

TRIPURA

INNOVATIVE PRACTICES IN ELECTION MANAGEMENT

SMS based systems for monitoring of Polling Stations: Toward improving Electoral System while considering the range of technical and societal challenges

1.1 Introduction

The use of electronic voting machines (EVMs) in India has helped prevent several electoral malpractices and resulted in more efficient conduct of elections. Some misplaced and misguided comparisons are however made between the EVMs used in India and the PC based EVMs used in some foreign countries. The strength of the Election Commission of India EVMs is that it is a fully standalone machine and is not part of any network with no provision for any input and therefore leaves no possibility of hacking. The Indian EVMs are fundamentally different from the voting machines and processes adopted in various foreign countries and surmises based on foreign EVMs is completely erroneous and the Hon'ble Karnataka High Court has in view of the advantages offered by the India EVMs has hailed it as 'a national pride'.

Having a standalone EVM guarantees that it cannot be hacked and is tamperproof but imposes a limitation on use of any network technology in the EVM. For the **Electoral Information & Poll Monitoring System** for the elections in 2009 in Tripura therefore an alternative networking platform using the mobile phone was developed to effectively harness the available communication facilities and the networking technology to further improve the reliability, accuracy and trustworthiness of the electoral process. Monitoring of the polling stations and the election process was earlier dependent on conventional communication medium like fax, telephone and police wireless and in-person visits. In view of the directives of the ECI to develop an effective communication plan and to collect poll-day information from the polling stations on strategic parameters it was felt that the utility of the communication network could be improved to pin point the polling stations where corrective measures are required for the conduct free and fare election. With the assistance of the National Informatics Centre the cellular and web

technology was used to leverage the advancement in technology to improve the trustworthiness of the election process. The elector data was hosted on the web and search facility in English and Bengali was provided and used to disseminate voter slip and candidate details to the electors, over web and SMS, based on citizen request. The net work technology was also used to collect poll data over SMS and monitor the election process in general.

2.1 Poll Monitoring System

The information and communication platform using the mobile phone was used in a very significant way for the first time for poll-day-monitoring of 3008 Polling Stations in Tripura during the General Election 2009. Using the mobile phone a SMS-based Web Application Software GSM/ GPRS Modem interface was deployed to collect Poll day statistics on the 23rd April 2009, the day of the poll in the two Parliamentary Constituencies in Tripura. Because of lack of mobile connectivity and inaccurate reporting through the SMS by some of the communication officials, the information with regard to some of the polling stations could not be received through SMS and for such cases the Communication teams at the Sub Divisional and the District level obtained the information by other means of communication which were put in place as part of the communication plan and kept the information updated.

The application gave an idea of the average voting percentage and the progress of poll, and also generated Voter Turnout Report (Polling Station, Assembly Segment and Parliamentary Constituency wise). All the stakeholders like the Assistant Returning Officers, Returning Officers, Observers and the Chief Electoral Officer could directly monitor progress of poll and address any problems immediately.

The SMS-based monitoring system was further improved for the Bye-election to the 8-Town Bardowali Assembly Constituency held in Tripura on the 28th May 2009 and with the availability of proper connectivity the SMS based system worked satisfactorily from all the polling stations and alternative means for keeping the system updated were not required. The SMS based system could be reliably used to closely monitor the poll process, collect data

from all the polling booths and monitor election process in general including tracking of arrival/ departure of the polling parties, conduct of mock poll, presence of polling agents/ micro-observers, deployment of CPF and use of video/ digital camera at the polling station. The system displayed online, the two hourly progress of poll at the polling stations collected through SMS and generated reports for the scrutiny of Register 17A. The two hourly record of the Vote cast provided an additional check for the votes recorded in the Presiding Officers Diary. The information required as per the Election Commission of India directive for Register 17A scrutiny regarding the poll process was collected by SMS through the Booth Level Officers (BLOs) and scrutiny report could be generated as soon as the poll was over. The real time information regarding the poll process and two hourly progress of poll at the polling stations was made available online on the CEO's website for the public and the press on the day of the poll.

