



THE E-GOVERNMENT HANDBOOK FOR DEVELOPING COUNTRIES

*A Project of InfoDev
and The Center for
Democracy & Technology*



infoDev

**CENTER FOR
DEMOCRACY
&
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PREFACE

The process of globalization may very well entail both a reduction of income disparities among countries, and increasing income inequalities within countries. If this is so, for many countries, addressing the Digital Divide issue will be as much an external as an internal battle. On both fronts, e-government will be a powerful tool to help all types of economies (developed, developing and in transition) to bring the benefits of the emerging global information society to the largest possible part of their respective populations.

Direct effects of e-government include cost effectiveness in government and public operations, significant savings in areas such as public procurement, tax collection and customs operations, with better and continuous contacts with citizens, especially those living in remote or less densely populated areas.

Indirect effects are no less important, and include greater transparency and accountability in public decisions, powerful ways to fight corruption, the ability to stimulate the emergence of local e-cultures, and the strengthening of democracy.

These are among the reasons why e-government, after spreading through developed market economies, has now become a priority in an increasing number of developing countries. Around the world, significant resources are being mobilized, as well as additional human resources and energies, to develop, implement and promote the use of e-government. However, since such resources remain scarce in regard to the immense tasks of socio-economic development and poverty alleviation, it is essential that they be used wisely and with a maximum chance of success. Benefiting from other countries' experiences, understanding their successes and failures, and adapting that knowledge to the characteristics of one's socio-economic environment will be vital to the future of e-government in many parts of the world.

This is why *infoDev* is proud to have contributed to the production of the present Handbook. There is no e-government textbook and no e-government theory; knowledge comes from practice; excellence comes from best practices. This handbook is a first attempt to bring together key resources and examples of best practices from around the world and to provide an operational tool to help e-government practitioners move as swiftly and efficiently as possible through the three stages described here, namely: publishing, interacting, and transacting. As was once said, in e-business, e-commerce, and e-government, the most important letter may very well not be the 'e', but the 'r' ... which allows participants to move from 'contacts' to 'contracts'.

The e-government Handbook is one of the products which best illustrates the new strategy of *infoDev*, based on exchange of best practices and knowledge dissemination. This handbook, its companion CD-ROM and its associated website follow in the track of the *infoDev* Telecom Regulatory Handbook, and the 'regulateonline' website; it constitutes a vital tool for those countries, governments and societies who choose to adopt e-government as a pillar of their e-strategies. We congratulate the Center for Democracy and Technology for having been able to carry out the assignment of putting this product together, and have no doubt that the e-government Handbook is going to become a worldwide reference in the years to come.

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INFORMATION FOR DEVELOPMENT PROGRAM



The Information for Development Program (*infoDev*) is a multi-donor grant program that supports innovative projects demonstrating the development opportunities offered by information and communication technologies (ICT). *infoDev*'s mission is to promote the application of these technologies and the sharing of best ICT practices for social and economic development, with a special emphasis on the needs of the poor in developing economies.

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infoDev encourages dissemination of its work, and this report will also be available on the website: <http://www.infodev.org>.

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INTRODUCTION

This Handbook attempts for the first time to catalog and present key resources on e-government in a format readily useful for policymakers in the developing world.

Among the many promises of the digital revolution is its potential to strengthen democracy and make governments more responsive to the needs of their citizens. E-government is the use of information and communications technologies (ICT) to transform government by making it more accessible, effective and accountable. E-government includes:

- providing greater access to government information;
- promoting civic engagement by enabling the public to interact with government officials;
- making government more accountable by making its operations more transparent and thus reducing the opportunities for corruption; and
- providing development opportunities, especially benefiting rural and traditionally underserved communities.

E-government is not a tool limited to the richer countries. Indeed, some of the most innovative uses of the Internet in governance are appearing in the developing world, as ICTs are being used to streamline government and connect it more closely with the people it is supposed to serve.

Our goal in creating this handbook is to offer concrete guidance to government officials and others in the developing world, presenting for the first time a comprehensive index of e-government models and resources, focused on success stories in the developing world. This handbook presents a roadmap – in fact, a compilation of roadmaps – for policymakers considering electronic government as a mechanism for reform. We do not seek to “sell” e-government. Other reports and papers have outlined the philosophy, the benefits and the general methodologies of e-government. Here, using specific examples, we show how it can be done, with a healthy respect for the realities and challenges that must be faced.

The handbook is arranged as follows:

- Part I examines the three phases of e-government, which we define as publish, interact and transact, and offers examples of each phase and recommendations for implementing successful e-government projects.
- Part II focuses on the actual process of achieving e-government policy goals, focusing on the transformation of government through ICT. Part II addresses five key

determinants of success, again using specific examples from the developing world to illustrate each factor.

- Part III takes a different look at e-government, addressing seventeen challenges and opportunities that arise in developing and implementing e-government projects.
- The Appendix consists of multiple indexes of exemplary sites, case studies, and published papers, categorized by the phases, processes, challenges, and opportunities of e-government.

E-government is not a panacea. Although it can facilitate change and create new, more efficient administrative processes, e-government will not solve all problems of corruption and inefficiency, nor will it overcome all barriers to civic engagement.

Moreover, e-government does not happen just because a government buys more computers and puts up a website. While online service delivery can be more efficient and less costly than other channels, cost savings and service improvements are not automatic. E-government is a process that requires planning, sustained dedication of resources and political will.

But it is now clear around the globe that the utilization of ICT has the potential of revolutionizing the way people interact with government and each other. From the rural farmlands of Gyandoot in India to small villages in Africa, e-government is improving the condition of people in developing countries by improving access to information useful to their daily lives, providing government services, and offering new opportunities to participate in the political process.

THE RESOURCES

We have assembled a host of case studies, best practices and other online resources, and have drawn recommendations from them to illustrate and guide readers through the ideas and concepts of e-government. These resources provide empirical evidence of what actually works.

In this print version, we give only illustrative case studies. The companion online resource contains links to all the useful sites and other resources we identified, searchable electronically and categorized by the three phases of e-government, as well as to the various elements of success, challenges and opportunities. We encourage you to utilize the electronic version in CD form or at the website www.cdt.org/egov/handbook/.

The Publish Phase of E-Government

Case Example: Government of Colombia Portal - a one-stop portal for access to government information.

At the beginning of 2000, the President of Colombia issued a directive requiring all federal government agencies to create Internet sites representing their services to the Colombian citizenry, which are now linked through a single portal. E-government managers focused on the quality of the sites, because they recognized that producing a supply of useful material on the Internet would stimulate greater demand for Internet access overall, and thereby increase the penetration rate.

