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Rise of E-Governance

Dr.R.K.Mitra

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Rise of E-Governance

Dr R. K. Mitra*

Abstract

E-Governance in its present form and coverage has seen several levels of evolution both in concepts as well as applications. Notwithstanding a serious impetus provided by advent of internet, E-Governance has its origin to a systematic thinking on developing certain performance yardsticks for the government departments, particularly, with respect to the Information Resource Management (IRM) and its various nuances. That E-Governance was truly a response to make the government departments more efficient than mere technology is well established by the sequence of events that unfolded. In this paper, an attempt has been made to trace the rise of E-Governance from its early days and deliberate on various issues that came by as the momentum picked up.

In India, there was no such event where concern to improve public services was linked to performance of government departments and institutions. However, that did not prevent E-Governance to make its presence felt though in a very limited scale and coverage. The initial E-Governance efforts in India were more sporadic attempts on the part of some enterprising/IT savvy government officers/IT professionals. Gyandoot, the celebrated community E-Governance, of Dhar district of Madhya Pradesh was not part of any planned IT policy of the State. It was conceived by an enterprising and technology savvy district collector. The GIS based system of tracking police control room vans at Gautambudh Nagar of Uttar Pradesh, was nothing but a creative experimentation by a technology savvy police officer. Nevertheless, the success of these early isolated attempts truly made the foundation for subsequent growth of E-Governance. The National Informatics Centre (NIC), set up in 1985, quickly grew into as an application service provider and it could collaborate with many State governments as well as Central Government Departments and institutions to roll out many E-Governance initiatives. The advent of WWW made it possible in all government departments and institution to have their websites and portals. Today, there is hardly any government institution where E-Governance in some form or other is not practiced. The trend that is evident is increasing focus on efficient delivery of services as well as process re-engineering. The story of growth of E-Governance in India may not be same as that of USA or Europe but nevertheless one can say that E-Governance in India is not a mere hypes, it is very much real and for government departments, it is no longer an option. Rise of E-

Governance has preceded with several levels of evolution in concept and applications of IT in government.

The early phase is mostly devoted to issues relating to information Resource Management (IRM), Strategic Information Management (SIM), performance yardsticks in terms of Best Practices. At this stage the broad strategic issues related to information Management by the government departments. The second phase saw the rise of the World Wide Web and a whole range of issues connected with the management of WWW _ design of websites, assessment and evaluation of websites, a new public information model based on WWW etc. Then came the third phase, i.e., E-Governance which led to issues relating to organization, legislations, accountability, security, reliability, participation tools.

JEL Classification: L88

Keywords: E-governance, Information Resource Management (IRM), E-literacy, Top-down Vs Bottom Up, Public Information, NeGP, e-Gov.

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Rise of E-Governance

1. Introduction

Information Resource Management (IRM) and Issues Thereof: First Phase.

In one of the earliest literature works, Caudle (1996) outlined an Information Resource Management (IRM) strategy as a strong medicine for many of governments' service delivery ills. McClure (1997) provides a comprehensive insight how IRM in the USA got increasingly related to performance yard sticks in ultimate analysis. Giving a reference to adoption of best practices of leading private and public organizations under legislation called Information Technology Management Reform Act (ITMRA), he demonstrates as to how concrete performance measures can be built under the ambit of a legislation to make the accountability of public organizations more transparent and focused.

A snapshot of IRM in the federal agencies in terms of certain best practices is provided in Table 1.1 in three functional contexts: decide to change, direct change and support change. The best practices were identified through a research sponsored by the General Accounting Office (GAO), USA. (McClure 1997)

Table 1.1: Best Practices by General Accounting Office (GAO)

Best Practice Management Area	What a Leading Organisation Does	What a Typical Federal Agency Does
Decide to Change Initiate, mandate and facilitate major changes in information management to improve organizational performance	Quantitatively benchmarks against standards and industry leaders. Evaluates current performance and opportunities for improvement Holds program managers and stakeholders accountable for IT decisions	Fails to benchmark performance Delegates IT issues to technical units and staff Sustains management rates of turn over the hinder true ownership and accountability
Direct change Establish an outcome-oriented, integrated strategic information management process	Evaluates existing mission critical processes before applying IT Directs scarce IT resources towards high-value, high priority uses Carefully controls and evaluates IT spending through specific cost and performance measures	Often justifies or purchases IT products and services before evaluating existing business processes. Lacks accountability and disciplined decision-making for IT investments. Fails to rigorously monitor the results produced by systems investments.
Support change Build organization wide information management capabilities to address mission needs.	Maintains up-to-date professional skills in technology management Establishes clearly defined line and IT management roles and responsibilities.	Perpetuates outmoded skill base with inadequate training and hiring of new expertise Fails to delineate line management and IT professional roles and responsibilities in major system development and modernization efforts.

Source: McClure 1997

Caudle (1996), while acknowledging the best practices identified by GAO, USA, argued that best practices do not stay stable in a new, dynamic area such as information resources.

Westerback (2000) in her work on Strategic Information Management (SIM) practices in the United States of America (USA) had argued as to how a legislation support (viz, the Information Technology Management Reform Act (ITMRA) later renamed as Clinger-Cohen Act of 1996 can impact directly on the management of IT at government organizations.

