Comprehensive and Crucial NIC ICT Support for the 2021 Assam State Legislative Assembly Elections

The National Informatics Centre (NIC) has been offering all-round ICT support to the State Government for conduct of elections since 1990 onwards. Over time the ICT involvement in election as in all other work domains has increased in an exponential manner to a stage when it has become indispensable in present times. It is a matter of great pride for NIC that it plays a crucial role in almost all ICT activities for any election. In the 2021 Assam Legislative Assembly Elections too, NIC led the ICT initiative. This role of NIC becomes explicit when the different ICT components working in tandem to conduct the elections are examined individually.

1. ICT Infrastructure

The NIC District Centre in each District acts as the nodal ICT centre for all election activities. If required, some ICT infrastructure and paraphernalia is supplemented by the District Administration. The primary connectivity for all election operations is the **NIC network NICNET**. The State/District Administration is dependent on NICNET for receiving and transmitting of all election data and communication.

The role of **NIC Video Conferencing services** assumes added significance because of the ongoing pandemic situation. NIC Video Conferencing was utilized extensively by the State and District Administration at all hours for coordination and management of the 2021 Assam Legislative Assembly Elections.

2. Manpower Resources

Manpower: The NIC District Informatics Officer (DIO) is notified as the District Nodal Officer/IT Manager of the Election IT Management Cell in almost all districts of Assam. The Assistant NIC DIO (ADIO) and all field engineers working for NIC are fully involved in election-related work for a period of almost three months for each election. The NIC Assam State Centre has a specially designated Division which looks after all election-related work in close coordination with the office of the Chief Election Officer not only during the elections but throughout the year. NIC district personnel are involved in every crucial election cell such as the Manpower Management Cell (MPM), Model Code of Conduct (MCC), EVM Cell, Postal Ballot Cell, Training Cell, etc. They manage all aspects of ICT application starting from planning ICT support to providing training to personnel and operating and management of ICT software and applications.

The NIC State Centre coordinates all election activities in the districts and takes up development and customization of software and mobile Apps for elections.

3. Software Support

The mainstay of the NIC software services for the elections has been the NIC-developed online application **Polling Personnel Management System (PPMS)** which is used to enter, randomize, train and deploy polling personnel in every polling booth of the State. PPMS has been augmented in the last 2021 Assam Legislative Assembly Elections by two other NIC-developed online applications Force Deployment Software and Eletraces which were used for crucial election-related activities. Many NIC District Centres have also developed their own software. One such example is the mobile application **Prasikshan** developed and implemented by NIC Hailakandi as a ready reckoner for polling personnel who had undergone training for 2021 Assembly elections has been recognized as one of the top twenty applications in a national assessment conducted by NIC. Moreover, the NIC District Centre in each district is also responsible for ensuring the smooth performance of a host of ECI recommended software both before during and after the elections. Some of these applications are outlined/listed below:

3.1   NIC-developed Applications

Polling Personnel Management System (PPMS): The PPMS online application developed by the NIC Assam State Centre has all the essential modules required for effective enrolment and randomization of civil administration polling personnel in different stages, organizing training programmes in batches and deployment according to polling booths and counting modules. The software supports generation of call letters and duty slips for each of these activities and provides a variety of reports according to the requirements of decision makers and managers. This software has been used successfully in successive elections including the Bodoland Territorial Region elections and the Tiwa Council elections of 2020 and the 2021 Assam Legislative Assembly Elections

A partial version of PPMS was introduced in Assam as early as in 2006. The scope of the software underwent gradual expansion to cover almost every aspect of polling personnel management over the years, and it technology platform saw continuous enhancement to keep up with new developments. PPMS is today a generic online PHP/Postgres-based application which can be used in all types of elections including local body elections. The objective of the PPMS is to bring under one umbrella all automation in connection with Polling Personnel and Counting Personnel management in all the Election Districts of Assam, fulfilling all guidelines laid down by the Election Commission of India.

PPMS fulfils the entire range of required functionalities for the election process. The **Data Entry/Edit Module** is used to enter the data of officials from various state/central government departments into the system to make a complete database of available manpower in the district. In the **First Randomization Process,** the system picks up suitable personnel to be used as Polling Personnel, with required percentage of personnel kept in reserve as stipulated by the rules. **Training venue and Room-wise Batch Creation and Generation of Training Letters, etc.** are done through the PPMS after the first randomization through the system. In the **Second Randomization Process,** groups are randomly formed and assigned to individual LACs. The process is witnessed by the Election Observers. **Generation of Group Letters/Group Training**

Letters with Schedules comes after the Second Randomization. All the appointments letters are generated in specified formats. Training schedules and other pertinent information can be dynamically added in the appointment letters itself. In the **Third Randomization** all the groups that were formed after the Second Randomization, are assigned Polling Stations randomly. This step is also done in the presence of Observers. Thereafter the **Counting Module** is used to draft and appoint counting personnel for counting of votes to all Randomization guidelines. **Report module** of PPMS generates various type of reports effective in making decision pertaining to the Manpower Management Cell (MPMC) and Training Management Cell (TMC). The PPMS has its inbuilt **Security Module** which encompasses measures taken to improve the security of the application by identifying and fixing all kinds of security loopholes.

