



ISSN 2047-3338

The E- Governance Architecture of Global ICT Program

Saman Mujtava¹ and Dr. Prashant Kumar Pandey²

¹Department of Computer Science, NIMS University, Jaipur, Raj., India

²Dept. of Electronic & Communication Engg. Goel Institute of Technology & Mgt. Lucknow, U.P. India

Abstract– Global ICT Programs introduce new and universal modes of organizing centered on innovation and technology initiatives and implemented through a novel mix of policy instruments, international institutions, business interests and techno/ managerial concepts. In eGovernment initiatives, for instance, which include portals and other mechanisms to provide a single point of access for a set of services and interactive applications, Global ICT Programs bring together the government, the private sector and a plethora of international institutions situated across various boundaries, territories and organizational domains. Jordan is an interesting case study of such an attempted transformation in government and public/private relationships.

Through this paper, we will attempt to provide an insight regarding:

- A definition of e-Governance to build a business case for its adoption
- A brief discussion on evolution of e-governance technologies
- Present Scenario of e-governance efforts in India
- Strategies/action plan for designing e-government projects for addressing immediate objectives with a vision for future in mind

Index Terms– E-Governance Architecture, ICT, IT Literacy, ICT Tools and e-Citizenship

I. INTRODUCTION

E GOVERNANCE is the application of information and communication technologies to transform the efficiency, effectiveness, transparency and accountability of informational and transactional exchanges with in government, between government and government agencies of National, State, Municipal and Local levels, citizen and businesses, and to empower citizens through access and use of information.

The rest of this paper is organized as follows: Section 2 describes the present and past status of E-governance development. Section 3 describes the evolution of E-governance in our country. Section 4 proposes the strategies for implementation of e-governance by government. Section 6 presents the conclusion and suggested future work.

II. E-GOVERNANCE DEVELOPMENT: THE PAST AND PRESENT STATUS

Global shifts towards increased deployment of IT by governments emerged in the nineties, with the advent of the World Wide Web [1]. The technology as well as e-governance initiatives have come a long way since then. With the increase in Internet and mobile connections, the citizens are learning to exploit their new mode of access in wide ranging ways. They have started expecting more and more information and services online from governments and corporate organizations to further their civic, professional and personal lives, thus creating abundant evidence that the new “e-citizenship” is taking hold.

The concept of e-governance has its origins in India during the seventies with a focus on development of in- house government applications in the areas of defense, economic monitoring, planning and the deployment of IT to manage data intensive functions related to elections, census, tax administration etc. The efforts of the National Informatics Center (NIC) to connect all the district headquarters during the eighties was a very significant development. From the early nineties, IT technologies were supplemented by ICT technologies to extend its use for wider sectoral applications with policy emphasis on reaching out to rural areas and taking in greater inputs from NGOs and private sector as well. There has been an increasing involvement of international donor agencies under the framework of e-governance for development to catalyze the development of e-governance laws and technologies in developing countries [2].

While the emphasis has been primarily on automation and computerization, state governments have also endeavored to use ICT tools into connectivity, networking, setting up systems for processing information and delivering services [3]. At a micro level, this has ranged from IT automation in individual departments, electronic file handling and workflow systems, access to entitlements, public grievance systems, service delivery for high volume routine transactions such as payment of bills, tax dues to meeting poverty alleviation goals through the promotion of entrepreneurial models and provision of market information. The thrust has varied across initiatives, with some focusing on enabling the citizen-state interface for various government services, and others focusing on bettering livelihoods. Every state government has taken the

initiative to form an IT task force to outline IT policy document for the state and the citizen charters have started appearing on government websites.

For governments, the more overt motivation to shift from manual processes to IT-enabled processes may be increased efficiency in administration and service delivery, but this shift can be conceived as a worthwhile investment with potential for returns [4]. Table 1 shows some of the recent e-governance projects implemented by various state govts.

Table 1: Recent e-governance projects implemented by various state governments

State/Union Territory	Initiatives covering departmental automation, user charge collection, delivery of policy/programme information and delivery of entitlements
Andhra Pradesh	e-Seva, CARD, VOICE, MPHS, FAST, e-Cops, AP online—One-stop-shop 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 etc
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) etc
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
North-Eastern States	
Arunachal Pradesh,	Community Information Center. Forms available on
Manipur, Meghalaya,	the Meghalaya website under schemes related to
Mizoram and Nagaland	social welfare, food civil supplies and consumer affairs, housing transport etc.