Another important consideration in strategic information management is a possible approach of bottom up or top down to IRM planning. Fletcher (1997) has discussed about a bottom-up approach to IRM for local and country government departments based on a wide survey of IRM practices in cities and country governments in the USA. While IRM as a federal initiative was around since early 1980s, city and country organizations have had a marked absence of policy initiatives or management guidelines on IRM. While at federal level, the IRM strategy is top-down, IRM models at country levels are more evolutionary, more bottom-up, more innovative due to their close proximity with citizens.

Yet another important issue of strategic information management is how to abridge the digital divide. Bertot et al. (1999) addressed select issues related to development of universal services through a global network of networks. In March, 1994, at the World Telecommunication Development Conference in Buenos Aires, then Vice President of the USA Al Gore introduced to the world the United States' vision for the development of a Global Information Infrastructure (GII). Vice President Gore called for the establishment of "a global network or networks" and Clinton administration's support for an information infrastructure not strictly limited to a domestic policy.

Lin (2000) considers the question of IT literacy an integral part of strategic Information Management Policy at the macro level. In an age of increasing importance and ubiquity of information technology in daily life, make it essential to articulate what the citizens need to know and understand about IT to avail the IT borne facilities that are being introduced by the public authorities. Such an articulation is an essential component of empowering the common citizens to participate and make best use of services which are IT propelled. In India, researchers have already voiced the need for e-literacy programme (Lal et al. 2004) by the government.

2. Advent of internet and management of WWW.

Huang et al. (2001) dealt with issues relating to management of World Wide Web (WWW) in public administration. The web offers many new opportunities as well as challenges to modern organizations (Mitra and Cohen 1999). First of all, the Web makes it easy for transmitting information in a timely fashion. Secondly web pages can provide larger amount and more variety of information without incurring major printing and distribution costs. On the web Costs do not necessarily increase as the amount of information being communicated increases. Furthermore, multimedia objects including drawing, photograph, animation, sound, video and computer applications, can be incorporated into Web pages at a low cost to enhance the Web's communication effects.

The advent of internet has given rise to a new public information model, apart form a wide variety of issues of management of World Wide Web. Lan and Falcone (1997) have outlined a policy model for public information provision in an internet age (Figure 1.1) and held that through the Internet specifically, rather than a flood, there has been an increase in the controlled flow of information in and out of the information reservoirs of public, private, and non-profit institutions. Stowers (1999) discovered a paradigm shift in government moving on to WWW.

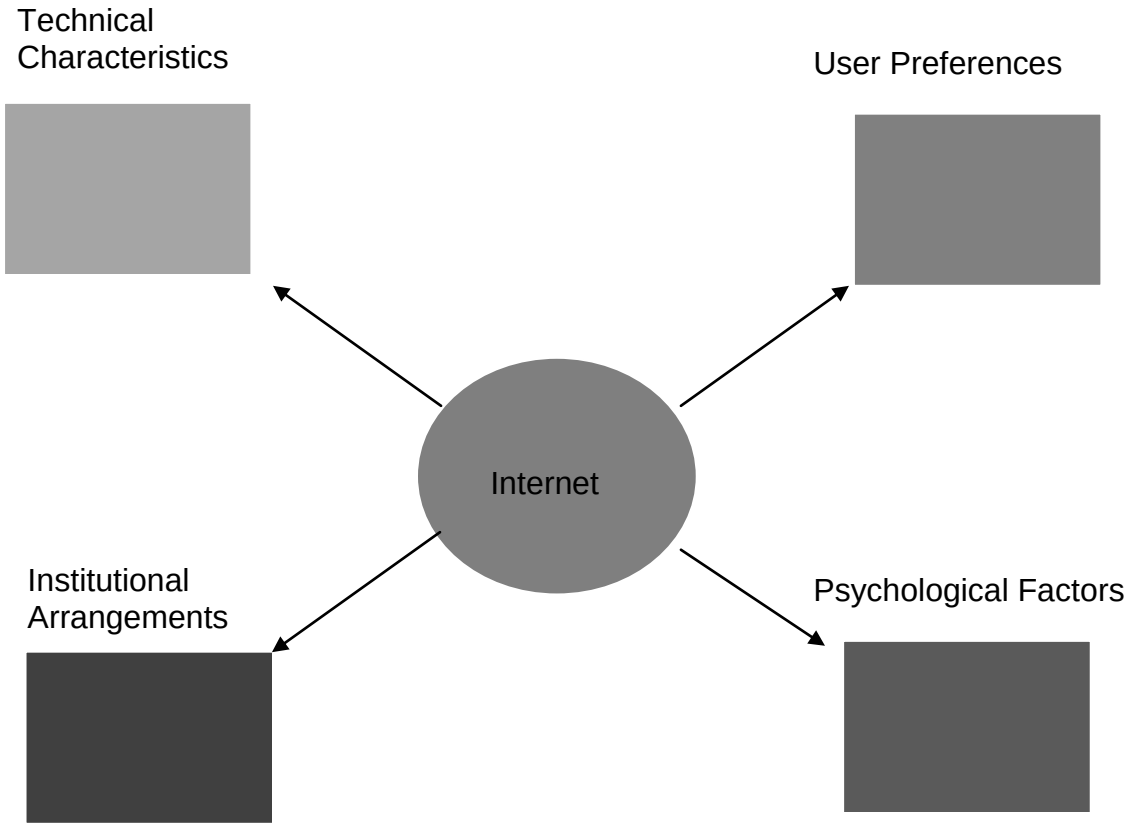

Fig. 1.1: Model for Public Information Provision
Source: Lan and Falcone 1997

Issues relating to development of website have drawn substantive attention of researchers. Giudice and Goodman (1999) in a live conference at Builder.com recommended stages for creating a user friendly website.

