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### E-Governance: Past, Present and Future In India

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**ABSTRACT** — Governments worldwide are faced with the contest of change and the need to reinvent government systems in order to provide efficient and cost effective services, information and knowledge through information and communication tools. E-Governance is E-Commerce technology means online convenience of government services. Development of any country can be judge by the scope of E-Governance in that country. Moreover, today's government has also full faith in E-Governance and its widespread network across the world proves it. Due to widespread demand of E-governance and exponentially increasing size of data, new technologies like Open source solutions and cloud computing need to be incorporated. We have also presented an exhaustive list of E-Governance projects which is currently being used in India and in universal situation. We have provided a machinery for improving E-Governance by including technologies such as Open Source and Cloud Computing.

**General Terms:** Business Information Technology

**Keywords:** E-governance, cloud computing, open source software.

#### 1. INTRODUCTION OF THE STUDY:

Implementation of programmes in an assimilated way and in a time bound manner, in a cost effective fashion and also to provide the necessary services to the citizens equitably with ease, it is essential that we use the technologies available today and work out a comprehensive e-Governance system for all government to government and government to citizens transactions. e-Governance has to be citizen friendly. Particularly in a democratic nation of a billion people like India, e-Governance should enable seamless access to information and seamless flow of information across the state and central government in the federal setup. Governance refers to the exercise of political, economic and administrative authority in management of the country's affairs. As a citizen of this democracy, everyone is entitled to the fulfillment of certain basic needs by the government. Physical resources have to be duly complimented by an optimum communication infrastructure. The relevance of physical resources is limited by the accompanying information structure. It takes little

knowledge of management to realize that we first need to make better use of existing physical infrastructure before adding more to it. Obviously, the aim should be to first overhaul the communication infrastructure. In fact information and communication infrastructure are the next frontier for seeking the survival and the growth of democratic government. With the coming of Internet it has thrown open the reach of government and citizens 24 hours a day, 7 days a week and 365 days a year. This needs to be exploited and an overall perspective needs to be presented focusing various related issues to e-governance

E- Governance may be understood as the performance of this governance via electronic media to facilitate speedy, efficient and transparent process of disseminating the information to the public and for performing the Government activities.

**1.1 E-Governance:** Use of internet by the government to provide its services at the door step of customers, business and other stakeholder. In E-Governance, government makes best possible use of internet technology to communicate and provide information to common peoples and businessman.

There are all the four pillars of E-Governance:-

**CONNECTIVITY:-** Connectivity is required to connect the people to the services of the government. These should be a strong and lengthy connectivity process for the E-Governance.

**KNOWLEDGE:-** Here knowledge refers to information technology knowledge. The government should be refer the employee skills and attitude for full engineers in a way of how to handle in a effective way of E-Governance. These engineers also handle all kind of fault that may occur during the working of e-governance.

**DATA CONTENT:** - Data Content refers to the Share the knowledge or information over the internet or open source software, there should be its database. Database also a collection of information this method database should have the data content which is related to government services.

**CAPITAL:-** it is Refers to a Money. Capital can be on public or private partnership. It is used by government to provide their services or to that sector of the economy based on its operation.

## 1.2 E-GOVERNANCE MODELS

E-GOVERNANCE services can be shared between citizens, businessman, government and employees. These four models of e-governance are as:-

1. Government to citizens (G2C)
2. Government to government (G2G)
3. Government to employees (G2E)
4. Government to businessman (G2B)

**Government to citizens (G2C):-**This model of e-governance refers to the government services which are shared by citizens. Here, citizens visit to the link of services that they want to use. This models strong the bond between government and its citizen. Type of services which are provided by this model includes:-

- Payment mode used in online bills such as electricity, water, telephone bills etc.
- Online registration in application
- All the Record copy of land.
- Online filling of complaints.
- Availability of any kind of information through online.

**Government to government (G2G):-**This model refers to the services which are shared between the governments. There is lots of information that need to be shared between various government agencies, department and organizations. These types of services or information are as:-

- Sharing of information between police department in various state.
- Government document exchange which includes preparation, approval, distribution, and storage of all governmental documents is also done through e-governance.
- All the Finance and Budget documents work Through done by the E-Governance process.