Source: PC Quest Article

A. e-Governance evolution in India— Challenges before Stakeholders

Since 1996, I was fortunate enough to work closely with a variety of government and commercial concerns, investigating the continuing trends in the field of e-governance area [5]. I can say, from my experience that although lots of efforts have been made in the creation of infrastructure and internal information handling by government bodies as well as public services, the diffusion of technologies in moving towards e-governance have been rather slow. This may primarily be attributed to the following reasons:

- *Lack of IT Literacy and awareness regarding benefits of e-governance*

There is general lack of awareness regarding benefits of e-governance as well as the process involved in implementing successful G-C, G-G and G-B projects [6]. The administrative structure is not geared for maintaining, storing and retrieving the governance information electronically. The general tendency is to obtain the data from the files (print) as and when required rather than using Document Management and workflow technologies. Lately the use of DMS and workflow technologies has been able to find its use only in those departments where there is perceptible lightening of workload of the subordinate staff.

- *Underutilization of existing ICT infrastructure*

To a larger extent, the computers in the department are used for the purpose of word processing only, resulting in the underutilization of the computers in terms of their use in data mining for supporting management decisions [7]. The time gap between the procurement of the hardware and development of the custom applications is so large that by the time application is ready for use, the hardware becomes obsolete.

- *Attitude of Government Departments*

The psychology of government servants is quite different from that of private sectors. Traditionally the government servants have derived their sustenance from the fact that they are important repositories of government data. Thus any effort to implement DMS and workflow technologies or bringing out the change in the system is met with resistance from the government servants.

- *Lack of coordination between Government Department and Solution developers*

Designing of any application requires a very close interaction between the government department and the agency developing the solutions. At present the users in government departments do not contribute enough to design the solution architecture. Consequently the solution developed and implemented does not address the requirements of an e-governance project and hence does not get implemented.

- *Resistance to re-engineering of departmental processes*

Successful implementation of e-governance projects requires lots of restructuring in administrative processes, redefining of administrative procedures and formats which finds the resistance in almost all the departments at all the

levels. Additionally there is lack of expertise of departmental MIS executives in exploiting data mining techniques, updation and collection of real time content onto website etc. Therefore the content as is collected or maintained by various e-governance portals is unreliable or full of gaps. In such a scenario, its difficult for any e-governance solution to achieve its intended results.

- *Lack of Infrastructure for sustaining e-governance projects on national level*

Infrastructure to support e-governance initiatives does not exist within government departments. The agony is that the government departments are not equipped to be in a position to project the clear requirements nor are there any guidelines for involving private sector [8]. Whatever efforts have been made by various government organizations may be defined as islands of computerization. The infrastructure creation is not guided by a uniform national policy, but is dependent on the needs of individual officers championing a few projects. Therefore, the required networking and communication equipment is either non-existent in government departments, or if it exists at all, it does not serve any tangible purpose as far as the requirement of e-governance project is concerned. The use of connectivity options provided by government agencies like NICNET etc. are used in a very limited manner for data transmission purpose between various locations viz. Distt., State, Center etc. and is mainly utilized for e-mail and Internet purpose only [9].

Most state governments have formed the IT task force and have their IT policies in place. Although policies may have lofty goals, much seems to have happened only in automation and computerization the drawback is that these IT policy documents are not made based upon the requirements and inherent capabilities of the state but are based on the surveys and strategies used by other nations or other states. Though it's very wise to take examples from the successful e-governance strategies of other states and countries, its equally essential that we customize our state policies after a careful study of the parameters applicable to the particular state in question. A tentative action plan is presented to help implement the e-governance initiatives as below:

B. e-Govt. Action Plan– Strategies for today, Vision for Future

Government leaders in India are starting to realize that e-governance is the key to drive today's economy with an increased participation from citizens. Providing services online is no longer going to remain optional for local and central government as demand for providing services @ internet speed has been coming from the citizens [7].