Closely linked to the issue of development of website is the question of evaluation and assessment of websites. Evaluation of websites from the standpoint of users is an important strategy of management of websites. Rosenfild and Morville (1998) argued that a high level of user-centred awareness distinguishes successful web designers from the others. Huang and Chao (2001) provided a useful framework of evaluation of websites by suggesting specific indicators under three broad heads namely, Defining, Designing and Producing. Eschenfelder et al. (2001) provided yet another framework of assessing Government websites touching upon orientation, content, currency, accuracy, services provided, quality of links, feedback mechanism etc.

Stowers (1999) has used yet a different methodology of assessment i.e., a content analysis methodology rather than user statistics like log files, documents down loaded etc. Cullen and Honghton (2000) conducted a study to assess the effectiveness of New Zealand government websites in providing equitable access to government websites in providing equitable access to government information to all citizens. After evaluation of fifty two government websites, the crux of the findings that emerged is that users are found to have a clear understanding of good web design and what they expect of government agencies and officials. Users were found to have a well-developed sense of their rights to access government information through this medium and of the accountability of government to meet their information needs.

3. Rise of E-Governance: The phase pen-ultimate

Scholars have described e-commerce as the mother of E-Governance (Gupta et al. 2004). While e-commerce grew in private business, E-Governance rose in government organizations. There are many definitions of E-Governance - each views it from a distinct perspective. The definition given by Gartner Research (2000) is found to be the most acceptable. E-Governance has been defined as the application of electronic means in the interaction between government and citizens and government and businesses, as well as in internal government operations to simplify and improve democratic, government and business aspects of Governance. The term interaction stands for the delivery of government products and services, exchange of information, communication, transactions and system integration. Government consists of levels and branches. Government levels include central, national, regional, provincial, departmental and local government institutions. Examples of government branches are Administration, Civil Service, Parliament and Judiciary functions. Government operations are all back-office processes and inter-governmental interactions. Examples of electronic means are Internet and other Information and Communication Technology applications.

4. Four broad segments of E-government have been identified (Gartner 2000). These are:

- Government to Government (G2G) - this is backbone of e-government and effect implies sharing of data and conduct of electronic exchanges between or amongst government organizations. This involves both intra and inter-departments exchanges at National level, as well as between the National, State and local levels as also exchange amongst State and local levels.
- Government to Business (G2B) - this includes all kinds of interfaces and exchanges between government organizations and business, between government and Non Government Organization or between government and civil society.
- Government to Citizens (G2C) - these are designed to facilitate citizen interaction with the government. Examples are on-line transactions, renewal of licences and certifications, tax payments, registration etc.
- Government to Employees (G2E) - these are mainly internal communications like leave applications, applications for advances, internal guidelines etc. etc.

The World Bank (http:/www/worldbank:org/publicsector/egov/definition.htm) has used the term 'E-government' to denote: "the use by government agencies of information technologies (such as Wide Area Networks, the Internet and Mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be of less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions".

Malick and Murthy (2001), while agreeing with the World Bank perspective on E-government, observed that E-Governance is more than e-government - it is a precondition for good and transparent administration. It eventually implies provision of quality services to the citizens and stakeholders with diverse interests, administrative independence and managerial autonomy. It also requires reduction in controls, recognition for individual and

organisational performance, ready and easy availability of all the resource through electronic media leading to open mindedness towards competition which would inculcate a sense of discipline among the public servants. It strives for a collaborative approach, in inter and intra-governmental interfaces and transactions, keeping in view the interests of all the stakeholder. It aims at making available and sharing information in a trusted environment of transparency in the conduct of business, translated into sharing of knowledge across the institutions, participating divisions, businesses, user groups and individuals.

The issue of governance has been addressed in great detail in the Tenth Five Year Plan 2002-2007 of the Government of India. It has categorically been mentioned that good governance is one of the most crucial factors for the fulfilment of the targets of the Tenth Plan.

Efficient governance requires efficient institutions. The efficiency and effectiveness of institutions, in turn, depends on their delivery mechanism and supportive framework of rules and procedures, each of which has to work in harmony with the other to discharge the functions for which the institutions have been created. Only then would one expect the institutions to fulfil their stated objectives and carry out their assigned responsibilities in managing the affairs of the society. One of enablers of efficient governance is use of information and communication technology for bringing efficiency in institutions.

According to contemporary researchers (Gupta et all. 2004), governments around the globe will increase their spending on e-government. Of the five governments covered in International Data Corporation (IDC), study 2002, namely Australia, China, Hong Kong, Korea and Singapore, e-government spending will grow fastest in China at compounded annual rate of 40 percent while Singapore and Korea will spend at a rate of 20 percent, Australia at 15 percent and Hong Kong at 13 percent. The Indian Government's IT spending is likely to be in the range of 12 to 15 percent of the total domestic IT spend. The IT Act 2000 gives legal recognition to electronic documents and will facilitate online transaction services on the Internet. Examples like e-Seva of Andhra Pradesh or Old Age Pension System of Thiruvarur District of Tamil Nadu or Bhoomi of Karnataka bear testimony to how IT is being conceived as an important agenda of public administration in India. A new wave

of E-Governance by way of Internet Portals, has taken over the centre spread.