Web site: <http://www.gobiernoenlinea.gov.co>

Case study: http://www1.worldbank.org/publicsector/egov/colombiaportal_cs.htm

Case Example: TaniNet - an agricultural community development web site in Malaysia, utilizing ICT to bring vital agricultural information (such as prices and biotechnological information) and services to farmers in Malaysia and across the South Pacific.

Through a collaborative effort, farmers and the Malaysian Agricultural Ministry created TaniNet, an Internet-based online resource, to bring information such as up-to-date pricing and e-commerce distribution channels to remote locations. Farmers can post inquiries on the TaniNet online bulletin board that are either answered by other farmers or forwarded to relevant experts for response. TaniNet encourages local content development and the sharing of information online. Commercial services help to finance and sustain TaniNet.

Web site: <http://www.taninet.com.my>

Case studies: http://www.iicd.org/base/story_search_read?id=4363

<http://www.informingscience.com/articles/vol3/v3n4p207-214.pdf>

The Interact Phase of E-Government

Case Example: Namibian Parliamentary web site - inviting citizens to participate online in their national government.

Through its web site, the Parliament of Namibia engages citizens in the democratic process by affording them the opportunity to participate online in political discussions, and the opportunity to stay up-to-date with the legislative developments of the Namibian Parliament. In particular, bills up for consideration are posted online and citizens can send comments directly to parliamentary representatives. The site also links to many regional councils, which have similar web sites.

Web site: <http://www.parliament.gov.na>

PART I – THE THREE PHASES OF E-GOVERNMENT

E-government is not simply a matter of giving government officials computers or automating old practices. Neither the use of computers nor the automation of complex procedures can bring about greater effectiveness in government or promote civic participation. Focusing solely on technological solutions will not change the mentality of bureaucrats who view the citizen as neither a customer of government nor a participant in decision-making.

Understood correctly, e-government utilizes technology to accomplish reform by fostering transparency, eliminating distance and other divides, and empowering people to participate in the political processes that affect their lives.

Governments have different strategies to build e-government. Some have created comprehensive long-term plans. Others have opted to identify just a few key areas as the focus of early projects. In all cases, however, the countries identified as most successful have begun with smaller projects in phases on which to build a structure.

To assist policymakers in devising their own plans and initiatives, this handbook divides the process of e-government implementation into three phases. These phases are not dependent on each other, nor need one phase be completed before another can begin, but conceptually they offer three ways to think about the goals of e-government.

PHASE 1: PUBLISH – USING ICT TO EXPAND ACCESS TO GOVERNMENT INFORMATION

Governments generate huge volumes of information, much of it potentially useful to individuals and businesses. The Internet and other advanced communications technologies can bring this information quickly and more directly to citizens. “Publish” implementations of e-government diverge widely in their design and content, but developing nations generally can start the process of e-government by publishing government information online, beginning with rules and regulations, documents, and forms. Enabling citizens and businesses to readily access government information without having to travel to government offices, stand in long lines or pay bribes can be a revolutionary advance for nations wracked by inefficient bureaucracy and corruption.

Publish sites seek to disseminate information *about* government and information compiled *by* government to as wide an audience as possible. In doing so, publish sites serve as the leading edge of e-government.

Recommendations for Publish Projects:

- **Begin with a strategy to get information online, with appropriate milestones.**
- **Post information of value to people in their daily lives, and emphasize local language content.**
- **Consider a mandate that all agencies publish a specified range of information online.**
- **Seek attainable results using available resources.**
- **Design sites so they are easy to maintain, and sustain funding to ensure that information is updated regularly.**
- **Focus on content that supports other goals, e.g. economic development, anti-corruption, attracting foreign direct investment.**

PHASE 2: INTERACT - BROADENING CIVIC PARTICIPATION IN GOVERNMENT

Publish sites, however rich in content, are just a first step. E-government has the potential to involve citizens in the governance process by engaging them in interaction with policymakers throughout the policy cycle and at all levels of government. Strengthening civic engagement contributes to building public trust in government.

Interactive e-government involves two-way communications, starting with basic functions like email contact information for government officials or feedback forms that allow users to submit comments on legislative or policy proposals.

Recommendations for Interact Sites:

- **Show citizens that their engagement matters, by informing them of the outcomes of their online comments.**
- **Break down complex policy issues into easy-to-understand components.**
- **Be proactive about soliciting participation; use traditional media to publicize online consultations.**
- **Engage citizens collaboratively in the design phase.**

This phase of e-government may also include the creation of citizen/government forums, such as one set up by the Armenian government. Such forums constitute online communities where people can exchange ideas, broaden public awareness of issues, and establish new opportunities for activism not constrained by distance. In the Armenian case, citizens are encouraged to communicate on issues ranging from political participation to environmental protection.

PHASE 3 - TRANSACT: MAKING GOVERNMENT SERVICES AVAILABLE ONLINE

Governments can go further, by creating websites that allow users to conduct transactions online. Just as the private sector in developing countries is beginning to make use of the Internet to offer e-commerce services, governments will be expected to do the same with their services. Potential cost savings, accountability through information logs and productivity improvements will be important drivers.

A transact website offers a direct link to government services, available at any time. In the past, government services such as land registration or the renewal of ID cards required long waits, confrontation with stifling bureaucracy and the occasional bribe. Innovations such as citizen service kiosks located in shopping centers in Brazil or portable government computers that can be carried into rural pockets of India bring e-government directly to the citizens of of developing nations.

Recommendations for Transact Projects:

- **Target audiences that will have immediate use for the online services.**
- **Enlist the support of those who will be using the site and address the concerns of government workers whose role will change as a result of the innovation.**
- **Integrate e-government with process reform, streamlining and consolidating processes before putting them online.**
- **Recognize that initial investments in transact systems can pay off over time in terms of cost savings and increased revenue.**
- **Create a portal for transact services.**

Perhaps the biggest incentive for governments utilizing and providing ICT services is to streamline currently bureaucratic and labor-intensive procedures, which can save money and increase productivity in the long-run. Furthermore, by automating and revamping procedures and processes, especially in revenue-generating areas such as tax and fine collection, governments hope to stem corruption and graft, improving revenues while elevating trust in government at the same time.

