III. NAME OF CATEGORY- 'INNOVATIVE USE OF TECHNOLOGY IN e-GOVERNANCE'

<u>FORCE DEPLOYMENT SOFTWARE</u>

1. **Coverage – Geographical and Demographic** :-
(i) Comprehensiveness of reach of delivery centres,
   1. 38 (Thirty Eight) Districts of Bihar
   2. 40 (Forty) Police Districts of Bihar
   3. 38 (Thirty Eight) Dy. Commandants Offices of Home Guard
   4. 243 (Two Hundred and Forty Three) Assembly Segments of State of Bihar
   5. Departments such as ELECTION Department, HOME (Police) Department, DG (Homeguards).
   6. Citizens of Bihar State through Web Site http://elecon.bih.nic.in/

(ii) Number of delivery centers
   1. 40 (Forty) Police Headquarters
   2. 38 (Thirty Eight) Home Guard Dy. Commandants Office
   3. 38 (Thirty Eight) NIC district centres of Bihar
   4. 534 (Five Hundred and Thirty Four) Blocks of state of Bihar
   5. 4400 (Four Thousand and Four Hundred) Common Service Centres

 (iii) Geographical
   1. National level – Number of State covered   - One
   2. State/UT level- Number of District covered   - 38 Districts
   3. District level - Number of Blocks covered   - 534 Blocks

Please give specific details:-

(iv)Demographic spread (percentage of population covered)

This covers most of the districts, Parliamentary Segments, Assembly Segments and blocks of the State of Bihar.

2. **Situation Before the Initiative** (Bottlenecks, Challenges, constraints etc with specific details as to what triggered the Organization to conceptualize this project #):

Background :

Deployment of Forces for elections purpose in various phases of elections is the most difficult task of election process. There have been instances in which deployment of force does not seem to be in accordance with the transparency guidelines of Election Commission leading to inappropriate practices. In addition, due to inadequate number of forces in a district it becomes necessary to move forces from one district to another in different phases of elections to fulfill the required numbers. The movement of forces in each phase range from 3 to 5 thousand per district. For each personnel there are requirements to arrange Advances, Vehicle, Stay and Arms etc. at the election district. Issuing command letter for deployment and tagging with PCCP (Polling-cum-Collecting Party) or static booth using random methods and then serving the letter to the polling team is also a difficult task. In addition as Home guards are not being used on daily basis by District administration and many stays at remote locations makes it difficult to inform them for election duty purpose. Due to paucity of time and volume of police personnel, it was felt difficult to manage them manually or through OFF-LINE mode.

So it was decided to introduce an online System for monitoring, transferring, deploying, intimating/informing etc. of Force Deployment across the State.

Bottlenecks:

The major bottleneck with the existing system was that it was non-transparent, slow, inefficient and time consuming process. Locating and tagging police personnel, home-guards and Executive Magistrates at one place and then dispatching them to election booth as party/team, requires entire machinery of police forces completely engaged with the process. Data Entry of forces being used by recipient district is also cumbersome task and due to paucity of time it was resulting in chaos during election process.

Challenges:
- Need for conducting free and fair polls and making transparent deployment of forces across the state in accordance with guidelines of Election Commission of India.
- Use of informed Police and Para-military forces has decreased considerably the occurrences of incidents related to Poll violence in the state.
- Management of forces and movement in different phases to districts.
- Allotment, deployment, booth tagging, Magistrate tagging, Command Letter distribution etc. management across state through an efficient system.
- Time-consuming procedures that result in frustration for users of the system and leading to chaos at SPs office;
- Management of Large scale forces moving from different portions of the State.
- Need for efficient communication system/Plan to inform to the stakeholders.
- Home guards are not regular visitors to offices and they remain in remote locations.
- To assist para-military forces in their deployment plans for booth buildings.
- No such precedence of deployment process in any State of this scale.

- Non-reaching of forces creates chaos

Constraints:
- Conceptualization of a new process with no such precedence in any State.
- Non-Availability of ICT infrastructure, Technology and culture in departments of Stakeholders like Police and Home guards.
- Collection of Police personnel Details from Various Police Offices, Thana, training centres, CID etc.
- Non-availability of mobile and Numbers with Home Guards.
- Time Constraints between phases of during elections to process in very less time
- Need for Government Process Re-Engineering at various stages of deployment.
- Security considerations in deployment of Forces.
- Non-availability of vulnerability assessment and spatial layers for such practices.