The web portal (also called Internet Portal) is a kind of single door to the government. If a citizen has to look for hundreds of websites of individual government organizations, he or she would simply be lost in the wilderness of vast multitude of government departments. The portal is answer to such a situation. The portal encapsulates the size and complexity of government (Gupta et al. 2004). As a gateway or single point entry to government services, portals are becoming the standards. The United States (www.firstgove.gov) and the United Kingdom (www.ukonline.gov) are fine examples. The other countries which have adopted single entry portals include Australia, Brazil, Canada, Finland, France, Germany, Ireland, New Zealand, Mexico, Norway, Korea, Singapore, and Spain. In India, the Tenth Five Year Plan 2002-07, giving adequate importance to E-Governance, suggested for an India 'Portal - a portal of all government websites for providing one-stop non-stop delivery of public services and disseminates of services. Notwithstanding all these developments, the extent of usage of online portal is discouraging. Lack of awareness, lack of marketing by the government organizations, traditional mindset etc. are some of factors attributed to low use of portals (Gupta et al. 2004).

5. E-democracy

E-democracy is another extension of E-Governance (Hussain 2004, Desmukh et al. 2004). The fundamental requirement of e-democracy is a literate population which demands communication between the electorate and elected regarding the processes and structures encompassing all forms of dialogues between the government and the citizen. Which means E-Governance has to cater to citizens from different walks of life keeping in mind economic and financial viability of transactions which is also affordable to individuals, interest groups and communities? Requirement of information layers, keeping in mind the need of the specific group is to be ascertained. Feasibility of systems and sub-systems, components needing two-way communication between the government, businesses and users is examined while establishing communication links between government to government, government to citizen, citizen to government, government to business, business to government and intra- government transactions. In a study of state legislative websites in the USA, Fagan et al. (200 I) showed that usefulness and accessibility are two keys to

citizens access to on-line legislative documents. The internet based support to citizens is spreading to political elections. On-line voting is seen as a viable option due to increasing turnout, decreasing costs, decreasing invalid votes, lesser election fraud etc.

6. Evolution Theories

E-Governance evolves over a period of time and may follow some pattern of evolution. There are some studies which help gain insight into these patterns. Based on technical, organizational and the managerial feasibilities of several examples, E-Government is found to be an evolutionary phenomenon and therefore, E-Government initiatives should be accordingly derived and implemented. In this regard, the four stages of a growth model for e-government as described by Layne and Lee (200 I) are (i) cataloguing, (ii) transaction, (iii) vertical integration and (iv) horizontal integration. In Cataloguing stage, parts of the government's non transactional information are put on the site. Transaction stage empowers citizens to deal with their governments on-line any time, saving hours of paperwork, the inconvenience of travelling to a government office and time spent waiting in line. Vertical Integration is made through citizen's local portal. The citizen-user should still be able to access the service at the state or centre level from the same entry in the local portal, because the local systems are connected to upper level systems, directly or indirectly. At the last stage, one stop shopping for citizens. The horizontal integration of government services across different functions of government will be driven by visions of efficiency and effectiveness in using information technology, but pulled by citizens' demands on an 'inside-out' transformation of government functions to more service oriented ones. Such integration will facilitate "one stop shopping" for the citizen. Each organization may have to give up some power to move to this stage.

Sawhney and Zabin (200 I) have popularised yet another stage model called 'Ladder of E-Business' consisting of four Stages. The Ladder Model captures an evolutionary trend of e-business with each stage having distinct functionalities, challenges and concerns. It essentially speaks about four steps in the evolution i.e. Informate, Automate, Integrate, and Re-invent. Informate results in a static web site providing government information for public use. It can organize information about all the rules, regulations, procedures etc.

Some statutory forms may also be downloadable through the web site. But this does not really bring any strategic value to the government. At the automation stage, people within the organization start thinking in terms of the process automation of some government transactions and a small team may come into existence for this purpose. Integration of few activities within the organization and across departments may also start and some effectiveness and key results start setting in. Citizens are more in command in the matter of service delivery and core business processes transcend the agency involved by integrating other outside stakeholders, such as other government departments. Corruption and harassment prevailing in the traditional government is reduced, as customers feel empowered. There is also transparency in the transaction process and Government servants can be held more accountable. Multi-model channels of communications like e-mails, wireless devices and Kiosks can be used to put citizens in command. 'Re-invent' stage further takes up to higher point on the value chain i.e. 'transformational level outcomes and services', which are for long-term and revolutionary in nature. The government moves in to a new arena, where a whole new set of partners, users, customers, different agencies of governments at the federal, provincial and municipal level join together through a single technological platform to provide different services and facilitations to the customers. Many governments are indeed achieving this revolution, by way of setting up a Portal, where Private and Public service providers join hands to deliver their services.

This value chain model by Gartner Research (Gartner Group 2000) too lays down four stages of E-Governance, namely, Presence, Interaction, transaction, and Transformation. It maps out changes at four levels in technology, process, people and strategy/policy along with continuum of the four stages of e-services. Results are similar to the ones discussed in the first model.

7. Application Service Providers

Application service providers (ASPs) can help the local governments in realizing the full potential of e-government services (Chen and Jon Gant, 2001). Among all levels of government, local governments confront some demanding challenges concerning their ability to provide next generation e-government services. The shortage of IT workers was

ranked as the number one barrier to e-governnrnent, (Norris et al. 2001). This is mainly due to the difficulty of attracting and retaining the right IT talent, especially considering the competition for these workers (Hanson 2001). Another major challenge is the lack of financial resources. Other barriers include inadequate IT infrastructure and outdated work procedures and rules. IT outsourcing has been identified as one of the main ways to address these challenges facing local governments. The use of Application Service Providers is viewed as one type of IT outsourcing. Application Service Providers (ASPs) include mostly private vendors.