A prime example of this effort is the highway toll collection system in Gujarat Province, India, where toll booth operators were allowing dangerously overloaded trucks through for a bribe and pocketing a share of the tolls collected. By investing in an automated and secure tracking system that automatically calculates tolls and fines and then deducts them from the carrier's account. Delays and corruption were significantly minimized and revenues trebled, paying for the technology in one year.

The Transact Phase of E-Government

Case Example: E-Procurement System, Chile - Revamping offline rules and regulations in order to establish an efficient online procurement system.

Prior to the establishment of portals to conduct government transactions online, the government procurement system in Chile was fragmented and burdened with various, sometimes contradictory regulatory frameworks. In 1998, the government formed the Communications and Information Technology Unit (UTIC) and conferred on it the mandate of coordinating e-government efforts in an attempt to control costs and bring transparency to the system.

The UTIC completely revamped the underlying system of procurement by centralizing all purchasing activities through a central web site. This web site automatically sends emails to private companies registered on the system when contracts come up for bid and takes bids online. Not only has the new system streamlined procurement, it has also created new methods of oversight and accountability. For example, the site includes statistics and other information on past performance of government contractors.

Web site: <http://www.compraschile.cl> (in Spanish)

Case study: http://www1.worldbank.org/publicsector/egov/eprocurement_chile.htm

Transact sites can enhance productivity in both the public and private sector by making processes that require government assistance or approval simpler, faster, and cheaper. But because these are several steps (and in some cases, a quantum leap)

above “publish” sites, governments need to be aware that implementation will neither be simple nor cheap. Consequently, transact sites may require significant changes in the country’s legal framework and government workforce.

PART II: TRANSFORMING GOVERNMENTS THROUGH E-GOVERNMENT PROJECTS

E-government is about transforming the way government interacts with the governed. The process is neither quick nor simple. It requires a coherent strategy, beginning with an examination of the nation’s political will, resources, regulatory environment, and ability of the population to make use of planned technologies.

The success of e-government requires fundamentally changing how government works and how people view the ways in which government helps them. There is no “one size fits all” strategy in implementing e-government, but we have identified five essential elements in the transformation process.

Some words of caution – the primary motivation for e-government reforms should not be focused on saving money or cutting staff. While those can often be valuable results, the savings incurred from e-government initiatives most often benefit businesses and citizens utilizing the improved system, and not necessarily the government agencies that invested in ICT.

In order to realize efficiencies, moreover, governments must develop a citizen-centric model that involves key stakeholders outside of government – businesses, trade associations, scientists, academics, and NGOs. Without their input, e-

government projects are unlikely to succeed, because citizens will not use a system that does not respond to their needs. Once a consensus has been reached, leaders must fully communicate the vision to the public.

Five Elements of Successful E-Government Transformation:

- **Process Reform**
- **Leadership**
- **Strategic Investment**
- **Collaboration**
- **Civic Engagement**

PROCESS REFORM

Critical to the success of e-government transformation is the understanding that e-government is not just about the automation of existing process and inefficiencies. Rather, it is about the creation of new processes and new relationships between governed and governor.

The use of ICT is not merely a cost or labor saving tool, to be achieved simply by giving government officials computers or automating manual records. Rather, if conceived and designed correctly, e-government is a solution that can genuinely revolutionize the process of government itself. Therefore, government leaders planning e-government projects should first examine the function or operation to which they want to apply ICT. For example, governments should use ICT to bring transparency to problems, where the transparency represents a new way of addressing the problem. Or, to take another example, if the subject of an e-government project is procurement, officials and companies that do business with the government should first examine the entire process by which the government publishes solicitations and qualifies bidders and the requirements for filing bids.

Process Reform Recommendations:

- **Plan carefully - streamline and consolidate offline processes before putting them online.**
- **Don’t automate inefficiencies - eliminate them.**
- **Respond to local needs - draw on the ideas of those who will use the system and enlist their support.**
- **Try to focus projects from the user perspective.**
- **Dispel resistance of civil servants by training and incentives to support reform.**
- **Ensure commitment of resources for the long-term.**

Process Reform Models

The Central Vigilance Commission in India: Transforming how authorities deal with corruption.

Many nations face challenges in fighting corruption, due in part to a lack of transparency in anti-corruption enforcement. Public exposure can both boost public confidence that action is being taken and serve as an important deterrent.

The Central Vigilance Commission of India is an independent government oversight agency involved in the fight against corruption. In January 2000, the CVC began publishing on the Internet the names of officials suspected of extorting bribes and the disciplinary actions taken against them. The CVC site exemplifies process reform by creating a new method for dealing with corruption: exposure and public censure. The CVC site, by giving citizens ready access to information, also helps boost confidence in the system by showing that complaints are acted upon, while also creating accountability, for citizens can immediately determine if action has not been taken.

Web site: <http://www.cvc.nic.in>

Case study: http://www1.worldbank.org/publicsector/egov/cvc_cs.htm

E-Procurement System, Chile: Making government procurement more efficient and transparent by implementing comprehensive procurement reform.

Prior to the establishment of portals to conduct government transactions online, the government procurement system in Chile was fragmented and burdened with various, sometimes contradictory regulatory frameworks. In 1998, the government formed the Communications and Information Technology Unit (UTIC) and conferred on it the mandate of coordinating e-government efforts in an attempt to control costs and bring transparency to the system.

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Web site: <http://www.compraschile.cl> (in Spanish)

Case study: http://www1.worldbank.org/publicsector/egov/eprocurement_chile.htm

Additional Resource:

The following website has a check-off list to assist in process development: <http://www.local-regions.dtlr.gov.uk/egov/>

Leadership Model

The “Tiger Leap” Initiative, Estonia: Mobilizing the bureaucracy with a unifying concept and Presidential leadership.

Declaring Internet access “a human right,” Estonia is moving to provide Internet access to all its 1.5 million inhabitants by establishing local community Internet centers that provide free email and Internet access. In 1997, there were 80 centers operating. Plans are for 300 by 2002. Another element is a major program run by the Ministry of Education and funded in part with private investment, under which local governments and businesses cooperate to connect every school to the Internet, with the goal of producing a generation of Estonians who are 100 percent computer literate. The Estonian President was an outspoken advocate for the Internet, using his influence to press the initiative.

Case study: <http://www.wam.umd.edu/~abbate/Estonia/EestiNet/topics/tiger.html>

LEADERSHIP

In order to achieve the e-government transformation, elected officials and administrators are needed at all levels of government who understand the technology and the policy goals and who will push reform.

