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About This Toolkit

This Toolkit has been prepared by National Informatics Centre (NIC), Department of Information Technology, Ministry of Communication &IT, Government of India at the behest of UNESCO, New Delhi, Asia-Pacific Bureau for Communication and Information.

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Internet has emerged as one of the biggest revolutions of recent times. The Net revolution has ushered in enormous possibilities for leveraging technology not only to enhance productivity and efficiency but also to develop innovative business models and strategies in every sector.
Governments all over the world are using ICT applications to increase efficiency, accountability, enhance transparency, increase revenue collection and facilitate Public Sector Reforms.

However, the scenario vastly differs between developing nations struggling to get a foothold in the ICT revolution and those developed nations where the efforts of e-government have already started bearing fruit. For the developing nations, especially countries at the nascent stages of building an E-Government infrastructure, it is vital to understand where they stand in terms of their e-readiness, reflect upon the intrinsic components of an e-government action plan and draw lessons from the success and failure of the various e-government initiatives undertaken by other countries, developed or developing.

This E-Government Toolkit aims to demystify concepts behind e-government and strengthen the understanding of all those involved in planning and execution of E-government projects.

The toolkit offers an action framework involving all the stakeholders in developing nations including parliamentarians, government executives, institutions as well as non governmental organisations and guide them through various phases in their e-government initiatives.

While developing this toolkit, the endeavour has been to address all possible aspects for initiating, implementing and sustaining e-government programmes in any developing nation, right from defining the very concept of e-government and discussing the e-readiness and e-government action plan to technology, infrastructure, capacity building as well as legislative and regulatory framework. Further, a number of case studies have been discussed which exemplify the successful e-government initiatives, the challenges faced and the way they were addressed.

The objective, through this toolkit, is to offer a helping hand to policy makers and senior executives in the developing nations by endowing them with comprehensive information about what, how and when to be done to embark successfully on the road to e-government.

Finally, I would like to express my sincere thanks and appreciation to all those, who in one-way or the other have contributed to the development of the toolkit. At the outset, I would like to thank Dr. Susanne Ornager, Adviser for Communication & Information in Asia, UNESCO for providing valuable guidance and support during the development of the toolkit. I would like to express my gratitude towards Dr. N. Vijayaditya, Director General, NIC for providing valuable inputs and constant encouragement. I would also like to thank Professor M.Tawfik, Director UNESCO, New Delhi for inspiring me to develop this toolkit. I also wish to express my sincere thanks to Dr. B K Gairola, Deputy Director General, NIC for his immense support and valuable input without which, this work would not have been possible. I would also like to thank Dr. YK Sharma, Deputy Director General, NIC for his valuable advice in the project.

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Note: The views expressed in this toolkit are those of authors only and do not reflect in any way the opinion/policy of the NIC, Department of IT, Ministry of Communications & IT and GOI.

Conceptual Overview

The term e-government is no longer unfamiliar in the present times but it is extremely important for any country to have a clear concept of the subject before embarking on the transformation journey. The vision is strengthened further by understanding the various intricacies involved in the overall gamut of e-government.

1.1 E-Government & E-Governance

The terms E-Government and E-Governance are being synonymously used at various forums but it does well to understand the basic distinction between the two. Government is the institution itself, whereas governance is a broader concept describing forms of governing which are not necessarily in the hands of the formal government.

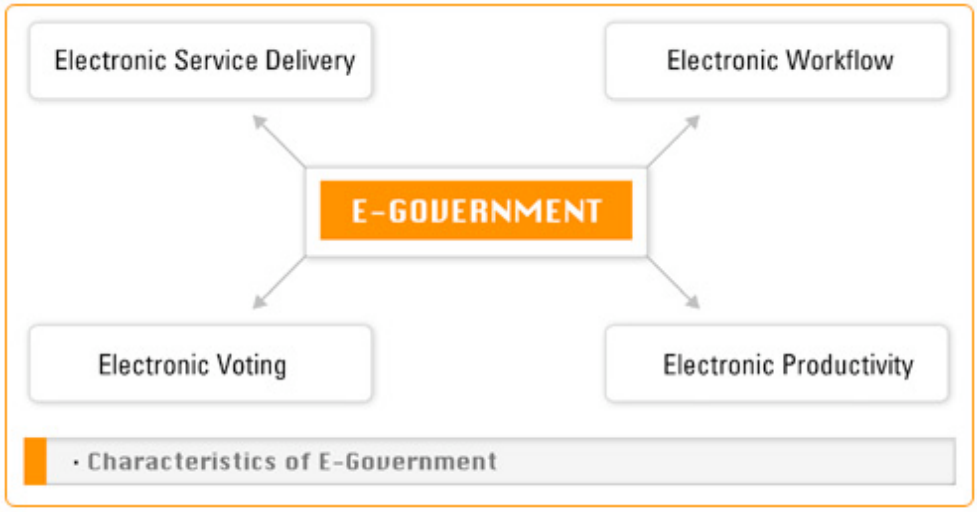
> "By Governance, we mean the processes and institutions, both formal and informal, that guide and restrain the collective activities of a group. Government is the subset that acts with authority and creates formal obligations. Governance need not necessarily be conducted exclusively by governments. Private firms, associations of firms, non governmental organizations (NGOs) and associations of NGOs all engage in it, often in association with government bodies, to create governance; sometimes without governmental authority"
>
> **-Keohane & Nye (2000)**

Though there is no commonly accepted definition of e-government/e-governance, however, taking a cue from the above, we can define them as follows:

| E-Government

E-government is the use of Information and Communication Technologies to promote more efficient and effective government, and make it more accessible and accountable to the citizens. The characteristics of E-Government include1 :

- Electronic Service Delivery
- Electronic Workflow
- Electronic Voting
- Electronic Productivity

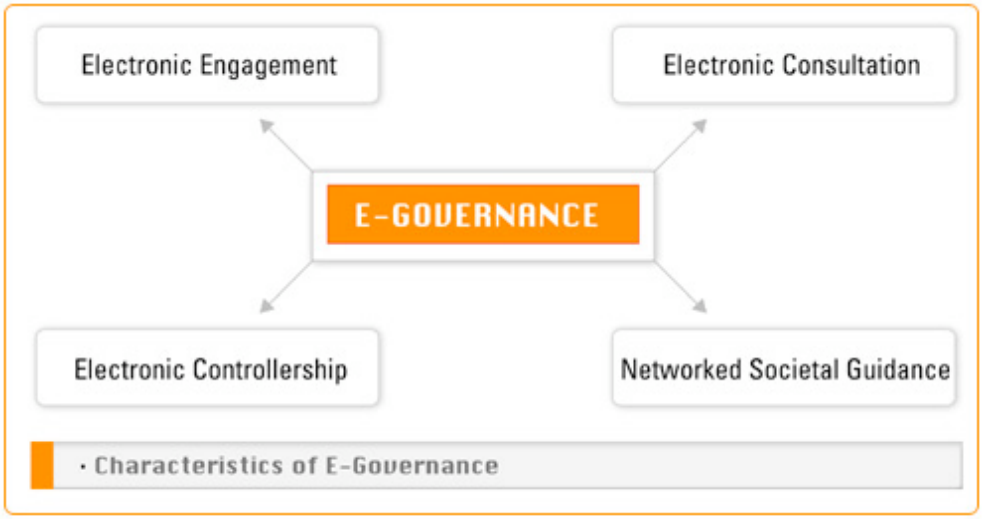


| E-Governance

Governance is the societal synthesis of politics, policies, and programs and E-governance is the application of ICT to the system of governance to ensure a wider participation and deeper

involvement of citizens, institutions, NGOs as well as private firms in the decision making process. The characteristics of e-governance include : 1

- Electronic Engagement
- Electronic Consultation
- Electronic Controllership
- Networked Societal Guidance



| E-Democracy

Apart from e-government and e-governance, it is important to understand the concept of e-democracy, which is a natural extension of e-governance. Even before the advent of Internet, interaction between government and other entities such as NGOs, Institutions and Society at large, which used to take place through conventional media, were crucial in the process of policy making. Now Internet and world wide web have made it easier for a government to embrace not only all the above stakeholders but even the common citizens easily into the process. We can define e-democracy as follows

E-Democracy refers to the processes and structures that encompass all forms of electronic interaction between Government (elected) and the Citizen (electorate).

E-Democracy can be a significant tool to strengthen democracy, bring people back into the political process, and assist in resolving complex issues by drawing on widespread citizenry in respective countries.

Next

1.2 Need For E-Government

The need for e-government finds its genesis into broader factor pertaining to 'good governance'. Since Governance primarily refers to the manner in which power is exercised by governments in managing a country's social and economic resources, Good governance involves a wide range of activity areas and an important facilitator of the same is the application of ICT in the process of governance.

"Good" governance is the exercise of that power by various levels of government that is effective, honest, equitable, transparent & accountable.

The need for e-government finds its genesis into broader factor pertaining to 'good governance'. Since Governance primarily refers to the manner in which power is exercised by governments in managing a country's social and economic resources. Good governance involves a multifaceted approach and application of ICT is one of the important enabler of good governance.

Using ICT along with other reforms, Governments today are able to deliver a wide range of services – from ration cards, motor licenses and land records to health, education and municipal services – in a manner that is timely, efficient, economical, equitable, transparent and corruption-free. The successful examples of e-governance, right from the Bhoomi Project in Karnataka state of India to the Bahiya Project in Brazil have shown that optimum utilization of ICT has enough potential to attain the above and hasten the pace of development.

E-Governance is the application of ICT to the functioning of the government. Coupled with necessary political support as well requisite process reforms it can go a long way in facilitating good governance. Major benefits of e-governance are discussed below:

1. Improved & Enhanced delivery of Government Services

Electronic delivery of information and services by the government not only results in efficiency, better quality but above all facilitates the equitable access. Once the services are available through Internet, Kiosks, Integrated Service Centers, Mobile devices, it becomes very convenient for people in urban as well as rural part of the country to avail these services, as governments in many of the countries, as well as private sectors are in the process of making a lot of investments in extending the communication infrastructure to the remotest parts of the country to reach the unreached. Application of ICT for delivery of services also facilitates the government becoming more responsive towards citizens.

2. Empowerment of citizens through greater access to government information and ability to interact and participate

E-government opens avenues for the common masses to become more aware and informed about government functioning. Effective use of technology in government, sharing of information with stakeholders, results in the empowerment of citizens through easy & enhanced access to government information and ability to easily interact & participate in the process of governance. Enhanced interaction among citizens & government as well as increased participation of the citizens in government functioning, decision making, policy making etc promotes civic engagement and strengthen democracy.

3. Enhanced Transparency & Increased Accountability of the Government

Application of ICT in the processes of government also helps in enhancing the transparency in government functioning, interaction with the citizens & businesses. Sharing information such as government processes, procedures, regulations as well as provision for tracking status of the application/request, introduces a lot of transparency in government functioning. This in turn helps in raising the trust level of citizens towards government and leads to better relationship between the government & citizen as well as Government & businesses.

4. Increasing the internal efficiency and revenue generation by the government

Application of ICT to the internal functioning of the government has been in place for quite some time. And it has been established at many occasions that an effective use of ICT can

minimize transaction costs and streamline government operations thus making government processes more efficient and effective. Judicious deployment of technology can lead to more productivity and a possible reduction & redeployment of the workforce.

Further, streamlined operations, timely reports on various aspects of the service can help in initiating timely action and result into much higher revenue collection by the government such as collection of taxes, duties etc.

5. Improving the relationship between the government and the citizens

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Finally, the adoption of e-government and its benefits including higher productivity, efficiency, enhanced transparency, accountability, responsiveness lead to an overall improvement in the image of the government in the minds of the citizens. The trust level imposed by citizens and businesses in the government can significantly go up due to the increased ease & efficiency of interaction while dealing with the government. Raised trust levels lead to improved relationship between government & Citizen as well as Government & business, one of the major objectives of good governance

Thus, it makes tremendous sense for the government sector all over the world to adopt E-government and embrace ICT advancements for streamlining its processes, connecting all the stakeholders, cutting costs, improving the delivery of services, and most importantly, realizing the vision of 'good governance'.

Further, with the success stories of e-government in different parts of the world, the international call for governments to respond to standards of accountability, transparency and participatory governance as critical elements for democracy and State legitimacy has also become stronger.

Previous Next

1.3 Forms of Interaction

Although the entire gamut of E-government involves a large number of entities and processes, there are primarily four types of interaction which form the foundation of e-government deployment :

G2G : Government to Government interaction involving sharing of data and conduct of electronic information exchange amongst various government departments and other entities. This exchange could be both intra and inter agency at the National level as well as exchanges among the national, provincial and local levels.

G2C : Government to Citizen interaction where electronic dissemination of information and electronic delivery of services takes place, fulfilling the primary objective of e-govern-ment. Initiatives in this form of interaction attempt to make transactions such as obtaining certificates, renewing licenses, paying taxes/bills and applying for government schemes less time consuming and convenient. Also included is the key component of citizen participation in the processes and policy formulation by the government.

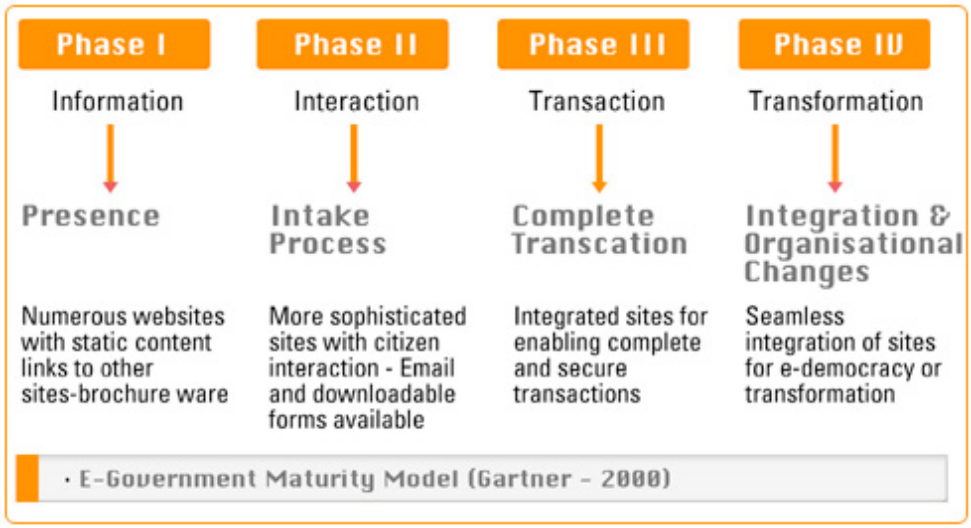
G2B : Government to Business interaction involving improved and efficient procurement of goods and services by the government from the commercial business entities. It also includes sale of government goods to the public and has the potential for reducing costs through improved procurement practices and increased competition. Further, this type of interaction involves the transaction and exchange between the gov ernment and the businesses regarding licenses, taxation and policies issued for various sectors.

G2E : Government to Employee interaction covering employment opportunities, work guidelines, rules & regulations, benefits and pay structures for the government employees, employee welfare schemes, work rules and regulations, government housing etc.

1.4 Maturity Phases of E-government

E-Government Applications and Projects generally pass through various stages such as publishing of information on the web to carrying out transactions and even upto complete process reengineering so as to bring in the true value and benefits of the efforts to the citizens.

Gartner Group has formulated a four-phase e-government model which can serve as a reference for governments to position where a project fits in the overall evolution of an e-government strategy. This model does not imply that all governments have to go through all of these phases. Since these phases offer a conceptual framework, it has to be kept in mind that they are not dependent on each other, nor is there a need for one phase to be completed before another can begin.



In each of the four phases, the delivery of online services and use of ICTs in government operations serve one or more of the aspects of e-government: democracy, government, business.

1.4.1 Phase I: Information

This phase entails usage of ICT to expand access to government information which is of importance to individuals and businesses. An efficient utilization of Internet and communication technologies can make it possible to disseminate government information to global audience in a fast and convenient manner.

Although, the ways and means of disseminating this information keep on evolving further with the advancements in technology, an ideal way for a developing nation to enter this phase would be the setting up of a **National Portal** providing a ready and comprehensive access to information online, ranging from Profile of the Nation, Parliament, Constitution, Executive, Judiciary to government publications, government services and government schemes for the citizens/businesses. (Refer to Chapter No.8 on 'National Portal' for more details .....)

Setting up a National Portal shall enable citizens and businesses to readily access government information without having to travel to government offices, stand in long queues or resort to malpractices to get the task done. This simple initiative can prove to be a revolutionary advancement for nations wrecked by complex bureaucracy and corruption.

Some noteworthy examples of this stage include the

UK Government's 'DirectGov' initiative

(http://www.direct.gov.uk/Homepage/fs/en)

'Firstgov' portal of the US federal government
(http://www.firstgov.gov)

Singapore Government
(http://www.gov.sg)

Canada Government's National Portal
(http://www.canada.gc.ca)

Indian Government's 'India Image' Portal
(http://indiaimage.gov.in)

New Zealand Government
(http://www.govt.nz)

1.4.2 Phase II: Interaction

The second phase pertains to enhancing the public involvement in the process of government functioning. Through use of technology, the interaction between the governments and citizens/businesses can be stimulated and made more effective. People can submit their queries and grievances through email or specially designed forms, check the status of their grievance, voice their opinion and help in policy formulation on important issues through online opinion polls and discussion forums and avail a whole range of online services. This not only raises the trust level of the citizens in the government but also saves a lot of time by providing services on a 24*7 basis which would have otherwise been done over the conventional 'counters' only during the working hours of the government. Good examples of this phase includes the websites of the Department of Administrative Reforms & Public Grievances (Govt of India), the Passport Information Portals (India) and some Indian State Govt Portals such as Andhra Pradesh andHaryana.

1.4.3 Phase III: Transaction

While in the Interaction phase, the citizen is able to exchange information online and get details of the procedures involved, when it comes to actually conducting the transaction, he/she has to resort to the conventional means. However, in Phase 3, this situation is amended and this phase involves establishing websites and other applications that allow users to conduct **transactions online**. In other words, the user is able to avail the service online in the complete sense. Online monetary transaction and payments is a crucial component of this phase since the citizen can carry out the transaction without having to even visit the government office. This phase demonstrates the advancements of technologies such as digital certificates and payment gateways and results in a long term cost saving and improvement in productivity. Services such as online booking and payment of travel tickets, payment of taxes, land registration, renewal of ID cards, payment of utility bills etc which require transaction can be effectively provided in this phase through citizen kiosks and web enabled applications. The examples of this phase includes projects such as the e-Sampark System (Chandigarh/India) and the E-Seva project of Andhra Pradesh Government (India)

1.4.4 Phase IV: Transformation

This phase alludes to the stage where government has gone through the full transformation process and all the citizen services are being made available online through a single 'virtual' counter round the clock. In other words, in this stage the capacity to instantly access any service in a 'unified package' is provided to the citizen. Ministerial/departmental/agency lines of demarcation are removed and services are clustered along common needs. Providing such fully integrated services shall require broad organizational change, aligning organizational setup with the new capacities and integrating the back-end operations and infrastructure in such a coherent and seamless manner that the government can effectively acquire the distinction of being called a **'digital state'**.

It can be well understood from the definition that e-government is to be seen as a continuous process, and not just an end to a means. Since the various countries exist at different levels of maturity in terms of resources and infrastructure, the adoption of e-government also has to be viewed in the form of different phases of maturity. Various studies and surveys have also been carried out to classify the different countries passing through the various stages of e-government. One such study on "Benchmarking E-Government" was carried out in 2001 by United Nations Division for Public Economics and Public Administration to rank the countries on the basis of their e-government capacity.

1.5 Stakeholders

The adoption of e-government in any Country shall involve the active participation and contribution of a number of key players and stakeholders in the entire process. Some of the important stakeholders shall include

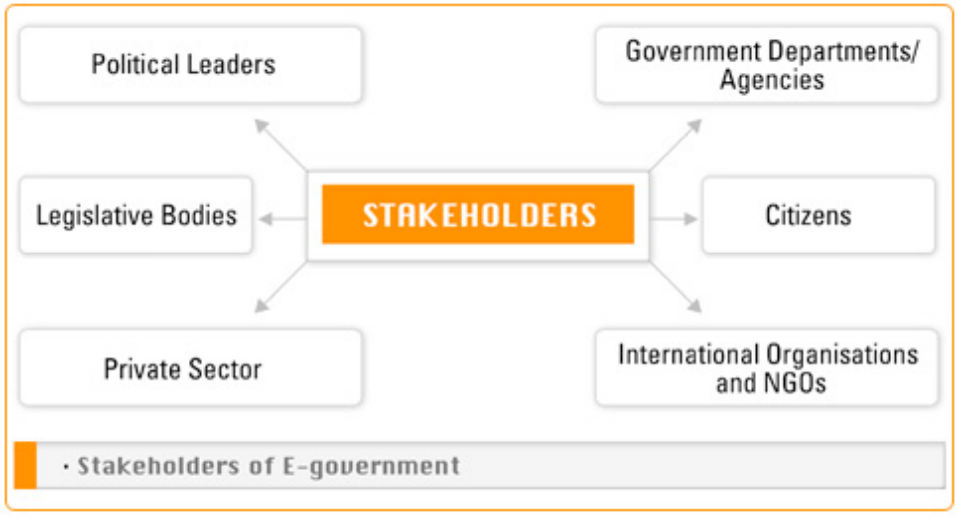
· Political Leaders :
No e-government initiative, no matter how well strategized can bear fruit unless there is a will to do so by the political leadership in the Country. This stands true for almost all nations and it is imperative that the top leadership in the Country is sensitized enough towards the need for electronic governance.

· Government Departments/Agencies :
The Government departments at all levels in a Country need to ensure a perfect backend integration of systems and processes to ensure a smooth and seamless transformation of the government to a digital state. The e-awareness amongst the government employees and their willingness to embrace change shall play a key role in the whole process.

· Legislative Bodies :
Formulation and enactment of well crafted IT laws and policies is a pre-requisite for the success of an e-government venture and the role of law making bodies assumes paramount importance in this regard.
· Citizens :
Being the key beneficiaries of the entire process, the citizens play a crucial role as they are the ones to expect a fast and convenient delivery of online information and services from the government and would also contribute effectively to the process of policy making by voicing their opinion and views electronically.

· Private Sector :
A healthy collaboration and partnership between the government and the industry/ private sector entities shall lead to an easy fulfillment of e-government goals as both the parties can draw benefit out of the ventures. The private sector can be an investor for e-government initiatives and can also add value to the e-government initiatives through deployment of advanced technology and global expertise. Apart from the commercial aspect, they would in-turn benefit from the increased efficiency,
transparency and accountability of the government.

· International Organisations and NGOs :
These can play an important role by being facilitators and motivators for the projects. Through an effective promotion of the e-government initiatives, these agencies can raise awareness amongst the common citizens and can also contribute by carrying out research in the area and exchanging best practices with countries who have already proved successful in some areas of e-government.



· Stakeholders of E-government

Chapter 2

E-Readiness

With the specter of the growing digital divide looming large, the significance of 'e-readiness' assumes paramount position in the roadmap towards e-government because in an environment that is more 'e-ready', people are in general more comfortable with the new technologies and e-government initiatives are easily accepted and adopted. Hence, before a country embarks on a journey towards adoption of e-government, it has to assess its state of 'e-readiness'.

2.1 The Concept

The implementation of E-Government in a country requires a conducive environment to realize its potential for development. Before preparing vision document or an E-government Action Plan, it is very important that a country assesses its e-readiness and tries to adjudge how prepared it is for adoption of e-government. An assessment of the existing environment to which e-government shall be applied, can be conducted in terms of the status of underlying communication infrastructure, institutional framework, human resources, existing budgetary resources, policy regimes, industry & social sector, investment climate etc.

According to a report by the Centre for International Development3 , Harvard University :

> "An e-ready society is one that has the necessary physical infrastructure (high bandwidth, reliability and affordable prices); integrated current ICTs throughout businesses (e-commerce, local, ICT sector), communities (local content, many organizations online, ICTs used in everyday life, ICTs taught in schools), and the government (e-government); strong telecommunications competition, independent regulation with a commitment to universal access ; and no limits on trade or foreign investment."

In simpler words, **e-readiness or the preparedness of a Country for adopting e-government** can be assessed broadly around the above areas and parameters.

With the specter of the growing digital divide looming large, the significance of 'e-readiness' assumes paramount position in the roadmap towards e-government because in an environment that is more 'e-ready', people are in general more comfortable with the new technologies and e-government initiatives are easily accepted and adopted. Hence, before a country embarks on a journey towards adoption of e-government, it has to assess its state of 'e-readiness'.

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2.2 E-Readiness Assessment Models

Since Electronic preparedness of a country shall be a fair measure of its capacity to transform into a digital economy, it is crucial that the methodology adopted to assess that level of preparedness is chosen judiciously. During the past few years, a number of e-readiness assessments have been carried out by various countries as well as inter-country research organizations. Although broadly, each assessment study attempts to arrive at the common objective of gauging how ready a country or its economy is to embrace e-government, the tools and models adopted for doing the assessment have been widely varying.

Some of the important guides, approaches and models for e-readiness assessment, developed by international bodies have been summarized below4 with their key features and the way they define e-readiness. The choice of whether to adopt an approach or model already considered to be a standard benchmark for assessment or to formulate a new or customized assessment methodology lies solely with the country aiming to conduct the assessment and the decision can be made depending on the conditions particular to that country and the available time and resources.

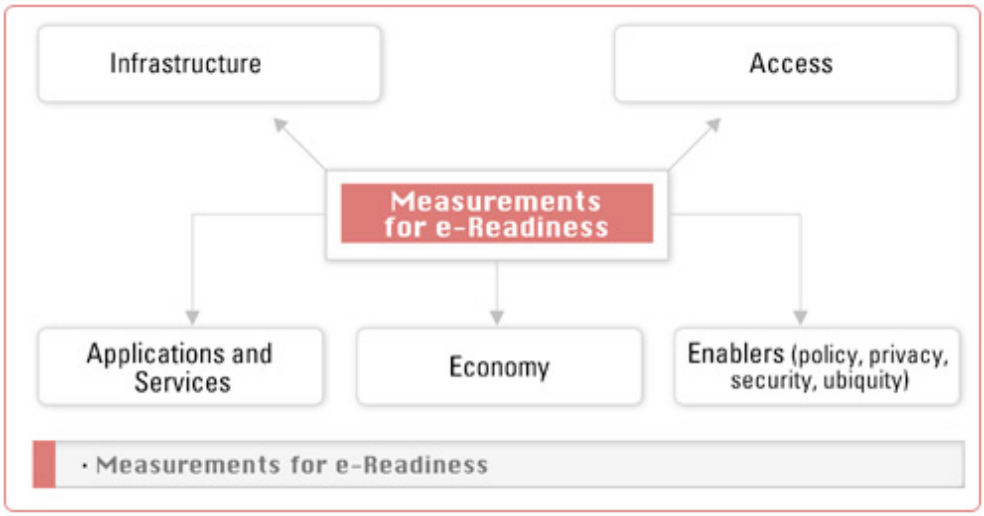
2.2.1 CSPP's Readiness Guide For Living In The Networked World

This guide, published in 1998 has been developed by the Computer Systems Policy Project (CSPP), which is a "public policy advocacy group comprising the Chairman and Chief Executive Officers of US information technology companies." This self-assessment tool is designed to help individuals and communities determine how prepared they are to participate in the "Networked World."

The guide defines an 'e-ready' community as : **"An 'e-ready' community has high-speed access in a competitive market; with constant access and application of ICTs in schools, government offices, businesses, healthcare facilities and homes; user privacy and online security; and government policies which are "favorable to promoting connectedness and use of the Network."**

The guide measures the prevalence and integration of ICTs in homes, schools, businesses, health care facilities, and government offices, with additional focus on competition among access providers, speed of access, and government policy. Measurements are divided into five categories:

1. **Infrastructure**
2. **Access**
3. **Applications and Services**
4. **Economy; and**
5. **Enablers (policy, privacy, security, ubiquity).**



The CSPP Readiness Guide provides a series of 23 questions, for community members to ask about the community itself. For each question, the users choose from a set of answers, which represent four progressive "stages" of development. The 23 questions are divided into the five categories listed above. For example, "choose the level of access to network services provided in homes in your community. a) 25 % of homes have a computer/access device..." The assessment produces a rating that indicates which of four progressive stages of development the community is at for each of the five categories listed above. "An overall 'score' for the community can be estimated by simply averaging the scores across the criteria."

Further information available at:
http://www.cspp.org

2.2.2 CID's Readiness For The Networked World: A Guide For Developing Countries

The Center for International Development (CID) at Harvard University developed this guide in year 2000. The guide, currently available in six languages, draws from the earlier CSPP guide, described above.

An e-ready society, as defined in this guide is : **"An 'e-ready' society is one that has the necessary physical infrastructure (high bandwidth, reliability, and affordable prices); integrated current ICTs throughout businesses (e-commerce, local ICT sector), communities (local content, many organizations online, ICTs used in everyday life, ICTs taught in schools), and the government (e-government); strong telecommunications**
competition; independent regulation with a commitment to universal access; and no limits on trade or foreign investment."

The guide systematically organizes the assessment of numerous factors that determine the Networked Readiness of a community in the developing world. This assessment is meant to serve as a basis for further analysis and planning. It measures 19 different categories, covering the availability, speed, and quality of network access, use of ICTs in schools, workplace, economy, government, and everyday life, ICT policy (telecommunications and trade), ICT training
programs, and diversity of organizations and relevant content online.

The guide provides a grid with descriptions of four stages of advancement in each of 19 categories (placed into five groups). Communities estimate their current stage of development in each category. No prescription is given on how that estimate should be made. The guide rates the 'stage' a community is in for each of the 19 categories, and descriptions are given of what is required to be in a particular stage. The Guide does not offer prescriptions for improved Readiness.

Further information available at:
http://cyber.law.harvard.edu/readinessguide/

2.2.3 APEC's E-Commerce Readiness Assessment

The Asian Pacific Economic Cooperation (APEC) Electronic Commerce Steering Group developed this guide in year 2000 with the objective "To help governments develop their own focussed policies, adapted to their specific environment, for the healthy development of e-commerce." The guide defines an 'e-ready' country as : **"A country that is 'ready' for e-commerce has free trade, industry self-regulation, ease of exports, and compliance with international standards and trade agreements."**

In this guide, six categories are measured for "readiness for e-commerce":

1. **Basic infrastructure and technology** (speed, pricing, access, market competition, industry standards, foreign investment),
2. **Access to network services** (bandwidth, industry diversity, export controls, credit card regulation),
3. **Use of the Internet** (use in business, government, homes),
4. **Promotion and facilitation** (industry led standards),
5. **Skills and human resources** (ICT education, workforce),
6. **Positioning for the digital economy** (taxes and tariffs, industry self-regulation, government regulations, consumer trust).

During the assessment through this tool, the participants are asked 100 multiple-choice questions grouped into the six categories listed above. The possible answers indicate progressive levels of e-readiness for a country. No overall scoring occurs. The product of the assessment is the answers to the 100 questions. Countries are supposed to work on areas with less than optimal answers, since they are "impediments to the deployment of e-commerce."

The Report is available at:
http://www.schoolnetafrica.net/fileadmin/resources/APEC_E-Commerce_Readiness_Assessment.pdf

2.2.4 McConnell International's Risk E-Business: Seizing The Opportunity of Global E-Readiness

McConnell International prepared this report in collaboration with World Information Technology and Services Alliance (WITSA), to assess a national economy's e-readiness, or "capacity to participate in the global digital economy" and it was released in August 2000.

The report defines an 'e-ready' country as : An 'e-ready' country has extensive usage of computers in schools, businesses, government, and homes; affordable reliable access in a competitive market; free trade; skilled workforces and training in schools; a culture of creativity; government-business partnerships; transparency and stability in government and an evenly enforced legal system; secure networks and personal privacy; and regulations allowing digital signatures and encryption.

The report measures five areas:

1. **Connectivity** (infrastructure, access and pricing),
2. **E-leadership** (government policies and regulations),
3. **Information security** (intellectual property, privacy, electronic signatures),
4. **Human capital** (ICT education, available skilled workforce), and
5. **E-business climate** (competition, political and financial stability, foreign investment, financial infrastructure).

For each country and each category, the report performs a "dynamic evaluation of the relevance and accuracy of available quantitative data with an understanding of myriad cultural, institutional, and historical factors." These general ratings and their narratives can then be used as a starting point for further planning. Countries are rated in the five categories listed above on a scale of one to three ('blue,' 'amber,' 'red'), and extensive analysis and recommendations are given.