Current trends and predicted future demands point toward a favourable outlook for Application Service Providers. Current e-government activities are centred on web site hosting, design, and management. These are the areas of Application Service Providers (ASPs) technical expertise. The future demand of local governments for interactive service delivery puts Application Service Providers in an even more advantageous position. Moreover, the use of Application Service Providers (ASPs) is particularly relevant in addressing the challenges facing local governments to ride on the next wave of e-government services. Because Application Service Providers (ASPs) are able to take advantage of economies of scale, they are able to provide government with customized e-government applications at a lower cost. This is particularly attractive to local governments. Moreover, Application Service Providers have relatively flexible hiring rules and financial packages which attract IT talent. Financial resources for the development and maintenance of e-government applications are relatively more abundant in Application Service Providers when compared to medium or small size local governments.

Application Service Providers offer an application or a bundle of applications called a solution as an outsourcing mechanism to various clients. They own the software license and the hosting server (Hayes 2000). They are primarily responsible for the development, supply, and maintenance of application software and sometimes hardware (Holohan 2000). There exists almost always some degree of collaboration between service providers and clients at both the development and implementation stages. At the development stage, the focus is on customisation of applications based on the input of local governments about their information systems and business processes. The implementation stage requires the input of governments on the areas that need fine-tuning and maintenance.

8. Legal, organizational and change management issues

Cresswell and Pardo (2001) have made an important case study on New York City Government and connected implications - legal and organizational - for an urban digital government department. Following key issues have been found to be of great significance and implications:

- Central versus decentralized control
- Issues of scale and complexity
- Stove-pipe program structures
- Divergent cultures

AlIen et al. (2001) stressed the need for tremendous amount of central coordination to field system wide adaptation and horizontal action. This is to be viewed in the context of public sector reforms that have been accorded more autonomy to organizational units. The need of the time is to frame new types of collaborative mechanism and federated decision making models required to change the administrative culture.

Zeichner (2001) included a philosophy, a Research and Development and legal solutions as integral part of an overarching legal framework for reliability and security.

Tapscott (1996) has outlined a model electronic government called inter-networked government in contrast to industrial age government. Functionally and organizationally, it is quite different from the usual bureaucratic formal government structure. In place of bureaucratic controls and isolated administrative functions, the inter networked government places importance on client service, community empowerment and integrated resource services. As against explicit approvals, the inter networked government relies more on implicit controls and approvals. All manual financial transactions are replaced by electronic transactions.

While there are many emerging programmes and initiatives on E-Governance in India, there are certain challenges in terms of policy and structure (Gupta et al. 2004). Governments would require making enormous changes in its processes, structures, skill and work culture. It might require implementation over another decade, as infrastructures

must be built, policy issues resolved, and interoperability established. While there is a growing body of knowledge dealing with the management of corporate change, there are still significant gaps in understanding the processes. E-Governance requires a fundamental change in how organizations operate. For an effective and efficient e- governance model, IT deployment be backed up flat structure, transparent systems and simple procedures (Anuradha and Aradhana 2004).Change in the mindsets of people both from inside and outside the government is required to bring about a successful change in the system. Managing change refers to getting the users to accept new organizational processes and the technology that enables it. New applications or processes that fundamentally change the way people work and their relationships with each other may require some formal change management programme, which, in effect, means helping people deal with their emotions. It is important to manage the human element for the success of any new system or process.

Communication, training and organizational restructuring are the key areas to be covered within the scope of change management. Government of India recognised the importance of legal recognition to electronic documents and transaction. The IT Act 2000 is step towards creating a supportive legal environment.

9. Reliability and security of on-line delivery system

The past several years have demonstrated a remarkable proliferation of electronic service delivery, especially in urban communities. However, the delivery of essential government services cannot proliferate in the absence of a philosophy for administering to electronic government security demands. After adopting an appropriate philosophy, it is then possible to articulate goals in the form of governance policies - also known as laws.

Researchers have voiced a number of data management challenges (Gupta et al. 2004). There is a need to have policies for sharing information on various issues as well as government activities that the public is entitled to know about. Here there is a need to set up adequate access control mechanisms to ensure that the integrity of data is not compromised. Extensible Markup Language (XML) is evolving as the de-facto standard for data interchange. While efforts to standardize XML are important, the real value of Government to Business (G2B) is possible only if business interchange documents are

standardized. While document exchange systems hold promise, metadata repositories and other associated infrastructure would have to evolve before XML can have serious impact. Government may have data in multiple diverse data sources. Extracting data from these diverse sources to allow interoperability would be essential for the success of the new E-Governance infrastructure initiative. These data sources are likely to be databases, documents on the web and various legacy systems. The problem is significantly complicated because raw data as stored in databases is not entirely useful and one needs to have the necessary wrappers to extract information from these applications. The security considerations assume great importance in the context of India where there is a great deal of coordination between the Centre and State governments. This calls for designing an information policy, resolving legal issues and adopting a system with adequate security features (Gupta et al. 2004). For example, Government of India has recently decided to develop an organized crime information system where under crime and criminal information having inter-State bearing will be stored and shared between the States and other intelligence agencies of the Central government. The system would call for high degree of network security and complex data management.