E-government requires strong political leadership in order to succeed. Strong leadership can ensure the long-term commitment of resources and expertise and the cooperation of disparate factions. Leadership can also articulate a unifying theme that can propel the e-government initiative through all the necessary steps. For example, by declaring Internet access a “human right,” the Estonian leadership created strong national support for the implementation of the Tiger Leap Forward Initiative, a multi-sectoral program that is aiming to create 300 Internet centers in Estonia by 2002 and whose eventual goal is to create a completely e-literate society. While it is not essential that governments declare Internet access a human right, leaders do need to understand that results will be most likely if they elevate the public profile of their vision and press for its successful implementation by tying it to broader human development and democratization goals.

The e-procurement system in Chile illustrates another approach to the leadership factor: One way for governments to spur development of e-government is through the creation of a

Leadership Recommendations:

- **Create an office and designate a senior official as a focal point for e-government innovation, planning and oversight.**
- **Signal Presidential/ Prime Ministerial support for the initiative to ensure that all relevant departments and agencies support it.**

central government agency that has not only expertise but also institutional authority to implement change. In Chile, this was the Communications and Information Technology Unit (UTIC), created in 1998 and given the mandate of coordinating e-government efforts. In taking the lead role in developing an e-procurement system, it garnered support at the cabinet level, lobbied the political parties and labor unions, and lined up private backing from a consortium

of companies that included the nation’s telecom companies, a well-known consulting firm, and the leading Chilean Internet-based applications company.

STRATEGIC INVESTMENT

Governments will need to prioritize some programs over others to maximize available funds in view of tightly limited resources. This will necessitate clear objectives for programs and a clear route to those objectives.

Developing nations must choose projects carefully in order to optimize their investment of time and resources. Projects should have clear value in terms of enhancing transparency, increasing citizen participation in the governance process, cutting bureaucratic red tape, or saving money. Standards and benchmarks must be established to measure the relative success of these projects. For example, in Gujarat, India, the automation of toll checkpoints resulted in a significant increase in revenue normally lost to corrupt border agents, so that the system paid for itself within a year.

Strategic Investment Recommendations:

- **Define clear goals.**
- **Catalogue available resources, ranging from funding to personnel.**
- **Make short and long-term plans, with expected expenditures, income streams and deadlines.**
- **Designate an officer or organizing body that will oversee planning and budgets.**
- **Consider multi-technology approaches. Some communities may not be ready for the Internet, but other technologies like radio may better serve their needs.**
- **Consultations with local communities will help ensure that they benefit from technology.**

Strategic Investment Examples

Computerized Interstate Checkpoints, Gujarat, India: Generating increased revenue by automating the highway toll and fine collection system.

The Indian state of Gujarat has an extensive road network that carries large volumes of commercial traffic. With nearly 25,000 trucks that enter the province daily, tolls and fines are a significant source of revenue and a tempting target for corruption. The Gujarat government in the past was ineffective at collecting tolls and stopping overloaded trucks (which caused numerous accidents) from entering the province and collecting fines from drivers. Delays and corruption at toll checkpoints were rampant.

In 1998, Gujarat authorities installed an electronic system for collecting tolls. Whereas in the past, toll collectors had wide latitude in assessing tolls and fines, the new system automated the weighing of trucks and the calculation of tolls and fines and ended cash transactions at the checkpoints by instituting a credit card payment system. The system was a good investment. Within one year, the system had paid for itself, illustrating how strategic investment, properly planned, can lead to long-term benefits.

Case study: <http://www1.worldbank.org/publicsector/egov/gujaratcs.htm>

Collaboration Models

Online Delivery of Land Titles, Karnataka, India.

Karnataka's land registration records were kept as paper records updated by hand, until computerization made data management much less onerous and more efficient. In order to bring about such radical changes in the system, however, the state government had to secure the cooperation of a number of stakeholders. For one, computerization of the records required the cooperation of the local village accountants who controlled the lucrative trade in land records management. Secondly, government bureaucrats, who were loath to take on new responsibilities, had to be trained to utilize a computerized database.

Case study: http://www1.worldbank.org/publicsector/egov/bhoomi_cs.htm

AfriAfya, Kenya: Public/private consortium using information exchange to improve health care services to the rural poor.

Kenyan health agencies and international aid organizations established AfriAfya, a public/private site that harnesses ICT to improve the health of rural Kenyans. The project relies on a small coordinating central hub and organizes up-to-date health information for communities that send it a steady stream of data from the countryside. These field centers are spread throughout the rural regions of Kenya, where 80 percent of the population lives. Doctors and caregivers can have instant access to vital information and statistics. Web site access granted to registered members only.

Case study: <http://www.inasp.org.uk/health/hif-afriafya.html>

Civic Engagement Model

State of the Environment Report, South Africa: An online environmental report, affording opportunities for continued public participation.

The content of this environmental awareness site is the result of extensive community participation. The participating communities identified six environmental priorities, which became the core issues addressed on the site, including: Pollution, Waste Management, Open Space, Conservation, Poverty, and Environmental Health. Visitors to the site are encouraged to continue giving input to determine what relevant information should be posted and to contribute materials or information that could be useful to the general public as well.

Web site: <http://www.ngo.grida.no/soesa/nsoer/>

COLLABORATION

Governments will have to explore new relationships among government agencies as well as partnerships with the private sector and NGOs to ensure quality and accessibility of e-government. Agencies may have to overcome traditional reluctance to work with each other to maximize benefits of scale in e-government projects.

Collaboration among government entities, private enterprises and NGOs can assist policymakers in crafting meaningful reforms and can expedite the implementation of e-government. Private sector experts, who deeply understand topics such as e-commerce, information technology, marketing, and management, can advise government policymakers. The private sector may have considerable expertise that can help meet the challenges of increasing efficiency, capacity, and “consumer” (that is, citizen) satisfaction.

Collaboration Recommendations:

- In the planning phase, establish a consultative process that includes opportunities to hear from and speak with business, NGO’s and other government agencies. Explain the goals of the e-government initiative and solicit suggestions.
- Take private sector advice and experience into account when designing systems. Respond to identified needs.
- Create incentives for the private sector to become active participants in reform.
- Encourage cooperation and integration between departments/ministries of government.
- Local champions will help projects succeed. To decrease skepticism in local communities, directly involve local leaders by making them representatives, and by teaching them IT skills they can pass on to their communities.
- Create local ownership. In conjunction with the establishment of a local management committee or body, handover of e-government projects should occur as soon as possible.
- Federal agencies and state and municipal agencies and authorities need to partner to ensure a smooth reform in services.