The report rates 42 countries, and analyzes the results by region of the world. Overall, the report describes a complex picture of e-readiness: most countries are reasonably 'ready' in some categories, but not in others.

Further information available at:
http://www.mcconnellinternational.com/ereadiness/EReadinessReport.htm

2.2.5 Network Readiness Index (NRI)

The Network Readiness Index has been jointly developed by the World Economic Forum, Infodev and INSEAD and takes CID Model as its base reference point. The latest report, published in 2003, has carried out a ranking for 102 countries and defines the Network Readiness Index as **'a nation's or community's degree of preparation to participate in and benefit from information and communication technology (ICT) developments.'** The NRI Framework 2003-2004 is based upon the following parameters which are then divided into sub-indicators:

- **Environment for ICT offered by a given Country or Community – market, political, regulatory, infrastructure;**
- **Readiness of the Community's key stakeholders to use ICT-individual readiness, business readiness, government readiness;**
- **Usage of ICT amongst these stakeholders – individual usage, business usage and government usage;**

In the overall results of the NRI Index 2003-2004, The United States comes out with the top rank, followed by Singapore at the 2nd place. Finland, Sweden, and Denmark occupy the 3rd, 4th, and 5th places, respectively. Canada gets the 6th position, followed by Switzerland, Norway, and Australia. Iceland comes in 10th position.

Further information available at:
http://www.greaterzuricharea.ch/content/07/downloads/wef_nri2003.pdf

2.2.6 E-Government Index (UNDPEPA)

With an aim to define the e-government environment of the various UN member states and to review their capacity to sustain online development, the United Nations Division for Public Economics and Public Administration (UNDPEPA) and the American Society for Public Administration (ASPA) undertook a research study and formulated an E-Government Index in 2001. The report defined e-government as **"utilizing the Internet and the world wide web for delivering government information and services to the citizens".**

The research was primarily based on two methodologies:

1. **The National government websites of the countries were analyzed for the content and services available that the average citizen would most likely use.** The presence, or absence of specific features contributed to determining a country's level of progress. The stages present a straightforward benchmark, which objectively assesses a country's online sophistication.
2. **A statistical analysis was done comparing the information and communication technology infrastructure and human capital capacity for 144 UN Member States.** The final measure or the E-Government Index generated could be a useful tool for policy-planners as an annual benchmark.

The study indicates that in the order of 'E-Government Index obtained, USA is placed at the top rank followed by Australia, New Zealand and Singapore.

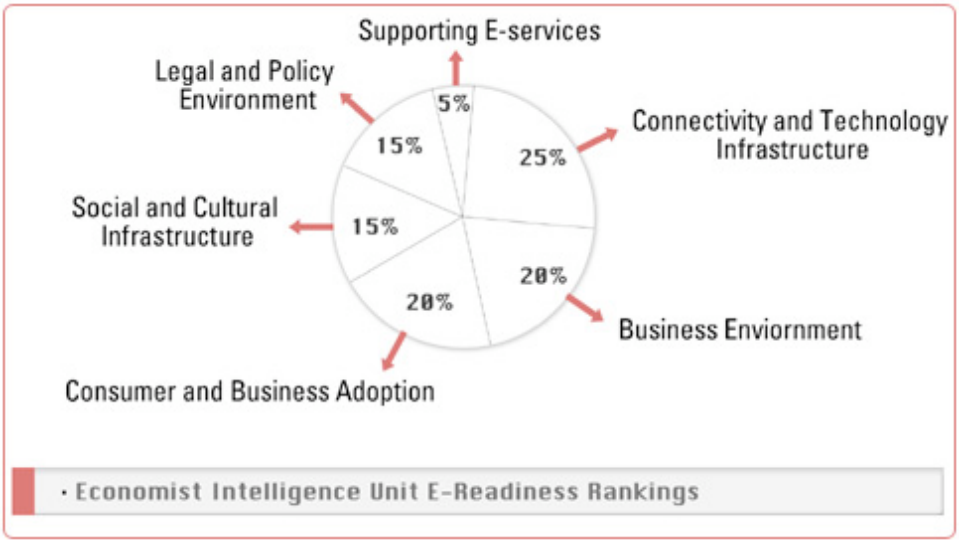
Further information available at:
http://www.pti.nw.dc.us/links/docs/ASPA_UN_egov_survey.pdf

In 2004, UNPAN has published another 'Global E-Government Readiness Report' available at http://www.unpan.org/egovernment4.asp

2.2.7 The Economist Intelligence Unit E-Readiness Rankings

The Economist Intelligence Unit (EIU) E-readiness Model ranks the communities according to six distinct categories which have been assigned weights as per their relative importance.

1. Connectivity and Technology Infrastructure (25% weight)
2. Business Environment (20% weight)
3. Consumer and Business Adoption (20% weight)
4. Social and Cultural Infrastructure (15 % weight)
5. Legal and Policy Environment (15% weight)
6. Supporting E-services (5% weight)



Each of the above categories has a number of sub-indicators and each variable in the model is scored on a scale of one to ten. The study, which was carried out in July 2002 concluded that the top ten places were dominated by the countries from North America and Western Europe, with Australia being the lone outsider. Singapore and Hong Kong were the leaders in the Asian group.

Besides the above tools and methodologies, certain other approaches, such as Amartya Sen's Capability Approach and Brown's Information based approach have been used from time to time to formulate e-readiness assessment models and conducting assessment studies. A good example of the above is a comprehensive E-Readiness Assesment Study carried out in 2003 by Department of IT, Ministry of Communications and IT, Government of India.5 The Department has also published a report titled 'E-Governance Assesement Frameworks (EAF version 2.0) in May 2004.

The report is available at:
http://egov.mit.gov.in

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2.3 Suggested Framework For E-Readiness Assessment

From the above analysis, the ground picture about the need for E-readiness assessment and the various options available to the developing countries becomes clear. The e-government efforts in any country involve a large amount of resources and since the economic and social conditions of developing countries do not allow them to take undue risks with new projects, it is imperative that the policy makers and planners in these countries have a fair idea about their 'preparedness' or e-readyness, before they allocate funds for the same or begin the development and
implementation.

Since the various assessment tools follow different parameters and the countries may adopt any one of them as per their demographic, political and socio-economic conditions. Countries may also consider customisation/adaptation of any of the above models as per their circumstances. Though a country may take any of the approaches, we however suggest that the E-readiness Assessment Framework should essentially cover the following aspects:

1. Political and Regulatory Environment :

- Commitment of the top leadership
- ICT Policy
- Communication Policy/ISP Policy/Broadband Policy
- E-Gov Policy/Action Plan
- IT Act
- Legal recognition of Digital Signatures
- Intellectual Property Rights (IPR) Protection
- Security Standards
- Privacy Policy

2. Infrastructure :

· Hardware
- Availability of High End Computing Infrastructure
- National and State Level Data Centres
- Community Information/Internet Access Centres

· Networking
- Fibre Optic/Satellite/Wireless/Wired Networks
- National/State level Network Backbones
- Network Operation Centres
- Internet Gateway
- Security Infrastructure
- Service Gateways/Payment Gateways etc
- Last Mile/Rural Area Connectivity

3. Application and Services :

- Websites/Portals
- Back-end Automation
- Application Software
- Electronic Delivery of Services
- Localisation of Standard Commercial
- Technology Standards
- Data/Metadata Standards
- Interoperability Framework

4. Human Resources :

- ICT Skilled Manpower in Govt/Industry
- ICT Literacy in Government
- E-Literate Citizens
- ICT Training Facilities (Basic & Professional)
- ICT Education in Schools and Colleges

5. Financial Infrastructure :

· Financial Institutions
· Financial Resources
- Budgetary Allocation
- Through Partnerships
· Foreign Investment

6. ICT Usage Scenario/Environment :

- ICT Usage by Citizens
- ICT Application in Government
- ICT Application in Business
- PC Penetration
- Internet Reach

It is important to point out here that e-readiness assessment is not a one time activity. Instead, it is a regular process and the countries ought to conduct such assessments in different stages from time to time. However, if a country does not have enough resources to carry out customised and detailed assessment studies on their own, they can refer to a number of international studies and reports which present a global picture with respect to the e-readiness scenario.

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Chapter 3

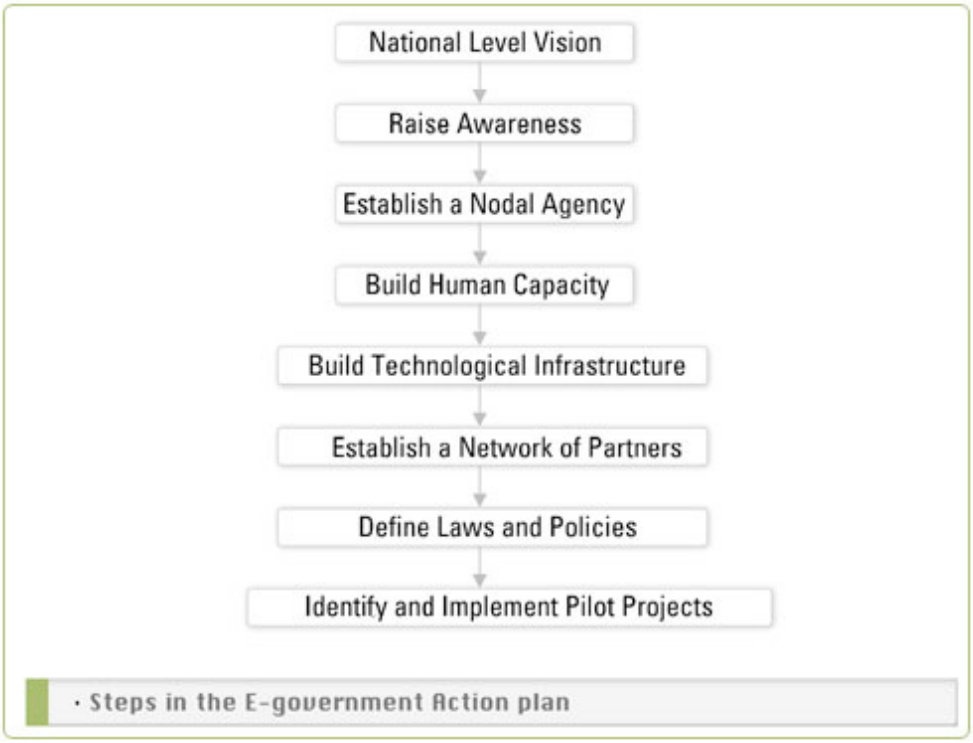
E-Government Action Plan

Once the 'e-readiness' assessment has been conducted and the ground realities about the state of preparedness of a country are known, a realistic and achievable strategy has to be crafted which will not only help in an effective implementation of e-government but prepares the nation to adapt it optimally

E-readiness assessment shall highlight the strengths & weaknesses of the country on different aspects of e-governance be it infrastructure, human capacity, Internet penetration or state of basic automation. It shall help government identify as which sectors are more prepared to embrace e-governance, which community (Business, Citizen, Government) is more prepared to be benefitted by e-government initiatives. This shall also help them in identifying the priority areas of e-governance and the critical areas of investment (be it last mile connectivity, skilled manpower, computer and communication infrastructure, software development, backend automation) for better impact of e-governance.

Since e-governance is a resource intensive activity and public money shall be spent on these projects, it is crucial that initial implementation of e-governance must be successful to build trust and motivation. Success of an initiative depends a lot on the factors other than technology and standards, for example, accessibility, motivation, at the end of intended beneficiaries. Back end automation or availability of data are also critical success factors.

Though there are no standard guidelines & processes available for devising an E-government action plan which could uniformly apply to all Countries, In this chapter, an attempt has been made to identify the steps to be taken to form the Action Plan for governments wishing to engage in e-government for development. The aim is to touch upon all phases and stages of e-government, from developing a vision to establishing requisite infrastructure, from formulation of laws to setting performance benchmarks and measuring success.



· Steps in the E-government Action plan

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3.1 Define A National Level Vision

E-government is not a 'One Size fits All' solution. Every Nation, whether developing or developed has a combination of priorities, resources and circumstances unique to itself. Thus, each nation has to define its own vision for e-government stating what e-government means to them and what are they aiming to achieve by adopting e-government. The Vision Statement should also be accompanied by a list of the priority areas for the implementation of e-government programmes based on the key sectors in the economy of the Nation as well as its e-readiness.

Thus, as a first step, countries need to define their broad vision for e-governance. This vision shall be aimed at the Nation as a whole, rather than short sighted objectives for individual project/organisations or regions. This broad vision of e-government should also be shared by all stakeholders (citizens, businesses, Government, NGOs and others). It would be a good idea to involve all the stakeholders, government and non-government while defining a vision and encourage them to contribute in terms of their views, needs, expectations and participation in the whole process. In the ultimate analysis, however, the vision statement has to focus upon the primary stakeholder and beneficiary, i.e the citizen. Cost-cutting and resource-saving should not act as the prime motivators for e-government adoption. A citizen centric vision of e-government shall form a strong foundation for the success of these initiatives.

A typical Vision Statement would read something like the following

"To ensure anywhere, anytime, secured, cost effective delivery of government information and services to its citizens, to ensure effective public administration, to create investment friendly environment for global business community".

The vision needs to be aligned with national development strategies and plans. Strategic goals will have to be derived from the Vision Statement which shall set the tone for building up of an Action Framework. Though these goals would vary from nation to nation, they could be broadly enlisted as

- **Electronic delivery of Government services**
- **Improving the efficiency of government departments**
- **Enhancing and encouraging peoples' participation in the process of governance**
- **Formulation of new laws as well as amendment of existing laws to facilitate e-government**

3.2 Raise Awareness

What good can a well defined vision do if its awareness in the minds of intended beneficiaries as well as all stakeholders is low. Its vital to 'communicate', not just formulate. A judiciously formulated communication strategy is a must for raising awareness about the impending transformation. The prime pre-requisite in formulating this strategy to reach out the common masses is to have an aware leadership having the necessary political will to give the initiatives, the necessary 'push' ahead.

Exposure of the top leadership in the country to e-government practices and to the value that e-government has brought to the governance process worldwide can make all the difference. Enjoying a high popularity and trust level with the masses, the political leadership could play an important role in spreading awareness about the concept and benefits of electronic government. This top leadership may include the Head of the State, the President, Prime Minister, Council of Ministers (Union/State), Chief Ministers of Provinces/States, Secretaries of the Government Departments and other senior executives. Since they are the people who largely determine how and when the transformation shall take place, a heightened level of awareness amongst them would drive things faster and in the right direction. This awareness can be generated through various means right from demonstrating the successful examples and case studies of e-government from other countries to holding seminars and high-level meetings on the issue.

Once the awareness levels and commitment from the political leadership and the top–level bureaucracy is high, its time to initiate education and outreach programmes to spread awareness about the benefits of e-government amongst the common masses.

Though advertising is not a common phenomenon with governments, but it is being more and more realized that promotion/advertising of the government initiatives is an important contributor to their success. A specialized communication agency could be hired to conduct research and develop publicity and training campaigns to inform the masses and prepare them for the gradual transformation towards electronic delivery of information and services from the government.

3.3 Establish An Apex Organisation

For a national level integrated vision to become a reality, it is important to have an apex organisation or institution whose sole mandate is to strategize, ensure and monitor the effective implementation of the e-government. Some of the important activities of this organisation would be:

· Design and develop standards, policies and guidelines on various aspects related to e-government

· Encourage and facilitate the formulation of new ICT legislations as well as amendment of existing laws and regulatory framework

· Consultancy inputs to individual e-governance projects

· Play the role of an anchor across various initiatives of e-government in different sectors thus leading to overall development

· Facilitating and promoting the establishment of National level e-government infrastructure

Further, either the same Apex organisation or a separate institution or an academy such as 'Centre for excellence in e-government' with the mandate to promote knowledge and skill building in e-government should also be set up. The primary responsibilities of this

Institution shall be :

· To provide training on various aspects of e-government thus building competencies that could prove highly useful in the long run.

· To Undertake research projects in e-government, focussing on the important aspect of developing localised solutions.

It should be noted here that it is not necessary that a new Organisation/Institutions is established at the Apex Level. An existing organisation in a country which has a lot of experience in ICT as well as domain expertise in various sectors of development could also be identified to act as the National Level Apex Organisation for co-ordination of e-government initiatives in the country.

3.4 Build Human Capacity

The level of e-literate human capacity in a country is an important aspect to ensure an effective delivery as well as equitable access of electronic delivery of government services. There are three distinct aspects when it comes to capacity building:

- **the IT skills and capacities within the government and its constituents**
- **the IT Skills in the Industry**
- **the IT literacy levels and capacities of the common citizens of the country**

Normally it has been observed that due to high illiteracy levels and low IT awareness in most developing nations of the world, there is a wide e-readiness gap between the capacities needed for successful e-government and what actually exists. Hence, the issue of human capacity building is downright vital for such countries and should be seen as a pre-requisite for e-government implementation.

The key capacities which need to be built and strengthened within the government may include:

- **Develop, operate and maintain Information Systems**
- **Procurement of ICT Infrastructure & Services**
- **Service Delivery, Maintenance and Operations**
- **E-Government Program/Project Management**
- **Change Management**
- **Citizen Relations Management**

As for the common citizens, the capacities required to be developed may pertain to

- **ICT education as a part of the academic curriculum at school level**
- **Raising basic literacy level in the country**
- **Opening up government/private facilities to educate the citizens about the usage of computers/Internet etc thus making them e-literate**

The various options which the governments can explore for building up human capacities and competencies such as above, have been discussed in detail in the subsequent chapters.

3.5 Build Technology Infrastructure

Infrastructure development is another prime concern for the developing countries, some of which may still be struggling to provide basic amenities like water, roads and electricity to the teeming millions. For e-government efforts to bear fruit in such countries, it is imperative that telecommunication infrastructure be developed hand in hand with the civic infrastructure. A coherent strategy may be worked out, in consultation with the provincial/local governments in various regions, for ensuring connectivity in the entire country including the underserved areas. Specifically addressing the issue of connectivity as the highest priority area, the deregulation of the Internet Service Provider (ISP) market should be considered as an important initiative towards Internet penetration across the nation.

It has been observed that many developing nations still face the dilemma of low penetration of the fixed line telecom infrastructure and low teledensity. The options of mobile telephony and wireless access could be explored by the policy makers but they have to be cautious about their coverage and the high-cost factor involved therein. A National ICT policy has to be formulated which addresses key issues including import of technological inputs, incentives for private sector investment in the area of telecom infrastructure, usage of public access kiosks and mobile centers in areas of low tele-density etc.

Besides telecommunication, one needs to look into computing infrastructure for development and delivery of applications online. Nations need to set up National and State level data centres operational on 24*7*365 basis.

Another related facet to building technology infrastructure is the issue of ensuring backend automation and information systems for the e-government programmes. Much ahead of an online delivery of services to the citizens, the backend systems have to be properly in place and the information systems already existing in different departments of the government should be able to 'talk' to each other and share data. Since the e-government initiatives rely on a significant degree on existing data, existing systems and existing processes; the quality, security and sharing of data are crucial. For this to happen, it is imperative to ensure that standards are ensured with regards to data collection, coding and processing within a Country. All these aspects have been taken up in greater detail in the subsequent chapters of this toolkit.

3.6 Establish A Network Of Partners

"Wise say that great ideas are hard to work out if you try to achieve alone and do not take partners along"..

Collaboration is the key for something as big as an e-government drive that seeks to transform the functioning of the government as a whole. It is suggested that a network of partners is formed comprising organizations and agencies that can effectively assist and participate in the implementation of e-government initiatives.

The network of partners may include:

· Private Sector :
Whether a country is developed or in the developing stage, successful e-government re- quires the expertise, resources and input from the Private Sector. It is recommended that instead of viewing the private sector as merely a place for 'outsourcing', the gov- ernment should aim to view them as a viable source for cost-sharing, technology and project management expertise and thus solicit their involvement and participation from the very onset of e-government initiatives. The private sector can also effectively act as a possible intermediary for digital transactions between businesses & government and citizens & government. Several successful e-government projects in India such as Bhoomi, E-Seva and VOICE are examples of effective partnership at some level with the private sector.

· Non Government Organisations (NGOs) :
NGOs are a highly active segment of the society in most developing countries and they normally focus their activities in specific areas of community development. As such, the NGOs enjoy a high trust level with the common citizens. These organizations can play a key role by voicing the needs of the local community before the government and assisting them in policy making for e-government initiatives. They can also act as an important channel for promoting e-government initiatives among the masses and spreading awareness about the benefits and usage of online government services.

· Research & Training Institutions :
These can prove helpful in conducting the e-readiness assessment studies, policy analy- sis and research on possible e-government applications, technological issues, data requirements, regulatory reforms and how e-government can facilitate sustainable economic development and growth.

Institutions working in the area of public administration, government services training and other ICT training institutes can play an important role in capacity
building within the government

· International Agencies :
Agencies like those under the United Nations can act as important partners for the e-government initiatives of any country as they play a facilitating role in not only raising the awareness and advocating for e-government but also by stimulating international debate and exchange of best practices. Agencies like the World Bank and other Develop ment Banks can act as important 'Donors' for e-government projects in developing countries and can donate financial resources as well as technical expertise.

3.7 Define Laws And Policies

Formulating an appropriate regulatory framework and defining laws and policies guiding e-government efforts are a 'must' when it comes to drawing an Action Plan as it is crucial both for affordability and sustainability of e-government. The legislative framework of a country should have scope and clear-cut provisions for accepting 'electronic equivalents' of traditional paper procedures, such as personal identification, signing and filing. Also, legal validity of online monetary transactions has to be ensured before people shall be able to impose their faith in the electronic system. **The legal and regulatory measures would typically pertain to:**

- **Recognizing the digital storage and exchange of information between government, citizens and businesses**

- **Providing legal sanctity to digital identities of individuals through digital certificates or some such means.**

- **Use of public information by third parties, safeguarding privacy and security issues**

- **Integrating and sharing data systems within and among administrations to cater to joined up services of the government**

3.8 Identify And Implement Pilot Projects

With the stage set, the next step is to identify e-government projects that shall lead the way and set examples as well as provide important lessons for the future. Picking the right project to be the 'pilot' is very important since a successful project becomes a powerful selling point for all future efforts and creates the necessary political momentum needed to move the e-government ahead. Such projects also help in generating demand from citizens for more such initiatives.

For choosing Pilot Projects, it is suggested that major stakeholders should be involved and a consensus is built. An assessment of the current state of ICT implementation and resources in various sectors can be carried out to act as a foundation for selection of possible pilot projects. A list of projects having the potential can also be chosen by inviting proposals from different departments. Since the objective is to ensure success for the pilot project and not to spend resources in reinventing the wheel, it will also be advisable to get ideas from other regions or countries that have successfully implemented similar projects. Many countries have developed frameworks for evaluation to prioritise and select those projects which offer a high value at comparatively low risk.

The following points have to be kept in consideration while identifying a pilot project for implementation:

- **The goal of the project is consistent with the overall e-government vision of the Country**
- **The identified sector is a priority area of the economy and possesses a somewhat positive culture for adopting best practices**
- **The identified pilot project is one that directly benefits a large number of citizens**
- **There is scope for fast implementation of backend automation**

Judiciously chosen and implemented pilot projects can provide valuable experiences that reveal the potential and challenges of e-government more clearly. They can be documented and used to strengthen the vision and planning process and the pilot projects can be replaced, in due course of time, with full blown implementation.

| Summary E-Government Action Plan

Steps	Activities/Output
1. Define a National level Vision	- Vision Statement - Strategic Goals
2. Raise Awareness	- Communication Strategy - Committement from Top leadership - Seminars/Workshops
3. Establish an Apex Organisation	- Setting up Apex organisation - Research & Training in ICT
4. Build Human Capacity	- Generate ICT Awareness within Govt - Building IT skills in Industries - ICT Education in school/college curriculum - Raising basic literacy levels in the country

5. Build Technology Infrastructure	- Develop telecom infrastructure - Ensure connectivity - Regulate ISP market - Mobile telephone - Wireless access - Backend automation - Formulate National ICT policy
6. Establish a network of Partners	- Private sector partnerships - Collaboration with NGOs - Setting up Resarch & Training Institutes - Partnerships with International agencies
7. Define Laws & Policies	- Recognise Digital Storage and exchange of information - Legal validity to Digital Identities - Integrating Data Systems - Safeguarding Public information and Privacy
8. Identify & Implement Pilot projects	- Select the right project - Involve major stakeholders - Assesment of current ICT status - Share ideas & knowledge - Replace pilot projects in time with full implementation

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Chapter 4

Building Human Capaciy

One of the main concern, while dealing with wide scale implementation of e-government projects is the level of Human Capacity, availability of skills & capacity within the government, in the private sector as well as e-literacy of the citizens of the nation are the major concerns of e-government programme implementation & management.

4.1 Requisite Human Skills & Capacity

The different kinds of human skills & capacities needed to be built up in a country aiming for e-government include the following:

· ICT Professionals within the government **to design and develop e-government solutions**

· ICT Professionals in the government to **evaluate, procure and manage technology solutions**

· ICT aware government **officers and staff to co-operate and participate in the process of e-government implementation**

· **ICT sensitized and equipped businesses and corporate sector**

· ICT literate citizens to eventually **leverage on the e-government solutions to make their lives comfortable and build a renewed relationship with the government.**

To embark on above mission, as a first step, government should assess the quality & quantity of the existing human resource pool available in the country. This information could be obtained from the e-readiness studies conducted by a country as an earlier step during the planning process of e-government. If such an information is not available, a study could be conducted to assess the present scenario with respect to available human resources.

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Once the existing situation is clear, the following initiatives could be undertaken towards building requisite human capacity.

4.2.1 ICT aware Top Leadership

For e-government efforts to bear fruit, the initiative and thrust has to come from the top which acts as a motivating factor for the rest of the personnel. Thus it is imperative for the top leadership to be ICT aware. Such a sensiization could be carried out through Seminars, Conference, & Consultations.

ICT awareness & sensitization programme may also be conducted for the policy makers & senior executives in the government so that they can assume a leading role in the initiatives.

4.2.2 Building Capacity within the Government

E-governance and ICT ought to be made a part of the training programme held for the new batches of civil servants. For example, the Lal Bahadur Shastri National Academy of Administrative Services in Mussourie (India) trains the new batches (entry level) of civil servants every year and as a part of the training, acquaints them with the necessary concepts of ICT technologies & for ICT applications in governance. Similar steps could also be taken for all other streams of Government (Central as well as State) services.
Many more programmes (Seminars, Workshops, Training) covering different aspects of e-government can be introduced for in-service government officers.

- The personnel employed in the departments responsible for procuring ICT products & services ought to be given **intensive training on evaluation, procurement and management of technologies** as nature of these procurement is different from conventional purchases in the government .
- Adequate training in the usage of ICT applications may be provided to the administrative and functional staff in different departments of the government
- **There should be training on Customer Relations skills for the government officials** as the direct interaction between the citizens and the government rises significantly through e-government.

| Change Management

Attitude and adaptability to change, especially in public Administration, is an important pre-requisite for the e-government implementation & transformation to take place in a country. Considering this, Professional Change management skills are required to guide government institutions through this process of transformation. A government may even consider hiring Change Management consultants who would be responsible for instilling confidence into the staff that
e-government is being ushered in to assist and help in carrying out their duties more efficiently and is not a threat to their jobs or authority besides helping them to adapt new paradigm of delivery of government services.

4.2.3 ICT Professionals within the Government

· **Develop and Train the existing ICT professionals within the** government in architecture, development and evaluation of e-government solutions.

· **Conduct extensive training programmes** for the existing ICT aware staff in the government so that they could update their knowledge and be well acquainted with the new generation technologies.

· Besides harnessing the existing pool of human resources available with the government, it is suggested that **new recruitment programmes** could be initiated for intake of ICT literate personnel. Rules for existing posts in the government could also be amended to make basic ICT literacy a prerequisite.

· It should be kept in mind that a specialised field like e-government would require human resources skilled in a number of disciplines apart from just computer programming. **The recruitment initiatives should also target other specialised skills such as e-governance solution architects, System Managers, Network Managers, Database Administrators, Customer Relations Managers, legal experts etc.**

| Nodal Agency

At times, it is not feasible for the government departments to recruit the large number of ICT professionals on its payroll. Further retaining them and providing enough professional avenues will be even more challenging due to tremendous growth of the ICT sector.

Therefore, rather than making several different departments deal with this issue, a nodal ICT agency could be identified and accorded responsibility to co-ordinate & extend necessary ICT support to the departments in their e-government initiatives. For example, the National Informatics Centre (NIC) in India is the nodal ICT agency in the government which provides wide range of ICT support to the government departments across all sectors of development. ICT support could range from Consultancy, Preparation of long term IT Plan, Architect a solution, Development of software, Designing databases, ICT Procurement, Setting up ICT Infrastructure, Communication & Collaboration Services to even taking Projects on Turnkey basis. Government should then lay stress on strengthening such an agency further to cope up with the growing demands of e-government.

4.2.4 ICT Industry

Government should introduce schemes to facilitate promotion & proliferation of ICT industry within the country through initiatives like Technology parks, Tax Benefits as has been successfully experimented in countries like India & China. Multinationals should also be encouraged to set up their base within the country. However government should work out a fine balance between the domestic ICT industry and multinationals to ensure healthy growth of domestic ICT industry within a period of time.

With reference to skilled ICT professionals Government can take initiatives to introduce more and more courses in professional studies in various Universities, Technology Institutions offering Degree and Diploma courses. Vocational Training Institutes can also play a significant role in building skilled human resource needed for e-government implementation at a large scale, throughout the state, region or nation. Private Training institutions should also be encouraged to offer more and more courses in ICT technologies & Applications. Initiatives should be taken to introducer newer courses as well as increase the seats in existing courses.It is also observed that skilled manpower and ICT literate human resources of a large number of developing countries work in other developed countries because of better monetary and career opportunities. It is advised that adequate incentives ought to be provided to such workforce motivating them to come back to their native country and contribute to its ICT growth.

4.2.5 ICT Aware Business

The Business sector in a country and the organisations in the corporate sector have to deal with the government on a large number of issues related to licensing, taxation etc. The purpose of deploying e-government initiatives from the government's side can not be successful if the businesses are not sensitized enough to the use of ICT in their operations.

Hence, the overall e-environment of the country ought to be strengthened and personnel employed in various businesses need to be made ICT aware and literate This could be further promoted or motivated through recognition of their efforts.

4.2.6 E-Literate Citizens

Finally and very importantly, the common citizen in the country has to be made computer literate and aware about the benefits of e-governance. Considering the fact that the overall literacy rates in developing countries are anyway abysmally low, it can be a daunting task and shall take some time to achiev. Phased approach would be suggested particular if the country is large or literacy level is too low.

As suggested, this mammoth task can be met by making a long term/shorts time plan and devise strategies to gradually make its citizens e-literate and also informed about the way ICT and e-government can make their life simpler. Some of the initiatives which could be taken in this direction are listed below :

· ICT Training to be made a compulsory part of curriculum at the school and collegelevel.

· Community programmes could be initiated and encouraged to make the adult population in all segments of the society ICT literate and technology friendly.

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Chapter 5

Infrastructure Development

The success of e-governance initiatives depends a great deal on sound ICT infrastructure. Therefore, due emphasis ought to be given on the development of e-government infrastructure in the country. Infrastructure needs to be built up for all aspects of e-governance, be it delivery of services by government or access of services by citizens or even for backend automation at government departments. Also, the government should ensure a coordinated development of infrastructure in various parts of the nation to avoid another divide between the ICT enabled and the non-enabled.

It is therefore suggested that a Road Map may be worked out by the developing nations for building National E-governance Infrastructure and all the future infrastructure development efforts should be in accordance with the Road Map. Since the ICTs change at a fast pace, it is not advisable to make all the investment up-front, even if resources are available.

National E-Governance Infrastructure should primarily involve, setting up following facilities:

- Nationwide Communication Infrastructure
- Computing Infrastructure
- Data Centres
- E-Government Architecture
- Interoperability Framework

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Chapter 5

Infrastructure Development

5.1 Nationwide Communication Infrastructure

While Communication Infrastructure needs to be setup for government to deliver its services online, there is an equally important need for setting up nationwide communication network for citizens to easily access government services whether in the urban areas or in the rural parts of the country. **Generally, urban parts of the country are already equipped with communication facilities. Therefore, Government needs to pay more attention to the rural and remote areas of the country to avoid occurrence of another digital divide.**

Various communication technologies have been successfully deployed in different countries. The popularly used communication technologies in various countries developed or developing, vary from Dial-up, ISDN, Leased Lines, Radio Frequency, WLL, Wimax, Fiber Optic, Satellite to Broadband (Description of these technologies is beyond the scope of this document. However, one could refer to IT Encyclopedia website at http://whatis.techtarget.com to get detailed information on these).