10. Pricing of information products

The issue of pricing of government information products, as of now, may be less talked about but this is an aspect bound to be addressed and resolved when E-Governance becomes a normal mode of governance. Sprehe (1996), in one of early research works addressed to the question of feasibility of instituting user fees for the services that the government departments are imparting. The Paperwork Reduction Act (PRA) of 1995 of the United States gave much more specific guidance on user fees with respect to information products and services. It is the policy that the government agency should not make a profit by selling public information collected and compiled at taxpayer expense to the American public.

The government agency may also provide enhanced levels of information dissemination which provide the information in ways that are more convenient to the user but more expensive to the agency; examples are microfiche, computer diskette, CD-ROM, fax-on-demand, and online delivery. The ultimate enhancement might be the provision of special

tabulations from databases, or even individually tailored databases excerpted from the agency's data holdings. These enhanced, value-added-modes of information delivery are considered "above and beyond" the discharge of the agency's basic responsibilities and therefore, are considered to be special benefits conveyed upon their recipients and hence, the government agency can establish a quid pro quo arrangement with the user: the user can have the information in more convenient form provided the user pays the agency's costs for the added convenience.

Another important issue is related to Information products as public goods. Love (1995) has given considerable thought in defining information products as 'public goods' or not. However, an answer to the question is sometimes yes, sometimes no, depending upon a number of critical issues and there is no consensus yet. In India, this issue has not come up in a big way. The fundamental difference between e-business and E-Governance centres around this issue, Government does not always seek to earn profit - it has a welfare agenda. For developing countries, like India, Government organizations have greater commitment particularly, to under privileged and therefore, pricing information or charging fees for electronic services is an issue which would require a consensus and can be resolved only at political level.

11. Technology in Government

The key challenge so far as technology in Government is concerned is to develop integrable, scalable and robust E-Governance solutions, while deploying multiple solution providers (Gupta et al. 2004). From the point of view of implementations, two important issues are, firstly, how to use solutions of multiple solution providers and secondly, how to standardise that part of processes which is common to a large number of departments and reuse of a solution can work. This is essentially a cost effective measure.

E-Governance solutions are evolutionary and architecture should also be able to evolve and be deployable in phased manner. All the government departments need to be interconnected and share the same backend database and applications. At the same time, it should be integrable with legacy system. With time, both number of users and complexity of applications would go up and the architecture must be scalable. Coming to standards of technology, the main components are database, operating system,

nomenclature, architecture and security. There are certain technologies which are already in use serve to prove their importance in E-Governance, Smart Cards (memory based or micro processor based) are in use in the form of Health Card or Social Security Card in some developed countries. In private sector, particularly in banking sector, A TM cards and credit cards are examples of smart cards. Biometrics is yet another example of E-Governance technology. DNA matching, finger print matching, portrait building etc. are some examples of Biometrics. Geographic Positioning System (GPS) based municipality operations, disaster management, education etc. are becoming popular.

Decision Support Systems (DSS) in government setting has proved to be very powerful tool. Primarily oriented on data-centric and model-centric, DSSs are increasingly being used in government decision-making. Gupta et al. (2004) have provided a list of select applications of DSSs in government activities:

- Egyptian Cabinet DSS
- Manhattan Court DSS
- Sprawl decisions in urban design
- Lake Development DSS of Philippines
- Urban Transportation DSS system
- Evacuation Modelling System in disaster management
- Environment protection DSS
- Avalanche path analysis DSS
- Agriculture management DSS
- Train Scheduling DSS

Geographic Information System (GIS) and web visualization are other tools found useful in certain cases. Kodmany (2001) has noted that America Universities are using teaching, research and service to address quality of life issues in their communities. The theoretical foundation for this can be found in the work of Kevin (1960) and Nasar (1998). O'Looney (2001) provides a detailed discussion on use of sprawl decisions in urban planning.

12. Public private partnership (PPP)

Examples of Beijing E-Park in China and Columbia Government Portal are often cited as case examples of public private partnership (Gupta et a1. 2004). In India, e-Seva of Andhra Pradesh State is yet another example. There might be many more case examples around the globe. However, accountability appears as a key element in a collaborative arrangement (AlIen et a1. 2001). There are also important debates around the issue of whether accountability is at risk when external partners become involved in the governing a=:1 shared delivery of government programmes and services. According to some, new governance arrangements threaten to undermine key institutions and practices of democratic accountability (Globerman and Vining 1996). This camp believes that any change to the existing system of ministerial accountability will damage the integrity of the system.

An alternative view is that collaborative arrangements can make government more accountable (Armstrong 1998, Ford and Zussman 1997). These proponents of collaborative arrangements insist that involving external stakeholders strengthens accountability to citizens by virtue of the addition of partners, and in particular, a private sector partner, pressure for accountability to customers or clients is increased. Notwithstanding legitimate concerns about new ways of doing things, it is difficult to conclude from these debates that the virtues of traditional accountability, namely their clarity and simplicity, can serve as justifications for their extension into an E-Governance era.

These tensions form the parameters around which new ties are being formed between governments and the vendors of IT systems and solutions. IT solutions, however, are more pervasive in demanding closer collaboration between private vendors and public sector clients (Mornan 1998). The complexity and sophistication of such solutions produce many strategic choices for governments about how to deploy IT both in and across public sector operations.