CIVIC ENGAGEMENT

The success of e-government initiatives depends on an engaged citizenry and, to that end, efforts to foster civic engagement are critical.

The concept of e-government revolves around the citizen. E-government is not just a cost cutting or efficiency initiative, but rather is directed at bettering the lives of ordinary people. In order to develop this citizen-focused vision, policymakers must keep the ordinary citizen in mind when designing systems. If at all possible, policy makers and designers should encourage stakeholders – both government and non-government – to participate in defining what their shared vision of e-government should accomplish. And once that vision is clearly defined, leaders must communicate it across all sectors, not just to those who will implement it.

Civic Engagement Recommendations:

- Consult widely in designing systems.
- Design applications that are focused on the citizen.
- Combine e-government with legal reform efforts such as requiring public notice and comment in legislative and regulatory processes.
- Keep in mind differences in local culture when seeking to engage citizens.
- Design engagement opportunities that build on successful models.

Infrastructure Development Model

Drishtee, India: Kiosk-based e-government for rural India.

The Drishtee program, extended recently to five Indian states, brings e-government services to rural India using kiosks run and maintained by entrepreneurs who charge a small fee for access. Drishtee combines social activism with market solutions in order to alleviate the problems of poverty and weak government and help those isolated by distance and lack of resources.

Web site: <http://www.drishtee.com>

Case study: http://www.iicd.org/base/story_read?id=4956

Law and Public Policy Case Study

Election Register, Palestine: Creating a modern and efficient election registration and tabulation system utilizing ICT.

Conducting a free and fair election always requires planning and preparation, touching on areas that include law and public policy. When the newly-created Palestinian Authority began preparations for its first election in 1996, it utilized ICT to ensure a quick, accurate and honest result. Among other steps, it had to create an entirely new legislative and regulatory framework, one that meshed with technological solutions to ensure the security and reliability of data.

Case study: <http://www.aceproject.org/main/english/et/ety02.htm>

Digital Divide Case Study

Citizen Service Centers, Bahia Province, Brazil: Placing service kiosks in convenient locations like shopping centers, allowing the public to transact government business with less hassle.

The state government of Bahia has created Citizen Assistance Service Centers (SAC) that bring together federal, state, and local government agencies in a single location to offer the services that citizens most frequently need and use. The centers have been placed in locations convenient to the public, such as shopping malls and major public transportation hubs.

To ensure that remote and poorer areas of the country are serviced equitably, a "Mobile SAC" has been developed. 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 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.

Case-study: <http://www1.worldbank.org/publicsector/egov/bahiaSAC.htm>

PART III - CHALLENGES AND OPPORTUNITIES – CONSIDERATIONS FOR THE DESIGN OF E-GOVERNMENT PROGRAMS

Once governments commit to strategies transforming their governance processes, significant challenges and opportunities will arise during their implementation. We have identified seventeen considerations that must be addressed by the e-government initiatives of developing nations.

Seventeen Challenges and Opportunities of E-Government Implementation:

- **Infrastructure Development**
- **Law and Public Policy**
- **Digital Divide**
 - **E-literacy**
 - **Accessibility**
- **Trust**
 - **Privacy**
 - **Security**
- **Transparency**
- **Interoperability**
- **Records Management**
- **Permanent Availability and Preservation**
- **Education and Marketing**
- **Public/Private Competition/Collaboration**
- **Workforce Issues**
- **Cost Structures**
- **Benchmarking/Qualitative Methods**

INFRASTRUCTURE DEVELOPMENT

All countries implementing e-government have struggled to develop a basic infrastructure to take advantage of new technologies and communications tools.

Many developing countries, even if possessing the will, do not have the infrastructure necessary to immediately deploy e-government services throughout their territory. These governments, such as the Andhra Pradesh state in India, must include in their e-government strategies efforts to build out their ICT infrastructure, developing novel approaches to solving the problem of remote connectivity in order to support e-government efforts. Others, such as Estonia, have partnered with the private sector to invest in programs that increase access and create an e-ready society.

Some of the best examples and guidelines on the issue can be found on the World Bank *InfoDev* site: <http://www.infodev.org/ereadiness/methodology.htm>

Infrastructure Development Recommendations:

- **Develop projects that are compatible with the nation's telecom infrastructure.**
- **Use public access kiosks and mobile centers if teledensity is low.**
- **Introduce telecom competition and lift regulations on wireless and other digital technologies to accelerate their deployment.**
- **Build on the micro-enterprise model to bring connectivity to underserved areas and ensure sustainability.**
- **Consider the government's current use of technology and learn from past successes and failures.**
- **Establish an action framework at the beginning of the process to allow for a rational and coordinated investment effort down the road.**

E-Literacy Model

Gyandoot, India: Community-based program in which roving entrepreneurs team up with government to bring Internet-based government services to remote villages.

Even the most remote, poor and illiterate parts of the world can effectively utilize e-government through readily available and affordable technologies, benefiting those who are in dire need of government services and bridging the digital divide.

The Gyandoot project uses portable government kiosks run as commercial enterprises. The key to the Gyandoot system is portability; it uses laptop computers with Internet access via wireless modems. The project brings government services to the poorest regions of Indian state of Madhya Pradesh. These kiosks offer access to information and services, from the latest crop prices to links to government offices where people can conduct transactions online instead of having to travel for days from their villages to central government offices.

Web site: <http://gyandoot.nic.in>

Case study: <http://www1.worldbank.org/publicsector/egov/gyandootcs.htm>

Accessibility Resource

U.S. Government Accessibility Standards Under “Section 508”

A U.S. law known as “Section 508” requires that each Federal agency's electronic and information technology must be accessible to people with disabilities. The Center for Information Technology Accommodation (CITA), in the U.S. General Services Administration, is responsible for educating Federal employees and designing the infrastructure necessary to support Section 508 implementation. The Section 508 web site includes some of the most up-to-date resources on technologies accessible to people with disabilities – technologies that are also relevant to developing countries.

Web site: <http://www.section508.gov>

Trust Case Example

Vietnam: Using the Internet to offer one stop shopping for businesses and investors seeking to obtain government licenses.

Hanoi and Ho Chi Minh City each launched Web sites for business service agencies in 2000. The two websites (Hanoi Ministry of Planning and Investment and Ho Chi Minh Department of Planning & Investment) are designed to serve as the first point of contact for potential investors, especially foreign investors. The sites provide detailed information including recent news, related laws and regulations, and travel information.