3. Scope of Services/ Activities Covered (Relevance of choice of application for client/ agency, Extent of e-enablement in terms of number of services, Extent to which step in each service have been ICT- enabled #)

Force Deployment Software is a joint initiative of **Office of Chief Electoral Officer, Election Department, Government of Bihar and National Informatics Centre, Bihar.** This is a **Workflow based application system** which leverages spatial and textual data to generate various MIS to serve and facilitate various levels of decision support to force deployment related election machinery across 38 (Thirty Eight) districts consisting of 534 (Five Hundred and Thirty Four) Blocks, 243 Assembly Segments and 40 parliamentary segments of Bihar to facilitate District Administration and Police Administration, Election Commission of India, Office of Chief Electorate Officer and Citizens of State. The system automates the process of movement of forces for different phases of elections, reporting of home-guards, deployment of state forces to booths and PCCP, reporting from booth, SMS alerts at various stages of deployment. The system is a web-based online software which integrates functions of various stakeholders such as SP Office, Commandant of Home Guards office, Election Office, Vehicle Cell, Reporting Cell, Command Distribution Centre, Enquiries and Helpdesk etc. Formation of parties, locating members of parties and assembling party for despatch involves huge task as part of police administration during election. **First time in Country automated software to manage the entire processes related to movement and deployment of forces has been developed.** Randomization software helps to randomly depute forces to election booth and PCCP which brings transparency in the entire process. Helpdesk has been created across state to assist the forces in locating their parties and collecting command letter. *Software helps to collect force details from various field formations, send SMS alert for reporting, monitor total availability of forces against targets, arrivals, reported, command*

distribution, allotments, re-allotments in case of causality, communication plan, vulnerability mapping of booths etc. This has drastically reduced the effort of managing forces in extremely limited time between various phases of elections. The software has been enhanced to include duty distribution of Home Guards on other days so that their payment schedules can easily be generated.

The salient features of e-enabled services for force deployment:

- Online workflow based system to assistant Police Administration in deployment of forces for Polling Party and Election booth.
- Identifying each designated polling staff by an unique serial no i.e. **Personal Identification Number(PIN)** unique across the State of Bihar.
- Online sharing/movement of Police personnel database for different phases of elections by concerned Police Administrations.
- Monitoring of Force movement/arrival against allotment to the district.
- Deployment of **two-tier of random number generation techniques** for polling party formation and deployment (booth tagging) with zero bias
- **Standardized application** for Parliament and Assembly Elections with capability to support local elections to Nagarpalika, Panchayat (Local Bodies Election) etc.
- **Support Simultaneous Elections** to Parliament and Assembly.
- **Multi-layer data security** at the level of Database, User & Observer.
- **Facility for locking and unlocking the processed data** by the Observer.
- Facility of **uploading photo to data table from external media** and option to **download photo from data table to system folder.**
- Preparation of Force **Identity Card**, used during poll duty.
- Generation of Command letters with photograph.
- Automated **deployment of police force** on election booth for free and fair elections.
- **SMS alert.**
- **Helpdesk and Online Search facility for duty of Police Personnel and Home guards.**
- **GIS Mapping of Election Booth** and vulnerability mapping of election booth.

4. Strategy Adopted

(i) The details of base line study done,

The current system of force deployment was designed to serve the needs of a police administration during elections which is a complex process and results in chaos during deployment process. There was need for simplification of deployment process and ICT intervention in entire process. The entire process had to be done in extremely secured manner. It is also necessary to develop a system which generates most of the in-process documents through the system itself. Complexity of the process can easily be understood as three different members of police party namely magistrate, police and home guards are three different entities and bring them together so that command can be issued and they can collectively collect arms and ammunition from single place is extremely difficult process. The process of deployment is so cumbersome that even managing elections for by-elections was taking lots of time. There was need to evolve alternate system of deployment with ICT intervention. Hourly assessment of force arrival, command distribution, vehicle arrangement etc. had to be done on priority basis.

(ii) Problems identified,

The existing system had following problems:
1. Non-existence of ICT Infrastructure.
2. Limited Availability of Mobile Phones and numbers
3. Biasness in deployment of forces.
4. Large scale movement of force data between different districts.
5. Limited Communication facility available
6. Non-availability of technical manpower to handle the systems.
7. Tagging of Personnel to Polling Magistrate.
8. Distribution of Command Letters and collection of Arms and Ammunition.
9. Collection of Police Personnel data and Home Guards Data from various Offices
10. Updating of Records and using these records for other purposes so that data remain updated.

(iii) Roll out/implementation model,

The software has scope for implementation in :

1. Parliamentary Elections
2. Assembly Elections
3. Assembly By-Elections
4. Panchayat Elections
5. PACS Elections

The roll out process started with training cum demonstration to all District Election Officers and Superintendent of Police of the State. In order to roll out the project across the State a comprehensive master trainers training programme was organized for DIOs/IT managers of the State for technical support. A project management team has been constituted including police officials, election officials, NIC and other stakeholders. The project uses technical manpower hired though NICSI as development team and operators hired either through district election office or through home guards office. Many of constables who are computer literate have been trained to use the system in SPs office. The project funding is done through various sources as and when required. NIC extends technical and project management support to the project. Nodal officer has been nominated at district level both for police as well as home guards. There is close co-ordination with election office, DGP office, DG (home guards) office, district administration, police administration, commandant of home guards office at district level. Infrastructure for operating the software has been procured on HOH model prevailing in the state.