**Government to businessmen (G2B):-**Through this model, bond between private sector and government increase and businessmen use to communicate. They share information through this model like:-

- Data collection of income tax.
- Rejection and approval of patent is also done by this model.
- Payment of all kind of bills and penalty.
- Sharing of all kind of information, rules and data.
- Complaints or any kind of dissatisfaction can be shown by this.

**Government to employees (G2E):-**This model increases the transparency between government and its employee. Here, employee can keeps a check on the functioning and working of government and government can keeps on its employees. Information that can be shared by this model:-

- All kind of data submission(attendance record, employee record etc) from various government offices is done by this model
- Employee can file all kinds of complaints and dissatisfaction by this model.

- All kind of rule- regulation and information for employees can be shared by this.
- Employees can check their payment and working record.
- Employees can register all kind of working forms online.

## 1.3 DIFFERENT AREAS OF E-GOVERNANCE

Today area of e-governance is very wide. E-Governance is implemented by government in almost every field. From urban states to rural areas and from politics to teaching-Governance has spread its root everywhere. Either its public or private sector, common man or businessman all is largely dependent on e-governance. Here we have presented different areas where e-governance is widely used. In the following section, we are describing the projects used in urban and rural areas of India.

## 1.4 E-GOVERNANCE PROJECTS IN URBAN AREAS:-

1.4.1 **Transportation:-** Services provided by e-governance in this area are:-

- Issuance of Time Table of buses.
- Provision of booking facility for Interstate transport.
- Transportation Improvement Program.
- Regional Transportation Plans.
- Congestion Management Process.
- Transportation Demand Management.

1.4.2 **Online payment of bills and taxes:-** Services provided by e-governance in this area's:-

- Online Transaction
- Payment of Bill
- Payment of taxes
- Payment of house EMIs

1.4.3 **Information and public relation key service:**

1.4.4 **Municipal services**

1.4.5 **Roads and traffic management**

## ZONES OF E-GOVERNANCE IN RURAL AREAS:-

In rural areas e-governance has its very powerful impact. Here, from agriculture to local information everything is done through e-governance.

- Agricultural science
- Homegrown information
- Disaster management
- Land record management
- Panchayat

### E-GOVERNANCE IN HEALTH

Service provided by these projects are as:-

- Availability of medicines
- Special health camps
- Facilities at Anganwadi canthers

### E-GOVERNANCE IN EDUCATION:-

- Providing basic education (elementary, primary, secondary) to children
- Providing computer education to children
- Results for 10th& 12thclasses

- Information on eligibility for “Distribution of books” scheme

### CHALLENGES IN E-GOVERNANCE

In this paper we have described basically three types of challenges. These are

**Technical Challenges:-** Technical issue involve the following challenges such as

- Interoperability
- Privacy
- Security
- Multiservice Interaction

**Organizational Challenges:-** Organizational challenges include-

- Lack of Integrated Services
- Lack of Key Persons
- Population
- Different Languages

**Economical Challenges:-** Economical challenges are as:-

- Cost
- Maintainability
- Reusability
- Portability

### PROPOSED FUTURE TECHNOLOGY OF E-GOVERNANCE

To make E-Governance more efficient and powerful, two technologies can be boon to it. These technologies are Open Source Software and Cloud Computing. In this section, we have proposed a framework to incorporate open source and cloud computing in E-Governance.

#### BENEFITS OF CLOUD COMPUTING

- On-demand self-sufficient service
- Network access
- Location independent resource
- Rapid elasticity

#### OPEN SOURCE SOFTWARE

Open-source software (OSS) is computer software with its source code made available with a license in which the copyright holder provides the rights to study, change, and distribute the software to anyone and for any purpose. Open-source software may be developed in a collaborative public manner. According to scientists who studied it, open-source software is a prominent example of open collaboration.<sup>[2]</sup> The term is often written without a hyphen as "open source software".

Open-source software development, or collaborative development from multiple independent sources, generates an increasingly more diverse scope of design perspective than any one company is capable of developing and sustaining long term.