The cities ran into trouble in various areas along the way. At first, the building of Web sites was viewed as the purview of the information services department and the business services group was reluctant to take on what it saw as added responsibility. Leaders solved the resulting inertia by bringing together lower-level managers to gain buy-in. Then, private companies were very reluctant to share information. After much discussion, the agency agreed to some commercial recognition in exchange for a large amount of information from the private sector.

Web site: <http://www.invest.mpi.gov.vn> (Hanoi Ministry of Planning and Investing) and

<http://www.hcminvest.gov.vn> (Ho Chi Minh Department of Planning and Investment)

Case-study: http://www1.worldbank.org/publicsector/egov/vietnam2cities_cs.htm

LAW AND PUBLIC POLICY

The application of ICT to government may encounter legal or policy barriers. Legislatures must ensure that laws are updated to recognize electronic documents and transactions. They must take proactive steps to ensure that policies support rather than impede e-government.

Law and Public Policy Recommendations:

- Consult with stakeholders to assess how existing laws may impede the desired results.
- Give legal status to online publication of government information.
- Clarify laws and regulations to allow electronic filings with government agencies.
- Reform processes by simplifying regulations and procedures.

Policymakers implementing e-government must consider the impact of law and public policy. Otherwise, any initiative will encounter significant problems. The effort must incorporate a holistic view, one that is not just focused on technology. Archaic laws, old regulatory regimes, overlapping and conflicting authorities can all greatly complicate or altogether halt a project. Legal reforms and new policy directives may have to be adopted before the online world can function smoothly.

Bridging the digital divide means more than just addressing race and class issues. Successful programs will create new opportunities for those who are traditionally isolated from government programs. In particular, technology programs often leave women, immigrants and the elderly behind. An effort must be made to include these and other vulnerable groups.

There are two issues of special concern tied to the digital divide:

E-Literacy -- ensuring e-government programs help to create opportunities by educating those who have not used, do not have access to, or feel uncomfortable with technology.

Accessibility -- making e-government programs available to the physically disabled.

Digital Divide Recommendations:

- Provide communal access through village computer centers or kiosks.
- Combine access with training.
- Provide incentives to the private sector to donate equipment and training.
- Emphasize local language and content tailored to different communities.
- Use for-profit entrepreneurs to build and sustain access points in small communities.

DIGITAL DIVIDE

Class, race, ethnicity, geography and other factors could lead to groups of people being disenfranchised. In many countries, content must be provided in more than one language or dialect. E-government must also address the needs of those who are illiterate.

The digital divide is the gap between people who have access to the Internet and those who do not. Those without access cannot learn essential computer skills, cannot access information that can provide economic opportunities, and cannot share in the benefits of e-government.

An exemplary illustration of how the digital divide can be bridged to benefit the rural poor is the Gyandoot Project, where the Internet connected a remote part of India to the government and the services it provides. As noted above, Jamaica enlisted postal workers to teach customers basic computer skills like email, and also created computer labs in local libraries, with the goal of empowering the rural poor to explore opportunities beyond their small communities, including the opportunity for increased civic participation.

E-LITERACY

Even in areas where access to technological infrastructure is nearly ubiquitous, there are still marginalized groups who are unable to make use of information and communication technologies because they are not 'e-literate.' E-government programs will have to take special steps to include people who are not e-literate.

Despite the Internet's democratizing potential, it has been recognized from the outset of the digital revolution that there is a very real danger that the world will be divided into the "information rich" and the "information poor." E-government has the potential of either equalizing access to government and its services or increasing the barriers to participation. Governments must make sure that those who are already educated or have Internet access are not the only ones who benefit from e-government. Such a disparity would only increase the problems of social and economic injustice, which e-government is meant to address.

Rather than attempt to train entire villages, Gyandoot began with a workable approach to the e-literacy barrier. For the initial

Privacy Resource

Privacy Impact Assessment, Ontario, Canada: An online guide to fair information practices.

Ontario Province, Canada has created a Privacy Impact Assessment toolkit, meant to educate governments interested in evaluating their information collection policies against widely-accepted privacy criteria.

Web site: <http://www.gov.on.ca:80/MBS/english/fip/pia/>

Security Resources

ACE Project: Exploring ICT applications in the electoral process.

A major area where e-government and security concerns have converged is the area of online elections. Conducting a free and fair election always requires trust in the security and integrity of voting data. The Administration and Cost of Elections (ACE) project provides a thorough online resource for policymakers who are trying to design electoral systems that utilize ICT. The site includes advice on ensuring the security and reliability of data.

Web site: <http://www.aceproject.org/main/english/et/et.htm>

The European Union eEurope Initiative.

In 2001, the European Union developed cyber-security guidelines for public entities, included in its report: Improving the Security of Information Infrastructures and Combating Computer-related Crime.

Web site: <http://europa.eu.int/ISPO/eif/InternetPoliciesSite/Crime/CrimeCommEN.html>

Transparency Case Examples

OPEN (Online Procedures Enhancement for Civil Applications), Seoul, South Korea: Giving citizens the ability track online the progress of their applications for services.

In 1998, the Seoul government initiated a comprehensive campaign to battle corruption. As part of a concerted effort to bring transparency to government functions such as licensing and permit approval, reformers not only streamlined the burdensome regulatory rules (the complexity of which provided ample opportunities for extorting bribes) but they also created an online monitoring system to track the progress of government applications. Now, citizens will know at all times where precisely their applications stand in the evaluation process, thwarting corrupt bureaucrats who in the past demanded bribes to expedite applications or even tell a citizen the status of his application.

Web site: <http://www.metro.seoul.kr>

Case study:

<http://www.metropolis.org/Metropolis/gcities.nsf/AllDocs/5E3C2014AAF141124A256B570003757D?OpenDocument>

Declaranet, Mexico: Public officials disclose assets to increase trust in government.

Mexican President Vicente Fox started the reform process towards greater transparency and government openness by submitting a public declaration of his assets using the e-government site Declaranet and urging all public functionaries to do the same.

Web site: <http://www.declaranet.gob.mx>

kiosks, village committees each 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.

E-literacy Recommendations:

- **Ensure that content is in local languages and that interfaces are easy to use.**
- **Develop applications that use speech or pictures in addition to, or instead of, written text.**
- **Include an educational component in e-government projects.**
- **Provide aides at access points who can train citizens in basic computer skills.**
- **Create programs that include traditional media, like radio programs or newspaper columns, where citizens can learn about e-government.**
- **Special attention should be given to groups difficult to integrate (women, elderly, immigrants).**

ACCESSIBILITY

Governments must serve all members of society irrespective of their physical capabilities. Online services will have to be designed with appropriate interfaces – this may have significant cost implications.