For the SMS based reporting system the Booth Level Officers (BLOs) assigned to the polling stations were trained to send formatted SMS messages on the following poll related activities and the expected timings of SMS from the BLOs were pre-scheduled and circulated to the BLOs during the training sessions:

Milestones	When to send SMS
Phone No. Validation	From 10AM to 1.P.M in previous day of the Poll day
Polling Party Reached	Instant Polling Party reaches the PS on the previous day of the poll day
Presence of (a) Polling Agents, (b) CPF (c) Micro-Observers, (d) Digital Camera / Video Camera	Before the commencement of Poll (7AM on Poll day)
Mock poll conducted	Before the commencement of Poll (7AM on Poll day)
Poll Started	Instant Poll Started (7 A.M onwards)
Poll Interrupted/ Resumed	Instant Poll Interrupted/ Resumed on Poll day
Two Hourly/ Final Vote Cast Reporting	2 Hourly report from 9AM on Poll day/ Instant Poll closed
Polling Party Departed	Instant Polling Party departed

The format and syntax of the SMS messages were suitably designed so that the message received by the system through the GSM modem could

be automatically interpreted and up-dated into the database and made available to all the stakeholders for monitoring the Polling Stations on line. The following standardised syntax was adopted and the BLOs trained for proper use.

Milestones	SMS Syntax
Phone No. Validation	P[PC NO]A[AC No]P[PS NO]PV eg. P1A8P15PV
Polling Party Reached	P[PC NO]A[AC No]P[PS NO]PR eg. P1A8P15PR
Polling Agents, CPF, Micro-Observer, Digital camera, Video Camera	P[PC NO]A[AC No]P[PS NO]PA[No. of Polling Agent]C [CPF Y/N]M[Micro-observer Y/N] D[Digital Camera Y/N] V [Video Camera Y/N]
Mock poll conducted	P[PC NO]A[AC No]P[PS NO]MC
Poll Started	P[PC NO]A[AC No]P[PS NO]PS
Poll Interrupted/ Resumed	P[PC NO]A[AC No]P[PS NO]PI P[PC NO]A[AC No]P[PS NO]PR
Hourly/ Final Vote Cast	P[PC NO]A[AC No]P[PS NO]VC800 P[PC NO]A[AC No]P[PS NO]VM470VF430
Polling Party Departed	P[PC NO]A[AC No]P[PS NO]PD

The system has the complete information with regard to the votes cast in each polling station and report on voter turn out was available and can be generated Polling Station wise, Assembly Segment wise and Parliamentary Constituency wise. With every two hourly record of the votes cast the SMS based system provided an additional check for the votes recorded in the Presiding Officers Diary.

2.2 Event Reporting

SMS-based-feedback received from the BLO's for each and every Polling Station along with the time-stamp was displayed with the following details in respect of each polling station:

- Phone No. Validation. To validate and display the BLOs mobile phones registered in the system, from the polling stations on the previous day of the poll.
- Polling Party Reached: To confirm the time when the Polling Party reached the polling station on previous day of the poll.

- c) Polling Details: To display polling station-wise details including the number of polling agents present on the poll day, CPF present or not, Micro Observer present or not, digital camera/ video camera used or not.
- d) Morning Mock Poll: To confirm the time and satisfactory conduct of the Morning Mock Poll using the EVM.
- e) Polling Started: To confirm the time of start of poll.
- f) Polling Interrupted/Resumed: To get report about interruption of Poll at any polling station so that corrective measures could be initiated and also its subsequent resumption.
- g) Two Hourly/ Reporting: - To get two hourly updates on the votes cast starting from 9AM on Poll day.
- h) Final Vote cast: To get report about on the total Votes Cast in terms of Male and Female Electors and indication of closure of poll.
- i) Polling Party departed: To confirm departure of Polling Parties along with EVM and other election materials.