Working of E-Governance in Open Source environment Two entities that are actively involved in open source environment are active and passive entities. Active entities are code developers while passive entities are users who give their feedback openly to e-governance in open source environment. This feedback is bi-directional where an active and passive entity communicates.

Scholars Casson and Ryan have pointed out several policy-based reasons for adoption of open source – in particular, the

heightened value proposition from open source (when compared to most proprietary formats) in the following categories:

- Security
- Affordability
- Transparency
- Perpetuity
- Interoperability
- Flexibility
- Localization—particularly in the context of local governments (who make software decisions). Casson and Ryan argue that "governments have an inherent responsibility and fiduciary duty to taxpayers" which includes the careful analysis of these factors when deciding to purchase proprietary software or implement an open-source option.

#### E-Seva, a Government to Citizen Project:

The e-seva project whose services include online payment of utility bills, issuing certificates, issuing licenses & permits, e-forms etc started in 1999. It was designed to provide ‘Government to Citizen’ services. It delivers services online to consumers by connecting them to the respective government departments and providing online information at the point of service delivery.

The project has become very popular among the citizens especially for payment of utility bills. Success of this project is largely based on payment of electricity bills. It exemplifies the potential for integration of delivery of Union, State and Local Government services at one point. However, it also shows that the model based on payment of utility bills could not be rolled out in the rural hinterland.

#### Project FRIENDS, a Government to Citizen Project

FRIENDS (Fast, Reliable, Instant, Efficient Network for the Disbursement of Services) which was launched in June 2000 is a Single Window Facility providing citizens the means to pay taxes and other financial dues to the State Government. Its services are provided through FRIENDS Janasevana Kendrams. This project is a classic case of achieving front end computerized service delivery to citizens without waiting for completion of back end computerization in various government departments.

This project thus tries to avoid the complex issues involved in business process re-engineering in the participating departments. FRIENDS counters are not even networked with the participating departments or entities. Print-outs of payments made through the counters are physically distributed to participating entities for processing.

To remove bottlenecks at the time of processing, a government order was issued to treat a receipt from a FRIENDS counter as equivalent to a receipt from the concerned government entities.

#### E-Procurement Project, a Government to Business Project:

Prior to the introduction of an e-Procurement system procurement in Government departments was done through a manual tendering process. The process consisted of a long chain of internal authorizations and scrutiny which necessitated several visits by the suppliers to government departments.

The manual tender system suffered from various deficiencies, including discrimination, cartel formation, delays, lack of transparency etc. The e-Procurement project was introduced in 2003. The benefits of the new system are as follows were reduction in tender cycle time, reduction in opportunities for corrupt practices, Cost Savings, substantial reduction in the advertisement costs in the press media, Transparency in the bidding process. Besides, it has made a visible social impact, as citizens are assured that government procurement is conducted in a transparent manner, saving taxpayers' money.

#### **Smart Gov, a Government to Government Project:**

The processing of information in the Government is predominantly workflow intensive. Information moves in the form of paper files from one officer to another for seeking opinions, comments. Smart Government was developed to streamline operations, enhance efficiency through workflow automation and knowledge management. The solution automates the functioning of all levels of Government entities and provides a well as defined mechanism for transforming the "hard copy environment" to a "digital environment". It enhances productivity through use of IT as a tool.

SmartGov replaces the paper file with an e-file. SmartGov provides the features of creation, movement, tracking and closure of e-files, automation of repetitive tasks, decision support system through knowledge management, prioritization of work, easy access to files through an efficient document management system and collaboration between departments.

#### **Digital India:**

Digital India is the latest initiative which is being coordinated and implemented by the Department of Electronics and IT, it is a program that aims at transforming the country through leveraging information and communication technologies in every sphere of economy and society.

It is centered around providing digital infrastructure as a utility to every citizen, governance and services on demand, and digital empowerment of citizens. This was launched keeping in view that despite the successful implementation of many e-Governance projects across the country, e-Governance as a whole has not been able to make the desired impact and fulfill all its objectives.