(iv) Communication and dissemination strategy and approach used

1. Official Website of State Govt.
2. CEO Bihar Website.
3. Force Deployment Portal http://elecon.bih.nic.in/
4. Communication of each process and stages in process to concerned users through SMS.
5. SMS to all Registered Users of the Website.
6. Email to all Registered Users of the Website

5. **Technology Platform used–**
(i) Description,

H/W and Software Specification	Name of H/W and S/W
1. Servers & Desktop	High End Blade Servers, Local servers, Desktops
2. OS	Windows 2008, Windows 7 & XP
3. DBMS	SQLSERVER 2008
4. Framework	.net Framework 4.0
5. IDE Software	Visual Studio 2010, Java Script
6. Reports	Crystal Reports

7. SMS	NIC SMS Gateway
8. Mobile App	Android based Java Application
9. GIS/GPS Mapping(Spatial Data)	Silver Light, ARC GIS Server
10. Unicode Support	Indic IME, Google API
11. Video Player	Adobe Flash Player

(ii) Interoperability

Interoperability standards available for government frameworks have been followed and the data generated are directly used for other software. Software has been developed using open standards. The software has scope to facilitate date for deployment of home guards for day-to-day works of law and order as well as traffic control.

(iii) Security concerns

All measures have been taken to make application secured from unauthorized access and data is also protected. Logs are maintained and proper backup mechanism is being followed to ensure protection of data from losses. Securing data is major concern as loss of data at the time of election can result in delay in election process and deployment of forces to the booth.

(iv) Any issue with the technology used.
Mobile app is being developed to allow detached access to applications and improvements are being done time to time as per need and suggestions of the department. Reusability of data is also given highest priority. Due to Shared channels of SMS there can be small delay in delivery of services. Proper Power Backup, availability of internet connectivity at data centre and at remote locations of district is essential for the success of the application.

(v) Service level Agreements (SLAs) (Give details about presence of SLA, whether documented, whether referred etc. #)

There is proper agreement between stakeholders and it is governed by MOU signed between NIC and departments. Separate Roles and Responsibilities have been defined for stakeholders. All the stakeholders work together to achieve the objective of the system.
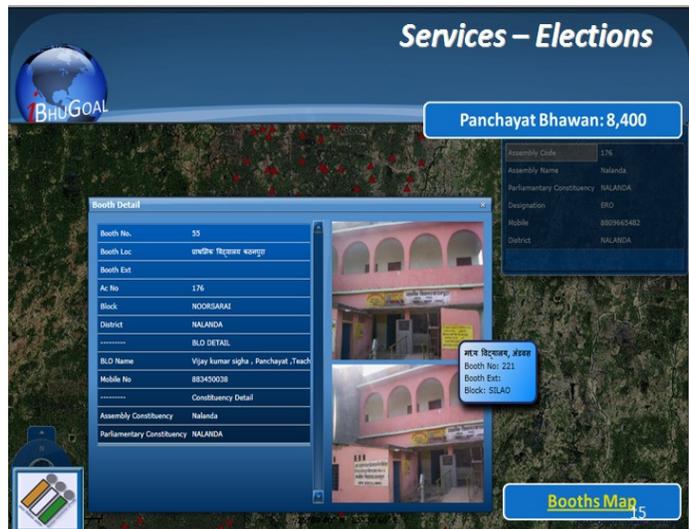
6. **Demonstrate innovative use of ICT for development** (Give details about use of new and emerging technology, innovative usage of ICT for process change to improve quality of the life/ organizational effectiveness, relevance of technology to provide the service #)

Use of new and emerging technology:

1. **Online System facilitating access by all election related offices of the state.**
2. **Integration of SMS service for communication [Both PUSH and PULL Service]**
3. **SMS alert at every stages of process namely registration, deputation to the district, duty allotment, details of members of team, booth details etc.**
4. **E-mail being used as mode of communication to stakeholders.**
5. **Online Transfer of Advances to the Accounts of Police Personnel.**
6. **Help Desk and Enquiry Facilities through Website.**
7. **Mobile App for locating booth locations in assembly segments**
8. **GIS technology to facilitate booth mapping, route charts for forces and booth locations.**
9. **SMS based reporting and DASHBOARD for stakeholders**
10. **GIS based Vulnerability mapping of booths and demarcation of administrative area for POLICE Thana.**

WEB GIS MODULE

Web GIS module envisages establishment of Bihar State Election Spatial Data Infrastructure for Multi-Layer GIS for planning and e-Governance by taking advantage of existing & available data and ICT infrastructure resources. This is largely meant to visualize MIS data spatially through thematic maps for making quicker and better decisions. This has been introduced to bring dynamism and transparency in the process in order to overcome problem related to planning, development, monitoring & decision-making during election process by Chief Electoral Officer, Observers, DEOs and ROs. District and Block wise maps, AC wise maps, Naxal Affected Areas mapping, Election Phases with timing, Mapping of Polling stations and linking maps with communication plan etc.