Each of these has its own strengths & weaknesses. **Based on the demographic, geographic and economic status of the country, one could choose among these technologies which are best suited for them.** One could also consider deploying a combination of these technologies. Nationwide Communication Network, based on the geography & demography of the country, could be a daunting task. Government may,
therefore, consider its execution in a phased manner. **Strong and stable communication infrastructure is one of the critical success factors for delivery of government services online.**

E-government aims to bridge the gap or digital divide and provide equitable access of its services to all. Generally, Internet and Communication Infrastructure is readily available in major towns and cities while access is really poor in the remote villages or under-developed parts of the country. Depending on the existing state of infrastructure and geographic span/terrain of the country, it could at times become a daunting task and the government may find it difficult to carry it out alone. Participation of private sector should be sought in this area. Some special incentives could be provided to the private sector organisations, particularly those working in areas with difficult terrain.

5.2 Computing Infrastructure

Computing Infrastructure is another important dimension of National e-Government Infrastructure. While on one end, government needs large computing infrastructure to develop and deliver e-government services on continuous basis, infrastructure is also needed at the end of citizens to derive the benefits of these services.

Again, like communication infrastructure, there is a high order of disparity in availability, affordability of computing devices in urban and rural areas, particularly in developing countries. Further, in rural areas, due to lack of basic infrastructure such as electricity, telephony, it may not be worthwhile for the people to have computers, even if they could afford it. To extend the reach of government services and address the wide range of citizens, governments world over are setting up common/shared/community infrastructure in the form of community information centres, Internet kiosks etc. Government should also consider, making their services accessible from various other media/devices such as basic telephones, mobiles, cable TV network, PDAs and many other hand held devices.

Government should partner with state governments as well as local institutions to setup community information centres, computer centres and Internet Kiosks whereby people of the community can go and access the government services. Such a concept has been tested in many countries and proved to be successful. Various models have been evolved in making these centres sustainable. Though initial funding has been made possible in many of the cases, the private sector/entrepreneurs should be asked to set up such centres, operate them to eventually make them self sustainable. The local institutions may also be asked to maintain and sustain such centres. Same centres can also be used for capacity building, conducting basic level ICT training programmes. (Refer to Chapter 10- Case Studies of this document to know more about such initiatives by various countries).

Behind the delivery of electronic services, a lot of automation and computerization of data and processes has to be handled at the backend. Large size software systems need to be developed to enable backend data processing, reporting Development, Testing and Tuning (Performance, Security) of these software need a lot of computing/storage resources. If the network connectivity is good between the Data Centre and the associated departments, the development and testing infrastructure (combination of hardware and software) could be set up inside the data centre but completely isolated from the Production Data Centre. Alternatively, the departments may have their own computing/development infrastructure. However, high end software testing infrastructure should be set up centrally at a Data Centre or in some shared facility of the government to make the proposition technically feasible and economically viable.

5.3 Data Centres

In the era of e-governance, government is expected to deliver its services to the citizens on 24*7 basis. To achieve this, the government has to set up a sound and stable infrastructure operational round the clock.

Internet Data Centre is a facility which provides extremely reliable and secure infrastructure for running Internet operations on a 24*7 basis. It shall not at all be cost effective if each department starts setting up its own data centre as running a high class Internet Data Centre needs a lot of recurring resources. It is, therefore, suggested that the government may set up a high grade Data Centre at a National level to be used by all entities of the government. All departments should, in turn, establish high speed connectivity with the data centre so that they can manage their applications from their own premises in a secured manner.

In cases where the country is large and the government feels that one Internet Data Centre may not suffice, it could decide to set up multiple Data Centres. However, the number of data centres should be optimized to the extent possible primarily due to the high recurring operative costs as well as scarcity of skilled resources. It is suggested that the decision to set up a data centre should be driven by demand and not by political or geographical boundaries within the country.

As the pace of e-government picks up nationwide, besides delivery of services, Government may also have to set up data centres to share the large scale/special purpose resources for development of the systems.

An Internet Data Centre should essentially have the following features:

- **High End Computing Infrastructure**
- **Storage Networks (SAN/ NAS)**
- **High Speed Local Area Network**
- **Multi-Tier Security**
- **High Speed Internet Connectivity**
- **24*7*365 Help Desk**
- **Multi level Redundant power back-up**
- **Air Conditioning Management**
- **Fire Detection & Control System**

Besides providing computing and storage resources on demand, another important aspect/role of Data Centre is to provide **data protection.** Therefore, Data Centres need to have strong **state-of-the-art backup and recovery and vaulting solutions** in place.

The data digitized and gathered by the government in the process of governance is very valuable and the government can not afford to lose this data at any cost, even due to natural disasters. Hence, the government has to consider setting up a Disaster Recovery Centre in a geographically different location, preferably in a different seismic zone. Incase a government has multiple data centres, they can be connected to act as a back-up for each other.

5.4 E-government Architecture

E-government Architecture generally consists of three components : Services Architecture, Process Architecture and Data Architecture

· Services Architecture :
Describes the whole lot of services offered by the Government, processes to be followed for each service, Concerned Department(s), relation/dependence on other services etc. Services could be like Vehicle Registration, Passport Issuance, Caste Certificate, Payment of Tax, etc.

· Process Architecture :
Lists the various processes to be followed for rendering different services, independent of their association with one or more services. These processes are then further grouped in various categories and detailed rules/procedures are defined for executing each of the processes. This brings a lot of standardization across services and promotes interoperability as well as reuse of process components. Processes could be Content Management, Citizen Registration, Personalization, Online Form Submission, Electronic Payment etc.

· Data Architecture :
Deals with the data associated with various Government Services, as described in service architecture. In Data Architecture, we enlist all the data elements needed/associated with above service and then define metadata about each data element. This metadata information includes the standard Nomenclature for each data elements, their type, size, format, default value, valid value range, owner etc. Use of such a standard definition by all government applications shall facilitate interoperability among various applications as well their integration which shall go long way in delivery of integrated/ one stop services to the citizens and businesses.

Another important aspect is Application architecture. It primarily defines the various tiers of an ICT application such as Data Layer, Business Logic, Presentation Layer, technologies to be used in each layer and interaction between these layers. Guiding principle is that each layer should be separated or made independent from each other, layers as afar as possible. E-government applications are generally about automation of government operations at the back end and delivery of services at the front. These applications involve a lot of data and logic based on government rules, procedures, regulations etc. In a real life situation these entities undergo change from time to time. Effort should be to separate different layers of application so that change in any one of them should not effect the whole application. Principles of n-tier architecture and Web Services based Architecture should be used while defining Application Architecture.

5.5 Interoperability Framework

One of the main objectives of most E-Government initiatives is to provide one stop integrated, client-centric government services to the citizens as well as businesses. In order to attain this objective, the Government needs to be perceived as a single entity, with seamless flow of information across individual ministries and departments as necessary. An Interoperability Framework is essential to support the flow of information and to improve the coherence of information systems maintained by individual ministries and departments.

The Interoperability Framework aims to define the set of specifications to facilitate Government systems to communicate and interoperate with other systems, both within Government and external to it, efficiently and effectively.

By bringing together the relevant specifications under an overall framework, ICT management and software developers have a single point of reference whenever a need arises to locate the required interoperability specifications that should be followed for a specific project. By adopting these interoperability specifications, system designers can ensure interoperability between systems while at the same time have the flexibility to select different hardware, systems and application software to implement solutions.

Compliance with the Interoperability Framework can be made mandatory for any system in the Government. Suitable mechanisms must be adopted by existing and legacy systems to conform to the framework.

Framing of policies and specifications for Interoperability Framework should be followed up with provision of support, guidance on best practices, toolkits and agreed schemas. The entire strategy to implement good e-government should be viewed in long-term perspective and hence must be supported by vigorous processes. The development of Interoperability Framework must therefore be reviewed and updated on a continuous basis.

More information on the Guiding Policies while designing Interoperability Frameworks and some of the Interoperability Initiatives undertaken by different Countries worldwide have been provided in the Annexe.

| Government Gateway

Government Gateway is generally established to facilitate the efficient delivery of online services in a cost-effective manner. It enables the government departments to focus on the rapid delivery of online services, rather than building the common underlying components required for online services. The Government Gateway is a modular set of components that provide Authentication, and Authorisation, Transaction routing with reliable delivery as well as Secure Mail and On-line Payments.

Users of the Gateway can be Individuals (citizens), Organisations (businesses) or Agents (intermediaries). Users need to register once with the Gateway, and then enroll for the specific services that they wish to use. They will then have a single credential (User ID/Password or a Digital Certificate) for use across all the Government services using the Gateway. The Gateway possesses highly secure infrastructure for transactions and delivery of messages.

UK Government has set up such a gateway as a part of their e-government initiatives, which can be accessed at the http://www.gateway.gov.uk

5.6 Domain Name Policy

While considering various issues related to technology, infrastructure and the policy requirement for effective e-government, the important aspect of having a Domain Name Policy for the country deserves attention. Generally speaking, a domain name is an addressing construct used for identifying and locating computers on the Internet. In practical terms, the domain name is the core of the Internet identity for an entity.

Globally, there are approximately 60 million Internet domains registered. Of these, about 40 million are in generic top level domain (gTLD) category, while about 20 million are in the country code top level (ccTLD) domains. The administration of gTLD rests with the Internet Corporation for Assigned Names and Numbers (ICANN), an internationally recognized, non profit corporation for preserving the operational stability of Internet, with membership from different countries and experts in the field. The responsibility of managing the ccTLD, as mentioned above, has been entrusted to the individual countries who, in general follow, the guidelines provided by ICANN. These Internet domain names are used by the user entities to identify them in the networked Internet space.

> The DNS (Domain Name System) structure contains a hierarchy of names. The root, or the highest level, of the system is unnamed. Top Level Domains (TLDs) are divided into classes based on rules that have evolved over time. Most TLDs have been delegated to the individual countries whose codes are assigned from a table known as ISO-3166-1, which is maintained by a UN Agency. These are called country code Top Level Domains, or ccTLDs. In addition, there are a limited number of 'generic' Top Level Domains (gTLDs) which do not have a geographic or country designation.

There is a growing awareness that the number of domain name registrations in a country is a significant indicator of its Internet proliferation and a measure of its popularity in the Internet space and the various countries are showing a keen interest in promotion and registration of country level domain names.

For the countries embarking on e-governance, it is suggested that they should look into the administration and management of their country code top level domain and define a broad level policy. Though Governments may sometimes subcontract the operation of their root registry to a private partner due to some technical/administrative reasons, it is still suggested, rather strongly recommended, that the ultimate control over their ccTLD should remain with the government itself.

For websites and portals belonging to the government departments and institutions, it should be made mandatory to register their domain name in country code top level domain so that it truly reflects the national identity of the portal/websites. Countries such as US, UK, China, India have drafted clear cut rules with respect to Internet addressing mechanisms and it is recommended that such rules may be formulated and implemented by all the developing/developed countries.

For further information on Domain Names, refer to following websites:

- **Internet Corporation For Assigned Names and Numbers**
  http://www.icann.org
- **Internet's Network Information Centre**
  http://www.internic.net

Implementation of national level e-government infrastructure is a resource intensive phenomenon and sometimes the government may not find it feasible to carry out the entire task on its own. Hence, it may explore the possibility of private sector partnership in developing nationwide infrastructure. Different modes of partnership such as BOO, BOOT, BOT etc may be deployed (as explained in Chapter 6 of this document titled Partnerships…).

The government may also consider seeking assistance from International agencies. Though different governments may choose different modes of implementation, the overall coordination of National e-government infrastructure development programme should be handled by a government agency. This Government agency could be something like the National level ICT organization of the government or an institution responsible for the implementation or facilitation of the National E-Government Plan. Alternatively, it could be carried out by a high level council set up by the government which should have representation from the government, public sector, private sector as well as the NGOs.

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Public Private Partnerships are significantly different than traditional procurement or privatization. Risk Sharing, Innovation, Competition & Efficiency brought by the private partners are the key features that work toward making Public Private Partnership Viable & beneficial.

6.1 Need for Partnerships in e-Government

E-Government projects are normally large in scale and magnitude of operations and require not only a huge amount of resources but also a multidisciplinary skill. Hence, it becomes difficult at times for the government to handle the projects completely with its own resources. It, then necessitates/prompts the governments to get into partnerships to leverage on the strengths and resources of its partners. These collaborations or partnerships can be built up with the private sector as well as the other stakeholders in the process of e-government including the NGOs.

Considering the fact that companies in the private sector are exposed to greater competition and are subject to higher risk, they generally develop tools and techniques to manage their environment better than a government organization which does not face the same level of exposure and competition. The private companies generally operate in the corporate sector which is characteristically different from the public sector. Even the software tools developed for the corporate segment can not be applied in the public sector. Thus, there is potential for learning from the skill set of each other and develop similar competencies within the government.

One of the main attributes of e-governments projects is the 'citizen-orientation', be it in software interfaces or online delivery of services. It is often expected that the entire process shall be tuned and geared towards the needs of the citizens. However, governments traditionally have been working as superstructures and did not have much citizen orientation. On the other hand, the private sector has abundant experience in citizen/customer relationship and this experience can be used to the advantage of e-government initiatives. The private companies can share valuable lessons to the government in customer service, responsiveness and adaptability to the customer needs.

The 'customer is the king' premise, can be modified as 'citizen is the king', in the context of e-government

Similarly, e-government and its impact has to be extended to the remotest parts of the country. Generally, traditional governments have been working as superstructures and do not have much interaction with the community. On the other hand, NGOs closely associate with the community at the grassroot level. The citizens, therefore, at times have a much higher trust level in such institutions. Since one of the major requirements of the success of e-governance is its acceptance and usage by the people, the NGOs can play a crucial role in the success of e-government projects by bridging this gap. NGOs can also facilitate the implementation of large scale projects and their roll out to the villages which are not so easily accessible. On the other hand, Governments can concentrate more on the Planning and Design of the projects.

Thus, partnerships can be built up where each retains its core strength on one side and leverages on the experience and strength of the other partners, thus accelerating the pace of e-governance.

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6.2 The Possible Avenues for Partnership

The partnership with the various stakeholders for e-government initiatives can be in many areas such as the following:

- **Financial Investment**
- **Infrastructure Setup**
- **Solution Architecture and Technology Selection**
- **Content Development and Management**
- **Rendering Front-end services to the citizens**
- **Citizen Relationship Management (CIRM)**
- **Roll-out of e-government projects (nationwide/regionwide)**
- **Software Development**
- **Project Management and Assessment**
- **Capacity Building**

The above list is only suggestive, but not complete by any means. Different countries are building such partnerships in many different ways.

6.3 Public Private Partnership (PPP)

"A cooperative venture between public and private sectors built upon the strengths of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks and awards."

A Public-Private Partnership is a contractual agreement between a public agency (federal, state or local) and a private company. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility. The public interests are fully assured through provisions in the contracts that provide for on-going monitoring and oversight of the operation of a service or development of a facility.

The concept of Public Private Partnerships existed much before the e-government. Many governments have already built up such partnerships particularly in the domain of civic infrastructure development. Department of Finance, Republic of South Africa has in fact issued a detailed document titled Guidelines for Public Private Partnerships. These Guidelines contain a set of procedures to advise departmental accounting officers and project managers on sound practices when preparing, procuring and implementing PPP arrangements. PPP is emerging as an important paradigm in the parlance of e-government.

6.4 The different Forms of Partnerships

The collaborations and partnership between the government and the other stakeholders, be it the private sector or the NGOs, can assume a variety of forms such as:

| Public Private Partnerships

· BOO (Build-Own-Operate)Model :
The private partner builds and operates a facility/service without transferring ownership to the public sector. Legal title to the facility remains in the private sector, and there is no obligation for the public sector to purchase the facility or take title. A BOO transaction may qualify for tax-exempt status as a service contract if all Internal Revenue Code requirements are satisfied.

· BOT (Build-Operate-Transfer) Model :
The private partner builds a facility to the specifications agreed to by the public agency, operates the facility for a specified time period under a contract or franchise agreement with the agency, and then transfers the facility to the agency at the end of the specified period of time. At the end of the franchise period, the public partner can assume operating responsibility for the facility, contract the operations to the original franchise holder, or award a new contract or franchise to a new private partner.

· BOOT (Build-Own-Operate and Transfer) Model :
The private partner owns the project, invests resources, undertakes its development, operates it for some time and then transfers the stakes to the public agency. This is almost identical to the BOO model except that the government gets the ownership of the assets created by the partner at the end of the project, at a nominal cost. The BOOT model is highly suitable in situations where assets build up during the project are expected to outlast the pre-specified time period of the project such as setting up nationwide/ region-wise Communication infrastructure.

| Contract Services

· Operations and Maintenance
A public partner (federal, state, or local government agency or authority) contracts with a private partner to provide and/or maintain a specific service. **The contracts could be a simple one like Annual Maintenance Contract (AMC) at a fixed cost or could be complex contracts linked with strict SLAs (Service Level Agreements) defining the expected levels of various services.** Under the private operation and maintenance option, the public partner retains ownership and overall management of the public facility or system.

· Operations, Maintenance and Management
A public partner (federal, state, or local government agency or authority) contracts with a private partner to operate, maintain and manage a facility (commonly known as Facility Management) or system providing a service. Under this contract option, the public partner retains ownership of the public facility or system, but the private party may invest its own capital in the facility or system. Any private investment is carefully calculated in relation to its contributions to operational efficiencies and savings over the term of the contract. Generally, the longer the contract term, the greater the opportunity for increased private investment because there is more time available in which to recoup any investment and earn a reasonable return.

| Outsourcing

Outsourcing model is suitable for activities such as running the Help Desk, front-end or the day-to-day customer management for the projects/services as this is a resource intensive activity and private sector is much more skilled in doing these tasks due to their experience in Customer Relationship Management. Well defined software development assignments is another area for outsourcing. Apart from enhancing the efficiency, outsourcing can also address the government's problem of scarce skilled human resource.

The choice on what and how much to outsource has to be made very judiciously and carefully, considering the resources available with the government and the potential costs involved in

outsourcing the work keeping in mind the time targets. Rather than going for either extreme i.e total outsourcing implying handing over the entire e-government project from concept to commissioning, subsequent maintenance and upgrade and zero outsourcing implying doing everything in-house, it is advisable that the governments decide on 'selective outsourcing'. Utilizing the strengths of different vendors in specific areas in a selective manner could yield substantial benefits, while the government still keeps the key areas of operations in its own hands.

| Partnerships with NGOs & local bodies

Partnership with the NGOs/Non profit organizations/Local Bodies working in the interiors and remote parts of the country to facilitate a large scale roll out of the projects on a nationwide basis. These companies can also provide large scale manpower from the local regions for smooth implementation of the projects in the villages and other areas which are not so easily accessible

Moreover, NGOs and similar local organisations in villages, closely associate with the people at the grass root level and thus enjoy much higher trust levels vis-à-vis government. Since one of the major requirements of the success of e-governance is its acceptance and usage by the people, these agencies/organizations can play a crucial role in the success of e-government projects by bridging this gap which otherwise may result into another digital divide.

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6.5 Important Considerations for Successful PPPs

While there is not a set formula or an absolute foolproof technique in crafting a successful PPP, following aspects should be looked into while developing a Public-Private Partnership (PPP), each of these keys is involved in varying degrees :

· Political Leadership

A successful partnership can result only if there is commitment from "the top". The most senior public officials must be willing to be actively involved in supporting the concept of PPPs and taking a leadership role in the development of each given partnership. A well-informed political leader can play a critical role in minimizing misperceptions about the value to the public of an effectively developed partnership. Equally important, there should be a statutory foundation for the implementation of each partnership.

· Public Sector Involvement

Once a partnership has been established, the public-sector must remain actively involved in the project or program. On-going monitoring of the performance of the partnership is important in assuring its success. This monitoring should be done on a daily, weekly, monthly or quarterly basis for different aspects of each partnership (the frequency is often defined in the business plan and/or contract).

· Carefully Developed Plan

You must know what you expect of the partnership beforehand. A carefully developed plan (often done with the assistance of an outside expert in this field) will substantially increase the probability of success of the partnership. This plan most often will take the form of an extensive, detailed contract, clearly describing the responsibilities of both the public and private partners. In addition to attempting to foresee areas of respective responsibilities, a good plan or contract will include a clearly defined method of dispute resolution (because not all contingencies can be foreseen).

· Private Partner Commitment

It must be a real partnership, with shared burdens and shared rewards for both the public and private participants. The private partner should not be viewed just an entity for outsourcing work, they should rather be involved in the project as genuine partners so that they can contribute to the long run success of the e-government initiative. The key lies in finding each partner's strength and leveraging upon it to make a winning team.

· Communications with Stakeholders

More people will be affected by a partnership than just the public officials and the private-sector partner. Affected employees, the portions of the public receiving the service, the press, appropriate labor unions and relevant interest groups will all have opinions, and frequently significant misconceptions about a partnership and its value to all the public. It is important to communicate openly and candidly with these stakeholders to minimize potential resistance to establishing a partnership.

· Selecting the Right Partner

The "lowest bid" is not always the best choice for selecting a partner. The "best value" in a partner is critical in a long-term relationship that is central to a successful partnership. A candidate's experience in the specific area of partnership being considered is an important factor in identifying the right partner.

| Intellectual Property Resources

An important consideration with regards to Public Private Partnership is the decision about who controls and how much. During the implementation of e-government projects, a lot of assets in the form of products, technologies, business models etc in which intellectual property rights such as copyrighting, patenting and trademark rights could exist. Since Government is in partnership with the private sector during such projects, it is very important to define a clear-cut sharing mechanism and formulate policies with respect to returns on the use of these rights. The government must ensure that it owns IPRs individually or in partnership with the concerned private sector party wherever new processes, software etc are being developed.

Chapter 7

Legislations and Regulatory Framework

E-government has two dimensions for ICT application. The first is the application of Information Technology for the improvement of administration. Second is application of Governance to the emerging Cyber Society. Most of the conflicts and issues in E-government arise because of the inability to accept the existence of the 'general society' and the 'cyber society' with overlapping jurisdiction. And it is here that the country has to realise the need for defining comprehensive ICT policies, legislation and regulatory framework to facilitate effective application of ICT to the process of governance, delivery of citizen services, prevention of cyber crime etc.

7.1 Need For Regulatory Framework

E-government requires well defined regulatory framework and legal measures as an essential means for sucess. Such a framework should essentially be able to address the following issues:

- **Integrating and sharing data systems within and among administrations**
- **The use of this public information by third parties, especially the private sector, safeguarding privacy and security issues**
- **Enabling the digital exchange of information and transactions between government agencies, citizens and businesses.**
- **Recognizing the digital exchange of information, electronic transactions and record keeping**
- **Reaching citizens affordably and enabling citizens to reach government affordably by facilitating availability and access to information and communication services**
- Create and implement a minimum set of guiding rules of conduct that would facilitate **efficient communications and reliable commerce through the use of electronic medium**
- **Defining, punishing and preventing wrongful actions that attack the electronic medium or harm others.**

Thus, E-government requires a range of legislative changes including recognition of the electronic form of data/information, electronic signatures, electronic archiving, freedom of information, Data Protection, prevention of cyber crime, Intellectual Property Rights Legislations, electronic commerce etc. It also drives the need to introduce efficiency and effectiveness of electronic services. Achieving all this in one go is almost impossible, hence it can be carried out in a phased manner as per the circumstances.

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7.2 Types of Legislation

Depending upon the maturity phase of e-government in which a country exists, it can decide on the type and extent of ICT legislation which can be drawn to facilitate the smooth implementation of e-government. At the same time, one of the practical challenges is to thoroughly review the existing laws and policies and amend/modify them suitably so as to check the factors which may impede the progress of e-government in any way.

For countries in the 'publish' phase of e-government maturity, the following has to be considered while aiming to define ICT legislation:

The various departments of the government have large repository of information and data at their disposal which is released into the public domain for the benefit of the citizens through their websites and other electronic medium. It is important to accord proper legal status to the validity of this information published online so that the citizens impose as much trust and faith in the electronic information, as they would do in any other conventional government document. People should be able to quote information provided online as a reliable and authentic source at any official platform and such information should have sanctity in the court of law. This can be achieved either by introducing new laws or bringing out amendments to the existing laws.

If the State is in the **'interact' stage of e-government, a two way communication takes place between the citizens and the government and hence the issue of 'data security' and privacy of information** assume critical importance. Regulations need to be appropriately formed towards secure storage and transmission of data online.

By virtue of being the 'authority', the government possesses a lot of personal information about the citizens. During electronic delivery of services, such information is not only exchanged electronically, but also saved in digital form. In order to avoid any possible misuse or mishandling of this information, proper laws have to be in place to ensure the security of this information and hence respect the privacy of the citizens. A **Data Protection Act** should be drafted to define the protection and preservation of data captured online and the terms of this Act should be made available to the citizens at all junctures where such information is collected online from them, **to raise the trust level in the minds of the citizens. Protection of privacy** of individuals should also be addressed at this time.

At the same time, clear-cut rules for archiving and purging of electronic data also need to be defined. Intellectual Property Rights legislation must be amended to include the protection of e-content ownership. Laws to counter cyber crimes should also be introduced at this stage.

"A Country can give certainty to investors, increase competition, consumer choice, and stimulate innovation"

As a country moves towards the crucial ' Transact' stage of e-government maturity,a lot of transactions (including monetary) take place between the citizens, businesses and the government. Its important to modify the existing laws and formulate new ones to support these electronically conducted transactions and accord them legal status. The Electronic payments systems and gateways have to be established and validated. There is a need to setup a government controlled Authority to accord digital signatures to individuals and entities and promote their usage by validating electronic authentication and encryption with well defined standards.

7.3 Legal Environment

For a Country aiming to adopt e-government in its true spirit, it is a must to have a conducive legal environment so that all the stakeholders in the whole gamut of egovernance can be provided with adequate incentives to pursue the adoption of ICT.

The policy makers should be on a guard against over-regulating, which can stifle new and innovative services. Deregulation of telecommunication industry and establishment of independent regulators can ensure fast and healthy growth of communication industry in the country. This shall in turn accelerate the establishment and availability of e-governance infrastructure for not only delivery of electronic services but more for accessibility of e governance services to citizens all over the nation.

Since effective e-governance has everything to do with bridging the digital divide, the policy makers ought to encourage and provide adequate fiscal incentives for setting up telecommunication infrastructure in rural parts of the country and remote areas infested with difficult geographical terrain. In order to promote local electronic industry, incentives could be given in the form of subsidies and tax exemptions. Encouragement ought to be provided to export agencies and a tax holiday could be declared for a specified number of years on software exports, a measure which has worked well for a number of countries including India. Levy of duties could also be reduced on import of raw material required to setup telecommunication infrastructure.

Competing network infrastructures will provide sustainable competition in networks and services in the long term ensuring that everyone can access high-speed Internet services through a multitude of different devices via fixed line or wireless, thus strengthening the foundation for a successful utilization of the egovernance initiatives.

In all, what is recommended is a thorough review of existing laws and policies in different sectors and assessment on how they can impede the progress of electronic governance and accordingly setting up procedures and consultation groups to modify them to leverage upon the application of ICT to bring in efficiency and cost effectiveness. Simplification of administrative procedures could also be considered after application of ICT in view of inherent characteristics of information and communication technologies.

In 1996, The United Nations Commission on International Trade Law (UNCITRAL) adopted the Model Law on Electronic Commerce (MLEC) which removes legal barriers to the use of electronic communications and provides 'functional equivalents' to the use of paper documents for legal purposes. The MLEC has formed the basis for E-Commerce related laws and Acts adopted by various countries.

A brief summary of the efforts made in the direction of IT related Acts and Legislations in some countries is given below

7.4.1 United Kingdom

The UK Government enacted Electronic Communications Act in year 2000 to make provisions to facilitate the use of electronic communications and electronic data storage and to make provision about the modification of licenses granted under the Telecommunications Act 1984. The act talks in detail about the official policy on disclosure of information, provision of cryptography support services and validity of electronic signatures and digital certificates.

The Act is available on the Internet at:
http://www.hmso.gov.uk/acts/acts2000/20000007.htm

7.4.2 Australia

The Government of Australia formulated the 'Electronic Transactions Act 1999 with the objective to provide a regulatory framework that:

- **recognizes the importance of the information economy for future economic and social prosperity of Australia; and**
- **facilitates the use of electronic transactions;**
- **promotes business and community confidence in the use of electronic transactions;**
- **enables businesses and the community to use electronic communications in their dealings with the government.**

The act details out the application of Legal requirements to electronic communications in the country and lays out rules about the validity of electronic transactions.

More information is available at:
http://scaleplus.law.gov.au/html/pasteact/3/3328/pdf/ElectronicTrans99.pdf

7.4.3 United States

The United States Federal Government passed the E-Government Act of 2002 titled "Federal Management and Promotion of Electronic Government Services Act" in December 2002.

The Act serves to:

- **Provide effective leadership of Federal Government efforts to develop and promote electronic Government services and processes by establishing an Administrator of a new Office of Electronic Government within the Office**

of Management and Budget,

- **Improve the ability of the Government to achieve agency missions and program performance goals,**

- **Promote the use of the Internet and emerging technologies within and acrossthe Government agencies to provide citizen-centric Government information and services, and**

- **Promote access to high quality Government information and services across multiple channels.**

More information is available at
http://www.siia.net/govt/docs/pub/gip_summary_121702.pdf

7.4.4 India

In May 2000, both the houses of the Indian Parliament passed the Information Technology Bill. The Bill received the assent of the President in August 2000 and came to be known as the Information Technology Act, 2000.

This Act aims to provide the legal infrastructure for e-commerce and e-government in India. And the cyber laws have a major impact for e-businesses and the new economy in India.

Some highlights of the Act are given below:

- **Recognizes the electronic form of documents and recommends the use of digital signatures for authentication**

- **Provides legal recognition of electronic data, information as well as documents**

- **Facilitates electronic delivery of government services, be it submitting documents online while applying for a service or grant of a license/ certificates online by the government.**

- **Provisions for electronic payment transactions**

- **Recommends the establishment of Certifying Authorities for issuance of digital certificates. Further recommends regulation of Certifying Authorities by an Apex institution such as Chief Certifying Authority (CCA).**

The Act also provides for the constitution of the Cyber Regulations Advisory Committee, which shall advice the government as regards any rules, or for any other purpose connected with the said act. The said Act also proposes to amend the Indian Penal Code, 1860, the Indian Evidence Act, 1872, the Bankers' Books Evidence Act, 1891 and the Reserve Bank of India Act, 1934 to make them in tune with the provisions of the IT Act.

The Act is currently under revision.

For accessing the complete notification of the Indian IT Act, refer to the following URL:
http://www.mit.gov.in/it-bill.asp

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Chapter 8

The National Portal

An important dimension of the potential of Internet, especially in the context of 'good governance' initiatives, is the possibility of providing services anytime, anywhere. However, these services are often provided through a number of different departments working in different ways. For making such information and services accessible in a convenient manner, there is a need for a unified interface in the form of a one-stop source for information and service delivery. A 'National Portal' of the country can ideally emerge as a tool to facilitate the above.

In the context of e-government, a National Portal could be a gateway to a variety of information and services being provided by different government departments. Whether the citizen has to pay the utility bills or needs an access to the information on welfare schemes in different sectors, obtain licenses/certificates, apply for some business permits or even file tax returns online, the National Portal could be the answer.

The concept of having a single unified interface has proved beneficial as compared to having multiple websites of different departments simply because it saves the citizen from the hassles of searching a large number of sites, with diverse design and navigation patterns in order to look for the desired information or service.