In this era of accountability and performance measurement, govt. will face increasing pressure to make the services more accessible to their citizens. The pressure comes directly from the new legislatures and government policies to implement high-end technologies in governing the nations; but also indirectly and perhaps more intensely from citizens. The citizens nowadays are not using government services in isolation, but are simultaneously making transactions and interacting with the corporate world. In addition to this direct

or indirect pressure, governments must themselves study and realize the cost saving benefits e-Governance techniques produce with this rise in demand for e-services, it is a mandatory requirement for government budget writers that the efficiency enhancement and cost saving potential of providing online services and information be mastered [5].

E-governance is about more than streamlining processes and improving services. It's about transforming Governments and renovating the way citizens participate in democracy. So how does a government agency cut through the clutter and build a strategy to facilitate the transition to successful online or "e" service delivery. If the government Waits, its perceived as being out of touch with the citizen needs and loses an opportunity to realize the tremendous benefits of online service delivery and larger citizen participation in overall service delivery. Yet if the e-governance started and implemented in haste, the are doomed to fail. According to one of the surveys conducted by a reputed agency, 75% of e-governance may fail because of poor planning [3].

The real challenges are how to develop and sustain successful e-governance projects and deliver state of the art e-services to citizens. Unfortunately its not as easy as adding "e" in front of your service delivery mechanism. Successful e-governance initiatives can never be taken in haste. Particularly for the democratic nation of the 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. No country has so far implemented an e-governance system for one billion people. Some of the requirements for implementing successful e-governance across the nation are:

- e-Governance framework across the nation with enough bandwidth to service a population of one billion.
- Connectivity framework for making the services reaches rural areas of the country or development of alternative means of services such as e-governance kiosks in regional languages.
- National Citizen database which is the primary unit of data for all governance vertical and horizontal applications across the state and central governments.
- E-governance and interoperability standards for the exchange of secure information with non-repudiation, across the state and central government departments seamlessly.
- A secure delivery framework by means of virtual private network connecting across the state and central government departments.
- Datacenters in centre and states to handle the departmental workflow automation, collaboration, interaction, exchange of information with authentication.

For success of an e-governance project and superior service delivery, it is imperative that the government agency focuses on whole citizen experience. Focusing on the citizen is essential for long term success. The government agency needs to integrate information from all points of citizen interaction. The overall architecture for e-Governance needs to ensure that the architecture components are extensible and scalable to

adapt to the changing environments. The e-Governance applications that are emerging as islands of successes have to be interoperable. Following are some of the suggestions for the successful transformation from “A” to “e”

a) Create Literacy and commitment to e-governance at high level

The most important requirement is a training program for policy makers in E-Governance (Senior Public Servants), politicians and IT task force members. The training program needs to be focused according to the requirements of the policy makers at the top. Such programs can be need based and outsourced when required. In addition it should be made mandatory for all the stake holders in implementation and maintenance of e-governance services to have the general IT skills. There may be specific requirements for training in certain specific projects. Such programs can be need based and outsourced when required. A few suggestive programs include e-governance training, Building web interfaces for citizen interaction, Document management and workflow applications, security and PKI solutions, Office Automation, networking etc[10].

b) Conduct Usability Surveys for assessment of existing e-governance projects

There is a varying degree of development of e-governance among the different states. A few States have leapfrogged into a digital era whereas a few are yet to start with any initiative. There is a tremendous divergence in the extent of implementation of the concept of e-Governance. It is, therefore, not possible to come up with a framework for implementation of e-Governance which is straightaway applicable to all states and the Central Government. Therefore an e-readiness exercise should be carried out in all states, government departments to understand their level of acceptability of the e-governance [2].

c) Starting with implementation of pilot projects and replicating the successful ones

The pilot projects taken in various states should be assessed for their achievement levels. They should be classified as success or failure according to the desired output written down before implementation of the projects. The study should be carried out by an independent agency for the implementation agency the study should be carried out at each stage of implementation. Bottlenecks and causes of delays should be documented, even though they are removed later. The successful projects should be replicated over the nation with members drawn from the implementing team. The projects, which could not achieve the desired outcome, should be documented for possible causes of failure. Various bottlenecks and causes of delay should be identified.

d) Follow the Best Practices in e-governance

The study of Best Practices will bring forward the best practices being followed nationally and internationally. The national and international Best Practices study will give a great momentum to the process of E-Governance. The State Governments will not have to re-invent wheel every time and they can learn from the developments already made.

e) Build National resource Database of e-governance projects

This would allow any organization planning an IT project to instantly ascertain whether any such project has already been implemented anywhere in the country. Intending implementers would know who the key people in similar projects are and how to reach them. It is well known that it is much easier to replicate a solution than to evolve it the first time around. So the lead-time to implement projects can be reduced substantially.