Force Deployment Software:
The NIC-developed online Force Deployment Software was extensively customized and implemented for the first time in Assam for the 2021 Assam Legislative Assembly Elections. Assam was the second state/union territory in the Country to have successfully automated the randomization and deployment process for security forces engaged in elections.

The Force Deployment Software, Assam is used to randomizing the deployment of constables and home guards in all the polling stations, tagging CAPF and Other Armed Forces to polling locations, police sectors and police zones, and tagging Sector officers and Zonal officers to police sectors and zones respectively. After randomization and tagging, administrative users can view and generate different reports such as deployment plan, command certificate, etc. It has five different types of users: NIC Admin, State Monitoring, DEO/SP/SDPO, Home guard Commandant, and Other Office users.

Initially, the NIC Admin imports all master data such LAC details, Election district details, Police District details, different Office details, Home guard Commandant details, Election Phase details, and sets up all users. After that, the manpower providing users enter their personnel details for election duty. They also enter polling stations, polling locations, police sectors, and police zones details under their jurisdiction. After that the State Monitoring user prepares the state deployment plan for each phase according to which the manpower providing users transfer their police personnel to different Election Districts.

After the completion of all transfers, the manpower-receiving users lock all the incoming personnel. According to the phases set up by the NIC Admin, the randomization functionality is enabled on the randomization date, and randomization for constables and home guards is performed in the presence of Observers. Constables and home guards are allotted to different polling stations according to the randomization output, and Deployment Plans and Command Certificates are generated for constables and home guards. Duty SMSs are also sent to the allotted constables and home guards after randomization. These SMSs include all information such as polling station and location details, paired constable/home guard details, Sector officer details, Zonal officer details, reporting place and time, etc. According to this information, each personnel report at the mentioned reporting place and collect their command certificate before joining their respective parties for election duty.

Eletraces:
is an online software, a combination of an Android Mobile App and a Web Interface, used to track the movement of election personnel on duty, especially those travelling with EVMs in order to be able to locate the EVMs at any moment of time. Eletraces was successfully implemented during the 2021 Assam Legislative Assembly Elections. Eletraces works on the basis of GIS maps. The Android Mobile App

tracks the personnel through the mobile phone with the downloaded Eletraces App that he carries with him. Eletraces was configured for Assam by feeding it with the required GIS maps of Assam.

While performing his/her task, the officer can also report pre-defined events and indicate the starting point and completion of each event based on his/her location. Eletraces works in Internet Shadow zones (place where internet connection is not available), and uploads the data once internet connectivity is available. The web interface helps administrative users to track the movement of election personnel. Eletraces provides several GIS layers to analyze the GPS tracking data.

Beside the above, other other NIC district-specific software such as the mobile App **Systematic Voters Education and Electoral Participation** (SVEEP) for citizen awareness were used extensively.

3.2   Support for ECI Web and Mobile Applications

A wide range of web and mobile applications recommended by the ECI is run under the direct supervision and responsibility of NIC in all districts. These include the **cVigil** web portal and Apps for the Model Code of Conduct (MCC) Cell, the **two-stage randomization process of EVMs and VVPATs** for the EVM Cell, **ENCORE** Application for filing of nominations, main election monitoring and results declaration and the **Electronically Transmitted Postal Ballot System (ETPBS) system**.

NIC's responsibility extend to **post election activities** such as running modules for **expenditure monitoring** and **Index Card Preparation** in ENCORE and providing video conferencing services for **Account Reconciliation Meetings (ARMs)** convened by DEOs with Expenditure Observers in presence of candidates and agents. All the ARMs were conducted and moderated by DIO, NIC through desktop VCs at the district level for the 2021 Assam Legislative Assembly Elections.

Conclusion

Like in all other previous elections, NIC played a comprehensive and critical role in the successful conduct of the 2021 Assam Legislative Assembly Elections by managing and providing all ICT services and support required. NIC and its affiliated officials and personnel worked round-the-clock and shoulder-to-shoulder with the State and District Administration to make the elections a grand success.

Even after the2021 elections, NIC has been working on migrating the Force Deployment Application to open source platforms and to make it more flexible to suit the requirements of Assam. With the experience gained, NIC has also submitted a proposal to the Chief Electoral Officer, Assam to integrate and refine all NIC-developed election applications for Assam and productize them as an **Assam Election Package.** This will facilitate inter-application data exchange and coordination. The package could also be replicated by other states.