#### **The approach and methodology being adopted for the programme according to the Digital India portal are**

- Ministries, Departments and States would fully leverage the Common and Support ICT Infrastructure established by Government of India. Department of Electronics and Information Technology (DeitY) would also evolve or lay down standards and policy guidelines, provide technical and handholding support, undertake capacity building, R&D, etc.
- The existing or ongoing e-Governance initiatives would be suitably revamped to align them with the principles of Digital India. Scope enhancement, Process Reengineering, use of integrated & interoperable systems and deployment of emerging technologies like cloud & mobile would be undertaken to enhance the delivery of Government services to citizens.

- E-Governance would be promoted through a centralized initiative to the extent necessary, to ensure citizen centric service orientation, interoperability of various e-Governance applications and optimal utilization of ICT infrastructure/ resources, while adopting a decentralized implementation model.

- Adoption of Unique ID would be promoted to facilitate identification, authentication and delivery of benefits.

- Restructuring of NIC would be undertaken to strengthen the IT support to all government departments at Centre and State levels.

- The positions of Chief Information Officers (CIO) would be created in at least 10 key Ministries so that various e-Governance projects could be designed, developed and implemented faster.

- Some of the projects which have already been implemented or are in the process of being implemented in the Digital India initiative are:

- MyGov.in which is a platform that has been implemented for citizens to interactively engage within the government.

- An Aadhaar based biometric attendance system is being implemented in the central government offices in Delhi to begin with.

- JeevanPramaan Portal: A portal which allows pensioners to submit their life certificate, which can later be disbursed to the agencies for necessary processing.

- e-Greetings a portal for government greetings

- www.ebasta.in which is an eBook Platform has been developed; this can be used to upload e-books.

- eSAMPARK which is operational is an IT Platform for Messages to Elected Representatives

- Digital Locker

- Revamping of Mission Mode and Other e-Governance Projects like Transport, PDS, e-Prisons, National Scholarship Portal, Payonline, Checkpost online, etc.

- Policies to help departments in speedy implementation of e-governance projects have been developed.

#### **Successful E – Governance Projects In India**

- **AADHAAR:** The most prominent of NeGP (National e-governance Project) Aadhaar is one of the largest data base projects in the world

- **PDS:** (Public Distribution System): The core objective of this project is to enable the better services in the remote and rural areas of India with the use of ICT.

- **CARD:** (digital registration of deeds) **Project in Andhra Pradesh:** In registration of deeds as manual systems are involved problems like valuation of property, assessment of duty, lack of transparency in valuation of projects, deterioration of quality in storage of paper based documents.

- **E SEVA Project in Andhra Pradesh:**

E-Seva is the project launched by the AP Government to provide one stop shop solutions and services to citizens. the best model for G2C. The project is implemented with the help of Public Private Partnership (PPP).

- **BHOOMI Project in Karnataka:**

Karnataka being an agriculture oriented state faced with the problem of maintaining immense land records and entire process is done by manually.

- **AKSHAYA Project in Kerala:**

Kerala is renowned as one of the most literate states in the south India.

**SOME OF THE OTHER INITIATIVES ARE**

- **FRIENDS:** - This project is started by Kerala Government for its citizens to make online payment of electricity and water bills, revenue taxes, license fees, motor vehicle taxes, university fees, etc.

- **E-SEVA:**-Electronic seva by Andhra Pradesh government to pay utility bills, avail of trade licenses and transact on government matters at these facilities.

- **BWSSB ganakeekrutha Grahakara Seve, water billing, and collection system:** - This e-governance project is started by the Bangalore government.

- **DOMESTIC:** - This project is started by Daman and Diu. It is an Electricity Billing System for domestic consumers.

- **E-Pourasabha Municipal Application:**-E-Pourasabha is an e-governance application for urban local bodies. It is implemented for Tax Collection system, Property Tax, Water Tax etc.

- **HEALING**

- **AGMARKNET:** - It is a project approved by Department of Marketing & Inspection (DMI), Ministry of Agriculture, and Government of India.

- **LokMitra**

- **Chetana**

**E-GOVERNANCE PROJECTS IN INDIAN STATES:**

- **Andhra Pradesh:**- e-Seva, CARD, VOICE, MPHS, FAST, e-Cops, AP online— One-stopshop on the Internet, Saukaryam, Online Transaction processing.