7. Citizen Centricity (Give specific details on the following#)

(i) Impact on effort, time and cost incurred by user,

The application has resulted in drastic reduction in efforts required to manage activities during deployment of forces at district level. Police personnel get information well in advance regarding their deputation to the district so that they can easily plan the journey. Travel arrangement, vehicle, stay etc. can easily be planned as dispatch schedule of forces are known in advance. Distribution of command, locating members of parties has become extremely easy. Due to paucity of time in management of forces during elections ICT intervention and latest communication tools is extremely useful for police administration. The cost of the project is very less as compared to effort required to manage database during elections. Thus the work flow based integrated system has drastically simplified the processes and resulted in new paradigm of force management during elections. The feedback received from police departments, observers, and commandants of home guards , speaks volumes in terms of time and effort required to carry out task as been minimized due to this effort. The effort also has resulted in statewide data base of constables, hawaldars, police officers, inspectors, sepoy, home guards etc. and is being used for various other MIS activities such as deployment of forces for elections.

(ii) Feedback/grievance redressal mechanism,

An integrated grievance mechanism has been formulated to address various grievances received during election process. On average 5500 grievances per election have been addressed before declaration of election results. The emerging and the fast-evolving paradigm of *good governance*, in conjunction with the increasing tendency towards *decentralization*, presents pressing challenges for reinventing governments and reengineering governance processes – at all levels – in order to meet the expectations of the citizens. Grievance management is also being handled at district head-quarters, SP office, CEO office etc. Essentially, thus, an institutionalized systematized mechanism for accepting grievances, processing them quickly and disposing them by taking necessary action has been setup for this purpose. A grievance redressal mechanism, in fact, has been an integral part of the machinery of election administration. A comprehensive and coherent management system for grievances handling that not only integrates the established principles of good grievance redressal, but also painstakingly operationalizes them, will work best to achieve the most important objectives that underlie good governance and people-centric public service delivery. The complainants are able to know about improvements made as a result of their complaints and about the recourse to further appeal / action if they are not satisfied with the manner in which their complaint is disposed.

(iii) Audit Trails,

Maintaining a complete audit trail for each transaction throughout its lifecycle is important not only for internal analysis and process optimization, but also for compliance with industry standards and regulations. Following procedures have been adopted for audit trail records:

- Maintain a complete record of every action that takes place to a database throughout its lifecycle
- Streamline compliance with industry quality standards and regulations
- Protect organization in legal situations with a proven record of the actions executed on a given database
- Filter the audit trail display to search for specific activities to database
- Export the audit trail records for archival purposes or reporting purposes

(iv) Interactive platform for service delivery,

The application has been made accessible on internet through a web application hosted on the website. Registered users can access various functionality and features on the website as per permissions. Information is also being communicated through pull and push SMS service configured for this purpose. Citizen can access the services though website or by sending SMS to specific number. SMS/email is being used widely for communicating large number of people. A toll free Number and HELPDESK has been established for citizen interface.

(v) Stakeholder consultation

Following activities have been performed as part of stakeholder's consultation

1. Establishment of procedure/process for force deployment.
2. Formulation of plan for training personnel
3. Preparation of content of training
4. Force movement plan across state in different Phases.
5. Online Application for capturing personnel data.
6. Sharing of Booth Details
7. Strength of police personnel to be used with PCCP and static booth
8. Randomization process for deployment of Forces
9. Process of Vulnerability mapping of Polling areas.
10. Command letter for deputation of forces.

Effective ICT led governance encourages better decision making and the efficient use of resources and strengthens accountability. Effective governance is characterized by robust scrutiny, which provides important pressures for improving performance and tackling corruption. Effective governance can improve management, leading to more effective implementation of the chosen interventions, better service delivery, and, ultimately,

better outcomes. Capturing domain knowledge, establishing effective and efficient processes, standardization of processes is key for stakeholder's consultation.

8. **Adaptability and Scalability** (Give details about Local language support, ability to leverage shared Government infrastructure, Standardization of technology used (hardware, software, application etc. #)

Most of the reports and data are available in Unicode so that people are able to access the services in local language. Software is most effective in providing complete details about various processes, monitoring day-to-day operations, reporting from each district/block through SMS and transparently posting persons through standard operating procedure established by departments. This increases faith of stakeholders and enforces guidelines of department. Conducting free and fair procedure is a challenge to all stakeholders and ICT driven process help to improve quality of decision making both by functionaries. A high-end database configured to support large number of concurrent users has been established. NIC SMS gateway has been integrated to deliver sms services.