If a project is already in operation in a similar environment somewhere in the country, acceptance by all concerned is much faster and smoother elsewhere. So change management becomes much easier and the time and effort involved in such implementations. Due recognition would accrue to the pioneers who created the successes. It would enable others to learn from them if they wish.

For implementing agencies, be they Government owned organizations like NIC, CDAC and State PSUs or private IT companies, it offers a unique opportunity to derive the full return and reward, both domestically and internationally, from their successes and the IPRs/ products that they have created. It would help create an archive of e-governance applications in the country.

f) Have clearly defined Interoperability policy

The e-governance architecture needs to ensure that the components are scalable and adaptable to the future requirements. It has also to ensure that the Local architecture fits into the State level and the same into National and Global architecture. Interoperability is a major criterion while defining the architecture.

g) Manage and Update content on government websites efficiently and regularly

Content is the 'heart' of any IT project. The government agency has to keep in mind some of the important technical guidelines, while developing the software and computerization, to facilitate the future integration. The department also needs to address the security of transactions and messages. The process of content development encompasses a whole range of activities starting with a comprehensive study of the system and identification of the objectives. It ends up with delivery of the intended benefits to the citizens or other users of the IT System. The government agencies must ensure that the data on the sites is always updated and relevant.

III. CONCLUSION

It is evident from above discussion that objectives of achieving e-governance and transforming India goes far beyond mere computerization of stand alone back office operations. It means, to fundamentally change as to how the government operates, and this implies a new set of responsibilities for the executive and politicians. It will require basic change in work culture and goal orientation, and simultaneous change in the existing processes. Foremost of them is to create a culture of maintaining, processing and retrieving the information through an electronic system and

use that information for decision making. It will require skilled navigation to ensure a smooth transition from old processes and manual operations to new automated services without hampering the existing services. This can be achieved by initially moving ahead in smaller informed initiatives in a time bound manner and avoiding large and expensive steps without understanding the full social implications. Every small step thus taken should be used to learn about hurdles and improve upon the next steps, both in terms of direction and magnitude. The proposed changes are likely to be met with a lot of inertia which can not be overcome by lower and middle level officials with half hearted attempts to diffuse the technology. The change in the mindset to develop and accept the distributed and flat structured e-governance system is required at the top level system to beat the inertia.

REFERENCES

- [1]. Aygerou, C. (2002). *Information Systems and Global Diversity*. Oxford, Oxford University Press.
- [2]. Bevir, M. and W. R. Rhodes (2004). "Interpreting British Governance." *British Journal of Politics and International Relations* 6: 129-164.
- [3]. Braa, J., E. Monteiro, et al. (2004). "Networks of action: sustainable health information systems across developing countries." *MIS Quarterly* 28(3).
- [4]. Ciborra, C. (2003). *Unveiling E-Government and Development: Governing at a distance in the new war*. Department of Information Systems, Working Paper Series. London, London School of Economics and Political Science.
- [5]. Ciborra, C. and D. D. Navarra (2005). "Good Governance, Development Theory and Aid Policy: Risks and Challenges of E-Government in Jordan." *Journal of Information Technology for International Development* 11(2).
- [6]. DFID (2002). *The Significance of Information and Communication Technologies for Reducing Poverty*. London, Department for International Development.
- [7]. Dobriansky, P. J. (2003). "Science, Technology, and Foreign Policy: The Essential Triangle: Remarks to the Council of Scientific Society Presidents." Retrieved 11 October, 2004,
- [8]. Force, D. (2001). *Creating a Development Dynamic*. New York, Digital Opportunity Task Force.
- [9]. Foster, I., C. Kesselman, et al. (2004). "The Physiology of the Grid: An Open Grid Services Architecture for Distributed System Integration." Retrieved 20th March, 2004,
- [10]. Intaj (2003). *Jordan's Information Society: a fast growing sector for a transforming nation*. Beirut, Economic and Social Commission for Western Asia.