Some developing countries have sizable disabled populations. These people could especially benefit from e-government services as they may not be able to travel to government offices. However, e-government projects need to accommodate the needs of the disabled – such as those who are blind, or do not have use of their hands.

The World Wide Web Consortium is developing protocols and procedures to support disabled people (those who are blind, deaf or otherwise handicapped) in using the Internet as freely as any other person. Those efforts include software solutions, policy initiatives, and educational conferences. The results can be viewed online in a document that sets guidelines to providing accessibility to the Internet for the disabled:
<http://www.w3.org/WAI/gettingstarted/>

Accessibility Recommendations:

- **From the outset, design applications that accommodate the disabled, such as an audio option for the blind.**
- **Establish as a legal requirement that the government must adopt technology to assist the disabled.**
- **Set performance criteria and measure progress.**

TRUST

To be successful, e-government projects must build trust within agencies, between agencies, across governments, and with businesses, NGOs and citizens.

When conceptualizing e-government, developers often do not realize the many boundaries, both physical and administrative, that the proposed project will cross. Yet, the success of e-government often comes down to building trust and common understanding with the variety of players early in the process. The biggest concern for most parties is that change brought about by a new system will negatively impact them.

Almost every successful e-government project is a case example in building trust.

The issue of trust also involves two issues of special concern to any online service:

Privacy -- protecting personal information the government collects about individuals.

Security -- protecting e-government sites from attack and misuse.

Privacy and security issues have received extensive international attention, discussed in the following two sections.

Trust Recommendations:

- **Map key internal and external partners and build a strategy to keep open lines of communications.**
- **Start with short-term projects that yield early results. This helps build trust and could help point to areas for larger scale ventures.**
- **Strong leadership can help build confidence in programs.**

Interoperability Case Study and Resource

The Electronic Service Delivery (ESD) Scheme, Hong Kong: Connecting over 20 agencies to provide more than 70 services via a single web site.

When creating this infrastructure, policymakers were aware that there are multiple coding standards for Chinese characters. Therefore, they adopted ISO 10646 as their common Chinese Language Interface for message exchange between the front-end ESD system and the back-end systems.

Web site: <http://www.esd.gov.hk>

CIO Council's Practical Guide to Federal Enterprise Architecture, US.

In the US, the Federal Government's Chief Information Officer Council put together a detailed guide to building and rebuilding government information technology structures to ensure interoperability and help achieve optimal performance of an agency's mission. The guide describes how to map the enterprise life cycle; obtain executive buy-in and support; establish management structures; develop a communications plan; develop a sequencing plan including identifying gaps and migrating systems; and benchmarks for these multiple pieces.

CIO Council's Guide Version 1.0: <http://www.gao.gov/bestpractices/bpeaguide.pdf>

US Government E-Government Strategy: <http://www.whitehouse.gov/omb/inforeg/egovstrategy.pdf>

Records Management Examples

Land/Property Registration in Andhra Pradesh, India: Computerizing and making readily accessible registration and record keeping of land titles.

Land registration offices throughout the southern Indian state of Andhra Pradesh now operate computerized databases to help citizens complete registration requirements within an hour instead of several days under the paper-based system. Antiquated procedures such as manual copying and indexing of documents, along with storing these documents under inadequate conditions, have been replaced. This system has not only streamlined records management, but also has given a once opaque system prone to corruption a much greater degree of transparency.

Case study: <http://www1.worldbank.org/publicsector/egov/cardcs.htm>

Independent Electoral Commission, South Africa: Using ICT to support fair and open elections, from registering voters to quickly and accurately recording and tabulating national results.

Determined to conduct free and fair elections, the Independent Electoral Commission (IEC) used ICT to register voters and collect and tabulate their votes quickly, with integrity and transparency. The IEC made effective use of Geographic Information Systems (GIS) for the creation of a multitude of spatial management reports required for election planning, logistics, registration, and results processing. The IEC also effectively applied call center technology, including an "800" number for the public with "where to register" details, illustrating the importance of combining computer and telephone technologies to address the realities faced on the grass-roots level. A GIS application helped desk operators pinpoint the exact location of a voting station for registration purposes by referencing the municipality name, suburb and cross-streets as supplied by the voter. Recognizing low literacy levels (and other information access problems in South Africa), this facility assisted the voter in identifying the voting station within his/her voting district by merely making a toll-free call.

The geographical database compiled for election purposes is a national asset that can be used by various state departments and private organizations for spatial planning. For example, the GIS can be used to spatially determine the best location for a clinic based on the proximity of young children and people over 60 years of age in a particular area.

Case study: http://www.accenture.com/xd/xd.asp?it=enWeb&xd=services\microsoft\micr_saiec.xml

<http://www.cdt.org/egov/toolkit/southafrica/electionregister.html>

PRIVACY

Privacy is one of the most important issues facing the Internet. Governments must be responsible custodians of the enormous amounts of personal information they hold.

Governments collect vast quantities of data on their citizens through everyday transactions. As e-government services grow in scope and popularity, those databases will expand in size and detail. Protecting the privacy of citizens' personal information stored on these databases while making effective use of the information contained in them is a vitally important issue, one which policy-makers must address if citizens are asked to entrust sensitive personal, financial and medical data to the government in order to utilize Internet-based e-government systems. Government websites and online services must adhere to privacy best practices.

Privacy must be addressed in the planning and design of e-government systems since it is much harder to interject privacy protections

after a system is built. Government websites and online services should fully comply with the fair information principles outlined, for example, by Ontario, Canada, in its privacy impact assessment tool.

SECURITY

Security is costly, but must be addressed in the design phase, as security breaches can shatter public trust in e-government.

Trust is a vitally important component of e-government projects. Without trust, citizens who may already be leery of using technology may avoid and even shun the use of online services that ask for detailed personal information.

Security Recommendations:

- Designate a senior official responsible for computer security.
- Continually assess systems to make sure that security precautions are being implemented.
- Backup information regularly and store backups in a separate location.
- When it comes to personal information, keep information collection to a minimum and do not disclose personal information without express prior consent.
- Provide ongoing training to employees on computer security.
- Evaluate performance of system managers in adhering to sound security practices.

TRANSPARENCY

Government transparency should be embedded in the design of ICT systems.