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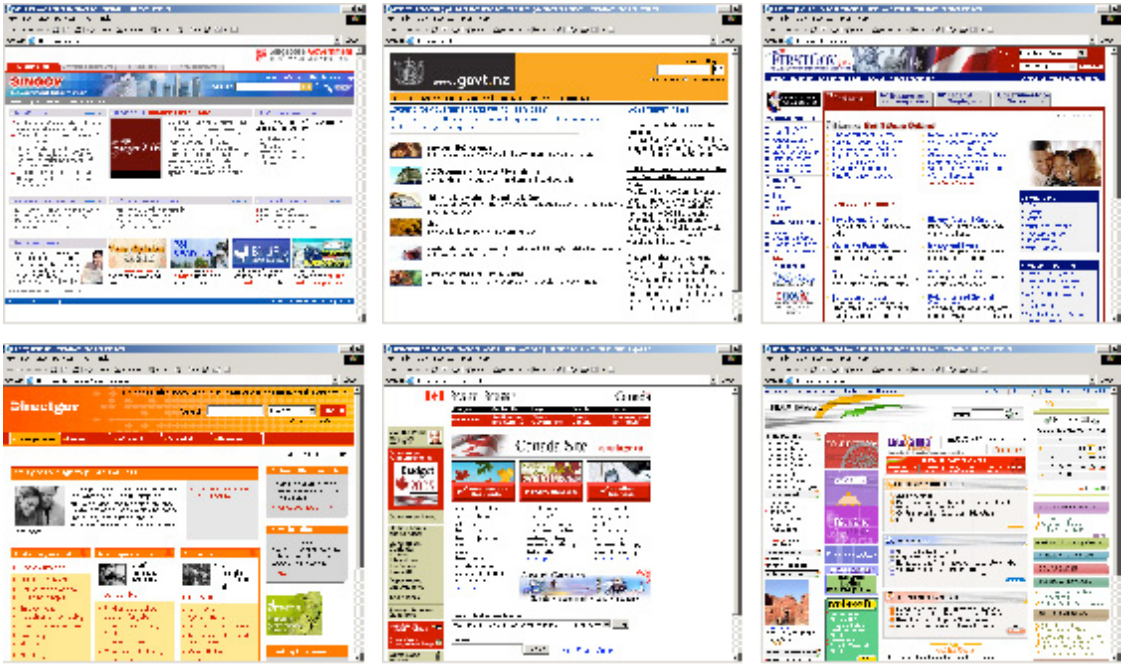
8.1 Single Entry National Portals

According to study reports, a large number of countries provide easy access to the information and services for their citizens, businesses, diaspora, as well as international community through single entry National Portals. Such portals acting as gateways to information & services from the government , have now emerged as the standard tool to interface the e-government initiatives with their intended beneficiaries.

Some noteworthy examples of Single Entry National Portals or Gateways include:

Singapore:	http://www.gov.sg
New Zealand:	http://www.govt.nz
USA:	http://www.firstgov.gov
United Kingdom:	http://www.direct.gov.uk
Canada:	http://canada.gc.ca
India:	http://indiaimage.gov.in



Brief overview of above portals, highlighting the special features, content sections is given in the following section.

8.1.1 Singapore Government Portal

http://www.gov.sg

The official Internet gateway to the government of Singapore. Serves as a convenient first-stop for the public to locate Singapore government information and policies, the latest news and speeches, resources, services and transactions available online.

An important component of the portal is eCitizen, the one-stop source to access/avail all the citizen centric services of Singapore Government being delivered online which range from information dissemination, interaction to full fledged transactions.
Services are further organized on the life-cycle pattern of the individual, creating an interesting experience for the citizens during interaction and also adds a lot of value to the service

delivery.

The highlight of the Portal is the provision for personalization which besides presenting relevant information also provides timely alerts & notices regarding payment of taxes, renewal of licences, passport as wells as general alerts & notices issued by the government. The navigation architecture is multimodal , thus further enhancing the accessibility of the portal.

8.1.2 New Zealand Government Portal

http://www.govt.nz

This Portal connects to New Zealand central & local government and provides a one stop source for the information & services offered by the government.

The content in the Portal is very comprehensive and well categorized. The important highlight of the portal is lot of original content, particularly with respect to citizen services. Besides A-Z index, Services are categorized by Topics such as Customs, immigration & travel ; Education & training ; Employment ; Health & safety ; Housing, property & local environment ; Licences, certificates & permits etc. In each section possible services one may need to avail are explained. Further , for each service, how to avail the service, the concerned department with complete contact details as well as relevant documents, laws, policies are also listed at the same place. This not only brings an element of uniformity but also makes it simpler for citizen to comprehend. Possibility of citizen whether novice or experienced with Web, getting lost or confused is just not there.

Simplicity of design & layout is an important highlight of the portal, which besides introducing the efficiency in browsing, enhances the accessibility of the portal for wide variety of citizens, internet connections as well as devices .

'Things to Know' is another important section which provides in an easily comprehendible manner information on popular topics such as Having a baby, Wanting to Study in New Zealand, etc. Partcipate in Government is another important section of the Portal.

8.1.3 United States... FirstGov

http://www.firstgov.gov

FirstGov is the U.S. Government's Official Web Portal for all government information, services and transactions. It provides direct online access to federal, state, local and tribal governments.

The layout and structure of the Portal is highly simplified. Besides presenting a comprehensive collection of links to a wide variety of information and services published on the web by different departments, the portal also brings a lot of value addition by presenting the information in such a manner that it is oriented to the citizens' needs. Information and services have been organized into separate categories for federal employees, government, business & non-profit organizations.

'Contact Your Government' by email, Phone & In person is an important highlight of the portal which facilitates the citizen's contact with various constituents of the government on variety of issues through a simple form, to be submitted online.

Reference Centre is another important section of the portal providing access to lot of valuable information such as Historical Documents, Maps, Laws of the land, Govt. News at a single Place. Govt Forms is an important highlight of this section, providing an easy access to a comprehensive collection of govt forms.

8.1.4 United Kingdom.... Directgov

http://www.direct.gov.uk

The Portal was earlier called UK online and considered quite popular for providing comprehensive and useful information to the citizens. The portal has now evolved into 'Directgov' as the place to turn for the latest and widest range of public service information in UK.

Access to Government information and services has been presented in multiple ways such as

access by the target group , access by the subject/ topic such as Employment, Health, Home and community, Learning, Travel and transport etc. Separate sections for the Disabled people & Elderly are important highlights in access by target groups.

Directgov provides access to hundreds of online services through its 'Do it online' section. One can search and browse the forms, tools and transactions currently available from across government. Services range from passport renewal forms to online tax returns, from interactive maps that let you search for local schools, hospitals to an online mock theory driving test. One can even search for jobs, report a minor crime and look up average property prices in the neighbourhood

A comprehensive directory of links to government websites has also been presented in multiple ways for the convenience of visitors.

8.1.5 Canada Government Portal

http://canada.gc.ca

The Canada Government Portal, is a single point of access to all programs, services, departments, ministries and organizations of the Government of Canada.

Although the prime focus of the portal is on citizen's corner with information and services useful to the common citizens, there are special sections targeted on Non-Canadians and Canadian Business .

There is a separate section about 'Canada' as a country which provides the various facets of its profile. Besides, there is a comprehensive and easily searchable Government Contact directory.

Though the portal is entirely build around the concept of links, Sections on Government Publications & On-line Forms are very useful and provide the visitors of the site, access to comprehensive collection of information on these subjects.

Another highlight of the Portal is that a certain standardization in design and layout has been maintained across various websites of the Canada Government which promotes an identity of the Canadian government on the Web.

8.1.6 India

http://indiaimage.gov.in

India Image is the official Portal for the Government of India and acts as a gateway to a plethora of information and services being provided electronically by the different departments of Indian government.

A special section of the Portal is the Government of India web directory which guides the visitors to thousands of web sites of Indian Government entities and also presents in a unique manner, their association/status in terms of sectors, ministries, departments etc. Portal also provides comprehensive information & access to Government News, Press Releases, Tender Notifications etc

The Citizen Service section in the Portal provides direct access to the diverse services directly relevant to the common citizens. Citizen Charters & Facility for public to Submit their grievance to Government Online are other important featues of the Portal.

An initiative is under way to evolve the India Image Portal into a comprehensive National Portal to act as a single point source for web based information as well as service delivery by the Government at the Central, State as well as District level in India.

8.2 Key Characteristics of the National Portal

· Comprehensive and Complete Coverage :

The National Portal should present a comprehensive information on all aspects and constituents of the government – whether federal, provincial or local bodies. If there is any information on an individual department's website or any electronic services for citizens available anywhere in the Country, it should be possible to access it through the National Portal. In other words, the Portal should not belong to just one group or sector of government, its mandate should include complete and comprehensive information from the various entities including Legislature, Judiciary, Executive, Apex Institutions, Local Government Bodies, Public Sector Undertakings, Government Institutions, Organizations, etc.

· User Interface :

The entire Portal, including all its components should have complete ease-of-use for all categories of visitors to the portal, novices and professional; regular and casual. The navigation pattern and the interface of the Portal should be such that the visitors are able to locate and access the desired information easily and with minimum training. Apart from being easy to use, the content and layout architecture of the Portal should have enough flexibility to accommodate new information to be highlighted in a prominent manner. The Portal contents need to be dynamically customized from time to time depending on the relevance of information elements and service components on a given page with minimum user interaction. This can be achieved by organizing information in such a manner that the more frequently used information required by a large number of users should be ideally available through a one click access. For example, during the National Elections, the election related information should be prominently displayed on the Home Page of the Portal.

Also, for ensuring a wider reach and coverage amongst the common citizens, it is suggested that the Portal should have versions in multiple regional languages. Also, an emphasis has to be given to ensuring 'universal' accessibility of the Portal. This would mean that the portal should be accessible through multiple devices (the mobile devices, hand held devices, PDAs etc) as well as to the entire cross-section of target audience, including people with certain disabilities.

· Single Window Access :

The National Portal ought to provide a single window access for searching information and services, electronically delivered by diverse organizations and departments. The citizen may need to only visit the National portal for a desired information/service related to the government sector and it should be available on the Portal in a predictable and consistent manner. "If one can not find a specific information for the government sector in the National Portal, it is not available", should be the broad goal for the coverage of content and services by the National Portal. For an effective Search Facility, the Portal should be able to index and organize vast amounts of information optimally. The search engines behind the portal should be capable of filtering and refining the information and presenting the search results in intuitive categories. At the same time, the Portal layout should also be dynamic enough so that events or news of National importance cutting across sectors could be reflected on its main page. The visitors to the portal could also be provided with the facility of 'personalization' whereby the visitors can choose the information/section of their choice and it shall be prominently available to them each time they access the Portal.

· Authentic, Accurate and Up-to-Date :

The information and content on the Portal, in addition to being comprehensive and complete, should be authentic, accurate and always up-to-date in order to attain and sustain the trust levels of the citizens. There need to be suitable arrangements at the back-end for keeping the information on the Portal always latest and thoroughly vetted. In fact, each government sector entity participating in the National Portal should eventually move to a situation where any modification should be available at the earliest through the relevant section of the Portal rather than in the printed form or other conventional media.

· Citizen Orientation :

National Portal has to be built from the 'citizens' or 'users' perspective, rather than from the perspective of the government. Although the target audience of the National Portal could be categorized broadly as citizens, businesses and government itself, however, the primary focus has to be on the 'citizens' in terms of its content and delivery mechanism. In other words, instead of presenting and categorizing the information and services on the basis of government departments, it should be presented in a number of citizen oriented ways such as life cycle stages, needs based, domain/sector based, location/region wise etc. Further, the citizens have to be considered, not as an omnibus group but as a large number of diverse groups. This would mean that the Portal has to provide information which would be common across the Country but there should also be some information that is specific to different groups of citizens with varying location, requirements and interests.

· Tools and Technologies :

It is important to ensure that the tools and technologies deployed in the development, hosting and maintenance of the Portal are state-of-the-art. The web server used for hosting the Portal has to be fully secure and reliable to ensure a 24*7 fast access to the Portal from anywhere in the world. The portal should be accessible across different connectivities, devices and software. Adequate Disaster Management Policy has to be formulated to ensure that the Portal is always available as intended despite any unforeseen circumstances.

By its very nature, the National Portal of a Country soon becomes a huge repository and dispenser of information on a various aspects of governance. While it is vital to keep the information authentic and up to date, management of this vast information is another aspect. Use of content management systems, databases should be encouraged to facilitate comprehensive search, different forms of information, archiving etc. This also makes it convenient to establish auto update links between the portal and backend systems operational at various departments. For achieving all the above, the different departments of the government at the backend have to work in unison, under the guidelines of an apex nodal agency and there has to be an organized decentralization and role definition so that the various constituents assume collective responsibility to generate content for the national portal, keep it current and relevant and make its access easy, intuitive and prompt.

Thus, countries should launch a Portal in the early phases of e-government to inform the public about various initiatives under the e-government programmme. The same portal shall eventually evolve into a National Portal, providing a single point of access to all the government information and services for citizens, business and other intended audiences.

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The Monitoring and Evaluation for e-government can be carried out with two distinct dimensions, namely:

- Performance measurement of individual projects
- Performance measurement of the overall e-government plan

At the level of the individual project, monitoring exercise shall assess the Project in terms of its progress vis-a-vis the projected plan, and consumption of resources vis a vis milestones achieved etc. Infact, as part of the Project Plan, major deliverables/milestones of the project shall be defined on a timeline to make the future evaluation convenient and transparent.

At the level of the overall e-government plan, monitoring efforts shall focus on comparing the amount of resources allocated for the plan and the overall impact that e-government efforts have made, whether qualitative or quantitative.

9.1 Performance Indicators for E-Government Plan

Based on the overall vision or goals associated with the e-government plan, countries can work out a list of indicators against which they would like to measure the progress. Though each country has to work out its own matrix, in the following section, the possible performance indicators of an e-government plan have been discussed. The performance indicators could be identified as being 'quantitative' or 'qualitative'.

| Quantitative Performance Indicators

- **Number of departments having a web presence**
- **Number of citizen services available electronically**
- **Number of departments enabling online transactions**
- **Number of departments who have initiated backend automation**
- **Number of guidelines, technical standards, data standards issued for ICT implementation in the government**

| Qualitative Performance Indicators

These indicators try to adjudge the impact of the overall e-government efforts on society at large in terms of economy, social development, effectiveness and efficiency of administration and governance.

· Impact : Economic

Indicators :

- Economic growth of the nation
- Increase in employment opportunities
- Increase in overall business transactions
- Business generated through online measures and transactions
- Reduction in operating cost for delivering a service online
- Enhanced revenue collection from various types of taxes
- Increase in international trade & economic cooperation

· Impact : Social Development

Indicators :

- Poverty reduction
- Increased gender equality
- Enhanced public safety and security
- Better management of environment using information systems
- Improved social welfare through effective dissemination of information
- Better health services: Increased life expectancy and decreased infant mortality
- Higher literacy levels of the society

· Impact : Governance

Indicators :

- Better co-ordination among government departments
- Greater accountability in public administration
- Better partnership between the government and the private sector
- Improved accessibility by citizens and businesses
- Improved Government-Citizen relationship
- Enhanced public participation in the process of governance
- Amendments in Legislative and Policy Framework with respect to use of ICT
- Improved International Relations.

Using the above performance indicators, the process of evaluation could be worked out which could involve any one or more of the various methodologies such as

- formal/informal interaction with all the stakeholders
- web based surveys
- structured/sponsored survey by professional agencies
- a third party survey carried out independent of the government influence

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9.2 Assessing the Usability of Government Portals/Websites

Most of the times, a concerted effort towards e-government involves the setting up of a website/ portal which acts as a front-end for accessing the online services. Since this website forms the face of the entire effort in front of the stakeholders, it is important that there is convenience and ease of use as far as the user interface of these government sites is concerned. An important aspect, therefore, in terms of evaluation becomes the assessment of these government websites. Some of the parameters which may be used for assessing the usability and citizen centricity of a Government Portal could be broadly grouped under five categories, namely Accessibility, Navigation Architecture, Content, Design & Layout and Reliability.

| Accessibility

Accessibility refers to the extent to which the portal and its contents are available to a wide range of users with varied levels of physical capabilities/skills and technologies. A portal being universally accessible would imply that a broad range of software, hardware and audiences, including physically challenged citizens can not only access the online content and services on the portal but are also able to actually make use of it. The World Wide Web Consortium's (W3C) Web Accessibility Initiative (WAI) is an internationally agreed recommendation for website accessibility for people with special needs and it is expected of the Government websites to follow these standards. It is important that reasonable steps are taken to sensitize the developers to alter practices, policies and procedures that make it impossible or unreasonably difficult for people with disabilities to access or use the web portal.

| Navigation Architecture

Navigation Architecture includes all those features which make it convenient/inconvenient for a user to browse the contents on the Portal. The navigation architecture should be such that users spend minimal time and effort in locating and using the desired information and services online. Even if the web portal has valuable information for the citizen, it is not of much use if that information is buried somewhere deep inside the piles of content and the visitor is not able to easily reach at it. Moreover, a certain consistency in the navigation pattern is very important, particularly for huge portals with large number of modules and pages.

| Content

A Government Portal should be oriented towards its citizens. This means that the content in the Portal has to be defined in the manner that the citizen wants and the portal should act as a platform to provide the information and services, hitherto provided conventionally by the government, in a faster and convenient manner. Apart from the quality of the content, equal emphasis needs to be given to the way it is written and presented. **The content aimed at the common public must be written plainly and in a language which people with diverse educational and knowledge backgrounds can easily understand.** This category includes all those parameters which influence the extent to which citizen friendly, authentic, correct and most updated content is provided, in a suitable format, on the government web portals.

Another important pre-requisite for an effective government website is the availability of comprehensive contact information which may be used by a citizen to approach the Government functionaries. A citizen centric website shall not only have the email addresses of the various Government Officials/Departments but also the postal addresses and/or the telephone/fax numbers so that a user with limited access to Internet may also be able to refer to the information from the site and then contact the concerned department.

| Design and Layout

Government web portals should have citizen friendly design and layout so that people find it **enjoyable and comfortable to access the desired information** with minimum fuss. The color scheme of the portal and the positioning as well as consistency of the design elements has to be such that it allows for legibility and easy reading. The features included in this category

affect the way graphics and design elements as well as the layout of the portal appears.

| Reliability

Reliability in this context refers to the extent of trust, which a citizen can impose on the government website with respect to security and legal requirements. Government web sites must raise citizens' confidence by abiding by the law and explaining their terms and conditions clearly to the users. The issue assumes more importance when it comes to online transactions as well as making payments through the website. Well worded disclaimers, privacy policies, terms and conditions and copyright information enhance the credibility of the website and help in further building the users' trust.

Another equally important aspect related to credibility is the site address or the URL. As per the international naming conventions, each country has reserved certain domain(s) for government websites (e.g. '.gov', '.gov.sg' (Singapore), '.nic.in' & '.gov.in (India)) and such domains are not freely available for registration by anyone as they are allocated to a government department only after due verification. Thus, the presence of such an address further adds to the credibility of the government website.

| Evaluation Techniques

A variety of qualitative and quantitative evaluation techniques can be deployed to assess the performance, impact and citizen-centricity of the government website

· Lab Testing :
Lab Testing involves inviting a select group of users in the laboratory setting and asking them to access and navigate the various sections of the website. Structured testing is then carried out on the way different users browse through the site and use its various online features. User behavior, when analyzed, proves as an important source to measure the usability and performance of the site.

· Online User Surveys :
This involves the website visitors responding to questions posed through pop-up surveys which appear whenever the site is accessed. This technique allows the website managers to survey a large number of users in a relatively short span of time. Online user surveys could be both randomized or carried out amongst a select panel of audience based on characteristics such as qualification, age groups, ethnic background etc.

· Interviewing Focus Groups :
This would involve selecting a focused group of target users and having a moderator ask them a prepared set of questions about the usability and citizen orientation of the website. The group could also be asked to perform certain test exercises such as availing a specific citizen services online or downloading an application form from the website. Such interviews could be carried out either face-to-face or in the form of 'virtual' group discussions.

· Syndicated Surveys :
This method involves buying access to the results of third party surveys carried out on the users to monitor the performance and functionality of the websites on a general basis. Though such survey results have high statistical validity, they may be too general for a government to extract evaluation results and data pertaining to the aspect of citizen centricity.

. Informal User Feedback :
This involves analyzing the unsolicited feedback of the visitors to the website received from time to time through guest books, email forms, helpdesk, phone lines etc. Such a feedback can help the government departments to eradicate snags and errors in the site and also to formulate questions and exercises for formal user surveys.

. Usage Data Analysis :
This kind of evaluation technique involves the analysis of the web log data collected through specialized software installed on the web servers. Quantitative data like page views, number of hits, unique visitors etc can be obtained through this method, which allows a government department to track overall usage trends over time.

. Web Performance Data :
The techniques here involve measuring the site's performance on technical aspects like the download time, speed of data transfer, number of broken links, accessibility for the disabled etc. There are various specialized tools, testing software and free websites which facilitate an online evaluation of a website on the above aspects.

. Heuristic Analysis :

Finally, an important method of qualitatively assessing a government website is through heuristic analysis or an expert review. In this approach, a panel of experts reviews the website and evaluates it against a set of pre-defined parameters.

As stated above, different countries will have different set of performance indicators and evaluation techniques for their e-government plan, since they shall be driven by the goals and targets set in the overall vision of a country's e-government plan. The coun- tries should not view evaluation as a one time activity and should regularly assess the e-government initiatives to ensure the success of the Plan.

Evaluation should not be viewed as a one time exercise. It should be conducted periodically. Another important aspect to be taken care is that the evaluation should not be conducted only at the end of the project/programme. This is because the feedback received from evaluation at that stage becomes very difficult to incorporate or introduces cost and time overruns. Evaluation strategy as well as indicators should be a part of the overall plan of the project and programme.

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Chapter 10

Case Studies

Introduction

A total of 29 case studies have been covered in this chapter to exemplify e-government sucess stories, failures, innovative steps taken by various countries as well as challenges faced by the governments in implementing and sustaining them.

The table given below is an attempt to categorise these case studies on the basis of the prime objective they serve. Some of these projects such as Durban Council Community Information (South Africa) have been initiated to improve the service delivery by the government to the citizens while some others like CVC (India) aim to enhance the transparency and accountability level in the government functioning. Case studies such as Afriafya Initiative undertaken in Kenya aim to exemplify how usage of ICT can lead to empowering citizens with information. There are also case studies such as Lok Mitra, Gyandoot, Nai Disha (India) and Citizen Service Centre (Bahia/Brazil) which serve as successful examples of Integrated Delivery of Services at a single point.

Category	Case Studies
Improving Delivery of Citizen Services	· Rindernet: Online Cattle Net (Austria) · Exam Results on the Internet (India) · CARD (Andhra Pradesh/India) · Bhoomi (Karnataka/India) · Online Parking Spot Search System (Rosenhiem, Germany) - Electronic Birth Registration in Rajshahi (Bangladesh) · Dairy Information and Services Kiosk (Gujarat/India) · Establishing a Quality Early Childhood Centre (New Zealand) · Vijaywada Online Information Centre (VOICE) (India) · Durban Council's Community Information Link (South Africa)
Integrated Delivery of Services	· Lok Mitra (Himachal Pradesh) · Gyandoot (Madhya Pradesh) · NAI DISHA (Haryana) · E-Seva (Andhra Pradesh) · Citizen Services Centres (Bahia/Brazil) · Beijing e-Park (China)
Increasing Internal Efficiency and Revenue	· Bhoomi (Karnataka) · Computerised Interstate Check Posts (Gujarat) · e-Procurement (Chile) · Khajane (Karnataka)

- Akshaya Project (Kerala/India)
- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

Increasing Transparency

- Central Vigilance Commission (CVC) website (India)
- Bhoomi Project (Karnataka/India)
- E-Procurement (Chile)
- Government Accommodation Management System (India)
- Computerization of Passport Issuance System (India)

Empowering Citizens with Information

- The AfriAfya Initiative (Kenya)
- Agricultural Marketing Network (AGMARKNET) (India)

Delivery of Services to Businesses

- Beijing e-Park (China)
- e-Procurement (Chile)
- Directorate of Commercial Taxes (West Bengal)
- Computerised Interstate Check Posts (Gujarat/India)
- Land Exchange (LX) (Victoria/Australia)

e-Government Delivery Infrastructure

- CIC (Community Information Centres)
- Drishtee: e-Governance through Kiosks (India)
- Citizen Services Centres (Bahia/Brazil)
- Akshaya (Kerala/India)
- e-Seva (Andhra Pradesh/India)
- Durban Council's Community Information Link (South Africa)

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10.1 NAI DISHA (Haryana/India)

NAI DISHA: New Agent of Information – District level Integrated Services of Haryana for All – A G2C Interface of Haryana State Government (India).

| Project Description

This G2C initiative of the Haryana Government with a portal at the front end provides over 25 common services electronically to the citizens in the North Indian state of Haryana in India.

For implementing the Nai Disha Project, the State Government first established an Integrated District Network (D-NET) as an inter and intra district communication backbone. The District Centres of National Informatics Centre (NIC) act as the Network Control and Management Centres for this D-NET.

The Nai Disha software has been developed by the Haryana State Unit of NIC, in collaboration with the State Department of Information technology and the financial funding for the project has been from the State Revenue Department. The pilot project was initially implemented at Panchkula district where the D-NET (Local Area Network) has been established in the Secretariat.

Public can get the information on various services, register complaints and check the status of the same through specially setup kiosks (five kiosks have been established at tehsil/sub-tehsil office at Panchkula, Kalka, Morni, Barwala, Raipur and Rani) or any computer with an Internet connectivity. The project has been further extended to five more districts (namely Sonepat, Rohtak, Hisar, Gurgaon, Sirsa) through State funding and plans exist to extend it soon to all the districts in the State.

| Project Objectives

· To serve the citizens at their convenience
· To bring transparency and efficiency in the delivery of services & information
· To create knowledge based jobs in the district
· To spread the utility of Information Technology among the masses
· To strengthen the back office operations for timely availability of information
· To strengthen the Intra-district communication backbone for timely availability of information

| Intended Beneficiaries (Stakeholders)

· Citizens of the State

· Various Departments of Haryana Government

· Officers/Officials at District level, District IT Society (DITS)

· Telecom/Internet Service Providers

· Kiosk Owners

| Services Provided

The citizen services provided under the project include issuance of commonly required licenses and certificates such as Driving License, Conductor's License (for commercial vehicles), Vehicle Registration, Caste Certificate, Residence certificate, Nakal (Revenue Document) service, Birth and Death certificate, Passport application acceptance service etc.

| Constraints/Challenges

· Contents and details of information to be provided to villages were to be

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

standardized for including into the NAI-DISHA, which varied from district to district

· Entry and updating of huge data by concerned department at local district level

· Due to involvement of multiple departments/organizations at district and state level, coordination for Hardware, Systems Software,

Application Software, Communication and Training requirements for district, data entry/updating at various levels was a challenge

· Follow-up with various departments to deliver the service to citizens in a scheduled time

| Impact

Although new definite statistics are available as yet, reports indicate that Nai Disha Project has led to a considerable improvement in the provision of effective and timely services to the farmers and common masses. The project has also strengthened intra district communication to a significant extent.

For further information, visit
http://naidisha.nic.in

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10.2 Bhoomi Project (Karnataka/India)

| Project Description

The Department of Revenue in Karnataka (India) has computerized 20 million records of land ownership of 6.7 million farmers in the state.
Previously, farmers had to seek out the Village Accountant to get a copy of the Record of Rights, Tenancy and Crops (RTC) — a document needed for many tasks such as obtaining bank loans. There were delays and harassment. Today, for a fee of Rs.15, a printed copy of the RTC can be obtained online at computerized land record kiosks (Bhoomi centres) in almost all the taluk offices. In the next phase, all the taluk databases are to be uploaded to a web-enabled central database. RTCs would then be available online at Internet kiosks, which are likely to be set up in rural areas.

| The Background

In the manual system, land records were maintained by 9,000 Village Accountants, each serving a cluster of 3-4 villages. Two types of records were maintained: 1) Registers, which indicated the current ownership of each parcel of land, its area and cropping pattern, and 2) village maps that reflected the boundaries of each parcel. Requests to alter land records (upon sale or inheritance of a land parcel) had to be filed with the Village Accountant. However, for various reasons the Village Accountant could afford to ignore these "mutation" requests. Upon receiving a request, the Village Accountant is required to issue notices to the interested parties and also paste the notice at the village office. Often neither of these actions was carried out and no record of the notices was maintained. Notices were rarely sent through post. An update to the land records was to be carried out by a Revenue Inspector, if no objections were received within a 30-day period. In practice, however, it could take 1-2 years for the records to be updated.
Land owners found it difficult to access the Village Accountant, as their duties entailed traveling. The time taken by Village Accountants to provide RTCs ranged from 3 to 30 days. Land records in the custody of Village Accountant were not open for public scrutiny.

Over time, several inaccuracies crept into the old system through improper manipulation by the Village Accountant, particularly with respect to government land. The beginning of computerization of land records in Karnataka goes back to 1991 when the first pilot was initiated through a centrally sponsored scheme of Computerization of Land Records, fully funded by the Government of India. By 1996, projects for computerization of land records were sanctioned for all districts in the state of Karnataka. However, no provision was made to install computers at taluk level where manual records were actually updated. The project fizzled out without achieving its objective of creating a clean, up-to-date database.

| The Approach

Today, a computerized land record kiosk (Bhoomi centre) is operational in most of the taluks in Karnataka. At these taluk offices, a farmer can obtain a copy of an RTC online by paying a Rs.15 fee. A second computer screen faces the clients to enable them to see the transaction being performed. Copies can be obtained for any land parcel in the taluk by providing the name of the owner or the plot number. A Village Accountant is available full-time at these kiosks.

When a change of ownership takes place through sale or inheritance, farmers can file for a mutation of the land record at the Bhoomi centre. After computerization, there is a 50% jump in the number of mutation requests. This change would seem to indicate a level of approval of the new system by the population, and willingness to update changes in land ownership that were previously left undocumented.

The Bhoomi software incorporates the bio-logon metrics system which authenticates all users of the software using their fingerprints. A log is maintained of all transactions in a session. This makes an officer accountable for his decisions and actions.

| Implementation Challenges

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

Roll-out of the application to 177 locations has been a challenge due to the poor quality of manual records and the enormity of the data entry task. In the first phase, the project was implemented on a pilot basis in a controlled environment at four taluks. After gaining experience in data entry operations and implementation of the software, the scheme was extended to one pilot taluk in each of the 27 districts. In the third phase, the project was rolled out simultaneously to all the remaining 177 taluks.

Source:
http://www1.worldbank.org/publicsector/egov/bhoomi_cs.htm

For further information, visitz
http://www.revdept-01.kar.nic.in/Bhoomi/Home.htm

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10.3 Electronic Birth Registration in Rajshahi (Bangladesh)

| Project Description

The Electronic Birth Registration Information System (BRIS) was introduced on a pilot basis in Rajshahi City Corporation (RCC), one of the oldest municipalities in Bangladesh. BRIS is based on a distributed application architecture, with four clients and one server connected via a local area network.

BRIS, as its name suggests, registers births electronically, providing a basic citizen identity, and building this with other data into a population database that can be shared with other public agencies. For example, the Department of Health uses the system to help ensure immunisation of all children, with vaccination lists provided for health workers and immunisation schedules provided for parents on the basis of registration data. The system could also be used to assist with the process of school enrolment. BRIS works in Bengali, although it can also generate certificates and reports in English.

| The Background

Birth registration is seen as a fundamental right for all childrens, and is part of the mandate of RCC. Since RCC was established as a municipal entity, registration has been carried out (for example in a major campaign during the 1997 Child Rights week). However, this data was all registered manually. Thus, a simple query such as the number of girls registered took a very long time to answer, since all register books had to be searched and separate tally sheets prepared. The manual process was subject to delays and, in transferring data, errors, duplications and inconsistences arose. The electronic system was therefore proposed, with financial assistance from UNICEF, Bangladesh.

Under the manual system, government agencies for immigration, elections, education, statistics, and health services were all undertaking separate registration activities. Those agencies, together with local government (i.e. RCC), form potential stakeholders in an integrated birth registration system. At present, the main stakeholders in BRIS are the health and the statistics agencies of government, and RCC.

| Cost and Benefits

BRIS has removed duplication and redundancy from birth/registration records through centralised storage of data. It has automated searching, sorting, processing and reporting tasks (such as those associated with immunisation) and very significantly reduced the time taken for such tasks. Error rates have also been reduced, with a combined ID number and barcoding system. A CD-ROM of BRIS data has been created; as well as providing backup would also allow transfer and reuse of registration data outside the LAN system. Both registration and immunisation rates have increased since the introduction of the system. The direct costs of system development were less than US$20,000, and operational costs are around US$200 per month.

| Implementation Challenges

· Resistance :

Widespread poverty in Bangladesh has been a driver to corruption in both public and private sectors as individuals seek bribes in order to maintain their livelihoods.
Systems like BRIS are a threat to corrupt activities: they remove duplicated activities and they increase access to information. Thus any roll-out beyond the pilot phase and location faced the risk of resistance.

· Procurement problems :

Red tape has meant there are long delays in the ordering of even quite basic spare parts for the system. Corruption could also affect the purchase of equipment for systems like BRIS.

· Lack of skills :

There is a severe lack of IT skills within the Bangladesh public sector. The problem is

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

exacerbated because many appointments are made on the basis of seniority or political involvement. As a result, many 'IT professionals' were not properly qualified to design or maintain information systems.