Public private partnership (PPP) is a powerful paradigm emerging in the area of e-governance. It is a new philosophy of engaging in private partners, namely private companies as well as Non-Governmental Organizations (NGOs) to bridge the gap in the quality, speed and efficiency in the service delivery process in the public sector.

13. E-Governance: Indian Scenario

National Informatics Centre (NIC): The Catalyst

In India, there is no such parallel event where a set of practices were codified under legislation. But the setting up of the National Informatics Centre (NIC) in 1985 by the Government of India to harass the IT in managing the internal processes of the government departments is indicative of Government of India's early concern for inducting IT in government departments and managing it strategically. The IT Act of 2002 is the first major impetus in recent time to recognise legally the IT based work processes and solutions making way for a whole range of e-services and e-transactions a reality. Conceptualisation of a 13-point agenda of E-Governance implementation for various Central Government Ministries and Departments and appointment of an IT Manager for each Ministry and Department are yet another two important strategic moves by the Government of India.

14. Early Move: Community E-governance Initiative

Gyandoot, a pioneering community based E-Governance initiative undertaken at the Dhar District of State of Madhya Pradesh in India kept the rural citizenry in close focus and concentrated on information and service needs of the villagers. Over the time, the system evolved with many more innovative features and got integrated into many connected government organizations.

15. Initiatives by the States

One remarkable feature of rise of E-governance in India is growth of state-level projects covering a wide area of services. To name a few and their key areas of coverage is shown in Table 1.2.

Table No: 1.2

E-governance Projects	State	Coverage	Application Service Provider (ASP)
1. Bhoomi	Govt. of Karnataka	Land Records	NIC, Karnataka
2. E-Khazana	Govt. of Karnataka	Treasury Solutions	NIC, Hyderabad
3. Data Warehousing	Tamil Nadu	Information for better decision-making on - Village amenities - Rainfall - Land-holding - Commodity Price - Malaria Eradication - Immunization analyses.	NIC
4. Praja (Rural e-seva)	Andhra Pradesh	• Online complaint filing • Registration • Issue of Certificates • Land Records • Auctions • Mandi Information	NIC, West Godavari Distt., NIC
5. E-seva	Andhra Pradesh	• Online transactions	
6. Bhuiyan	Chhattisgarh	• Land records	NIC and Chhattisgarh Infotech Promotion Society, an autonomous society.
7. E-Sangwari	Chhattisgarh	-Certification services	
8. E-Kosh	Chhattisgarh	-Treasury Solutions	
9. E-Panchayat	Chhattisgarh	-Panchayat Affairs	

The above table is just illustrative, certainly not comprehensive. The purpose is to highlight that States in India have responded to E-governance in right earnest and spirit. The focus has been 'public services' and at the same time, 'enhancement' of efficiency of internal processes and record-keeping. These dual objectives have made E-governance somewhat formidable and the process is irreversible.

16. Web Enablement

Almost all Departments and Ministries of Central Government, all State Governments have their websites. The National Informatics Centre (NIC) and the Department of Personnel and Training laid down detailed parameters as to how a Government department website has to be designed. However, with few exceptions like taxation department most websites are

being used for static dissemination of information. All State Governments, Public Sector Undertakings, State Government Undertakings have their own websites.

17. EVM

The General Elections, 2004 and 2009 in India, the largest democracy of the world saw total use of Electronic Voting Machines (EVMs) all over the country. Apart from costs reduction due to elimination of paper ballot papers, it reduced the scope of bogus voting and made counting fastest ever.

18. Application Service Providers

India has witnessed rise of application service providers not only in cosmopolitan cities but also in small Districts. Thanks to a well structured IT education in the country, there is an enormous growth of IT knowing young generation, many of whom have turned into entrepreneurs and catering to the needs of the local administrations. During the course of field study in connection with this research, it was discovered that even small police stations could develop vernacular based systems for use at the police stations. The National Informatics Centre (NIC) has emerged as the largest applications service provider for government departments both at National and at State levels. In many places, technical institutes have turned into successful application service providers. In Indore, a district in the State of Madhya Pradesh, International Institute of Professional Studies (lIPS), an institution of technical education, turned into an Application Service provider and went to collaborate with local police administration for developing an E-Governance project for Indore police. (Mitra, Issues & Challenges of E-governance in Indian Police Administration, Doctoral Thesis, 2004)

19. Smart Cards

Gupta et al. (2004) have provided a comprehensive list of smart card projects in India ranging from National Identity Card, Employees Provident Fund Card, Gujarat State Driving License Card, Rajasthan Milk Collection Card, Smart Ration Cards of Rajasthan State, Life Insurance Corporation of India Smart Cards, Petro Cards of oil companies etc.

20. National e-Governance Plan (NeGP)

Govt. of India's ambitious move to promote E-governance is best captured in its National e-Governance Plan (NeGP). The critical areas of thrust of NeGP are:

- Key focus on Services
- Mission Mode Projects
- Full rollout
- Quality and Speed
- Public Private Partnership

In short, vision of NeGP is that all government services are accessible to the common man through a One-stop-shop (integrated service delivery) ensuring efficiency, transparency and reliability at costs affordable to common man, throughout the lifecycle.