9. Adaptability Analysis
(i) Measures to ensure adaptability and scalability

The software has been designed keeping in view current requirement of force deployment process during elections. The software has already been requested for implementation in state of Tamilnadu. The software has scope for implementation across country as the force deployment process is similar that of other states. In addition generic processes have been conceived which make it suitable for adaptable in any of the state. The software is currently running for most of the election processes for various levels in bihar and it has scope for implementation in every state. Measures have been taken up to scale the project in case the project requirement increase. There is no architectural issue as such for implementation in any other state. The software is scalable to support large number of concurrent users and is able to store large data within databases.

(ii) Measures to ensure replicability

The software has been developed keeping in view the current requirement of management during Loksabha and Vidhansabha polls. The software has been developed on generic principles and has scope for implementation in any Loksabha or Vidhansabha constituency or other election process in the state. The software can be replicated in any of the states or in case ECI takes initiative to implement the software across the country. The software has been notified by CEO, office, state election commission as well as election authority conducting PACS election. The software can easily be implemented as it is on-line role based software. Centre for good governance, Bihar can take the project to remaining

departments. A large number of people currently involved woking with software can be trained to operate new software. The new software can be replicated easily.

(iii) Restrictions, if any, in replication and or scalability

The software has been developed keeping in considerations of replication at multiple places. Various measures have been done for productization of the software and it has been tested in multiple levels testing. There is no restriction as such with software for replication or scalability.

(iv) Risk Analysis

The software has been designed keeping in view the current prevailing procedures in the election process however there is always chance of change in working principles by ECI guidelines. In such case there is always risk involved with the project based on change in policies. Support of CEO, office for the project is mandatory condition for implementation across state. Funding requirement of the project is fulfilled through state government and continuous project funding is needed for continuity of the project. There are internal and external risks involved with the project however proper measures like training, redundant hardware, connectivity issue, manpower issues, budgets etc, has been taken up by the project team so that there is no critical issue which affects the project.

10. **New Models of Service Delivery** (Give details about type of partnership model use, Links to/Supported by Public/Private Organization Links provided to relevant websites etc. #)

The software is hosted at site http://elecon.bih.nic.in/. The software has been developed by NIC, Bihar and being implemented through NICSI. There is a MOU which has been signed between all the stakeholders indicating project duration, roles and responsibilities, resource estimation etc. Project funding is being done through CEO, Bihar office. The project envisaged to achieve complete automated system which generates most of the in process documents as well as assist the stakeholders in managing processes in extremely tight time schedule.

11. **Efficiency Enhancement** (Give specific details about the following #)
(i) Volume of transactions processed

Srl. No.	Services	2014-15	2013-14	2012-13
1.	Force Deployment	15,50,000	8,45,000	1,20,000
2.	SMS Support	56,00,000	12,00,000	3,10,000

3.	Helpdesk/Grievances	6,35,000	6,46,000	3,15,000

(ii) Coping with transaction volume growth

NIC Data centre equipped with multiple servers has been used for application and databases hosting. A dedicated team lead by a Server Admin continuously monitors the site along with other services. A cluster of servers have been created so that response time of application does not degrade during peak hours. Various transaction management schemes have been adopted for utmost service delivery. Around 4,000 concurrent users are accessing the services. Separate database servers have been hosted to support operations. Transaction logs are maintained so that in case of failure data can be recovered through the same. High speed 10 GB internet link connectivity is available through NKN for delivering services. In order to facilitate availability of services parallel links are also available so that in case of failure alternate links can be used. Response time of server has been by and large most effective.

(iii) Time taken to process transactions,

Transactions are processed as and when it is posted to the server. There is no delay time for server processing. Delivery of SMS is through NIC SMS gateway does take some delay as they are shared services and depending on load on the gateway there can be some delay in delivery of SMS. Response time of on-line server is good enough for delivery of services at remote locations.

(iv) Accuracy of output,

The accuracy of output has been given the highest priority otherwise this may lead to legal complications. There has been only very few court cases due to non-communication of grievances by department but same has been quashed by the courts. Till this date no major problem has been recorded through the department and its efficiency and service delivery has been well recognized by most of the stakeholders.

(v) Number of delays in service delivery

1. Delay in SMS service due to shared SMS gateway of NIC.
2. Change in procedure of randomization as suggested by CEO, office
3. Bandwidth related issue which may arise during operations.
4. Load on server and network in case of network congestion.
5. Transfer of data from various field offices require close co-ordination
6. Transfer of data from other districts

12. **User convenience** (Give specific details about the followings #)

(i) Service delivery channels (Web, email, SMS etc.)