Source:
http://www.egov4dev.org/rajshahi.htm

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10.4 E-Seva (Andhra Pradesh/India)

| Project Description

E-seva is built on the success of Hyderabad's (the capital of Andhra Pradesh (AP) in South India) Twin Cities Network Services Project (TWINS). TWINS, which was launched in November 1999 to focus on Hyderabad and its sister city Secunderabad, was renamed e-seva with the AP governments plans to extend the services to major towns and municipalities of the state.

The e-seva centre is a one-stop-shop for more than 30 government-to-consumer (G2C) and business-to-consumer (B2C) services including payment of utility bills; reservations of train tickets; getting birth and death certificates, vehicle permits, driving licenses; transport department services; sale and receipt of passport applications; telephone connections; collection of small savings; ATM (cash withdrawal and deposits and issue of statement of accounts); mutual funds (collection of applications and transfer of shares); receipt of complaints or requests in connection with citizen services; cell phone bill payments etc. Before the launch of the e-seva project, these services were available at separate offices and were normally time-consuming because of slow processing and often, large crowds waiting for the services.

The goal of e-seva is to simplify the delivery of city services by providing a wide spectrum of citizen friendly services that will save citizens the bother of running around various departments.

The system used in e-seva comprises a client/server model relying on Web browsers on the front end, an Oracle relational database on the back end, and an Oracle Web application server and reliable ISDN lines in the middle. There are 19 e-seva centres with 200 service counters spread across the twin cities (Hyderabad and Secunderabad). Each centres operates from 9:00 am to 7:00 pm everyday.

| Impact

Because of the innovative idea undertaken by the e-seva project, it has been able to attract the attention of customers and suppliers of services. **Various public and private organizations are providing their services through e-seva centres.** For instance, the Industrial Credit and Investment Corporation of India (ICICI), Housing Development Finance Corporation Project (HDFC), GTB, Unit Trust of India (UTI) are some of the banks with whom e-seva has tied up to facilitate banking services. Till 2001, Rs 5 was being charged for each service such as payment of property tax, registration, electricity bill etc which became free of cost after October 2001, significantly boosting the number of people availing the services.

| Implementation Challenges and Remedies

The experience of e-seva in Andhra Pradesh indicates that developing economies may encounter various types of obstacles in the implementation of the projects. Some obstacles are related to a particular IT project, some are related to all IT projects in general and some others are related to the broad socio-cultural forces. In AP, there have been various types of resistive forces acting against the implementation of e-seva and other IT projects. Some of them were overcome with the help of appropriate political and organizational strategies while others may take relatively longer time. First, in an economy with per capita income $400, only a tiny fraction of the population can afford a PC and Internet services. Second, illiteracy rate of 54% means that a majority of the population lacks basic skills required to use the Internet. Other resistive forces include IT unawareness of government employees and real and perceived threat of computerization, lack of belief among the citizens on the potential of IT, political motivation etc. However, the experience of the implementation of e-seva and other IT projects in AP also indicates that some of the barriers can be overcome by taking appropriate measures. The resistive forces originated from government bureaucrats, for instance, were overcome by strong support and recognition from the Chief Minister and likely approbation from the public. These factors resulted in support to IT implementation by government employees.

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

| Lessons to be Learnt

Other developing economies interested in achieving higher economic growth rate and citizens' welfare by utilizing ICT to provide various citizen services can learn many valuable and important lessons from the AP experience. **First, the governments need to collaborate with private and foreign investors to fund IT projects.** Politicians and policy makers are required to strike a proper balance between short-term and long-term goals.

Second, the needs of the potential IT users should be analyzed properly before investing in IT projects. Illiterate people, poor people and rich people may have different types of needs and one-size-fits-all approach may not work in such cases.

Third, the IT services provided to the consumers in developing countries should be affordable. The popularity of e-seva in AP is mainly because of its low charge (and free these days).

Fourth, it is important to gain the support of the various groups of stakeholders. The stakeholders may resist IT projects for various reasons. In the AP case, for instance, the reasons of government bureaucrats resisting the IT projects were different from the reasons the citizens resisted (or at least showed indifferent attitudes). It is important to identify the motivations behind the resistance and take proper measures to overcome them.

Fifth, an IT project is more likely to be successful if it complements with other existing and future IT projects. In AP case, for instance, e-seva complements with other projects such as CARD (project for registration), FAST (project for transportation department) and SKIMS (project for Secretariat linkage with various layers of administration).

For further information, visit
http://www.esevaonline.com

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10.5 Online Parking Spot Search System (Rosenheim/Germany)

The City of Rosenheim offers an interactive search for parking spots. Users can either look for free spots in one of the garages or parking lots online or they can use their cell phone with Internet access to find out, where they can park their cars. They can also find out all the information about prices, opening hours etc either online or mobile. The site can be accessed from cell phone with Internet access (WAP), the address is wap.rosenheim.de

Source:
http://www1.worldbank.org/publicsector/egov/egovbestpractice.pdf

For further information, visit
http://www.rosenheim.de/parkleit/stadtplan.htm

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10.6 Rindernet : Online Cattle Net (Austria)

RinderNet is a fairly successful e-governance project in Austria which aims at using Information Technology to facilitate the cattle farm owners in maintaining a comprehensive database on Cattle. All the farm cattle in the country have 'ear tags' which help in categorising the different animals and provide background information such as vaccination details against various infectious diseases etc. With the Rindernet project, all information related to the cattle, availabe in ear tags and in other records has been computerised.

A unique feature of the Application is the provision of online-issuance of 'cattle passports' and it allows different user access levels providing the most important information on both cattle and holdings: the history of every cattle can be traced to any given date and a complete information on every stock holder is available including reports to the database, available ears tags on holding, status of premium, findings of control-checks and so on.

Stockholder data are linked to ear tag information and registration records. Therefore, every holding related to a given animal can be accessed quickly and easily. Actually the application manages 13.000 active users (total of 105.000 stock holders) and 1.1 million registrations p.a. (total of 4 million). The number of online registrations increased from 33.000 (in May 2000) to 108.000 (in May 2001).

Source:
http://www1.worldbank.org/publicsector/egov/egovbestpractice.pdf

For further information, visit
http://www.rindernet.at

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- Computerization of Passport Issuance System (India)

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10.7 Citizen Service Centres In Bahia (Brazil)

The state government of Bahia has created Citizen Assistance Service Centres (SAC) that bring together federal, state and municipal agencies in a single location to offer the services that citizens most frequently need and use. The centres have been placed in locations convenient to the public, such as shopping malls and major public transportation hubs. They offer citizens tremendous time savings, while also delivering services with greater courtesy and professionalism. A further benefit has been a reduction in the overhead expenses of government since, in many instances, agencies pay much lower rents for space in the SAC than for the properties they previously rented to interact with the public.

| Project Background

As in much of the world, Bahia's public services traditionally have been delivered by disparate government agencies, at different locations, and with very different service standards. Sometimes to receive a single service, the citizen would have to visit multiple agencies. Often a citizen would learn of the information and documentation needed for a given service only after visiting multiple government agencies on multiple occasions. Typically, citizens were treated with less courtesy and professionalism than in the private sector. In 1994, the Government of Bahia hosted the first of several annual technology fairs in the state capital, Salvador. A few government services were offered there, using new ICT systems (e.g., issuing identification cards). The service was far more efficient and well-received by the public. The idea was then raised: Why not deliver services this way on a regular basis?

| The Approach

The SAC centres bring multiple government services together in a single location. Now a citizen can register his vehicle or get a driver's license at the SAC. During the same visit, he can get a national identification card, apply for unemployment benefits, look for a new job, get a labor identification card, submit a legal case in small claim's court, get a passport, register a business complaint, check on his retirement eligibility and benefits, etc.
Over 500 separate services are offered by the participating agencies.

All services are not available at all Centres. The SACs come in different sizes. Three large SACs house over 20 agencies each. All of these are located in Bahia's capital city, Salvador. There are 15 medium-sized SACs, with between 8 and 20 government agencies. And there are also five small SACs, with fewer than eight agencies. Within the SAC, each of the multiple government agencies occupies a separate space with signs clearly indicating the names and locations of different agencies. A publication is available at the reception desk of each SAC centre, detailing which, agencies are present at each SAC. Citizens also can obtain the same information by calling a toll free SAC information hotline.

Whether the SAC is large or small, a reception desk sits at the entrance to each Centre. There, the citizen can explain which service(s) he needs. For the most demanded services, the receptionist enters the citizen's name and information into the electronic tracking system for the appropriate agency (or agencies) that provide that service (or services). The citizen then receives a ticket securing his place in line at the appropriate government agency, and indicating the estimated wait time.

After checking in, a citizen can sit in the climate-controlled waiting room for his number to be called, or leave the SAC and return at the appointed hour, to be attended by the next available agent. (With the SAC Facil ("SAC made simple"), available at a few SAC locations, citizens can use the telephone or Internet to make an appointment for a specific day and time.)

When the SACs are located in shopping malls, the hours of operation also expanded greatly. Public services in these locations are now provided from 9 a.m. to 10 p.m., including Saturdays.

A Mobile Documents SAC also was developed to reach the most remote and deprived communities in Bahia. This Mobile SAC is a large, 18-wheel truck equipped with air-conditioning, TV set, toilets, and a covered waiting area. Inside the truck, four basic citizenship services are provided: issuance of birth certificates, identification card, labor identification

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

card, and criminal record verification.

When the Mobile SAC arrives in a community, the truck links to the computer network of the SAC headquarters through a telephone line. The truck typically will be parked in the town square, and remains three to four days before moving on the next community on its route.

| Implementation Challenges

The Superintendency for the Development of the Public Service and Citizen Assistance (SESAC) in Bahia is responsible for assuring the quality of public services in the state. Through SESAC, the State Government can establish agreements with the multiple entities involved in providing public services through the SACs. Those agreements stipulate that the agency is operationally subordinate to the administrators of the SAC posts.

Without strong pressure from the Governor of Bahia, individual agencies likely would not have joined in the SAC experiment. The Secretariat of Administration covered many of the costs for the fist agencies to join the SAC. But now that the SACs are functioning well, and highly praised by Bahia's citizens (see below), securing the participation of different government agencies is no longer such a challenge.

Managing the workers in the SACs presents certain challenges. Some are employees of the agencies (federal, state, or local) that have joined the SACs. Over half of the workforce, however, is made up of new contract employees (i.e., these are not civil servants). Interestingly, this has not provoked significant conflicts with Bahia's public employee unions.

Both the new SAC hires and employees of the participating government agencies receive customer service training to instill the service standards and comportment demanded in the SACs. Of course, the new hires also receive training in the services they will be responsible for delivering at their SAC stations. They are not trained, however, in the back end processes that are part of delivering the service to the citizen. To manage the payroll system for SAC employees, the Government of Bahia pays the salaries of employees of federal agencies that are participating in the SAC. The Government of Bahia considers this is a cost worth paying in order to make the SAC model function.

| Costs and Benefits

The first SAC was inaugurated in Salvador in September 1995. **Within six years, nearly 32 million services had been delivered through the SACs** (two-thirds in the 8 SACs of the capital, and the remaining one-third in the Mobile SACs and 14 fixed SACs of the interior). While it used to require multiple visits and long lines for a citizen to receive an identification card, now this is handled in 20-30 minutes at the SACs. While business owners must still go in person to a government office to register a new business for the first time, registration documents can be renewed in just minutes at a SAC or via the Internet. (The initial registration can be completed in approximately 1 day.) Customer satisfaction studies are carried out every six months to evaluate the performance of the SACs. The public's evaluation has been tremendous.

| Lessons Learnt

The SAC experience in Bahia demonstrates that it is possible to bring about tremendous improvements in the quality and efficiency of government services without significant back end re-engineering.

In Bahia, government policy makers found it was easier to train new workers in how to deliver services in the SACs than to instill a high-quality customer service ethic in the majority of the state's existing public employees. This may not be true in other contexts. Also, for many governments, it may not be possible (politically or legally) to hire private sector contract labourers to deliver government services.

Result-oriented management ideas were central to the design and implementation of the SAC model. Customer satisfaction was accorded the highest priority.

Source:
http://www1.worldbank.org/publicsector/egov/bahiaSAC.htm

10.8 LOKMITRA (Himachal Pradesh/India)

The Government of Himachal Pradesh is committed to provide the general public, especially living in distant rural areas of the State, with the benefits of "Using Information Technology (IT) in Governance (E-government)" at their doorstep. The Web-enabled Government-Citizen Interface, named as LOKMITRA, is one such step of the State Government in that direction.

The following objectives are envisaged, to start with, in the project:

· Easy access to Government Information at the remotest corners of the State

· Redressal of complaints without physically visiting the Government offices
· Transparency in the working of the Government
· Responsive and responsible Administration

Hamirpur district has been chosen for introducing the project on a pilot basis by setting-up a district-wide Intranet. The project resulted in various direct/indirect social as well as economic benefits to the rural masses, as indicated below:

· Better dissemination of government information, resulting in better awareness among rural masses about various Government Schemes and bringing in transparency.

· Saving in time and cost of people visiting District headquarters time and again for getting information, lodging complaints & inquiring their status etc.

· Reduction in response time by the concerned departments and increase in their accountability to people.

· Virtual Extension Counters for the Government, by way of using these Centres for getting the departmental data, entered and transmitted from time to time.

· A common platform for the people to interact with each other on mutual interests e.g. matrimonial, sale/purchases etc.

· Additional income opportunities from these Centres by using them for General Training, Word Processing and Data Entry jobs and extending Internet Access also in case the Centres procures dial-up Internet connection from any of the Internet Service Providers (ISPs) available in H.P.

· Employment generation by way of allowing opening up of more such Citizen Information Centres in the private sector.

The LOKMITRA Interface is proposed to be later expanded to all the Districts in the State by making it available through Internet, thereby increasing the employment generation and facilitating the growth of Internet Service Providers (ISPs) also throughout the State.

| Services offered

· Classified Complaints :
The citizen can lodge any of the classified grievances or complaints against the listed departments in a pre-defined format. For these classified complaints, either the griev- ance will be redressed or the action initiated by the District Administration towards the redressal of the complaint will be intimated. In any case, the complainant will get a reply within 10 days.

· Questions/General Grievances :
The citizen can ask any relevant question from the given departments, seek counseling and advice, or narrate their grievances, not listed under Classified Complaints sub-head, and they

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

shall receive a reply within a reasonable period of time, say 30 days, from the concerned department. General grievances not specifically covered can also be sent through this module.

· Downloadable Forms :
All types of forms which the citizens need for various purposes, have been put on the LokMitra Interface and these can be obtained directly from the Citizen Information Centres. There will be no scarcity of any form and the time spent on visiting the con- cerned office for obtaining the form will also be saved. The driving license form, medi- cal form, forms for getting various subsidies, ration card form etc. will all be available through these Centres.

· Vacancies :
All vacancies being publicized by the H.P. Subordinate Staff Selection Board Hamirpur are being put on the LokMitra. The public can search the vacancies through the Centres and obtain application forms also. In addition, all types of vacancies being created in different departments at Hamirpur are also being included. A search facility has been included through which a prospective candidate can search a particular type of job
also.

· Tenders :
The small tenders being floated locally by the Public Works department, Municipal Committee, Irrigation & Public Health, DRDA/Planning departments etc. are also being put under this option. The conditions, details of job to be done, date of publishing,
last date of submission, earnest money to be deposited, total cost of the work and other conditions are being included. In addition, the public can also find out the status of
the tender as to whether it has been awarded, cancelled and re-tendered with reasons thereof and in case of awarding of the tender, the name of the person being given the tender can also be found out.

· Promotional Schemes :
The various Promotional Schemes for general public from all Departments have been included. One can also find out as how to take benefit under a particular scheme, which forms to be filled, how to obtain those forms and other formalities to be completed without actually going to any of the offices.

· Contacts :
All departments have been asked to provide the Name, Addresses and Telephone Numbers of their officers/offices on the LokMitra. Therefore, the list of all subordinate offices will be available to the public and it will be classified according to the District/Divi- sion/Block/Panchayat/Tehsil and it will be possible to get a listing of all Government offices in a particular Panchayat or Block along with their names and phone numbers. Subsequently, after setting up of the Government network in the State, the public can send/receive Email also from all the subordinate Government offices at various levels.

· Market Rates :
The rates of vegetables, which are grown in Hamirpur district will be collected from six nearby Markets and put on LokMitra. The vegetable growers can compare the rates and find out the best place where to sell their produce. The rates will be available on daily basis and the growers will have the facility to compare rates in different Mandis of the same items and/or for different dates.

· Sale/Purchase :
This option facilitates creating a Networked Rural-Bazaar. Any person can give an advertisement for selling goods, which are pre-classified. Further, the public can search this database for buying the goods which are displayed for sale. The goods advertised are available for a period of 2 months from the date of display.

· Matrimonial Services :
The public can use the LokMitra for matchmaking also by putting up advertisements on the Network. A matrimonial advertisement will be available for a period of two months from the date of submission. However, it can be renewed for subsequent 2 month inter- vals by payment of additional fee. Facility to upload the photograph of the prospective bride or bridegroom, directly from the Centres to the Server, has also been incorpo- rated.

· Notice Board :
The Administration will put up all important notifications and events being organized or to be organized on the Notice Board and the public can simply refer to this Notice Board for notifications/events of any department. Special notifications being issued by the District Administration during the fairs/festivals will also be made available during the period of their enforcement.

· Hamirpur News :
The current news items of Hamirpur district are viewable through the session. These news

items are made available immediately and are flashed on the top of all screens till their expiry date. Since the language used is Hindi and the news are local to Hamirpur, this feature will be an interesting one and is available free with other paid services.

· Children Corner :
This facility is available for the school going children, in the form of subject matters, jokes, stories etc. They may also send questions and raise queries related to any subject.

· Village Email :
The villagers can send and receive mails to and from other Centres and Government function aries. The Panchayats may use this service for sending/receiving information from the Block/District offices. After the LokMitra Interface is made available on the Internet, this Email will become Internet Mail.

· Implementation Details :
This project has been initiated by the Department of Information Technology, Govern- ment of Himachal Pradesh. The Gyandoot Project implemented in the district Dhar of Madhya Pradesh has been the role model for this project. The funds for the project have been provided by NABARD making LokMitra the first IT based project funded by NABARD in the country. The software has been developed by National Informatics Centres (NIC), Himachal Pradesh State Unit, Shimla.

A society under the Deputy Commissioner is responsible for running and implementing the Project in the Hamirpur district. The services are available to the general public on payment basis. The Society has fixed rates for all the services ranging from Rs.5 to Rs.30 per service. The Hamirpur News service is available free along with any of the other services.

Source:
http://himachal.nic.in/lokmitra.htm

10.9 Vijaywada Online Information Centre (VOICE) (India)

The Vijaywada Online Information Centre (VOICE) delivers municipal services such as building approvals and birth and death certificates. It also handles the collection of property, water and sewerage taxes. The VOICE system uses five kiosks located close to the citizens. These are linked to the back end processes in the municipal offices through a wide area network. **The appli- cation has reduced corruption, made access to services more convenient, and has improved the finances of the municipal government (known as "municipal corporations" in India).**

| Project Background

Vijaywada is a city of one million (70% literate) spread over 57 square kms in eastern Andhra Pradesh in India. It is a major agricultural trading centre serving domestic as well as export markets.

In the past, citizens have faced many difficulties in dealing with the municipal government, including bribery and harassment as well as the need to make frequent trips. Several trips to municipal government offices were needed to obtain a building permit or death and birth certificates. The issuance of certificates often was delayed due to corruption.

In paying taxes/rentals/charges for advertisements in public places, a citizen had to visit the appropriate municipal department to get a demand note and then go to the bank to make the payment. Meanwhile, the municipality lost revenue as a result of collusion between staff and the payee to lower the demand, and due to the inability to send notices to defaulters for follow up.

| The Approach

With funding from the Union Ministry of IT (48%), the Andhra Pradesh State Government (32%) and the municipality (20%), the VOICE project was launched in June 1998 and implementation was completed in December 1999. There are two components of the VOICE system: 1) work stations distributed in key departments where the work of the department has been automated, and 2) the citizens interface.

Citizens can go to any of the five kiosks set up in different parts of the city. Some information can be accessed from an Interactive Voice Response System. Those with an Internet connection also can connect to the Web server and retrieve information.

The hardware components include four servers located in the municipal office and 18 clients distributed amongst various departments networked in a LAN. Each kiosk has two terminals with multilingual software. Application software such as Lotus Notes for grievance workflow and a Geographical Information System are used actively. CMC Ltd., a public sector software company, developed the entire application as a product which can be customized for other municipal governments in India.

The following departments have been automated: town planning, taxation, public health, estate and engineering. Citizens can see the municipal budget allocations online. The status of tax payment, grievance registration, and birth/death certificates also is available online. Business people can inquire about their tax status, advertising space available for lease and register complaints.

| Implementation Challenges

Implementation took place over the course of 18 months. There was considerable resistance to these changes from revenue earning departments, which stood to loose the income received from bribes. Preceding implementation of the project, performance review meetings were held to make officers accountable. The departments later saw the new system as a way of coping with the pressure to perform.

Minimizing the gap between the requirements of the officers and the features that were

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planned for the system by the developers was a constant challenge. Several meetings had to be organized during the development phase to close this gap. The implementation of the VOICE system was regularly monitored by the commissioner and CMC Ltd., the system developer.

Data entry to create the data bases was a huge task. Nearly 1.5 million records from various departments had to be entered. It was found that the internal staff was unable to cope with this load. A large part of the work was outsourced, but progress had to be monitored closely.
When the system was implemented, training was provided to 220 staff that would interact with separate modules of the system. Sixty officers were given a basic course by professional IT training institutes. A core team of 8 officers was trained in systems administration to manage
an internal support desk.

There was nevertheless a tendency to bypass the system and do paper work outside it. The commissioner interacted with departments through the system and did not allow anyone to bypass the system. For example, tender monitoring, issue of work orders, and work progress monitoring was done only through VOICE screens.

| Costs and Benefits

The cost of the project paid to the developer was Rs 18.7 million ($0.4 million) of which 48% was spent on hardware and system software and 52% on application development. This is about 9% of the yearly expenditure on establishment.

The benefits have accrued to the citizens and the municipal government. Corruption has been reduced, services are quicker, and the municipality has become more responsive. In just under a year, the system issued 15,000 birth/death certificates, 2,100 building approvals and 224,000 demand notices for taxes. Nearly 7,700 grievances were registered, of which 97% were resolved. The commissioner can view these statistics by wards and departments, making monitoring more effective.

All internal processing of applications is now screen-based, generating greater efficiency. For example, the rent calculation for the bill boards is automatic and transparent; the system tracks advertising agencies that have not renewed contracts; and outstanding collections are sent timely notices.

| Lessons Learnt

This application is significantly different from other service delivery applications, as one of its goals was reform of the municipal government. Reforms of this kind need a champion within the organization, and in the case of VOICE, success was largely a result of the involvement of the commissioner. Identification of key staff to form a core team, constant monitoring, and marketing of the concept to citizens also contributed to the success of the project.

The application is an example of a partnership between federal and state government agencies, the municipal government, and a software development company. Contrary to the pattern in many government departments where new software applications have been custom developed in-house, this product was developed by a private company. The application will be quicker to implement and robust, but likely will be seen as more expensive than in-house software development (which, while relatively inexpensive, may be of poorer quality and reliability).

VOICE was a local initiative, not part of a grand design in the state's e-government effort. In fact, VOICE competes with an application, TWIN, developed by the state government to deliver some services in the city of Hyderabad. The utility of VOICE could be enhanced by offering information and services from other government departments like police, road transport, railways and registration. This would require a high degree of coordination at the state level. In the interim, many local initiatives undoubtedly will sprout and later, a solution to link and integrate these different applications will have to emerge.

Source:
http://www1.worldbank.org/publicsector/egov/voice_cs.htm

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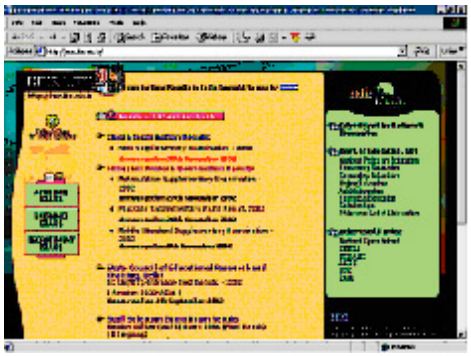
10.10 Exam Results on the Internet (India)

The Education System prevailing in most countries of the world emphasizes on the concept of 'Examinations' as a performance measuring parameter. India is no exception and every year witnesses a large number of academic examinations, be it of a school education board or for entrance into higher studies in a professional field. And directly related with the importance of examination system is the significance of the exercise of properly disseminating the exam results.

In the decades spanning 60's and 70's, exam results, especially those of the State School Boards meant students and parents spending sleepless nights waiting for the early morning arrival of the 'Gazette' carrying the result. With the change in the pattern of Education Boards all over the Country, the concepts of +2 results and significant increase in the entrance exams for various professional courses came into fore, not only enhancing the number and magnitude of examinations but also bringing tough competition in the academic scenario. Till a few years back, it was a common sight to see the students thronging notice boards trying to find their roll number in the list of successful candidates. The emergence of Internet has seemed to transform the above scenario as it has made it possible for students to check their Exam Result in the comfort and safety of their own homes with the 'moment', just a mouse click away.

The practice of using the World Wide Web as a medium to publish examination results is not new, especially in countries with a high rate of Internet usage. The concept picked up in India during the past 4-5 years with the increased proliferation of Web and its reach into the Indian homes and cyber cafes. The organization behind the vast exercise of publishing the various exam results on the Net in India is National Informatics Centre (NIC), a part of the Ministry of Communications & Information Technology. Through its nationwide infrastructure present in all states, UTs and districts of India, NIC has been publishing and disseminating the results of several academic and recruitment examinations using the medium of Internet every year on the Exam Results web portal (http://results.nic.in).



| The Process

The entire process of publishing results on the World Wide Web comprises a number of steps and stages. Based on a thorough research and its IT expertise, NIC has acquired the requisite know-how and prepared a generic software for publishing results which has been made available to all the NIC centres across India with appropriate guidelines to use/customise the software as per varying requirements of different examination agencies.

Exam Results being a sensitive issue on which the future and career of millions hinges, it is imperative to ensure that the information is absolutely accurate and reaches the intended target audience with minimum effort and delay. As a first step, the NIC Centres in various states and UTs, in consultation with the concerned State Education Board customise the software in terms of information requirement, layout, number/type of reports to be generated etc. The result data, once prepared in the digital form by the respective Board is then transported in the appropriate format on to the Results servers being maintained by NIC. All this invariably involves a sound infrastructure setup geared to meet the huge anticipated traffic, especially during peak hours and also having appropriate backup and contingency

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measures. NIC has established ICT infrastructure comprising a series of state-of-the-art web and database servers along with latest applications and performance tuned network devices for this purpose.

Important announcements, both prior to the declaration of the result and upon its launch on the Net are posted on the web portal (http://results.nic.in) informing students, who can then access their results using a simple browser based interface by entering their roll number at the requisite place.

| Additional Delivery Channels

Realising the present status of Internet access in India and the need to make this information reach even the remotest corners of the country, the exam results are being disseminated using multiple channels so that more and more students can access them with minimal time and effort. Therefore, besides the World Wide Web, the results are also being made available through IVRS, SMS and Email.

| Interactive Voice Response System (IVRS)

In IVRS, the caller dials a given telephone number and the computer plays the part of an operator giving out the information requested, in recorded or synthesized voice. The server is configured to accept calls with the help of dedicated CTI (Computer Telephony Interface) software and hardware. The calls can be placed from any standard telephone instrument. A large number of students access their results using this channel.

| Short Message Service (SMS)

The Short Message Service (SMS) is the technology to send and receive short text messages from one mobile phone to another mobile phone. SMS based technology is not only cost effective but extremely efficient too.

Considering the high density of cell phone users in India, various results are now being provided to the students through the SMS on the mobile phones. The users have to type a specified message code followed by the Roll No. and send the message to a designated number to obtain the results.

| E-mail

The students are also able to receive their results in their individual mailboxes, for which they had to pre-register with the Results web portal. Apart from this, complete school wise results are also being sent to the various schools through email on pre registration.

| Success Indicators

The examination results declared by NIC on its various servers over the past few years have received a large number of hits from students, teachers, parents, school authorities and other interested stakeholders. In 2004 itself, 26.7 million hits were received on the website hosting the CBSE Results. While 3,30,000 marksheets were emailed into the individual students' mailboxes, 3,80,000 and 2,10,000 results were disseminated through IVRS and SMS respectively.
Within a few moments of the declarations of results, hits are seen flowing in from all over the country (including the remotest corners through the cyber cafes/community centres) as well as from other parts of the world.

| The Impact

The whole concept of declaring Exam Results over the Net has done more to promote the Internet awareness and usage than most other conventional promotion strategies. The sensitivity of the issue and the anxiety factor associated with the very concept of Exam Results made the exercise popular even in areas known to be having very low Internet penetration. Even in the case of North Eastern States marred by adverse terrain and climatic conditions, students were seen thronging the CIC Centres setup by the Department of Information Technology (http://www.cic.nic.in) anxiously awaiting their marksheet to appear on the computer screen.

Encouraged by the success of this initiative, many Institutions/Universities/Boards have enhanced the level and type of usage of ICT in the ambit of their total operations and at the same time, the familiarity and trust level of various stakeholders (officials, students, teachers, parents etc) in technology has significantly gone up. Some of the Boards are now delivering

the Admit Cards to the students through the Net. The counselling for admissions after the AIEEE-2004 (All India Engineering/Pharmacy/Architecture Entrance Exam) was carried out online and students can also submit the application forms for the next year through the website.

For further information, visit
http://results.nic.in

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10.11 Dairy Information And Services Kiosk (Gujarat/India)

In recent years, the milk co-operative movement initiated by India's National Dairy Development Board (NDDB) has led to a substantial increase in milk production in India. The two main reasons for this increase are more efficient collection of milk and higher profits for producers, both of which have been influenced by IT. This case describes the automation of the milk buying process at 2,500 rural milk collection societies. It also describes the extension of the co-op database through the creation of a Dairy Information Services Kiosk (DISK). The Kiosk makes it possible for co-operatives and farmers to manage a database of all milch cattle and access a dairy portal with information about valued services. The case demonstrates the willingness of rural farmers to invest in technology, provided that it can deliver real value.

| Application Context

The co-operative movement began at Amul Dairy in Gujarat and is now replicated in 70,000 villages in about 200 districts of India. Following the repeal of quantitative restrictions on food imports by the Government of India under a WTO agreement, the Indian dairy sector faces a strong challenge from the large organised dairies in the developed world. To meet this challenge, the co-operative dairy sector has to further improve the production, collection, processing and marketing of milk and milk products.

| The Approach

The productivity increases that are needed require an extensive education program to reach millions of farmers and dairy workers. Education on such a massive scale has been facilitated through rural Internet kiosks created for the dairy sector. Of particular interest is the fact that the dairy sector is already using computers in 2,500 rural locations to buy milk from the farmers quickly and transparently.

The number of farmers selling to their local co-operative milk collection centre varies from 100 to 1,000 and the daily milk collection varies from 1,000 litres to 10,000 litres. Each farmer is given a plastic card as identification. At the counter, he/she drops the card into a box, which reads the card electronically and transmits the identification number to a personal computer. The milk is then emptied into a steel through kept over a weigh bridge. Instantly, the weight of the milk is displayed to the farmer and communicated to a PC. Then, an operator sitting by the side of the trough takes a 5 ml. sample of milk and holds it up to a tube connected to an electronic fat testing machine. (This machine is a local adaptation of an expensive and sophisticated tester manufactured by a Danish company). By moving the machine's hand lever three times, the fat content of the sample is determined in just a few seconds. The fat content is displayed to the farmer and is communicated to the PC.

The computer calculates the amount due to the farmer on the basis of a rate chart that indicates the price for milk with different levels of fat content. The total value of the milk is then printed out on a payment slip and given to the farmer, who can collect the payment at an adjoining window. In many centres, this entire transaction takes no more than 30 seconds. This application is used in approximately 2,500 rural locations, exposing half a million people daily to the benefits of information technology. The E-Governance Centre of the Indian Institute of Management (IIMA) has worked to extend the benefits of this application by developing a Diary Information System Kiosk (DISK) software which will replace the existing application at the milk collection centres. It has two major components - an application with enhanced database and reporting running at the society level and connectivity to a Dairy Portal serving transactional and information needs of all members and staff at various levels in the district co-operative structure.