Display of voter-turnout data was made publically available on the internet and the following online Reports were generated and used by the election officials to decide on the mobilization of election functionaries, security forces, replacement of malfunctioning EVMs and graphical

- a) Polling Station-wise Scrutiny Report and Poll-day Statistics with breakup of male/ female voters.
- b) Exception monitoring on Phone No. validation, Polling Party reached, Polling Station details, Mock Poll, Poll started, Poll Interrupted/ Resumed and Polling Party Departed helped get real-time information on any dislocation so that corrective action could be immediately be initiated.
- c) 3(three) layered (PC, AC and Polling Station) time-scaled Column Graph on Vote Cast
- d) Polling Station wise Voter Turnout percentage (100-90%, 90-80%, 80-70%, 70-60%, 60-50% 50% & under). Assembly Constituency wise abstract and Polling Station wise detailed report.

2.3 Expenditure

Low cost GSM/ GPRS based Modems (costing approximately INR 14 000/-) which were directly connected to the computer were deployed to

receive SMS from the BLOs and to upload the information received directly into the database and also to send SMS to the citizenry. With the arrangement for receiving near-real-time feedback directly from the Polling Stations the poll-day monitoring could be automated and the existing communication resources and manpower deployed for the elections could be effectively and optimally utilised.

The other best practices adopted for the elections in Tripura during 2009 included the following:

3.1 Electoral Information System

The advancement in Cellular and Web Technology was also innovatively used in Tripura elections in 2009 to host elector data in English and Bengali, and provide for search facility and disseminate voter slip and candidate details to the electors, over web and SMS, based on citizen request. The system facilitated dissemination of elector voter slip and candidate information and encouraged a record turnout of 84% voters to exercise their franchise.

SMS syntax for receiving citizen request for getting voter slip and candidate details, were standardized and widely publicised. This cost effective solution was very popular amongst the youth and the first time voters as they could conveniently find the polling station details and turned up in large numbers on the poll day to cast their vote.

Service	SMS Syntax
Get Voter Slip	PS[EPIC NO]
Get Candidate details	CAND[PC NO]

The Website of the Chief Electoral Officer, Tripura was redesigned with a powerful search facility with access to the electoral rolls of the entire State, the information regarding the election laws and rules and the Guidelines of the Election Commission of India and also the results of the past elections held in the State along with the details regarding the Election Officials including the ROs, AROs, BLOs and the Sector Officers along with the Communication Plan. To strengthen the search facility, data base of electors after the special summery revision was converted into Unicode and provision of search for

elector details by giving name, address or the EPIC Card No. was provided on the website.

3.2 Preparation Of Electoral Rolls with 100% Photograph Coverage:-

In the Electoral Roll finally published in the Tripura on the 16th January 2009, 100% photograph coverage could be achieved. After that, during the period of continuous updation also it was ensured that 100% photograph coverage is maintained and the on the day of the polls on the 23rd April 2009 and 28th May 2009 photograph of every elector in the State was available on the roll.

In order to ensure that the photo electoral roll is error free, without any photograph mismatch and photograph of every elector was included before the final publication, a PDF verification copy of the photo electoral roll was generated after making the additions, deletions and modifications and given to the Booth Level Officers (BLOs) for re-verification of all entries and the photograph by going from house to house. The re-verification drive undertaken over a week, before final publication with the BLOs going from house to house helped to identify electors who did not have EPIC, remove errors of data entry and mis-matches of photographs and also collect photographs of the last 250 electors which were the most difficult to collect. This effort of re-verification of the electoral roll by the BLOs made it possible to have an error free photo electoral roll in Tripura with 100% photo coverage.

3.3 Distribution Of Electoral Photo Identity Cards-100% Coverage

While preparation of the error free photo electoral roll was being done the new EPIC card to be issued were also generated and given to the EROs on a compact disc. After the final publication of the photo electoral rolls on the 16th January, 2009, Electors Photo Identity Cards were printed and laminated at the level of the EROs and distributed by house to house visits by the BLOs and the same was completed by 25th January, 2009. The house to house visit for distribution of EPIC by the BLOs ensured that the EPICs were properly distributed and 100% of the electors in the State were provided with EPIC Cards

As a result of this exercise which helped to achieve error free roll with 100% photo coverage, on the day of the poll on the 23rd of April, 2009 the

State had a 84.11% turn out and 99.45% of the voters who came to the polling stations to cast their vote came with their EPIC Cards and only 0.55% voters had to rely on other documents.