The NeGP can be portrayed as under:

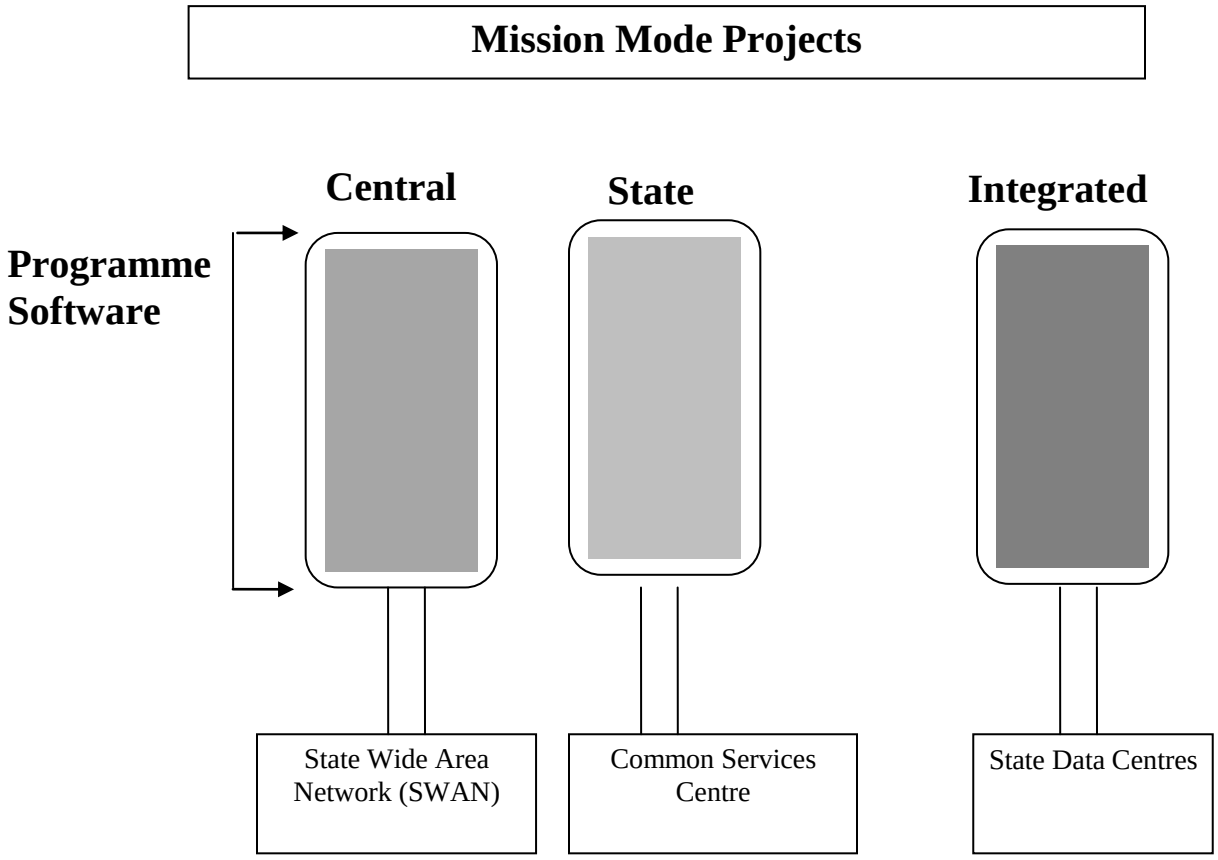

Fig.1.2: NeGP: A Conceptual Portrayal

Mission Mode Projects are those which are time bound, projects aim at improving the infrastructure and services delivery associated with various key sectors keeping in perspective the stated vision of NeGP.

The NeGP rest on few sound pillars.

- State Wide Area Networks (SWAN) - will provide the connectivity backbone which is crucial for the success of any e-Governance initiative.
- State Date Centres (SDCs) – will provide the connectivity backbone which is crucial for the success of any e-Governance initiative.
- Common Service Delivery Centres (CSCs) – will act as the citizen interface and front end for providing G2C services. These will be located at the Gram Panchayat level and will be owned by village level entrepreneurs.

Researchers (Prabhu, 2011) have identified many missing links in NeGP programme. Firstly, absence of need analysis of the requirement of the citizens is quite evident. Secondly, legacy based systems are still prevalent. Thirdly, Mission Mode Projects (MMPs) do not have interoperability or interface across themselves. Fourthly, there is no exchange of information between the data structures of various governments.

21. e-Gov 1.0 and e-Gov 2.0

e-Gov 1.0 usually refers to digitalization of manual process (not necessarily more efficient). Very limited participation of the citizens with little cross-departmental interfaces and no web-enablement, e-Gov 1.0 is the very initial scenario of E-governance that unfolded in India.

e-Gov 2.0 is just an evolutionary phase towards more efficient governance through a whole lot of changes in business models, operating procedures, financial processes and finally technological model.

22. Concluding Observations

The basic objective behind this paper was to capture the trajectory through which e-Governance rose from its infancy. Much before it took some visible form, there were conceptual underpinnings in the form of Information Resource Management (IRM) and the various attendant issues. Information Resource Management and performance of Government Departments got linked up and perhaps this coupling is the backdrop from which E-Governance started its nascent journey. In its journey, many issues of critical importance came by and E-governance each time sub-assumed some new dimension or other.

In India, we do not have much evidences of systematic evolution of E-governance and unlike today, there was hardly any definitive policy on connecting ICT and Governance. Sporadic attempts to link the two were the initial templates of E-governance. However, web technology and governmental intervention accentuated the process faster. Although there has not been any systematic assessment of the impact of E-governance in a centralized manner, however, increasing IT enablement of government services even at the primary level is a big indicator to the potential of E-governance in India.

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