Common Service Centre across the state have access to the application. In addition Block, Sub-division and district functionaries are able to access application at regular interval. In order to make application reach to masses local language interface in Unicode has been added so that information so provided can be used by large set of people. Applications are accessible both for citizen and for government functionaries as per needs. Application has been hosted on internet site making it accessible from any location i.e. http://elecon.bih.nic.in/. Easy navigation facilities, help files make it accessible to larger audience. The application is also accessible to departmental users for closed access on certain information.

Access Delivery Channels:

Panchayats:: Common Service Centres - 4400 Common Service Centres have been established in the State for providing citizen centric services. This application can be accessed from panchayats. This adds revenue to earnings of local entrepreneur. In addition there are many cyber café available for accessing the services in each Panchayats.

Block Site:: ICT infrastructure has been provided through Block Centre/Executive Assistant established across the State on HOH(Hardware on Hire Basis) connectivity is being provided through Internet Data Card/SWAN Node. Block level Officers have been trained to operate the system.

District Site:: ICT infrastructure has been provided to all the districts for day-to-day operation. Officers/Staff have been trained to enter on-line data and prepare various kind of analysis reports. Both SPs Office and commandant of Home Guards officials have BEEN trained to operate the system.

State ELECTION Portal :: http://elecon.bih.nic.in/ This has been hosted in State Data Centre of NIC which provides 24 x 7 services and a high speed link for internet backbone. The data centre is connected through 10G link of NKN.

Site is accessible through internet and measures have been taken to support around 40,000 users at a time. Web Application is integrated with SMS and e-mail facility so that stakeholders are informed regarding transactions and events in the system.

(ii) Completeness of information provided to the users,

Election activities are time bound processes and resource management in terms of man, money and material are crucial for smooth conduct of elections. Screen based validation has been provided to verify the correctness of ECI guidelines in deploying forces in party for the satisfaction of the Observers. Observers can carry out the process of randomization as many times as they wish before locking the data. They can only have the authority to unlock the data for re-processing, if required. Force Deployment Software deploys unique innovative ideas to weed out any biasness during force party composition and booth allotment. System inbuilt functions along with complex guidelines of Commission make this approach unique thus keeping user informed and satisfied at each and every step of force party formation. Multi-layered randomization technique is core to this innovation.

(iii) Accessibility (Time Window),

The application becomes available after announcement of dates of election and remains active till entire process is completed. The application is accessible 24 X 7 to the stake holders. Stakeholders can get registered to the site to get alerts on processes and training. The software has been integrated to inform to the stake-holder though e-mail various activities during election process. Entire internal communication between field formations is through e-mail. SMS integration has been done for both PULL and PUSH service for enquiry as well as reporting purposes. Online interface has been created for grievance monitoring and on-line movement of forces and tracking of arrivals.

(iv) Distance required traveling to Access Points

Application is accessible from CSCs or any Cyber Café available at Panchayats/Villages. Only after information about elections police personnel need to visit Block/District Centre for physical verification of documents. Services are also available at district/block office. All the services are available IN their locality.

(v) Facility for online/offline download and online submission of forms,

Entire process has been integrated as work flow system and is accessible to various stake holders at panchayats/villages, blocks, districts as well as state HQ. Acknowledgment for form receipt, election progress, selection, rejection, Queries are provided through sms and E-MAIL. There is also integrated system inbuilt for enquiring through sms.

(vi)status tracking

Application provides facility to track status of police personnel or home guard through web interface and SMS. User can log on to the server to access details of application and interact with the application as it becomes necessary. Progress related to application processing is also informed to the registered users through sms and email. Both push and pull services are being used for various kinds of alerts being generated through the system.

13. **Sustainability** (Give details about sustainability w.r.t. technology (technology used, user privacy, security of information shared – Digital Encryption etc. #), Organization (hiring trained staff, training etc. #), financial (Scope for revenue generation etc. #)

ORGANIZATION (HIRING TRAINED STAFF, TRAINING)

- **State PROJECT Core Team**
NIC, Bihar and Election Department, Government of Bihar has notified officers as Project Members of Bihar Election team. This also have members from administrative officers, who advices and assist during project implementation. This team is supported by a team of programmers well versed in adopting online web applications and provides technology implementation of the Project. This team work under overall supervision of Chief Electorate Officer cum Principal Secretary, Election Technology Department, Government of Bihar and State Informatics Officer, Bihar. The project team consists of officers nominated by NIC along with hired programmers well versed in application development using technologies such as web applications, GIS applications, Mobile Applications, other multi-channel delivery Systems.

- **User Department Core team :**
In order to support project at department level it is necessary to create and train a group of resource persons who can work at department level and integrate MIS applications with GIS. User department has formed a cell with hired manpower and domain experts. These people have been trained on using application by Central Core Bihar team. These people not only co-ordinate with Central Bihar team but also interact with field formation for collecting data. In addition the cell can motivate decision makers to use ICT in decision making process and create a ICT enabled environment for planning and monitoring.