4.1 Outcomes and Impact of the Initiatives

During the elections in Tripura in 2009, the Electoral Information & Poll Monitoring System achieved the following goals:

- a) Dissemination of Voter Slip & Candidate details to the Electors.
- b) With 100% coverage of the EPIC in the State, everyone had the EPIC Card No. and could find out location of polling stations through the SMS Search Facility.
- c) SMS-based-feedback on the milestones were automatically incorporated into the database, doing away with Data Entry and reports generated immediately after the event.
- d) Visual monitoring the poll progress in real time, for each and every polling station, Assembly Segments and Parliamentary Constituencies over time-scaled Column graphs and Data.
- e) Preserving data for Analysis and future use.
- f) Voter Turnout could be accurately projected during and just after completion of Poll.
- g) Provided the base data for scrutiny work on the day after the poll, as per ECI guideline.
- h) Functioning of Electronic Voting Machine could be monitored closely.
- i) Close watch on all the Polling Stations for conducting free, fair and peaceful election.
- j) Trouble mongers being aware of the effective communication and monitoring arrangements stayed away and the polling at all the locations could be completed peacefully.

The immediate impact of the initiative were

- a) Encouraging Electors to Vote on Poll day by sending out Voter Slip and candidate details

- b) SMS based search feature was particularly useful as the polling station of large number of electors had to be changed because of the delimitation of the Constituencies.
- c) Effective monitoring of each and every polling station, precise information to mobilize resources and near real-time corrective actions.
- d) Improved Transparency with Online Graphical Voter Turnout Report.
- e) Automatic generation of Voter-Turnout and Polling Station Scrutiny Report.

Although there is no readily available baseline data, the application "SMS-based-monitoring of Polling Stations" made significant improvement in the delivery time of making available resources to the polling stations in the form of Central Para-military Forces, Observers/ Micro-Observers, back-up EVM machines etc. and the comparative position before and after the implementation is given below:

Before implementation of SMS-based Poll Monitoring System	After implementation of SMS-based Poll Monitoring System
1. Reports were collected from the Sector Officer, Police Wireless message & Messengers engaged for the specific purpose through ARO and DEO and then compiled and a three tier systems were necessary.	Reports are collected directly from the Polling Stations to the State Head quarter through SMS message avoiding any time delay and increasing the accuracy
2. Collection of information was difficult, time consuming with manpower and management/ coordination required at different layers.	Collection of information was easy, simple and instant and minimum manpower required for compilation.
3. Manual error-prone compilation at different levels, which could not be shared in time amongst all the stakeholders	Compilation automated, accurate and available online. Voter Turnout & Polling Station-wise Scrutiny Report were ready by 5PM after the completion of the Poll at 4PM.

The application was developed with the assistance of the NIC and is verifiable and maintains exhaustive audit trail and conforms to 3 tier security in access control, database level security and application level transaction logging. The transaction trails are also displayed Polling Station-wise to the authorised user.

5.1 Conclusion

The application is highly scalable and is capable of adding new processes or updating the existing processes and can be adopted for different types of elections and also replicated in other States. The system can be adopted by the other States and additional features such as EVM details, photograph of voters taken by digital camera at the polling booth can be added to the system to have a complete record of all the activities at the Polling Station and therefore be helpful in conduct of free, fair and peaceful polling even at remote polling stations. Adoption across state is feasible and shall result to cost-cutting and significant improvement in operational efficiency

In order to maintain the trustworthiness of the election process the strength of the Election Commission of India EVMs, as a fully standalone machine needs to be maintained. However, in order to take advantage of the communication facilities and developments in the field of ICT, the alternative ICT platform such as the one that was tried in Tripura for the elections in 2009 may be developed which in addition to the SMS based monitoring also handles the photograph of voters and other record of the activities at the Polling Station to make the election process more open, transparent and reliable