This DISK database includes a complete history of all milch cattle owned by the farmers. The basic details of breed and a history of disease, inoculations, artificial insemination and pregnancy are maintained in the system. Longitudinal data on milk production by individual farmers is also available in the database. Decision support systems have been developed to forecast milk collection, and provide feedback to the farmers. Through the Dairy Kiosk farmers may place orders for a variety of goods and services offered by different agencies in the co-operative sector, and seek information on a variety of subjects of interest (e.g., best practices in breeding and rearing milch cattle, schedule of services provided by the co-operative,

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government and other private sector agencies). The computer-printed receipts that farmers receive each time they deliver milk provide an additional means for co-ops to communicate with their farmers. For instance, if one or more of a farmer's milch cattle requires an inoculation on a specific day (information provided by a veterinary service database) this fact can be printed out as a reminder on the farmer's payment slip.

Farmers will also have access to a multimedia data base on large number of innovations captured by SRISHTI (an NGO working in co-operation with IIMA) from hundreds of villages. These innovations cover agricultural practices, medicinal plants, home remedies, tools and implements, etc. The multimedia format has captured the description of the innovations provided by the innovators and a visual presentation of the innovations.

The DISK application has been pilot tested in two co-operative villages of Amul dairy in the Kheda district. A portal with illustrative content in Gujarati and English has been developed and is accessible on the IIMA E-Governance Centre platform .The focus of DISK and dairy portal is on improving the delivery of artificial insemination, veterinary services and delivering functional education about the dairy sector. The pilot was preceded by eleven one-day workshops in which 500 mangers of the entire co-operative dairy sector were sensitised to the potential of using IT at society and district levels. Based on the success of the pilot, the DISK application could be rolled out to 1000 societies which are already computerised.

| Benefits and Costs

The milk vending system costs around $2,000 per centre. Two private manufacturers currently produce the equipment. Nearly 600 such systems are in operation in the Kheda district in Gujarat. There are 70,000 village societies in India, of which 2,500 have been computerised.

The benefits to milk farmers include payments that are now based on a reliable and transparent measurement of fat content and weight. Under the previous system, the fat content was calculated a few hours after the milk was received because the measurement process was cumbersome. Malfeasance and under-payment to farmers were commonly alleged, but difficult to substantiate. In addition, milk for testing was stored in plastic bottles, which led to unhygienic conditions.

Farmers may now receive immediate payment for their milk, rather than waiting ten days as under the previous system. Moreover, queues at the milk collection centres are short, saving farmers considerable time.

Among the benefits to the co-operative societies is a reduction in the number of employees. The computer system also is able to keep accurate and up-to-date records, reducing the likelihood of fraud or corrupt practices (e.g. temporary use of the funds by individuals). With Internet connections these frequently visited co-operative centres could be used as a communication point offering services like email and fax. Farmers also could download government forms, receive documents (from a government site) and order supplies and agricultural inputs from manufacturers.

Source:
http://www1.worldbank.org/publicsector/egov/diskcs.htm

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10.12 Establishing A Quality Early Childhood Centre (New Zealand)

| About Early Childhood Development

Early Childhood Development (ECD) staff throughout New Zealand provide advice, support and information about early childhood education and parenting to parents, early childhood centres, playgroups and the wider community. ECD typically works with many agencies and stakeholders, coordinating and developing services for children in the first five years of life. On 1 October 2003, ECD integrated with the Ministry of Education, New Zeland).

| Background to service

Encouraging the development of quality centres supports the Ministry of Education's objective of increased participation rates in early childhood education. It's a complex process preparing to run an early childhood centre. It involves getting to know the regulations and requirements, working to ensure these are met, and then applying for a licence from the Ministry. Early Childhood Coordinators help by providing guidance and support directly to community groups.

The ECD website provides an easy to follow guide to setting up a quality early childhood centre which is segmented into a logical twelve step process. It's an innovative one-stop-shop for people wanting to set up an early childhood centre.

| An information-based integrated service

Prior to 1 October 2003, ECD supported community groups wanting to establish a licensed centre. Over time, each Coordinator had acquired their own set of hardcopy support documents, with no straightforward way of making sure the information was kept consistent and up to date. Making documents available through an Intranet was an obvious solution, allowing ECD to coordinate, update and communicate information across the country to their field officers.

ECD's coordinators soon saw the benefits of the intranet and work began almost immediately to make the authoritative documents available through the public website. ECD put considerable thought into determining how best to present the information to good effect. Close attention was paid to developing a strong narrative to guide people through the process using language that was plain and clear. The website, now run by the Ministry of Education, links to frequently asked questions; relevant legislation and regulations; pdf handbooks on managing centres; a spreadsheet to download and create an annual operational budget; a checklist of infants' and toddlers' requirements; and a timeline for establishing centres.

The result is a client-focussed service that integrates information provided by as many as 26 agencies and other organisations, including non-governmental organisations like the Royal New Zealand Plunket Society. It is not only easy to get information (by a web link) but it is presented in a context and sequence that guides people from beginning-to-end. Internet complements existing delivery channels

The web-based service has not replaced established delivery mechanisms. Coordinators still deal directly with community groups, who now often have the website on screen while they are talking to Coordinators on the phone. The site also explains how to get information sent by post, rather than having to download and print it out. People using the site have found the approach helpful and user-friendly, particularly the depth of information now available online, which would be prohibitively expensive to produce and maintain in print and distribute across the country.

| Critical success factors

- **Clear vision of what needed to be achieved**
- **Business rather than technology drivers**
- **Working across the organisation to get support and commitment to the project**

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· **Building a team with in-depth knowledge of the business, a passion for delivering excellent service and a broad base of skills**

· **Guiding clients through a process, not just presenting disconnected information**

· **Effective use of the web as a medium for linking disparate information sources**

· **Close attention to detail, particularly language, to make the service easy for clients to use.**

For further information, visit
http://www.ecd.govt.nz/establish.html

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10.13 CARD (Andhra Pradesh/India)

The Registration Department in Andhra Pradesh launched the CARD (Computer-aided Administration of Registration Department) project at 214 sub-registrar offices (including 2 pilot sites) in 1998-1999 with an expenditure of Rs.22.7 Crores. Later it was extended to another 25 Sub-Registrar Offices (SROs) in the year 2001 with an expenditure of Rs.3.7 Crores including strengthening and upgrading of the "C" category S.R.Os and the remaining 148 Sub Registrar Offices were computerized in the final phase.

Land registration offices throughout Andhra Pradesh now operate computerized counters to help citizens to complete registration requirements within an hour instead of several days, as was necessary under the earlier system. The lack of transparency in property valuation under the old system resulted in a flourishing business of brokers and middlemen leading to corruption. Antiquated procedures such as manual copying and indexing of documents, and storage in paper form in ill-maintained backrooms have all been replaced.

| Application Context

Registration to document changes in ownership and transactions involving immovable property is governed by the Indian Stamp Act of 1899. Deeds of various kinds are required by law to be written on stamp paper of prescribed value. Certain transactions require a fixed duty. For others, the ad valorem method is used, whereby the stamp duty is a percentage of the property value or loan that is the subject of the instrument. The ad valorem method ensures that inflation will not erode the value of stamp revenues. This method accounts for over 90% of the total revenue from stamp duty.
Registration is carried out at the office of the Sub-Registrar of Assurances. In Andhra Pradesh (AP) there are 387 sub-registrar offices that register approximately 1.2 million documents per year. The work of the sub-registrar is supervised by a hierarchy of District Registrar, Deputy Inspectors and the Inspector General. The traditional 11-step registration procedure is complex and time consuming, beyond the comprehension of most citizens:

1. The value of the property is determined

2. Stamp duty, transfer duty, registration fee and other fees are calculated

3. Citizen must purchase stamp paper

4. The legal registration document and certificates to be enclosed with the document must be prepared

5. These documents are presented to the Sub-Registrar of the jurisdiction

6. The Sub-Registrar scrutinizes the documents, reviewing the valuation of the property, calculation of stamp duty, transfer duty, registration fees and miscellaneous fees

7. Payment of deficit stamp duty, if any, is required

8. Final document certified by the citizen before the Sub-Registrar and two witnesses

9. The document is copied into the register books

10. Copies are posted to 2 indexes (by name and property), and accounts

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and reports

11. The document is returned to the citizen

A brief account of the people involved in the conventional registration process:

| Stamp Vendors

Stamps are sold to the public through private stamp vendors (licensed by the Registration and Stamps Department) and at stamp counters at the offices of the Sub-Registrars. The private stamp vendors usually charge an illegal premium on the face value of the stamps when there is scarcity of stamps of a particular denomination.

| Document Writers

The document writers have been given official recognition in several states of India through a system of licensing (there are 3,908 licensed writers in AP). In AP, when a document is not written by a licensed document writer, an additional fee (approximately $5 or Rs.215) is levied at the time of registration. Document writers prepare the maps and location sketches to describe the property, fill in various forms and assist citizens in procuring certificates from various authorities. For their comprehensive services, they demand a fee higher than that prescribed by the law.

| Registration Agents

These are self-employed individuals and firms who, for a lump sum payment, get a document registered, covering the whole range of services.

This manual registration system generated a number of important drawbacks. Most importantly,

| Lack of transparency in Valuation

Since the stamp duty is linked to property values, valuation procedures are vital. A system of market value guidelines was introduced in 1975, whereby the rate per unit of rural/urban lands is assessed for all villages/towns and incorporated in a register for public guidance. However, the basic value registers usually are not accessible to the public, and even if they were, it is difficult for a common citizen to read them and calculate the amount of stamp duty, transfer duty, registration fee and miscellaneous fee. All this creates an impression that the valuation of property is "flexible" and "negotiable," prompting a host of corrupt practices and a flourishing business of brokers and middlemen who exploit the confusion surrounding the registration process.

· Tedious back office functions :
Conventional manual methods of copying, indexing and retrieving documents are laborious, time consuming, and prone to errors and manipulations. Thus, a premium is often paid for speedy delivery of services.

· Difficulties in preserving documents :
The registers occupy a lot of physical space, usually in ill-maintained backrooms. They also deteriorate with age and repeated handling.

| A New Approach

The Computer-aided Administration of Registration Department (CARD) has been designed to eliminate the maladies affecting the conventional registration system by introducing electronic delivery of all registration services. CARD was initiated to meet the following key objectives:

- **Demystify the registration process**
- **Bring speed, efficiency, consistency and reliability**
- **Substantially improve the citizen interface**

These goals have been achieved by:

- **Introducing a transparent system of valuation of properties, easily accessible to citizens**
- **Replacing the manual system of copying and filing of documents with a**

sophisticated document management system using imaging technology
· Replacing the manual system of indexing, accounting and reporting through
the introduction of electronic document writing

Since 60% of the documents, Encumbrance Certificates (ECs) and certified copies relate to agricultural properties, the success of the CARD project would greatly benefit the rural farming community. Agriculturists would also benefit from a possible link-up of the CARD network with the rural bank network, which would enhance the efficiencies of the rural credit services by eliminating the need for paper-based procedures.

| Implementation Challenges

Implementation of an IT project involving over 200 locations state-wide was a formidable challenge. The project was divided into 9 major tasks and 64 sub-tasks. Approximately 2,000 hardware items and software packages were procured within a span of about five months through the agency of AP Technology Services. The project had to be implemented rapidly so that the technology (both hardware and software) would not become obsolete prior to the project launch. Implementation required considerable re-engineering.

First, the national Registration Act of 1908 did not contemplate the use of computers to handle registration procedures. The Registration Act therefore, had to be amended, a process that took over a year.

The Act, in its application to the state of AP, has been amended to provide for the following:

· Document registration and copying are completed with the aid of electronic devices like computers, scanners and CDs; and copies are preserved and retrieved with the same tools

· Copies of documents registered and stored electronically, retrieved, printed and certified by the sub-registrar are received as legal documents

· The registration software shall be prescribed by the Inspector General

Second, to use these new technologies effectively, a large and well-designed training program was carried out by a private sector company at a cost of $262,000 (9% of the project cost). The following decisions were taken to motivate employees:

· A cross-section of the field personnel was closely associated with the design and development of the software, and especially in the task of business process re-engineering

· No external technical personnel were recruited

· The head of the department undertook extensive tours throughout the state and conducted workshops, presentations, and special training camps involving all departmental employees. The officials who managed the two pilot sites were closely associated with this effort

· Senior functionaries of the government such as the Principal Secretary and Minister of the Revenue Department were closely associated with, and were supportive of the project

A third implementation challenge was the tremendous data backlog. The CARD masters (state level) could be built without much difficulty, as the data is both limited and readily available. However, the project encountered major challenges in building up basic value data and the EC data for the last 15 years. The basic value data consisted of about 50,000 records at each Sub-Registrar Office (SRO). These data were entered into the systems by the trained staff in 6 to 8 weeks. The task of entering EC data, which has a more complex size and structure — about 1.2 million records of 2 KB size each — was out-sourced to five agencies.

Fourth, installation of CARD application software in 212 locations was considered a major challenge. Seven versions of the software had to be developed, tested and deployed in a period of 4 months to achieve the desired functionality across the counter. This task was made possible by the relentless efforts of the DPOs who were groomed in preparation for this task.

| Costs and Benefits

Six months following the launch of the CARD project, about 80% of all land registration transactions in AP were carried out electronically.

The time required for services such as valuation of property, sale of stamp paper and provision of certified copies of registered documents now take 10 minutes instead of a few days as under the earlier system. ECs are now issued to citizens in a span of 5 minutes, using a system that searches through more than 15 years of records from over 50 offices. Land registration can be completed in a few hours, whereas it took 7-15 days earlier.

The cost of the CARD project was funded entirely by the AP government. The 1996 pilot project to computerise two Sub-Registrar Offices cost about $55,000. The original outlay for the full CARD project was about US$3 million; and this figure is likely to grow to $4.3 million. (This cost includes hardware, software, training, site preparation, data entry, air-conditioners, furniture, stationery and storage media, and other miscellaneous expenses.)

As part of implementing the best practices of other states, the CARD project has been adapted in the registration department of Kerala government.

Source:
http://www1.worldbank.org/publicsector/egov/cardcs.htm

For further information, visit
www.ap-it.com/egovprojectsprofilessoct04.pdf

10.14 Central Vigilance Commission (CVC) Website (India)

With an aim to propagate the idea of zero tolerance for corruption, the Central Vigilance Commission (CVC) in India began to share with citizens a large amount of information related to corruption. The CVC website (http://cvc.nic.in) published the names of officers from the elite administrative and revenue services against whom investigations had been ordered or penalties imposed for corruption.

| Project Description

The Central Vigilance Commission was set up in 1964 in India as a Government agency responsible for checking corruption at all levels in public service. Vigilance Commissions and institutions called Lok Ayukta have also been set up in some states. These institutions are generally headed by retired public servants or High Court judges.

In 1998, based on the directive of the Supreme Court, the Government converted the Central Vigilance Commission into a statutory body through an executive order. The newly independent commission took several initiatives, particularly in recommending the use of IT by banks and other public institutions to bring in transparency.

One of the initiatives was the creation of a website; and one of the first actions was to publish the names of senior officers who were charged with violating conduct rules. The CVC website contains the following sections/features through which the CVC communicates with the public:

1. **The commission informs the public about its role, responsibility and strategies to combat corruption. This is an effort to keep the agenda of fighting corruption alive in the public mind**
2. **The commissioner communicates directly with the public through messages and speeches to bolster confidence in the institution**
3. **Instructions for how any citizen can lodge a complaint against corruption, without fear of disclosure or reprisal**
4. **Central Vigilance Officer's List: each organization is expected to nominate a senior officer to whom an employee can take a complaint on corruption**
5. **Statistical reporting of the achievements of the Commission (Annual Report)**
6. **Details of convictions of public servants by the courts are also presented, alongwith information on officers from the All India Services against whom an enquiry has been initiated or a penalty imposed. This section also highlights the performance of various departments responsible for conducting investigations**

Although the public at large often knows who is a corrupt public servant, there has been no systematic method by which this information could be brought to the notice of either the CBI or the Income Tax department. A new feature of the CVC site increased the risk element for the corrupt whose ill-gotten wealth is stashed away in the form of black money, foreign accounts, benami bank accounts (wealth hidden under false names), jewelry and other valuables, benami property etc. Members of public could now report information against a public servant about possession of black money or assets, which are believed to be disproportionate to his known sources of income. The Commission would scrutinize the information so received, and if the information is considered sufficient for carrying out detailed investigations, the CBI or the Income Tax authorities would be advised accordingly. The Commission clearly states that it does not entertain anonymous or pseudonymous complaints. However, the identity of the complainant can be protected if he/she so desires. Section 182 of the Indian Penal Code makes it a criminal offence for a person to report about a public servant any information which he knows or believes to be false.

The CBI and the Income Tax Department have schemes under which informants are rewarded

- Government Accommodation Management System (GAMS) (India)
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for the information they provide. The informants who provide information under CVC notification also will be eligible for such rewards.

| Implementation Challenges

The display of names of the senior officials of the Government of India – including IAS and IPS officers – on the CVC website caused a mild furor in the media. According to the CVC, the publication of these names was intended to meet a long-standing demand of the media for information about senior officials facing corruption charges and inquires. Under the law, no defamation had been caused by publicizing the names of the charged officers; yet the general perception seemed to be that the CVC website exposed a kind of a rogues gallery. In response to these criticisms, the CVC argued that all it had done was to extend to the departmental inquiries a practice that is as old as the Indian Penal Code in criminal cases. Under criminal law, when a person is accused, he is legally innocent until proven guilty; but the name of the accused enters the public domain.

The CVC experiment may embolden other agencies like public banks/tax department to publish the names of willful defaulters.

Source:
http://www1.worldbank.org/publicsector/egov/cvc_cs.htm

For further information, visit
http://cvc.nic.in

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10.15 The AfriAfya Initiative (Kenya)

| Project Background

AfriAfya, African Network for Health Knowledge Management and Communication, is an initiative established in April 2000 by Kenya-based health development agencies to explore new opportunities for harnessing communication and information technology for community health. The idea for AfriAfya was based on the realization that while modern ICTs had provided commercial entities, universities, ministries, research institutions and big hospitals with information and assistance in their activities, it had done very little for rural communities, particularly rural Kenyan (and African) communities in the area of health.

AfriAfya was thus established as a consortium of seven of the large health NGOs in Kenya and the Ministry of Health. The project has set up a small coordinating hub and seven field centres selected from existing community-based health intervention sites run by each of the Partner Agencies.

| The Approach

Communication was established between the hub and each of the Partner Agencies and field sites, and between the different field sites. Each of these sites were equipped with a computer, its operating software, printer, data modem, WorldSpace receiver and PC adaptor card. Three to four staff from each of these sites were trained in the use of this equipment. One site was additionally equipped with a television and video and various health video cassettes. Solar panels have been used to power the equipment where there is no electricity.

Training of the field site staff involved basic computer literacy, word processing, email messaging tools, web surfing skills, WorldSpace use - both the audio service and the data downloads, and the crucial skills of learning how to use 'Help' and electronic Tutorials.
The project is designed to ensure a two-way communication process so that information provided to communities is what they want, and to avoid just dumping information on them. The hub has collected information generated from the experience and questions provided by the communities involved, official publications from the MOH, the National AIDS and STDs Control Programme, Partner Agencies, other HIV/AIDS organizations in the country and from the Internet.

The hub then, repackages this information in a simplified, easy to read format and sends it back to the field centres for use by the field centres frontline healthcare workers and change agents, with the aim of supporting them and enhancing their capacity to deal with health problems and questions raised by lay community members. Questions and information requests raised range from simple factual issues to social issues, cultural practices that promote the spread of HIV/AIDS, and issues concerning community experiences gained over time.

The staff at AfriAfya have been working as a Staging Post, accessing and receiving information from local and international sources, adapting it and ensuring it is relevant to practical issues in our setting, and then disseminating it to the community-based health intervention sites that they are working with. This is done through email, printed material, diskettes, CD ROMs, telephone and fax.

The direct sharing of information and experiences between the different field centres and between the partner agencies is an additional interaction of crucial importance to the project.

| Impact

Through the AfriAfya project, it has been possible to introduce the use of ICTs in the seven field sites – six of them in rural Kenyan settings, and one of them in an urban slum setting. These sites have been equipped, and the staff there trained in the use of this equipment, and are using it. Even rural women with a very basic level of formal education have been able to learn how to use the equipment and are using it. In a community where the modern ICTs are considered largely the preserve of big institutions in cities, having such equipment in a rural setting and having 'normal rural women' operating it has in itself been quite an achievement.

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- Computerization of Passport Issuance System (India)

The project has collected information from the Partner Agencies and shared this with the other Partner Agencies. Having the seven health NGOs and the MOH working together and sharing their experiences has been a key achievement of the project. In many instances health NGOs will be doing similar work, sometimes even in the same communities, and not know what the other is doing. Sharing their experiences has meant that they don't have to reinvent the wheel all the time – they can learn from one another's experience. The information accessed through the system has not been limited to health information only. Agricultural information and information about income generating activities has also been accessed using the WorldSpace receivers.

| Lessons Learnt

Many of the lessons that have been learned as a result of the AfriAfya initiative are not necessarily new. For many people who are involved, they simply reinforce and strengthen the validity of lessons that have already been learned.

Some of the lessons learnt are the following:

· Networking, collaboration and ongoing partnership between different health organizations and institutions can be successfully developed, as demonstrated by the seven partner agencies currently working to gether and seeing mutual benefit in this. This, however, requires competent manage ment to make it work. At the beginning, there were concerns about 'fraternizing with the opposition', and 'big' partners overshadowing 'small' partners, but these have since diminished.

· Cooperation with external partners and international organizations has contributed to the success of the project. At the initial workshop, when the ideas were being discussed, the participation of organizations already using ICTs for health in various ways provided a useful input. With time, the interaction with others through email lists, on the videoconference and in face-to-face meetings has provided a lot of new insights.

· Building on existing structures is quicker than starting from scratch – working with already established health intervention sites has allowed AfriAfya to jump-start and bypass many of the very time consuming start-up stages. It has additionally built on what is there and enhanced it, which makes it easier to sustain than a stand-alone ICT project would be.

· People with limited background education can acquire basic computer skills, even rural women living in a rural Kenyan environment. Continuing development of these skills requires back up. A key lesson here has been that one should never underestimate the ability of rural people, especially rural women.

· Equipment is not available in the vast majority of community health settings and setting up does remain a major expense – computers, Internet access etc. Additionally, just giving the equipment is not enough; there needs to be training, follow- up and support to encourage use and resolve whatever technical problems arise.

· Establishing two-way communication processes takes time, and needs to be continu- ously refined and improved along the way. It is important to find out what information people want – rather than supplying them with what you know. Two-way communica- tion is essential if the information being provided is to remain relevant to the people on the ground. Keeping the 'right' information flowing – from the users' point of view – does remain a real challenge.

· If community members are properly enabled, it is possible to have an effective ICT programme even in isolated rural areas.
· Do not expect that sharing and communication will happen automatically. It needs facilitation and encouragement.

· Despite the plethora of health information on the Internet, very little is directly suitable for dissemination to poor communities as it is. It needs to be repackaged to ensure local suitability and relevance.

· Web resources can improve the quality of content and presentation for local health information production. Sites that can summarize reliable and accurate information become of particular interest as searching the vast WWW on bad slow connections can be an absolute nightmare.

· A final key lesson has been that there is no single solution: working in a diverse group of settings has been a big strength because it has demonstrated different ways of using the

different technologies effectively.

Source:
http://www.iconnect-online.org/Stories/Story.import4924/

For further information, visit
http://www.afriafya.org

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10.16 Agricultural Marketing Information Network -AGMARKNET (India)

In a Country like India with 70% of its population living in the villages and depending on agriculture as their main occupation, accurate and timely information about the market prices of the agricultural commodities is of extreme significance. Agricultural Marketing in India is undergoing a significant metamorphosis because of economic liberalisation and globalisation. Advancement in communication and information technology has made the world a smaller place and a larger market at one go. The availability of prompt and reliable market information about what ishappening in the market i.e. what quantities are arriving and what prices are quoted for different commodities considerably improve the decision making capability of the farmers and strengthens their bargaining power. At present, the information is disseminated through various media like radio, newspapers, blackboard display and public address system at market yards. The information provided by these methods is stale and does not help the farmers sufficiently in taking decisions in marketing their produce. The farmers are also not able to know about
the prices prevailing in other markets, as the Market Committees are able to disseminate information only in respect of their own markets. The farmers are, therefore, left with no alternative but to dispose of their produce in the nearest market, even at uneconomic prices. Market information is equally needed by other market participants in arriving at optimal trading decisions. To fully utilize the new emerging trade opportunities for the benefit of farming community, agriculture marketing information system in the country needs to be strengthened and Information and Communication Technology has a vital role to play in the process.

By and Large all, the States and Union Territories are providing some market information in one form or the other for the benefits of market users like producers, traders and consumers. However, the prevailing systems of dissemination of market information are mostly based on conventional methods due to which communication of information to different target groups usually gets delayed and looses its relevance. The existence of a comprehensive database and dissemination of complete and accurate marketing information is the key to achieving both operational and pricing efficiency in the agricultural marketing system. In order to improve the present agricultural marketing information system in the country , Directorate of Marketing & Inspection(DMI),

Ministry of Agriculture has launched scheme. AGMARKNET envisages linking all important agricultural produce markets in the Country, the State Agricultural Marketing Boards & Directorates and DMI for effective information exchange .

AGMARKNET has led to a nation-wide information network for speedy collection and diffusion of market information, computerization of market related information such as market fees, market charges, etc., ensuring regularity and reliability of data and increasing the efficiency in agricultural markets. AGMARKNET Project has also been designated as one of the Mission Mode Projects of the Department of IT, Government of India and has won accolades and awards for effectively fulfilling the objective of speedy collection and dissemination of agricultural marketing information for better market access and price realization by the farming community.

| Project Description

Directorate of Marketing and Inspection (DMI) has liaison with the State Agricultural Marketing Boards and Directorates for Agricultural Marketing Development in the country. The dissemination of market information is a common function of Agricultural Produce Market Committee (APMC), which is performed through displaying of the prices prevailing in the market on the notice boards and broadcasting through All India Radio etc. This information is also supplied to State & Central Government from important markets. The statistics of arrival, sales, prices etc. are generally maintained by APMCs.

| Objectives of AGMARKNET

· To establish a nation-wide information network for speedy collection and dissemination of market information for its efficient utilisation.

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· To computerise data on market fee, market charges, total arrivals, arrivals by agencies, prices (variety wise/quality wise), storage, despatches with destination, mode of transportation, costs, sold and unsold stocks, sources of supply with destination, method of sale, payment, weighment, grading facilities, quantities graded, market personnel (trained/untrained), market functionaries, market finance, development programmes, infrastructure facilities, constitution/composition of Market Committee, income and expenditure and other activities of the APMCs, State Marketing Boards and Directorates.

· To ensure flow of regular and reliable data to producers, traders and consumers to derive maximum benefit of their sales and purchases.

· To increase the efficiency in marketing by effecting improvement in the existing market information system

| Scope

NICNET based Agricultural Marketing Information Network (AGMARKNET) envisages to transmit price and market arrivals to State Agricultural Marketing Board/Directorate for analysis and local dissemination as well as for onward transmission to DMI Headquarters at Faridabad. To start with, 810 AGMARKNET nodes have been established in the country during ninth plan period. This includes 735 agriculture produce wholesale markets, State Marketing Boards/Directorates (48) and DMI offices (27) spread all over the country. AGMARKNET has to be expanded to further 2000 markets during tenth plan period. The Directorate of Marketing and Inspection (DMI) have prioritized about 735 Wholesale Markets, 48 State Agricultural Marketing Boards and Directorates and 27 DMI offices to implement AGMARKNET Scheme.

The major components of AGMARKNET are establishment of Computing Facilities and Networking, Development of Human Resource, Information Transmission, Development of Database and Portal on Market Information. NIC has tied up with Bharat Sanchar Nigam Ltd. (BSNL) to provide Internet facilities at the AGMARKNET nodes.

Source:
http://agmarknet.nic.in/agmarknet.htm

For further information, visit
http://www.agmarknet.nic.in

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10.17 Agricultural Marketing Information Network -AGMARKNET (India)

Chile Government's attempt to reform the country's Procurement System and adopt e-procurement has made business opportunities with the Chilean Government more transparent, reduced firms' transaction costs, increased opportunities for feedback and cooperation between firms and public agencies and sharply reduced opportunities for corruption.

| Project Background

Before the Chilean Public Procurement Information E-system was established, the main purchaser for the public sector was the Direccion de Aprovisionanmiento del Estado (DAE). The DAE possessed weak control mechanisms, lacked a uniform legal framework, and was burdened by the varied regulations of different government agencies. Two separate studies concluded that the DAE should be abolished. Yet, this action carried with it political and social risks, including the potential for a conflict between the government and the unions. Public agencies began to develop their own procurement systems and procedures. But it became nearly impossible for a private company to know and fulfill the different agencies' requirements.

| The Approach

Under the government procurement e-system, companies that wish to do business with the public sector do not need to search through newspapers or the Web for information about bidding opportunities. Instead, they only need to register a single time in the areas in which they do business (e.g., office furniture, construction services, IT consulting, etc.). Whenever a public agency needs to purchase goods or contract a service, it will fill out a request in the electronic system, specifying the kind of operation and including all the documentation and information associated with the request. Automatically, the system sends an e-mail to all the private companies registered in that selected area, minimizing response time and providing an equal opportunity for all firms. The system also provides on-line, all the information related to procurement operations, including the public organization's name, address, phone, e-mail, fax and position of the public officer in charge of the operation. Finally, at the conclusion of the bidding process, the e-system provides the results: who participated, the proposals, the economic and technical scores, and, lastly, who won the bid or obtained the contract. Historical information about the public organization's purchases and contracts is also made available. In accordance with the Presidential Executive Order 1.312 of 1999, participation in the e-system has been made mandatory for all public organizations in the medium-term.

| Implementation Challenges

The Committee that crafted the new e-procurement system was confronted with a number of troubling questions: How to develop a system that would account for the diversity of public agencies? How to obtain the resources to develop the system? How to build and maintain strong political support for an initiative that was seen as a technocratic solution, with little political payoff? How to deal with the resistance to change, and the belief that computerization means privatization or downsizing? What to do with the DAE? The Committee prepared a study that showed the efficiency gains of the new system would reach (at a minimum) $200 million per year, which is equivalent to 1.38% of the central government's total expenditures. This finding was sufficient to gain the support of the Budget Office.

The Committee also sought political and public support through exposure in the press outlining the benefits of the initiative in terms of transparency, efficiency, and development of the country's e-commerce capacity. It was pointed out repeatedly that information about procurement operations would be available on-line for everyone, at any time, from anywhere, and without censorship. Transactions also could be traced to the political officials responsible for them.

Support was deepened by lobbying political parties, interest groups, private sector advocates, and information technology companies. In order to maintain the political momentum and avoid political and bureaucratic resistance to the initiative, the Committee created a board, which included the director of the DAE, and representatives from each of the ministries and government agencies involved in the reform Program. Twelve public agencies were chosen to

- Government Accommodation Management System (GAMS) (India)
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participate in the design, development and testing process.

Though the e-system's development was relatively straightforward, there were some problems with the consortium in charge of its design. These problems, mostly were related to issues of how to reconcile the opportunities and possibilities of the Internet and related new technologies with the cultural and administrative realities of different public organizations and the Chilean Government as a whole.

Finally, in August 1999 a pilot program was initiated. The e-system, entirely Internet based, was launched at www.compraschile.cl. In October 1999, President Eduardo Frei signed the Government Procurement Act, which strengthened the new system by allowing e-commerce transactions, creating a new and common legislative framework and replacing the DAE with a smaller agency.

| Costs and Benefits

Between October 7, 1999 and February 15, 2000, 454 suppliers (in 75 different business areas) and 16 public agencies were registered in the e-system. The growing number of requests posted for bidding in the first five months demonstrated confidence in the new procurement system. In the relatively short period that e-procurement system has been established in Chile, substantial savings, creation of a perfect information market, and increased transparency and accountability are all evident.

Source:
http://www1.worldbank.org/publicsector/egov/eprocurement_chile.htm

For further information, visit
www.chilecompra.cl

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10.18 Computerized Interstate Check Posts (Gujarat/India)

Through the use of computers and other electronic devices at 10 remote interstate border check posts in Gujarat, India, a team of savvy public officials have reduced corruption and significantly increased the state's tax revenue.

| Project Background

Gujarat has an extensive road network, which carries a large volume of commercial traffic. Major highway systems link Dehli to Mumbai and provide the principal link to the Kandla seaport on Gujarat's west coast. Gujarat's 10 check posts are positioned at the border with three neighboring Indian states. Nearly 25,000 transport vehicles enter daily through these check posts.