- **Bihar:** - Sales Tax Administration Management Information.

- **Chhattisgarh:** - Chhattisgarh Infotech Promotion Society, Treasury office, e-linking project.

- **Delhi:**- Automatic Vehicle Tracking System, Computerisation of website of RCS office, Electronic Clearance System, Management Information System for Education.

- **Goa:** - Dharani Project.

- **Gujarat:**- Mahiti Shakti, request for Government documents online, Form book online, G R book online, census online, tender notice.

- **Haryana:** - Nai Disha.

- **Himachal Pradesh:** - Lok Mitra.

- **Karnataka:** - Bhoomi, Khajane, Kaveri.

- **Kerala:**- e-Srinkhala, RDNet, Fast, Reliable, Instant, Efficient Network for the Disbursement of Services (FRIENDS).

- **Madhya Pradesh:**- Gyandoot, Gram Sampark, Smart Card in Transport Department,

Computerization MP State Agricultural Marketing Board (Mandi Board).

- **Maharashtra:** - SETU, Online Complaint Management System—Mumbai

- **Rajasthan:** - Jan Mitra, RajSWIFT, Lokmitra, RajNIDHI.

- **Tamil Nadu:**- Rasi Maiyams—Kanchipuram; Application forms related to public utility, tender notices and display.

**E-Governance: Major Challenges in India**

Poor people and poor infrastructure are major challenges in countries like India.

- **Poverty:** Accessing Internet is a costly affair for the poor who struggle for their livelihood in developing countries like India. Lack of required infrastructure is also a challenge.

- **Technical illiteracy:** There is general lack of technical literacy as well as literacy hence is a challenge.

- **Language Dominance:** The dominance of English on the internet constrains the access of non-English-speaking population.

- **Unawareness:** There is general lack of awareness regarding benefits of E-Governance as well as the process involved in implementing successful Government to Citizen, G2G, Government to Employees and Government to Business projects.

- **Inequality:** Inequality in gaining access to public sector services between various sections of citizens, especially between urban and rural communities, between the educated and illiterate, and between the rich and poor.

- **Infrastructure:** Lack of necessary infrastructure like electricity, internet, technology and ways of communications will affect the working of the e-governance projects.

- **Impediments for the Re-Engineering process:** Implementation of E-Governance projects requires lots of restructuring in administrative processes, redefining of administrative procedures and formats which attracts a lot of resistance in almost all the departments at all the levels.

**Future Prospects of E-Governance in India**

- To deliver all Government services in electronic mode so as to make the Government process transparent, citizen centric, efficient and easily accessible.

- To break information silos and create shareable resources for all Government entities.

- To deliver both informational and transactional government services over mobiles and promote innovation in mobile governance.

- To build Shared Service Platforms to accelerate the adoption of E-Governance and reduce the —cycle time of E-Governance project implementation.

- To strengthen and improve sustainability of the existing projects through innovative business models and through continuous infusion of advanced technology.

- To promote ethical use of technology and data and to create a safe and secure E-Governance cyber world.

- To create an ecosystem that promotes innovation in ICT for Governance and for applications that can benefit the citizens.

- To better target the delivery of welfare schemes of the Central and State Governments.
- To reduce asymmetry in information availability, accessibility and ability to utilize the information.
- To increase the all round awareness and create mechanisms that promotes and encourages citizen engagement.
- To make available as much data as possible in the public domain for productive use by the citizens.

### CONCLUSION

In this paper, we have given a context and presentation of E-Governance along with a list E-Governance projects run by state and central governments. We have also proposed future technology for E-Governance with illustrative illustration of working of E-Governance with new technology. We have also proposed benefits of clouds with a graph showing how clouds reduce employment cost. Implementing E-Governance without cloud computing and open source is an old technology. Cloud computing and open source is a hottest buzzword in IT sector and we should make best possible use of these emerging technology. There are number of reasons which make cloud and open source technology so famous in E-Governance. These technologies not only provide society, technical benefits but also provide economical benefits. E-Governance with open source is very popular in west countries but in India it is still an emerging technology. NIC is providing the network backbone and a wide range of ICT (Information and Communication Technology).

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