- **Resource Persons at District level:**

In order to support project at district and Block level large chunk of data has to be uploaded to department level at regular basis. Kind of Parameters required at decision making has to be identified by the district. District officials dealing with data have been trained and equipped both for uploading data, data standardization and also they can use ICT as a tool for decision making. Proper h/w and software infrastructure has been created at field formations for updating data. District Informatics Officer/IT Manager have been trained to use the application and provide technical support to THE Project. Both SPs office and Dy. Commandant (Homeguards) technical persons have been trained to operate the software and co-ordinate with field formations.

- **Workshops on adoption of latest technologies:**

Workshops have been conducted for various stakeholders of the project to make them understand about available technologies and best practices   In order to support project at district and Block level large chunk of data has to be uploaded to department level at regular basis numerous training programme has been conducted by Master trainers. Currently there is emphasis is on using Mobile technology to deliver services and gather data from field formations.

Financial model adopted

The project has been implemented in collaboration with NIC, Bihar State through NICSI (National Informatics Centre Services Incorporated), a section 25 company under NIC, Department of Information Technology, Ministry of Communications & IT. This is to facilitate appropriate provisioning of outsourced services required for the project. However, NIC is single point coordination for project development & execution for the State Govt. In order to facilitate data entry operations data entry agencies have been hired at district level. However data entry operations as being done at district level with help of Dy. Election Officer and District Informatics Officer. CEO office has also hired a set of programmers and operators to support day-to-day operations. As implementation task is huge of its kind and time bound it is difficult for single agency to manage entire activities across Bihar. Set of Data Entry Operators are also hired at each district level. Similarly data entry operators and nodal officer of home department have been trained for software operations at district level. Entire funding for the project is done through Chief Electorate

Officer, Bihar and NIC, Bihar. Project funding has been done at regular interval in terms of Manpower, H/W resource, Software support etc.

Project management & Monitoring adopted

Following committees have been created by Election Technology Department, Government of Bihar for monitoring long term objective and progress of the project.

State Level Apex Body-

This has been constituted under chairmanship of Chief Electoral, Bihar with Principal Secretary, INFORMATION TECHNOLOGY, Addl CEOs, ADG(HQ), DIG (Homeguards), State informatics officer, MD, BELTRON as members

State Level Steering Committee-

This has been constituted under chairmanship of Addl CEO with Nodal Officer, Police Computerisation, DIG(Homeguards), Two Representatives from districts and Election Co-ordinator, NIC, Bihar as members.

District Level Executive Committee-

This has been constituted under chairmanship of District Magistrate of respective district of Govt. of Bihar with Nodal Officers of Police &Homeguards,IT Manager, Two Representatives of Blocks and DIOs/ADIOs of NIC as members.

Security and confidentiality standards

Role-Based Access Control (RBAC) is attracting increased attention in commercial systems. RBAC is based on modeling organizational-specific access control policies. The main components of RBAC are users, roles, permissions, user-role assignments, and role-permission assignments. Access control is enforced in terms of roles. Intuitively, when initiating a session, a user may activate any roles that he or she has been assigned to and use the union of corresponding permissions. Based on practical considerations, such as ease of implementation, database support, and processing needs, we have developed a model that allows view-based access control.

Users of the database system are able to access predefined sets of views, based on their authorizations. Views are built from a multi-level database and may be updated, according to the users' privileges. Any update is then propagated back to the multi-level relation. Users of the database system are the district level users, having direct access needs to some of the SQL Server database items, accessing the database through the this application. These users have different access requirements according to the role they are using in a given scenario. We take advantage of SQL Server's support of role-based access control has implemented security administration based on the users' roles in the system. Beside user roles, SQL Server allows application a role where accesses to the database depends on the application the user is using.

14. Result Achieved/ Value Delivered to the beneficiary of the project-(share the results, matrices, key learnings, feedback and stakeholders statements that show a positive difference is being made etc):

(i) To organization

1. Smooth conduct of 2014 parliamentary elections involving 20,00,000 transaction ranging over 243 assembly constituencies and 40 parliamentary constituencies.
2. Service to 80,000 police personnel deputed to different phases of
3. Parliamentary elections/Assembly By-Elections and Panchayat Elections.
4. Smooth communication through sms at different stages of election process
5. Reduction of internal processes and exchange of databases between districts.
6. Assistant in force movement to booth using route charts and different vulnerability maps.
7. Reduction in manpower needed to manage processes at sp office.
8. Locating of police party for booth/pccp becomes extremely easy.
9. Database reusable for deployment of police in law and order.
10. Reusable database for by elections.

(ii) To citizen

1. Enquiry of location of booth
2. Deployment status of forces to booths
3. Characteristics of booth based on vulnerability
4. Enquiry about police arty and their locations
5. Strength of force at each booth
6. SMS alert to police personnel
7. Enquiries through sms services
8. Help desk and online search facility for police personnel.