Trucking companies want to maximize their earnings from each vehicle. Often, this has prompted transporters to load their trucks beyond permissible axle load, creating a serious safety hazard. The central excise and state sales tax is levied on the basis of a record of the weight/count of manufactured goods that are shipped out from the factory or shipped to a trader. Yet, the number of trucks dispatched in a day is the primary basis of this assessment. Thus, by overloading, trucks manufacturers have evaded excise duty. (Some estimates are that 80-90% of vehicles are overloaded). In Gujarat's traditional check post system, a suspect vehicle was flagged to a stop, and then weighed on a weigh bridge located away from traffic. The legal penalty for overload is Rs 2,000 per ton. However, any fine often has been (illegally) negotiated. Inspectors are also expected to check for the driver's interstate transit permit, and that the state's annual road tax has been paid by vehicles registered in Gujarat. Corruption by departmental inspectors at these check posts has led to harassment of truck drivers and loss of revenue to the state.

| The Approach

The Transport Department in the State has been determined to introduce greater efficiency and root out corruption. First, SMART card based drivers licenses were introduced. The next IT project was to use computers and communication networks to collect fines from overloaded vehicles.
In the computerized process, all the check posts are monitored at a central location using video cameras installed at every check post. The video camera captures the registration number of all trucks approaching the check post. There are floodlights and traffic lights which make the check posts appear like a runway at night. A software converts the video image of the registration number to a digital form and the details of the truck are accessed from a central database. An electronic weigh bridge captures the weight and the computer issues a demand note for fine, automatically. Drivers can use a stored value card for payment.

| Implementation Challenges

The new system has teething problems. The central data base is being built and for many vehicles, it still does not hold the requisite details. Hence, the operator uses his judgement and, depending on the make of the vehicle, selects the permissible weight from a drop-down selection box. The writing and pattern of license plates is often non-standard and not in compliance with the law. Hence, the license tracking software has not worked properly (only about 35 out of 5,000 numbers were read accurately). Now trucks with non standard number plates are required to replace them at the check post. A vendor is available to make the change, for a fee.

Initially the system issued manual receipts with limited information, since the automatic receipt generated by the computer, without a signature of the officer, was not legally valid. With passage of the Central IT Act, the RTO's signature has been digitally incorporated on the receipt. Data on the number of vehicles crossing the check post suggests that some vehicles have begun to divert through longer routes in adjoining states to avoid the penalty. Implementing similar systems in other states could plug the loop hole.

| Cost and Benefits

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

Notwithstanding the implementation difficulties with the new system, the inspection of all vehicles has produced three-fold increase in tax collection over 2 years. Revenue increased from $12 million to $35 million, paying back the total project cost of $4 million in just 6 months.

On an average, vehicles are cleared in 2 minutes instead of 30 in the manual system. Harassment of truckers continues, abetted by the problems with the video monitoring system. The large and medium transport owners are happy with the system because they can come to know the exact date and time their driver passed the check post. The pre-paid card means that the driver does not have to carry much money.

To root out corruption, automation has been used to reduce the discretion of manual operators to a minimum. Education of clients (drivers and transporters) about the operation of the new system is a key to stop any harassment. The total revamping of the check post area has helped in selling the concept to truckers.
The new system could be used by the sales tax department of the State, which must monitor the movement of goods in the state, as well as trans-shipments. This might require that documents carried by truckers be made computer readable (bar coded). The Government is already working on a smart card based registration card.

Source:
http://www1.worldbank.org/publicsector/egov/gujaratcs.htm

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10.19 Khajane (Karnataka/India)

| Project Objective

Computerisation of all the treasuries in the state of Karnataka and connecting them to a central server at the state secretariat through a satellite-based VSAT system. The system has been developed for the Karnataka State Treasury which pays salaries and pensions to government employees and to employees of aided educational institutions, statutory boards, various public sector enterprises and bank employees in the Indian state of Karnataka.

Before computerisation, all the Karnataka state treasury operations were handled manually. Truckloads of cheques and challans (delivery notes) would be sent out for audit every March. The workforce was overburdened by a mountain of paper records. Every year, numerous frauds and overdraws were registered. Government pensioners, freedom fighters and employees had to suffer long delays in payments.

The Khajane project has streamlined the entire payment system, and all payments can now be tracked and monitored through the computerised system. The project involved intensive computerisation of the treasury departments all over Karnataka. It provides regular updates regarding the State expenditure and receipts to the central server. The project has been developed by CMC Ltd which has also provided the department with facility management services.

Khajane is a turnkey project for computerising all the 220 treasuries in the state of Karnataka. All the treasuries in the state are connected via VSAT to a central server at the State Secretariat in Bangalore, and a disaster recovery centre at Dharwad, a large town in northern Karnataka. All the financial transactions in the state are computerised.

Khajane aims to bring about a more transparent and accountable system of financial transactions and also discipline in operations and management, resulting in efficiency and cost savings for the government. This system eliminates duplication of data entry and maintenance of individual treasuries and enables uniform replication of modified data at the central server. Khajane monitors stocks for stamps and safe custody articles in the state. It also addresses pension payment details for treasury to retired Government staff and social welfare schemes started by the government.

| Project Components

- Dealer information system
- Returns processing system
- Dealer assessment system
- Tax accounting system
- Arrears recovery system
- Law and judicial system
- Industrial exemptions
- Personnel information system
- Management information system

| Payments

- Information on budget allocation and expenditure control against the allotment details
- Maintenance of a Bill Process Log for payment transactions
- Pay order generation
- Online cheque printing
- Easier paid-cheque reconciliation with the bank
- Anytime information on total payments in the state

| Receipts

- Online receipt details with updates of zilla and taluk panchayat balances

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

· Challan information linking with various modules (stamps, OAP, payments and deposits)

· Automatic generation of treasury transfer receipts
· Only approved challans are accounted

| Deposits

· Easy tracking of account details, routed through agency bank or treasury
· Online information on account balances
· Interest calculation and signature display online
· Lapsed deposits and its revival
· Maintenance of savings bank account details
· Bill/cheque log for the instrument's life cycle
· Complete record of payment and receipt transactions

| Stamps

· Stamps inventory information maintained online
· Inter treasury unit transactions and transactions with the printing press are recorded
· Strong room details captured
· Information on stamp stocks, embossing of documents
· Items/stamps transactions
· Information on the destruction of obsolete stamps

| Pension

· Maintenance of pension payment order details

· Pension payment based on frequency of pension release
· Online validation for pension bills
· Arrears calculation for pension revisions
· Automatic conversion of enhanced family pension to normal family pension
· Pensioner status information
· Up-to-date pension expenditure information

| Old age pension

A social welfare scheme floated by the government for financial pension payment details from the treasury to retired government staff:

· Capture of sanction order details

· Online generation of bills/money orders/cheques

· Up-to-date pension expenditure information

· Automatic status updates on expiry of sanction order

· Updated pensioner status

Salient features of the Project:

| Returns

· It generates state-wise/district-wise MIS reports from the central server
· Availability of integrated information at any point of time from a central place

| Strengths

· No direct competitive product

· Can be replicated for any state. It can also be replicated in the international market

| Benefits

· The treasury can do away with multiple manual entries and truckloads of cheques and challans

· Timely payments to pensioners
· Frauds and overdraws become almost a thing of the past
· Efficient budgetary control
· Online information for faster decision-making by the state government

Source:
http://www.cmcltd.com/case_studies/e-Governance/finance/khajane.htm

For further information, visit
www.karnataka.com/govt/khajane.shtml

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10.20 Beijing E-Park (China)

Beijing, the capital city of China, began its "Digital Beijing" initiative in the year 2000. Zhongguancun E-Park, at www.zhongguancun.com.cn is a pilot project that applies the latest computer and Internet technologies to improve the efficiency and responsiveness of government. Since then, more than 6,000 businesses have been able to apply for a license, file monthly financial reports, submit tax statements and conduct 32 other G2B and G2C functions online. The system has greatly increased government transparency and efficiency, and reduced the opportunities for corruption. The mayor of Beijing announced that in five years, most government administrative functions in the city will be performed online as they are in E-Park.

| Project Description

Zhongguancun Science Park(ZSP) is the first and biggest national science park in China. Large multinational information technology (IT) corporations such as IBM, Motorola, Microsoft, Lucent, HP, and Epson have R&D institutes here. Thirty-nine prominent universities and colleges, such as Tsinghua University and Beijing University are also located within the Park. More and more companies are moving into the Park, attracted by its hi-tech business development environment and preferential tax treatment.

The ZSP administrative committee, which is the local government body that regulates the Park, has twelve departments, each with different functions, like hi-tech company certification, taxation, etc. Before the E-park system, each department worked completely independently. The workflow was not integrated, and offices did not share information — each department had its own, private database with information on the same companies. Obviously, this was an inefficient and unresponsive system.

To improve the situation, the directors of the ZSP administrative committee decided to create the E-park. Through a partnership with an Internet application software company, Beijing Beauty Beard Ltd., founded by a group of business people who studied overseas, the E-park project began in May 2000. The first phase (E-application) was completed in August 2000 and the second phase (the remainder of the E-Park functions) was completed by the end of 2000.

The E-park has applied the latest computer and Internet technology to build a common administrative platform that connects all government departments. The central database and Website allow data sharing and workflow integration among all the departments. Now, the government works as an integrated body and shows only one face to public. The system includes five functions, all of which are accessed from the same home page.

| Project Components

· E-application :
The first step a company must take to set up operations in the ZSP is to apply for approval from ZSP to get a "hi-tech company certificate." "E-application" is a Web- based program that provides applicants with all forms and documents to be prepared as well as related laws, regulations, requirements and procedures — everything they need to know about setting up a company in the Park. And the application process works anywhere and anytime, no matter whether the applicant is in New York, Paris, or China. Foreign investors, especially, welcome this convenience.

· E-registration :
After a company is initially approved, it must provide additional information to register with other ZSP departments, like the statistics bureau, the finance bureau, the quality control bureau etc. Companies can do this via the Internet as well.

· E-reporting :
Each hi-tech company must report about 100 pieces of operational data, such as revenue, tax, costs, cash flow and so on, to the appropriate government offices each month. This is now done entirely online. (Companies must pay a fee to have a digital identity established by the Certification Authority).

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

· E-administration :

There are several documents that companies must file on a regular basis **and these are now all filed online:**

a) When a new product comes out, it must be registered and assessed by the relevant government authority to determine whether it qualifies for a hi-tech product tax break.
b) All the technical contracts a company signs must be registered for tax purposes.
c) To comply with an annual review of their hi-tech tax-preferred status, companies must submit a large volume of financial and other data along with supporting documents.

· E-consulting :

Government officials can provide interactive online consulting services about any of these procedures, and can provide answers to FAQ's by email or fax.

| Other Salient Features

· Red light reminder system :

In the traditional system, it was not possible to know the status of any application where it was, who had it, or when it would be complete. Now the system automatically keeps track of all applications and reminds the officers of how many days the applica- tion documents have been on their desk waiting for review and approval. The reminder light is clearly shown in the job list on the officials' computer screen. The first day is green light, the second day is a yellow light for warning, the third day is the red light, indicating that the official has not completed the job on time.

· Monitoring system :

Higher level managers can go directly into the staff member's virtual office to check and review their work.

· Statistics and query system :

This system is a powerful tool for managing the documents and data used for tax- preferred status reviews. Statistics collected include number and salary of staff, sales, revenues, costs etc.

· Optical Character Recognition (OCR), Voice Character Recognition (VCR) and Handwriting Character Recognition (HCR) :

The input of Chinese characters by a keyboard can be difficult, especially for older staff members who are not used to it. The OCR, VCR and HCR tools can be very helpful for making officials comfortable with data entry.

· Standard templates system :

The system not only provides standard forms and file templates, but also provides FAQs reply templates. So officers only need to click the mouse to finish their work. They work with a simple interface and do not need to learn any complicated programming or key strokes.

| Implementation Challenges

Because E-park was such a new and unfamiliar concept, it met with some resistance in the early stages. Some agencies were not willing to join in E-park's unified platform because they were concerned that the E-park system would decrease their power and limit their autonomy. Historically, cooperation and coordination among public agencies has been very difficult. Support from government leaders was critical to gaining cooperation.

From a management perspective, the first challenge was to change old habits. A key step was to educate government leaders, to explain to them what e-government is and what its benefits are. Second, both the government staff and the public users of the E-government system had to be given basic computer and Internet training. The second challenge concerns legal Issues

E-Government and e-business laws had not been formulated in China. The digital ID or signature is not valid and accepted. In the E-park system, CA (Certification Authority) has been established, but companies have to sign an agreement with the government that makes their digital documents legally binding, to make up for the legal shortage.

From a technical perspective, there were also many challenges:

· Security :

CA, a hacker's detection and monitoring system and anti-virus software were integrated into the system for protection. A Public Key Infrastructure (PKI) safety mechanism was also implemented for security of data transfer.

· Flexibility :
China's government is undergoing dynamic reform. Bureaucratic organization is changing dramatically. Procedures are changing almost every month and so are the regulations. So the system had to be flexible and broad, and the database structure had to be very carefully designed to accommodate these changes.

· Expandability :
In the early stage of system development, there were only a few agencies willing to join the platform. Later on, more and more agencies joined in, so the system had to be able to expand.

· Compatibility :
The system is for use by the public. The many thousands of users work on different operating systems, different types of computers and different networks. The system had to account for all these variations and be useful to everybody.

| The Outcome

The cost of the whole system, including hardware, software and networking, was less than $1.5 million — about $500,000 for the Intranet using optical fiber for the vertical main frame, $600,000 for the hardware platform with 12 servers, and $400,000 for application software. Most of the government workers are pleased with the system that makes their work simple. Some companies have written letters of thanks for a system that greatly reduced their burden.

Source:
http://www1.worldbank.org/publicsector/egov/zhongguancun_cs.htm

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10.21 Directorate of Commercial Taxes (West Bengal/India)

Commercial Taxes Directorate is the largest revenue earning setup of the Government of West Bengal. The functions of the Directorate of Commercial Taxes are, qualification of tax liability and collection of tax. Commercial Tax Information System has been implemented by the Directorate to augment revenue and minimize evasion of tax. It covers functional areas of registration of dealers, monitoring the payments by dealers which trade in high volumes, monitoring imports, payment accounting through processing of challans, monitoring corridor movement, payment accounting in Profession Tax etc. along with other utility reports.

| Project Background

West Bengal is a major importing state. The volume of commercial tax transaction is fairly large. About 1.6 million challans relating to Sales Tax and Profession Tax and 1.25 million waybills are handled every year. The problem is further compounded by the fact that West Bengal is the corridor for transactions for all the North-Eastern-States.

Therefore it was decided to computerize the activities of the Directorate with an aim to minimize the scope of tax evasion

Broadly, the objectives of IT application were as under:

- **Transparency in the system**
- **Get data; dealer-wise, commodity-wise, office-wise, transporter-wise for efficient functioning**
- **Reduce evasion of tax in the state**
- **Central data model, which could feed all check-posts in the state**
- **Ensure checks and validations, which assumed critical status as goods originate in different states**

Directorate of Commercial Taxes, Government of West Bengal looked for a solution which would be robust, secure and scalable. When dealing with state finance, the system should ensure transparency, efficiency and security. Oracle was selected as a platform for automating Directorate's functions in West Bengal. Oracle platform also provided the technology features which were required to implement VAT policy.

| Services

The Directorate has now made available all application forms for sales tax registration of dealers. A single data model has enabled the Directorate to have all the information about the dealers at one place. The Directorate can closely monitor the dealers, particularly those who engage in large volume trading. The procedure for obtaining waybills from the Directorate has been simplified so as to enable the dealers to obtain the same from the appropriate authority without any hassle.

Most of the major check-posts are now connected with the central system through leased lines and can have the data online. National Informatics Centre (NIC), West Bengal State Unit, implemented the solution. NIC West Bengal State Unit has also developed and hosted an official web site for the Directorate of Commercial Taxes (www.wbcomtax.nic.in).

The traders and professionals having their business or place of work in the state have the benefit of applying for enrollment under Profession Tax Act online. Since information is on a central location, the hardcopy details of pre and post-payment information need not be moved physically.

| Benefits

Profession Taxpayers can submit enrollment application forms and challans online. The database has about 12.5 million records and is approximately 1000 GB in size. All Sales Tax

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

related applications are running on a single system.

Among other benefits, West Bengal Commercial Tax Directorate has been able to detect frauds worth substantial amount by processing payment challans and waybills. Due to the centralisation of data, mismatch cases of transit document have gone down substantially. The system has thus ensured, inter alia:

· Improved transaction processing (reduced processing time)
· Faster and accurate data retrieval
· Introduction of transparency in the system
· Better control and supervision
· Security checks
· Easier and efficient record keeping
· Augmentation of revenue through provision of critical data to the revenue officers
· Identification of tax defaulters and generation of necessary reports
· Provision of the facility for online application for enrollment by professionals
· Integrating the organization geographically and functionally

West Bengal Commercial Tax Directorate, keeping the momentum on, is planning to connect the remaining check-posts and also important offices in the state with the central server. Future plans include introduction of information counter at the Directorate's main building and networking of offices located across the state. The Directorate will also introduce a dealer login, which will enable the dealers to file returns and apply for waybills electronically.

For further information, visit
http://www.wbcomtax.nic.in

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10.22 Land Exchange (LX) Victoria /Australia

The property market is one of the critical industries in creating wealth and growth in the State of Victoria. It is estimated that the market operates on an average annual turnover of $44billion dollars. However, the information system that is currently in place for land transactions is still relatively primitive.

The current delivery of land related information and transactions is predominantly paper-based. The services are often operated and maintained by two or more agencies at different levels of government.

In order to address this, Land Exchange (LX) has established an online environment where people can exchange land-related information and conduct transactions via the Internet. Core LX functionality will comprise:

· Electronic Conveyancing Project (EC) :
Electronic settlement, lodgement and registration of interests so that people can transfer ownership of land via the Internet (excludes the conveyancing process that occurs prior to settlement).

· Streamlined Planning via Electronic Applications and Referrals Project (SPEAR) :
Electronic registration of planning applications so that subdivision and consolidation planning applications can be lodged, referred, tracked and paid for online.

· Crown Land Status Online Project (CLSO) :
Online access system that allows for the identification of Crown land and the determination of its status.

The role of LX will be to deliver core government land-related information and transactions via the web. Key LX investment outcomes are expected to include:

· Faster, easier and accurate transactions in freehold and Crown land
· Online access to land related information and transactions across the state
· Increased efficiency and saving for industry and government
· Increased process transparency for parties
· Reduced risk for the government through the migration from paper to electronic records.

| Major challenges

· Stakeholders and expectations :
In order to develop business requirements that are user focused, it was fundamental for the LX project team to engage various stakeholders to ensure the development of business requirements and functional specifications that met users' needs. Each stake- holder had their own requirements and expectations of LX. It, therefore, became an integral part of the LX program to manage these expectations.

· Governance structure :
In order to ensure that key stakeholders contributed to project oversight, it was nece-ssary to establish a comprehensive program governance framework. The framework is based on project management methodology and has a number of different groups whose terms of reference have been clearly defined.

The management of the governance structure has presented a challenge in terms of meeting the ongoing reporting requirements and ensuring that it remains 'fit for pur- pose' as the program has evolved.

· Legislation :
The LX system requires a legislative framework to ensure that electronic transactions can occur. The development of the Transfer of Land (Electronic Transactions) Bill has necessitated

Government Accommodation Management System (GAMS) (India)
Computerization of Passport Issuance System (India)

the resolution of numerous complex issues and required extensive stake- holder consultation.

· Expected investment returns :

a) **Service Enhancement**
b) **Transparency** - Introduction of transparency among the parties to the transaction. e.g., monitoring of progress
c) **Responsiveness** - Reduction in Land Registry processing timeframes and inputs,
thus improved response time
d) **Quality** - Improved data quality via better validation and certification of data
e) **Convenience** - EC - Elimination of need to arrange or physically attend property
settlements and removal of bank cheques. SPEAR - data only needs to be entered once, reduced communications with other parties, automatic notification if application is incomplete
f) **Equity** - Removal of cost and access differences for rural and regional users

· Financial :

a) **Reduced cost for users/applicants** - EC savings for vendor and purchaser reps. is estimated at around $70 per transaction:
b) **Reduced cost for industries** - $33million per annum saving for industry using
EC is estimated by 2010 based on reaching 66 percent of transactions in scope.
SPEAR savings currently being estimated.
c) **Provide Govt revenue** - Potential for revenue stream generated from licensing
agreements to be used to fund LX operation

· Economic Development :

a) **Increased ability to attract new business and investment-** Reduced time frames and holding costs relating to infrastructure and property development

· Organisation Improvement :

a) **Cross agency processes** - Reform of State Revenue Office duty collection process

b) **Risk minimisation** - Prevention of permanent information loss of State's Crown
land holding due to rapid paper deterioration

· Human resource development :

a) **Improved technology skills** - The LX project is an ICT initiative that is first of its
kind in Australia
b) **Greater collaboration across departments** - The LX requires collaboration
between the Department of Sustainability and Environment, Department of Treasury & Finance (SRO) and a large number of local government authorities
c) **Commitment to Govt strategy** - LX supports the government's commitment in
'Growing Victoria together' in the area of
- Promote growth in information and communications
- Improve the business environment through competitive business cost
- Increase Victoria 's productivity and competitiveness.

Source:
E-Government Resource Centre, Victoria, Australia
http://www.egov.vic.gov.au/Victoria/CaseStudies/Case5/landexchange.htm

For further information, visit
www.landexchange.vic.gov.au

10.23 Gyandoot (Madhya Pradesh/India)

| Project Description

Gyandoot is a successful example of a low cost, self-sustainable and community owned rural Internet project implemented in Dhar District of Madhya Pradesh state in India. Dhar district has a population of 1.7 million and 60% of the people live below the poverty line. The objective of the Gyandoot project has been to establish community-owned, technologically innovative and sustainable information kiosks in a poverty-stricken, tribal dominated rural area of Madhya Pradesh. During the design phase of the project, meetings were held with villagers to gather their input. Among the concerns highlighted by villagers, was the absence of information about prevailing agriculture produce auction centre rates. Consequently, farmers were unable to get the best price for their agricultural produce. Copies of land records also were also difficult to obtain. A villager had to go out in search of the patwari (village functionary who maintains all land records), who often was difficult to get hold of as his duties include extensive travel. To file complaints or submit applications, people had to go to district headquarters (which could be 100 miles away), resulting in a loss of wages/earnings.

| The Approach

The Gyandoot project was launched on January 1, 2000 with the installation of a low cost rural Intranet covering 20 village information kiosks in five blocks of the district. Later, 11 more kiosks were set up. Villages that function as Block headquarters or hold the weekly markets in tribal areas or are located on major roads (e.g., bus stops) were chosen for establishing the kiosks. Seven centres are located in towns (urban areas), 8 in large villages with a population of 5,000-6,000, another 7 in medium sized villages with a population of 1,000-4,000, and the rest are in small villages with population less than 500. Each kiosk caters to about 25 to 30 villages. The entire network of 31 kiosks covers 311 Panchayats (village committees), over 600 villages and a population of around half a million (nearly 50% of the entire district).

Kiosks have been established in the village Panchayat buildings. Information kiosks have dial-up connectivity through local exchanges on optical fibre or UHF links. The server hub is a Remote Access Server housed in the computer room in the District Panchayat. User fees are charged at the kiosks for the services provided. Local rural youth act as entrepreneurs, running these information kiosks along commercial lines. At the inception of the project, it was decided that further expansion of kiosk centres will take place only when local youth come forward to start new centres as private enterprises.

A local person with a 10-year schooling (matriculate) can be selected as an operator. He/she needs only maintenance, limited typing (software is menu driven) and numeric data entry skills. For the initial kiosks, each village committee selected three candidates to receive training at the District Council. At the end of the training, the best trainees were selected to run a kiosk.

The following services are offered at the kiosks:

· Agriculture Produce Auction Centres Rates :
Prevailing rates of prominent crops at the local and other recognized auction centres around the country are available online for a nominal charge of Rs. 5. The volume of incoming agricultural produce, previous rates etc. are also provided on demand.

· Copies of Land Records :
Documents relating to land records including Khasra (record of rights) are provided on the spot at a charge of Rs. 15. All the banks in the district have agreed to accept these kiosk documents. Approximately 0.2 million farmers require these extracts at every cropping season to obtain loans from banks for purchasing seeds and fertilizers.

· Online Registration of Applications :
Villagers had to make several visits to the local revenue court to file applications for obtaining income/caste/ domicile certificates. Now, they may send the application from a kiosk at a cost of only Rs. 10. Within 10 days, notification about the readiness of the certificate is sent via e-mail to the relevant kiosk. Only one trip is needed - to collect the certificate.

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

· Online Public Grievance Redress :
A complaint can be filed and a reply received within 7 days for a cost of Rs 10. These can include complaints regarding drinking water, quality of seed/fertilizer, scholarship sanction/disbursement, employee establishment matters, functioning of schools or village committees, etc.

· Village auction site :
This facility began in July 2000. It makes auction facilities available to farmers and villagers for land, agricultural machinery, equipment, and other durable commodities. One can put one's commodity on sale for a charge of Rs. 25/- for three months. The list of salable commodities can be browsed for Rs. 10/-.

· Transparency in government :
Updated information regarding beneficiaries of social security pension, beneficiaries of rural development schemes, information regarding government grants given to village committees, public distributions, data on families below the poverty line etc. are all available on the Intranet, which makes the government functioning more transparent.

Other services offered at the kiosks include on-line matrimonial advertisements, information regarding government programs, a forum for school children to ask questions, ask an expert, e-mail (free for information on child labour, child marriage, illegal possession of land belonging to Scheduled Tribes, etc.). Some kiosks also have added photocopy machines, STD PCO, and horoscope services. In January 2000, the first month of operation, the kiosk network was accessed 1,200 times for a variety of services. That number reached nearly 9,000 in July. During the first 11 months, the 31 Gyandoot kiosks were used nearly 55,000 times.

Twice each day, the person managing the server, prints the complaints, applications, and e-mails that have been received and sends them to the appropriate authority. The collector responds to certain queries and complaints. If a complaint cannot be addressed, a reply is forwarded to the kiosk manager. The action necessary to address the problem in the field is expected to be taken within 7-10 days. A reply is received at the server room, which is forwarded to the kiosk manager. The district is in the process of putting up a LAN connecting major departments (health, education, tribal development, revenue, food, agriculture, public health engineering, District Council and District Magistrate) to the Gyandoot server. This will eliminate the manual handling of papers.

| Implementation Challenges

In the initial phase, there were reliability problems with the dial up connection. Most of the local rural telephone exchanges (LRTE) did not operate with optical fiber cable. Now the telecommunications department has upgraded the connections of all LRTEs to which Gyandoot kiosks are connected. Senior politicians have been convinced of the merits of the Gyandoot project through demonstration of the facilities provided. The Member of Parliament from the district allocated 25% of the developmental funds (Rs 20 million) at his disposal for an e-education project in the district.

Although complaint filing has been structured through a menu, numerous complaints are sent using the e-mail facility in local languages, which make them difficult or impossible to address.

To enhance the economic viability of kiosks, they are being given licenses to vend government judicial stamps and delegated powers to write petitions. In addition, a public awareness campaign has been launched in the district to promote the kiosks.

| Costs and Benefits

The entire expenditure for the Gyandoot network has been borne by Panchayats and the community with no expenditure burden for the state or national government. The network has been set up at a total cost of Rs. 2.5 million (1 US$= roughly 50 rupees). The average cost incurred by the village committee and the community in establishing a single kiosk was Rs. 75,000.

The funds for the Gyandoot network have come from existing untied funds available to the village committee, private investment, annual State Finance Commission share of revenues, and the National Social Aid Programme allotment available to the District Council. The district level co-ordination committee of bankers has approved a loan scheme for setting of kiosks under the Government of India self-employment scheme.

Each kiosk has a computer, modem, a printer, UPS (4-hour rating), furniture and stationary. The first 20 kiosks established by the village Panchayat have been turned over to a

manager/owner of the kiosk after executing an initial agreement for one year. The village Panchayat maintains the building and the fixtures while the manager is responsible for all the operational expenses and revenue collection. The manager does not receive any salary. He pays 10% of income as commission to the District Council for maintaining the net. For the 11 centres started as private enterprise, the owner pays $100 as a license fee for one year to district council.
Each kiosk was expected to earn a gross income of Rs. 4,000 per month (50% from Gyandoot services, 25% from training, and the remainder from work like typing). The operational costs are Rs 1,000 per month. Net income of Rs 3,000 must cover investments and provide a profit to the entrepreneur. In practice, the gross income has ranged between Rs. 1,000-5,000 per month; depending upon the skill and zeal of the manager.

| Key Lessons

The Gyandoot system helps in filing complaints not just because a communication system has been installed, but due to improvements at the back end that have made district offices more responsive. The awards that the Gyandoot project has received are one sign of its success. In awarding the Gyandoot project the Stockholm Challenge IT Award 2000 in the Public Service and Democracy category the jury described it as "a unique government-to-citizen Intranet project with numerous benefits to the region, including a people-based self-reliant sustainable strategy. The project also was awarded the CSI-TCS National Award for Best IT Usage for the year 2000.

| Impact

The observations (and data collected) by a study team of Indian Institute of Management (Ahmedabad) indicate that as an experiment, the Gyandoot project can be considered path breaking. In the initial euphoria of its launch, with the project champion at the helm of affairs, the usage of the Gyandoot portal was at its peak. It is reported that many citizens were able to resolve their complaints, receive long-pending payments and get access to services, which were hitherto inaccessible.

However, with the passage of time , the functioning of Gyandoot has been somewhat impeded by the lack of reliable power supply and affordable connectivity in the district of Dhar.

Source:
http://www1.worldbank.org/publicsector/egov/gyandootcs.htm

For further information, visit
http://gyandoot.nic.in

10.24 Durban Council's Community Information Link (South Africa)

| Project Description

Community Information Link (CIL) was a project initiated by Durban Metropolitan Unicity Council. It used an existing public library network reaching 40 public libraries, to provide Web-based community and council information via a client/server network – a webserver (IIS) serving client PCs with touchscreens and a browser.

The application (based on needs analysis surveys) included a database of community service organisations which was loosely enough defined to include small for-profit services. The database was moderated by the librarian in each of the libraries and was populated by means of community information collection (telephonic), by the library staff and also by any members of the public who wished to enter the details of community service organisations they were involved in. The latter were checked and then "made live" by the librarian moderator. The application also included a job-finder which allowed for capture and printing of a CV, and webforms for advertising for job applicants as well as employers looking for applicants (to enhance local employment). Other Web-based facilities included classified adverts, and "what's on in your library".

| The Approach

The objectives of CIL were three-fold:

· To improve quality of life of the (often impoverished) communities around the libraries by providing access to survival information in both Zulu and English;
· To support provision of council services by raising the profile of what was being offered to communities who had not received much in the way of local government services previously;
· To provide a technology platform and channel to residents of the city who would otherwise not have access to ICT; as a skills enhancing service, and to give them a voice

The application was also intended to enhance the democratic process and thus provided access to councillor's details and various means of input to the local government departments, e.g. to report faulty streetlights, etc.
Residents of Durban who were at or below the poverty line were envisaged as the main beneficiaries, though the council itself was also to benefit from the opportunity to provide information about the (rateable) services offered, when many ratepayers were not paying because they did not know what services were available. Library staff were the other main stakeholder group.

| Costs and Benefits

The pilot project was rolled out to 18 libraries only. Hardware and licence costs were US$170,000; software costs under US$5,000; telecom line rental costs were about US$90 per month per library. The benefits to the residents would be difficult to quantify but are unlikely to be significant. There was very little use of the CIL system: users wanted access to Microsoft Office and the Internet rather than the community information. **The community information provided was only ever provided in English, not Zulu or any other language and it had little relevance to improving quality of life in the target communities.** Intended benefits for the council were not achieved, with little or on council information put online and no interaction between community members and councillors. There was one unexpected benefit: the funding of the second/main stage of the project by the Carnegie Foundation to the tune of US$0.7 million However, the aims changed for this second stage, and the money was later used to provide Internet access to all 60 libraries in the Unicity, with no particular community content focus.

| Implementation Challenges

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

· Lack of HR capacity :
Due to frozen posts and lack of funding for personnel, libraries were running at about 50% capacity. This restricted the ability of library staff to support community users of CIL; yet those users – often being exposed to ICTs for the first time; often with low literacy levels – needed considerable assistance.

· Lack of support :
Lack of support from the highest level in the library system trickled down to a lack of support and project ownership by many library staff, limiting the drive to reach out with the system into local communities. There was also a lack of understanding and support for the project within the Council, leading to resistance to opening channels of communication with the public.

In terms of its initially-stated objectives, the project was largely unsuccessful, verging on a total failure. By 2002, Community Information Link no longer existed, and the equipment allocated to it was being reassigned for other purposes. Its main value was in leveraging the funding from the Carnegie Foundation.

Source:
http://www.egov4dev.org/durbancil.htm#title

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10.25 Drishtee: E-Government Through Kiosks (India)

| Background

Drishtee is a revenue-generating platform for rural networking and marketing services that enable e-government, education, and health services. It is a state-of-the-art software package which facilitates communication and information interchange within a localized intranet between villages and a district centre. A string of rural services, which include land records, mailing software, virtual marketplaces, matrimonial services, on-line grievance postings and a host of other customized services have supplemented this communication backbone.

| Project Description

The objective of the project has been to establish community-owned, innovative and sustainable information technology projects in the most poverty-stricken and tribal-dominated rural areas throughout India. The project addresses the social, economic and development needs of the villagers through an innovative G2C (Government to Citizen) model. The project seeks to mark a paradigm shift by using information and information technology for rural people, causing a shift in the government's delivery apparatus - to serving villagers directly rather than through civil servants.

Drishtee is currently in the process of installing low cost, self-sustaining and community owned rural Intranet projects in several targeted districts. Services are provided through Drishtee in a village (or a group of villages). A local villager owns a kiosk after having it financed through a government-sponsored loan. Kiosk owners can then pay for their loans with their earnings and become an entrepreneurial role model for the younger generation.

These Information Kiosks provide user-charge-based services to rural people. Each kiosk will have computers and will be wired through an Intranet network. Besides the computer and modem, the hardware set up at the kiosk includes a printer, UPS, furniture and stationary.

Soochanalayas or centres have been established to cater to the 25 to 30 surrounding villages. Soochanalayas have been established in the buildings of Gram Panchayats, which are located either at block headquarters or at prominent haat bazaar (weekly marketplace in tribal areas) or are in prominent villages on major roads (e.g. bus stand points).

Soochanalayas are nodes working as rural cybercafe-cum-cyberoffices. Server/hub is a Remote Access Server (RAS) housed in the computer room in Zila Panchayat (District Council). Each Soochanalaya provides an option to access services to about 15 Gram Panchayats (25 to 30 villages or 20,000 to 30,000 people). The services of the network cover wide-ranging information needs of the villagers. Thus, Drishtee provides an option to access various services through its network to villagers living in 311 Gram Panchayats and over 600 villages and a population of around half a million.

Drishtee has developed software to run the intranet and various services. It is very simple and menu-driven software, which requires minimum data entry at the client end. The software is in Hindi language and requires the LINUX operating system. MySQL will be used for the RDBMS backend and PHP as the programming language. Java is used for communication. The software has an elaborate administration mechanism to monitor node activities and maintain quality of services offered to the people.

The project has demonstrated a new model for a more effective, accessible, prompt and transparent governance, which benefits not only the citizen but also the government by effectively making the citizen a partner in the process of governance. The system is very cost-effective. In the Drishtee model, each of the kiosks caters to the needs of the surrounding villages. Kiosks have been established in buildings, which are located either at block headquarters, at prominent haat bazaars (weekly marketplace in tribal areas) or at prominent villages on major roads (e.g. bus stand points).

| Challenges

Infrastructure and power supply have been the two major barriers to Drishtee.

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

· Impact :

Around 40,000 users have used the Intranet system since the inception of the project. Mandi rates, land records, and grievance redressal continue to be the most popular services, which have been utilized by 75% of all users. Eleven new Soochanalayas have been established within eleven months of the project inception. Soochanalayas are running as economically viable units with all the Soochaks comfortably earning a livelihood. All the commercial banks in the district are eager to finance new Soochanalaya units and three new Soochanalaya units are sanctioned by the commercial banks for financing. There has been a 3% to 5% increase in the margins of farmers due to the ability to bypass middlemen and traders. There has been a four-fold increase in the number of users per month and an increased awareness of computers and IT in rural areas. This has resulted in the opening of new private computer training institutions and enrolment in such institutions has increased by 60%. The effect has opened a new horizon of employment avenues for the rural youth.

Efficiency level in the functioning of government departments has increased resulting in improved and prompt services to the rural masses. Self Help Groups in the rural areas are getting more organized and empowered due to the transparency brought about in government services and rural economy (e.g. Farmers' Association in village Kod are demanding a new kiosk in the village). The lower government functionaries have become more computer-savvy. This is apparent in an increased number of applications for computer loans from the Employees Provident Fund and an increased number of officials who have joined computer-training classes.

Computer literacy has increased in rural areas as approximately 120 rural youth are getting trained in the Soochanalayas in the remote areas. Several prominent organizations like Microsoft, ISRO, MIT, IIT, IIM, NIC, LBSNAA, IIPA, HLL, Tata Trust, Mahindra Tractors, Jain Irrigation, Web Duniya, and S.Kumars have sent their high level teams to understand the model and its impact. Various State Governments like the Governments of Himachal Pradesh, Haryana and Orissa have sent their teams of officials to understand the model so that it can be replicated in their respective states.

Source:
http://www.e-devexchange.org/eGov/orissa.htm

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10.26 Community Information Centres (CIC) (India)

| Project Inception

The North-East region of India has traditionally been less developed due to its remoteness and difficult hilly terrain. A strong communication infrastructure has been lacking. Information Technology (IT) has consistently catalysed socio-economic development. It was envisaged by the Government of India that extending the reach of the IT revolution to this region would give a boost to all-round development. In particular, satellite based communication overcomes the challenge of terrain and geographic remoteness.

The Ministry of Communications and Information Technology, Government of India launched a Pilot Project to establish CICs in 30 Blocks in North-Eastern States in April 2000. The pilot project was launched in August 2000. Inspired by its sucess, CICs have been set up in all the 487 Blocks of the eight North-Eastern states viz. Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.

| Objectives

The CIC project was conceived to achieve the following objectives:

- **Information Technology & Communication infrastructure at Block level in North East of India**
- **Web access and Internet services such as E-mail**
- **Market access and e-commerce**
- **Access to socio-economic databases**
- **E-learning (computer aided learning processes) and e-education**
- **E-medicine, e-consulting**
- **E-governance applications, citizen centric services**
- **Weather information**
- **IT awareness among local people**
- **Computer training programmes**
- **Employment Opportunities**

| Infrastructure and Management

Each Centre is well- equipped with infrastructure including one server machine, five client systems, one each of a VSAT, Laser Printer, Dot Matrix Printer, modem, LAN hub, TV, Webcam and two UPS (1KVA, 2 KVA).

Each CIC has two CIC Operators (CICOs) for managing the centres and providing services to the public.

The project is a joint effort by Department of Information Technology (DIT) under Ministry of Communications and Information Technology (MCIT), National Informatics Centre (NIC) and the State Governments of the North-Eastern states.

DIT has funded the project and has the responsibility of overall monitoring and management. NIC is the implementation agency. Application Software development and training of CIC Operators are a part of NIC's responsibilities. The State Governments were entrusted with the mandate of site selection, preparation and maintenance, manpower recruitment (CICOs) and identification and creation of content for various services/applications to be delivered through the CICs.

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

| Project Implementation and Monitoring

In addition to the CIC Cell at DIT and the CIC group at NIC Headquarters, the project has been executed with the contribution of NIC's State Informatics Officers (SIOs) and District Informatics Officers (DIOs) who have liaised with the state government authorities and the vendors delivering and installing the equipment at the CICs.

The CIC group at NIC, New Delhi has developed a comprehensive information system for the CICs wherein every aspect of the progress of the project is remotely monitored. The delivery, installation and operation status of all hardware and software is logged into this site by the SIOs and CIC Operators themselves, including post-installation malfunction of machines and applications.
The CIC group holds review meetings, twice a week, over Video Conference, with the SIOs of the North-Eastern states, vendors representatives both in Delhi and in Guwahati and Calcutta, State Coordinators and officers from other NIC divisions. A Visual Monitoring system is in place whereby CICOs can send images captured with the Web Cameras to Delhi for attendance and general observation. TVs have been provided at each site to disseminate educational programmes through Doordarshan and IGNOU in addition to general entertainment which is anticipated to attract visitors to the CICs.

The establishment of the CICs has been an arduous and very challenging task. The installation of the equipment was done during peak monsoon season. Due to heavy rains, there were very frequent landslides and floods which have severely impeded easy travel. In spite of these hardships, the equipment was delivered and commissioned on target. Novel solutions were found for transporting men and machines including elephants, boats and plain head load. A truck bearing equipment for four CICs in Nagaland was hijacked by extremists. The Law and Order scenario in the region had threatened to scuttle satisfactory implementation of the project. As a result of a gigantic and unique team effort, agencies associated with the project have surmounted all hurdles to make the project a success.

| Services

Basic services to be provided by CICs include Internet Access and E-mail, Printing, Data entry and Word processing and Training for the local populace.

In addition, several citizen-centric or Government to Citizen (G2C) services are to be delivered from the CICs such as

· Birth and Death Registration
· Service Facilitation Centre (e-Suvidha) wherein different types of certificates issued by Block and District administrations like SC/ST, Marriage etc can be disseminated through CICs
· Prices and other market information of Agricultural produce
· Information on Exam Results and Educational opportunities
· Employment portals

The number of visitors varies between 20 to 100 a week depending on location of CIC. Many CICs report over 150 visitors/week.

| Utilization of CICs

· Training :
Training of the local population on the fundamentals of using computers and the imparting of basic working knowledge is a major activity in the Community Information Centres. A prime example is that of CIC, Yuksam, Sikkim which is doing some commendable work.

Since the opening of the Centre in Yuksam, the CIC has seen successful completion of the Basic Computer Awareness Training Programme for the first ten batches of trainees and there has been a constant increase in the number of interested persons. The trainees include people from different walks of life, in an age group ranging from 10 years to 78 years. They are school going kids, college students, NGO members, secondary and pre-school teachers, nurses, doctors, ration shop owners, forest guards, farmers, radio mechanics, barbers, pan shop owners, tourist guides, porters, hoteliers, hotel receptionists and others. The Centre announced that special care would be taken in conducting lessons for the less educated local people and it has made a modest beginning by recruiting a few participants.

Some other innovative and useful ways in which users have derived benefit from the services at the CICs are described below:

· Guidance was given to tourists going to Myanmar by bus, from Imphal to Mandalay on the Indo-Burma road by downloading information obtained from Web Search at CIC, Imphal East I

· One user received information from the Neurological Institute, Guwahati for treatment of his father's illness

· Another user ordered medicines from Apollo Hospital, Chennai

· A third user downloaded a Comparative Price List of Computers to help in purchase of a PC

· A Bank Officer received the result of correspondence course

· A Film Maker registered his entry for a Film Festival and received the entry rules

· Board Examination results, the All India Entrance Examination results for various Engineering/Medical Colleges, State Bank Recruitment results were disseminated from several CICs

· In CIC, Yuksam, Sikkim, demonstrations were held for young children from Class 1 to Class 5 which included Disney World Animations. The centre also organized a Quiz Competition for the students of Yuksam Secondary School. The youngest person to fully browse the net here is a 10 year old. The CIC will train all the members of the Panchayat here and surrounding areas who are then expected to convince the local people to take advantage of the CIC, as they enjoy a larger forum

· CIC, Jugijan distributed information regarding Rainfall Records

· An Assamese Word Processor 'Sabdalipi has been introduced for use by visitors at CIC, Raha. Similarly a Bengali typing software was introduced for official purposes in Khowai, Tripura

· Service for Tracking delivery of Speed Post articles and Express parcels by CIC, Imphal East I through links to associated Websites is being provided

· A Teachers' Day Programme organized by CIC, Wozhuro Ralan in Nagaland was addressed by local luminaries and used as a forum for Awareness generation about CICs and their prospective potential.

| Project Sustenance

Many of the CICs, already operational, charge nominal amounts from users for services which help them to meet day-to-day running expenses such as consumables, stationery, fuel for the Genset etc.

DIT/NIC will continue to provide manpower support to the CICs for five years and NIC will provide technical and maintenance support for this period. DIT/NIC will continue to provide satellite connectivity after five years. The Community Information Centres will then be handed over to the respective state governments. The state governments are required to evolve a viable business model to make the CICs self-sustaining during these five years. The private sector may collaborate with government for effective service delivery.

Substantive revenue generation has been achieved by many CICs such as Golaghat, Assam and Gangtok, Sikkim which pays the salaries of the operators from this revenue.

Source:
http://informatics.nic.in/archive/inf2002oct/e_governance.htm

For further information, visit
http://www.cic.nic.in

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10.27 Akshaya Project (Kerala/India)

| Project Description

Kerala, in an endeavour to 'bridge the Digital Divide' and to propel Kerala as India's foremost knowledge society, embarked on 'Akshaya Project' on the 18th of November, 2002 in the Malappuram District. It is expected that Akshaya will be a watershed in effacing the divide between "information haves" and "information have-nots" and in disseminating the benefits of IT to the common man.

Akshaya expects to be ranked amongst the most ambitious ICT programs ever attempted in a developing society. The project is expected to generate a network of 6,000 information centres in the state, generate about 50,000 employment opportunities and throw up investment opportunities to the tune of Rs.500 Crores, all within a time span of 3 years.

| Objectives

The Akshaya project is envisaged as a practical, commercially viable enabler essentially having to:

· Impart basic IT literacy to at least one member of each of the 65 lakh families in the state
· Extend the training initiative into a service delivery mechanism for the local citizen

| Service Delivery Mechanism

Once the people have been introduced to the immense possibilities of ICTs, the next step would be to make facilities available to make their learning useful and reap the benefits.

The focus here would be to ensure a viable, sustainable service delivery mechanism for the citizens of the state. The Akshaya centre will be equipped with necessary equipment like computers, fax, printers, telephones, broad band Internet connection etc., and software so as to cater to the information and communication requirements of the local citizens. A community portal which will cater to the day to day requirements of the local community is also envisaged.

| e-Literacy Campaign

The e-Literacy campaign is the foundation on which the state seeks to bridge the digital divide in the state. The underlying objective of the campaign is to remove the "fear of the unknown" that common people have about technology in general and computers in particular.

The e-Literacy campaign proposes to impart basic/functional eLiteracy to one member of each of the 65 lakh families in the state. Selection of the member to be trained will be decided by the family members. The persons trained as part of this campaign are expected to act as a catalyst in ensuring the overall success of the project.

The course content is being designed keeping this in mind. The emphasis of the training program will be on the use of technology and not on technology itself. The program will aim at opening up the minds of the student to the immense possibilities and benefits of ICT.

| Expected Benefits

· Direct Benefits :

a) At least 1 computer literate person in every home in the state
b) Network of 6,000 Community Information Centres across the state
c) Convenient access for the common man to information services

- Government Accommodation Management System (GAMS) (India)
- Computerization of Passport Issuance System (India)

d) Local Community Empowerment
e) Generate locally relevant content
f) Generate over 50,000 direct employment opportunities in three years
g) Generate direct investment of over Rs. 500 crores in 3 years

· Expected Indirect Benefits :

a) Cheaper communication through Internet telephony, e-mail, chat etc.
b) Enhanced ICT demand in Tele-medicine/e-Commerce/e-Education
c) Enlarged marketing opportunities for agricultural/traditional products/ artifacts
d) Improved delivery of public services
e) Catalysing of all sectors in the IT Industry

| Strategies

The Akshaya project conceived in a Public Private Partnership (PPP) mode, will be implemented through the Local Self Government (Panchayati Raj Institutions).

The project has been shaped based on the rich insights gleaned from the 'Saksharata' campaign of the state that resulted in a 100% literate state in a very short period of time. The project has also been drawn from the experiences of projects like Gyandoot that have been attempted in India and abroad.

The project has been designed to leverage Kerala's unique strengths, active community organizations, progressive social framework, advanced telecom infrastructure and wide-spread media penetration.

Use of self-employment programmes and private enterprise within a government framework in the development of training institutes and content generation will aim at ensuring commercial viability as well as sustainability of the project.

| Multipurpose Telecentres at ward level

The project involves the setting up of multi-purpose IT enabled "Akshaya Kendras" for every two wards, each catering to approximately 1000 families. Akshaya Kendra is the basic unit through which the project aims to reach its objectives.

Each Akshaya Kendra will become the primary contact point for residents in its vicinity. The Akshaya Kendra would provide for a number of facilities that could be used by the common man to simplify his day to day activities. The Akshaya Kendra will be equipped with computers, printers, fax machines, photocopiers etc. The investment on each Akshaya Centre is around Rs Two Hundred Thousand.

The Akshaya Kendra will have facilities for DTP, printing, computer rental, Internet browsing, chatting, Internet telephony among others. Government information and forms for various government services will also be made available through the Akshaya Kendra. The Akshaya Kendras will carry the official logo of the Akshaya Project.

The entire project is to be implemented through the 3-Tier of Panchayathi Raj Institutions. District Panchayath will be the overall coordinators. Committees are proposed at State, District, Block, Panchayat/Municipality and Ward Levels for the implementation of the project. The role of the grass root level committees at the local body level and ward level will be mainly to ensure 100% participation of the households for the Literacy campaign.

Source:
http://www.akshaya.net/akshaya/project/

For further information, visit
http://www.akshaya.net

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10.28 Government Accommodation Management System (GAMS) (India)

The Government of India owns a large number of residential units (over 65000) under General Pool Residential Accommodation (GPRA) at New Delhi. Government allots them to Members of Parliament, Supreme Court and High Court Judges, senior government officials and other employees of the Government of India and its attached/subordinate organisations, through the Directorate of Estates (DoE), which is the Estate Manager of the GPRA under the Ministry of Urban Development & Poverty Alleviation (MUD&PA). DoE receives applications from all the eligible applicants (more than 0.2 Million) for various types of residential units, prepares waiting list and allots residences to them.

The computerisation in the DoE started in the early 1990s. However, it was not very effective, as the computerised system implemented during those days did not attempt to map the business process involved in the allotment of these residential units in totality.

| A New Beginning

Government Accommodation Management System (GAMS) is a computerised system for government accommodation management, automating all the activities starting from the submission of the application to the vacation of the residential unit by the allottee. This system is radically different from the earlier system which updated databases in offline mode making it less current and therefore, of not much use. The required software has been designed and developed by NIC.

GAMS covers following activities related to the allotment of GPRA houses:

- **Reducing the number of forms**
- **Simplification and Redesign of the application form**
- **Registration of applications for initial allotment, change of accommodation, and allotments on medical/functional and other grounds and printing of acknowledgment slips**
- **Registration of vacation of house for any category**
- **Preparation of waiting lists for initial, change and adhoc allotments**
- **Preparation of proposal for allotment according to such waiting lists**
- **Allotment as per the finalised proposal for allotment**
- **Acceptance / technical acceptance of allotment by the employee**
- **Printing of authority slip for the possession of house**
- **Reconsideration for re-allotment by the employee**
- **Preparation of first rent bill and revised rent bill in future**
- **Allottee Account Number (AAN) for all the allottees**
- **Cancellation of allotment**
- **Retention/extension of house after cancellation**
- **Regularisation of house allotted to an employee upon death, retire ment and transfer as per rules**
- **Accounting of license fee recovery from allottees**
- **Subletting and litigation cases**
- **Printing of letters at various stages with signatures embedded in the letter of allotment**

| Technology Used

GAMS uses the state-of-the art IT. It is implemented using 3-tier architecture as a web-enabled application. These are:

Database Server - Oracle 9i on RedHat Linux Advance Server
Application Server - Oracle 9iAS on RedHat Linux Advance Server
Front End - Internet Browser on Microsoft Windows.

- **Government Accommodation Management System (GAMS) (India)**
- Computerization of Passport Issuance System (India)

The application has been developed with the Developer Tool Oracle Internet Developer Suite.

| Highlights

· Authentication with a difference – Virtual Private Database and

Rolebased Menu :
The GAMS software incorporates the concept of data access according to Oracle user account and the associated set of rules & policies implemented through Virtual Private Database (VPD). Each authorised user of the system has been given a username with password and has been assigned specific roles to operate on GAMS. Based on the set of rules and policies associated with one's account, he/she gets a specified housing stock and based on the roles, also gets a customised menu option which helps the user to do the activities allocated to him/her. One cannot see or operate on the housing stock assigned to any other user. An authorised user cannot do the activities not assigned to him/her.

· No more Hand Written Records / Letters :
All letters, registers, records and MIS reports are generated by the system.

· Accounting of License Fee Recovery :
The DoE levies License Fee for the houses allotted by it. It results in the collection of a large sum of money for the Government. GAMS helps in tracking & accounting the License Fees recovered. Further, the allotment is done much faster, thereby reducing the number of days a house remains vacant.

· Allotment of Allottee Account Number (AAN) :
GAMS allots an Allottee Account Number (AAN) to each allottee of the government accommodation. Once allotted, the AAN shall remain the same throughout his/her entire service. This shall facilitate the accounting of the license fee recovery and also tracking of the movement of government servants from one accommodation to another.

· Dissemination of Information to the Applicant – Citizen Interface :
Information is available through the helpdesks available in the Information Facilitation Centre (IFC) of the DoE. The Website of the DoE has been revamped to display informa- tion available through GAMS. All forms needed with regard to the allotment, are avail- able on the website and can be downloaded by the applicants. Information Kiosk has been installed to provide information to the applicants. Plans have been drawn up to install these kiosks in various bhawans for easy access.

GAMS has been implemented in all sections of the DoE dealing with GPRA. The successful implementation of the project has attracted the attention of several departments. Requests have been received to implement a similar system in the regional offices of the Directorate.

For further information, visit
http://estates.nic.in

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10.29 Computerization of Passport Issuance System (India)

The Passports are issued at 30 Passport Offices in the country and the subsequent services are also rendered at 160 Indian Missions abroad. Generally the Passport services are rendered either after the Police clearance or after verifying at the office where the previous passport was issued. While providing the Passport services the particulars of the applicant is also matched against various existing records.

The Passport seekers required traveling long distances (some times beyond 400 kms) to submit their applications and to know their application status. Long queues at Passport Offices are common scene. Like any other public dealing offices the Passport Issuing offices are also surrounded by touts and unhelpful officials which creates the maximum harassment to the passport seeking public.

All the 30 passport offices in the country are computerized. The computerization includes all the operations from acceptance of the application to the production of Machine Readable Passports. The following are the major benefits due to the computerization:

a) Instantaneous status enquiry through telephone and Internet, which avoids long distance travel and waiting in queue for many hours.
b) Some services are available across the counter, which takes earlier took several days.
c) Various statistical reports simplifying the Monitoring System.
d) The elegant Machine Readable Passports reduced waiting time at National and International Immigration Counters.

The decentralization of acceptance of Passport Application is being introduced over 500 offices across the country to take the passport services to the doorstep of the public. The Passport Applications are accepted at District level and forwarded to the concerned passport offices after entering the data and police verification, which avoided the public to travel long distances.
The provision is made to apply passport online, which helped to produce error free passports, reduce processing time at issuance office and avoid the applicant to wait in long queues.

A central database with passport applicant details including photograph is created at NIC HQRS, New Delhi. The database has over 60 Million records. The access is provided to all the Passport Issuance Authorities in India and abroad, Immigration authorities and other selected security agencies. The creation of this database made a revolutionary change in the Passport Issuance System resulting in the following major impacts:

a) Relief for Indians to get Passport services outside the country across the counter especially when they lose their passport for which it used to take several days/weeks.
b) Helped security agencies to detect fake passports without visiting individual passport offices.
c) Helped the passport holders as well as Immigration authorities to detain or release the passengers immediately in case of suspect passports, earlier in such cases take several days to conclude.

A project of scanning over 30 Million Passport Applications having 400 Million pages across the country was completed recently. This is a step towards less paper office approach in passport offices where trucks of papers are dumped which were impossible to retrieve. Hence the following is achieved:

a) Release of space in prime areas.
b) File retrieval has become instantaneous.
c) Avoided missing/destruction of evidences.
d) Investigations regarding forgery of Passports became possible without approaching the Passport Offices.

In the recent pendency clearance drive at RPO Delhi, it was demonstrated that about 60

- Government Accommodation Management System (GAMS) (India)
- **Computerization of Passport Issuance System (India)**

officials can produce over 35,000 passports in a span of 10 days by using the existing IT infrastructure. The Passport Issuance System in India could become the best among the developed countries if the Passport Employees shows little bit cooperation. Presently the Indian Passport is just a step away from e-passport.

For further information, visit
http://passport.nic.in

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10.30 Union Budget Document-Dissemination & Live Webcast (India)

The Annual exercise of declaration of the Budget of the Country every year holds immense importance for everyone including businesses, government departments, organisations and citizens at large. Effective application of ICT to this area involves not just computerising the entire budget activity but also making the complete information available to the nation immediately and in an easy to access manner. National Informatics Centre (NIC) in India has been fulfilling the key objective of 'Information Sharing' in e-government by publishing the Union Budget of the Country at the same time as it is announced in the Parliament by the Union Finance Minister, for the past many years now. A special website has been designed and developed to enable the citizens to view the complete text of the Annual Union Budget over the Net. The website has been developed as a measure of public facilitation in order to disseminate accurate and direct information to the people.

The website enables one to view all aspects of the budget in detail including the facility to download all the documents of the budget almost immediately after the presentation of the budget in the Parliament.

The Budget Speech of the Finance Minister is also webcast live by NIC and the video of the entire speech can be viewed on the website by millions from all over the world.

Budget reports of last 9 financial years are available in the archive. The website contains a record of last 8 Economic Surveys as well. Links to all important financial institutions like Reserve Bank of India, CBEC, Income Tax Department, Planning Commission, Central Pension Accounts Office etc facilitates knowledge sharing between the various departments under the Ministry of Finance.

For further information, visit
http://indiabudget.gov.in

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Chapter 10

Case Studies

Category	Case Studies
Improving Delivery of Citizen Services	- Rindernet: Online Cattle Net (Austria) - Exam Results on the Internet (India) - CARD (Andhra Pradesh/India) - Bhoomi (Karnataka/India) - Online Parking Spot Search System (Rosenhiem, Germany) - Electronic Birth Registration in Rajshahi (Bangladesh) - Dairy Information and Services Kiosk (Gujarat/India) - Establishing a Quality Early Childhood Centre (New Zealand) - Vijaywada Online Information Centre (VOICE) (India) - Durban Council's Community Information Link (South Africa)
Integrated Delivery of Services	- Lok Mitra (Himachal Pradesh) - Gyandoot (Madhya Pradesh) - NAI DISHA (Haryana) - E-Seva (Andhra Pradesh) - Citizen Services Centres (Bahia/Brazil) - Beijing e-Park (China)
Increasing Internal Efficiency and Revenue	- Bhoomi (Karnataka) - Computerised Interstate Check Posts (Gujarat) - e-Procurement (Chile) - Khajane (Karnataka)
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Annexe 1

Global Interoperability Framework Initiatives

Having recognized the importance of Interoperability Framework and its relevance and impact on e-governance, many countries have evolved or in the process of evolving their national interoperability framework for government business as well as for other sectors. These national E-Government frameworks address the use of various technologies and protocols. Each national framework addresses some combination of the following technologies/frameworks, as well as others:

- **Networking LAN/WAN protocols**
- **Directory Services**
- **Domain naming**
- **File, Hypertext and Message transfer protocols**
- **Messaging/Data Integration**
- **Schema/Metadata Registries**
- **Web-based Services and Middleware**
- **Security**
- **Authentication**
- **Character sets**
- **Newsgroup services**
- **Browsers and Viewers**
- **SMS/WAP/iMode**
- **Reusability**

Notable Interoperability Framework initiatives by some of the countries are discussed in brief below:

| United Kingdom

The UK online strategy envisages better public services tailored to the needs of the citizen and business, founded on seamless flow of information across government. The e-Government Interoperability Framework for UK sets out the government's technical policies and specifications for achieving interoperability and ICT coherence across the public sector. The e-GIF defines the essential pre-requisites for joined-up and web-enabled government.

The UK e-Government Interoperability Framework model focuses on 4 aspects- interconnectivity, data integration, access and content management. The main thrust of the framework is to adopt the Internet and World Wide Web specifications for all government systems. The Framework also sets out policies for establishing and implementing metadata across the public sector.

| New Zealand

The New Zealand e-GIF is built on following five elements:

· Business Process Interface :
Takes care of matters needed to enable managers to map processes to support inter- agency business solutions; and define the services to be presented based on business solutions.

· Service Delivery :
This element covers matters needed to provide answers to queries from clients.

· Access :
Matters needed for obtaining access to information are covered in this element. Included are security; features of access methods and types of expected transactions.

· Information Sharing & Exchange (Data Integration) :
Matters needed to allow for the recognition of data-codes, recognition methods, interpretation

and formats used.

· Interconnection :
Matters needed for the exchange of information between a user and an entity of e-government- transmission mechanisms; transfer mechanisms (interfaces) that link the transfer medium (internet) and an end user, security and protocols for managing the connection.

| India (Interoperability Framework For E-Governance (IFEG))

In India, the National Informatics Centre (NIC), under the Department of Information Technology, Ministry of Communications and IT, Government of India, has initiated the development of an Interoperability Framework for E-Governance (IFEG) that comprises a set of policies and technical standards to facilitate interaction between isolated E-Governance applications. Leveraging the recent technical advancements that allow applications to interoperate, regardless of the underlying technologies, IFEG envisages facilitating joined-up service delivery through a single window.

Major objectives of IFEG are:

· To provide user-centered e-services by facilitating the interoperability of services and systems between public pursuit of their E-Government strategies

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Annexe 2:

Guiding Policies For Interoperability Framework

The development of the Interoperability Framework should be governed by a set of underpinning policies and guidelines. The following policy issues may be considered important while developing the e-government interoperability framework for a developing country.

· Dynamic Environment :
Technologies, standards and the end user requirements are continually changing with time. The Framework should be able to respond to these changes and should be able to function in a dynamic environment.

· Easy Access to Information :
Central to the effectiveness and utility of e-government, is the ability of end users to gain easy access to government and public sector information. Option to an end user to complete all transactions at a single point; provision of integrated services; availability of services in different languages; multi-channel and multimedia communication means; are all crucial to the success of e-government and hence to the design and development of the Framework.

· Adoption of Web-based Standards :
It is essential that the Framework is aligned with the specifications and standards adopted by the Internet and World Wide Web in respect of all public domain information systems.

· Bowser-based Technology :
Primary means of access to all public domain information systems must be through browser-based technology.

· Use of Primary Standards :
XML (eXtensible Markup Language) may be adopted as the primary standard for data integration and presentation tools for all public domain information systems.

· Use of Open Standards :
To the extent possible, focus should be on open standards and open source software. Open standards allow exchange of information between dissimilar hardware, operating systems and application software. For example, XML allows creation of common inform-
ation formats. It permits sharing of both the format and the data over the Internet and intranet and the transformation of data from one format to another.

· Use of Open Source Software :
Open Source Software has publicly available specifications. The open availability of their source code encourages further development in the public domain, making them robust and interoperable. The objectives of the Framework should be in tune with those of open source software (OSS) and therefore, they should be assessed and considered favourably alongside proprietary products.

· Use of Reusable Software Components :
It is important to speed up the life cycle of large software projects, mainly to avoid time overrun and to keep the cost of development under control. This requirement can be partially met by employing reusable software components and processes. Efforts should be made to identify and create components which can be used within the appli- cation as well as across various applications in different ministries and departments. The use of tried and tested components enhances the quality of the entire system.

· Scalability :
There could always be changing demands made on the information system, such as changes in data volumes, number of transactions or number of users. It is essential that the specifications chosen have the capability to be scaled to satisfy these changing demands.

· Metadata Standards :
Standardisation of metadata is essential if the data is to be truly interoperable. It also ensures that information access and services rendering to the citizens is achieved without the

knowledge of the structure of the government.

Compliance with the Interoperable framework must be made mandatory for any system in the Government. Suitable mechanisms must be adopted by existing and legacy systems to conform to the framework.

Framing of policies and specifications for IF should be followed up with provision of support, guidance on best practices, toolkits and agreed schemas. The entire strategy to implement good e-government should be viewed in long-term perspective and hence, must be supported by vigorous processes. The development of Interoperability Framework must, therefore, be reviewed and updated on a continuous basis.

Previous

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E-Government ToolKit

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