9. GIS mapping of election booth and integration of election rolls with booth for enquiry

(iii) Other stakeholders

- Online submission of personnel profile
- Appointments letters related alerts for Election through SMS
- SMS alert for training
- Online Enquiry for posting on Booth
- Enquiry REGARDING tour advanceS
- DELOYMENT LAN AT booths

Customer feedback

15. Extent to which the Objective of the Project is fulfilled-(benefit to the target audience i.e.G2G, G2C, G2B, G2E or any other, size and category of population/stakeholder benefited etc):

Software has been operationalized for different level of elections in state of Bihar. Most of the stakeholders have used the software in various purposes. Software has been extremely accepted and suitable for various election works. The objective of managing large scale of force movement across state during different phases of elections has been fulfilled through the software. The software has proved extremely useful time and again during election process. Following are the various types of services being delivered through the system :

G2G Services:

- Identifying each designated police personnel by an unique serial no i.e. Personal Identification Number(PIN) valid forentirestate
- Deployment of two tier so random number generation techniques for party formation and its deployment (boothtagging) withzerobias
- Standardized application for Parliament &Assembly Elections with capability to support local elections to Nagarpalika, Panchayat(Local Bodies Election)etc.
- Support simultaneous Elections to Parliament and Assembly
- Deployment of Forces through randomization

- Generation of Appointment Letters with Photo features.
- Online reporting of Election related events
- Transfer of force data online to different districts for conducting elections.
- Vehicle Management.
- Vulnerability mapping of election booths
- GIS mapping of election booth along with WEB interface for accessing various layers

G2C

- SMS alert to Police Personnel
- Enquiries through SMS services
- Helpdesk facility for police and homeguards
- Help Desk and Online Search facility for police personnel.
- GIS Mapping of Election Booth and integration of Election Rolls with Booth for enquiry

G2E

- Online submission of personnel profile
- Appointments letters related alerts for Election through SMS
- SMS alert for training
- Online Enquiry for posting on Booth

Most of the services are available free of cost to the citizen as this is mandatory service of government.

Benefits obtained from these services by each category of stakeholders

i. Automated deployment of police force on election booth for free and fair elections.
ii. Support for Unicode for local language interface
iii. SMS Monitoring of Polling Party and Polling Events including hourly poll percentage.
iv. Online reporting of Election related events
v. Online Submission of personnel information by departments
vi. Transfer of Force to other police administration
vii. Assistance for locating party through SMS support
viii. Reduction of task at SPs office and no chaos Zone.

Beneficiary of the Project :

- 38 (thirty eight) districts of bihar
- 534 (five hundred and thirty four) blocks of state of bihar
- 243 assembly constituencies
- 40 parliamentary constituencies
- Office of chief electorate officer
- District election officer
- Supdt. Of police
- Election observers
- 8463(eight thousand four hundred and sixty three) rural panchayats
- 2224 urban local bodies
- Citizens of state through web site http://ceobihar.nic.in/ & http://elecon.bih.nic.in/

16. Comparative Analysis of earlier Vs new system with respect to the BPR, Change Management, Outcome/benefit, change in legal system, rules and regulations

PARAMETERS	Original Software	New Software
1. Platform	VB and MS-ACCESS	SQLSERVER 2008 and .net Platform, C#, AJAX, ARCGIS Server, Silver light, IIS
2. Localization	English	English and Unicode Support
3. Online	Offline	Online Software with work flow managment
4. Force Randomization	Not Available	Force Deployment to booths with on-line facilities
5. SMS Support	Not Available	SMS Alert and SMS Monitoring facility has been added for monitoring

6. On-line Receipt of Personnel Information	Not Available	On-line submission of manpower details from different departments have been incorporated
7. Help Desk and KIOSK	Not Supported	**Available for Search Facilities**
8. GIS Mapping of Election Booth	Not Done	**Available with web interface**
10. Mobile App	Not Available	**For Enquiry of Booth and Online Reporting**
11.	Dashboard	**User based dashboards for allotments, transfer, monitoring and enquiry**

17. Other distinctive features/ accomplishments of the project:
1. First time in the country forces are being deployed on booth/PCCP using randomized methods adding transparency to the processes which lead to free and fair elections.
2. Online transfer of information completely minimizes effort of managing the databases at local level.
3. Efficient distribution of command letters which simplifies the most complex process.
4. Effective communication to stakeholders using SMS facility.
5. Processes have been re-engineered to make it more effective and secured.
6. Transfer of advances directly to accounts of individual police personnel.
7. Assistance to forces in reaching to booths so that casualty during elections can be minimized.
8. Preparation of Force Deployment Plan as per vulnerability assessment.
9. SMS based reporting of forces to booth.
10. Deployment of Police strength at each booth building.