Citizens too rarely understand how government decisions are made. This lack of transparency prevents the public from actively participating in government and from raising questions or protesting unfair or ill-advised decisions. A lack of transparency can conceal official graft or favoritism.

Transparency Recommendations:

- Post online rules, regulations and requirements for government services (such as requirements for obtaining a license) to minimize subjective actions by officials.
- Highly-placed public officials can expedite transparency and accountability efforts by making their offices positive examples of openness.
- When putting services online, give citizens the ability to track the status of their applications.
- Train civil servants and provide incentives to reform.
- Integrate transparency and process reform to simplify regulations and procedures.

Permanent Availability and Preservation Examples

National Archives, Malaysia.

The mission of the Malaysian National Archives is "to hold in custody and preserve archival materials pertaining to the nation's history and to disseminate information regarding their importance to the public." The Archive's easy-to-use web site contains a search engine for electronic data and research request services for documents.

Web site: <http://arkib.gov.my/>

National Archives and Records Administration, United States.

NARA is charged with the collection, storage and preservation of government documents with historical or informational significance and runs what is perhaps the most detailed and comprehensive web site in the world in terms of public and government records and document preservation. The site gives clear and detailed guidance for government bureaucrats and officials on many issues, including document retention, conditions and process for disposal, and how to handle sensitive and classified information. The site includes a searchable online database as well as a function for requesting documents that are not in electronic format.

Web site: <http://www.nara.gov>

Education and Marketing Model

E-government Portal, Dubai, United Arab Emirates.

The government of Dubai has become the first Arab state to offer e-government services to its people. Twenty-four government departments have signed on to deliver services through the portal. Marketing has focused on the convenience factor that e-government gives the user. Instead of standing in line or having to trek to several different locations, citizens can go directly to one site to get things done. To encourage people to use the online services, the government is conducting Internet training and awareness programs for citizens as well as mounting large-scale information campaigns in the media.

Web site: <http://www.dubai.ae>

Case studies: <http://www.dfn.org/news/uae/e-gov.htm>

<http://news.bbc.uk/1/hi/english/sci/tech/newsid-1628000/1628610.stm>

<http://www.arabwideweb.com/english/channels/technology/news/12.htm>

Public/Private Competition/Collaboration Case Study

The Contributions/Tax Collections Network, Mauritius: Creating an automated tax administration system to foster electronic transactions between business and government.

The Contributions Network Project calculates and integrates information for personal and corporate tax payments and payments for the national pension and benefit plans. To implement it, Mauritius depended on a public/private partnership. The project involved the development of a new tax regime. The government engaged in an education campaign to let employers know that the start-up costs and user fees involved in using the online system would in the long run end up saving participants money.

Case study: <http://www1.worldbank.org/publicsector/egov/mauritiusCNPcs.htm>

E-government can play an essential role in revealing to the public the policies their government is adopting or the actions the government is taking. South Korea, for example, reduced corruption by reorganizing government activities such as licensing and permit approval, and creating an online monitoring system to track each application. This program succeeded in reducing the number of bribes and collusion among corrupt bureaucrats because officials could now be held personally accountable for actions.

INTEROPERABILITY

Rather than adding new systems on top of outmoded legacy systems, e-government planners should develop systems and record formats that work together and across departments.

Reliable e-government requires a comprehensive overhaul of legacy systems. Putting incompatible record formats online neither simplifies nor reduces the workload imposed on people and government officials, thereby saving no one time or energy in the long run. For example, in Chile, merely putting various incompatible government procurement functions online would not have solved the problems of an inefficient offline system. Instead, the development of online e-procurement had to include eliminating inconsistent procedures and requirements and adopting common formats so that all government agencies could use the same online system.

Interoperability Recommendations:

- **Map and assess existing record systems.**
- **Identify and reform regulatory schemes that make interaction with the government onerous.**
- **Use common standards throughout the government, to shorten development time and ensure compatibility.**
- **Adopt a common IT infrastructure for the government.**

RECORDS MANAGEMENT

New technologies are being created to help manage information. Governments have unique needs in this field.

Better information management can help officials identify barriers to more efficient government. In Egypt, officials realized that while data was plentiful, there was no information management framework to make sense

of it. Without this framework, policy makers could not derive useful analysis quickly enough to react to social and economic developments.

Accurate official records should provide the basis for the rule of law, economic development, and accountability. Governments should take advantage of technologies that facilitate the cataloguing of records and the flagging and retrieval of information.

“Evidence-Based Governance in the Electronic Age” is a five-year project initiated by the World Bank in partnership with the International Records Management Trust. It involves coordinating a global network of institutions and organizations to provide support for modernizing records management systems in parallel with measures to improve public sector management. <http://www.irmt.org/evidence/>

Records Management Recommendations:

- **Encourage data sharing and cooperation between government departments.**
- **Streamline offline record keeping processes to make the transformation to online publication easier.**
- **Creation and standardization of meta-data is critical for conducting successful data searches across institutions and networks.**

PERMANENT AVAILABILITY AND PRESERVATION

Historical documentation is of special importance for governments.

ICT not only allows for quick and cheap dissemination of data, but also for its compact and convenient storage. Instead of warehouses filled with paper documents that can take days to search through and require an army of bureaucrats to keep track of, governments can preserve and make readily

Permanent Availability and Preservation Recommendations:

- **Design applications according to need.**
- **Consider relevance, usability, language compatibility and affordability.**
- **Encourage cooperation between departments and with the private sector in collecting, storing and utilizing data, but proceed continuously with personally identifiable information.**

Workforce Issues Case Example

Online Delivery of Land Titles in Karnataka, India: Addressing the resistance of government employees to online transactions.

Many reform efforts fail because they are undermined internally or have little support from current stakeholders whose buy-in is critical for success. For example, in Karnataka state, the political leadership encountered resistance in its plans to computerize the antiquated and inefficient land registration system from its own staff, who thought it would result in either job losses or radical changes in the way they performed their duties. Unless the support staff understood and supported the proposed changes, the project was doomed to fail. This case examines the leadership initiatives taken to win support and bolster the chances of success for the project.

Case study: http://www1.worldbank.org/publicsector/egov/bhoomi_cs.htm

Cost Structure Example

Corporate Plan for Information Technology and Computing Services, Fiji.

The Fijian government's strategic plan for ICT deployment and investment offers an example of a national plan to develop a highly advanced set of e-government services. It addresses system development, training, policy development, strategic planning, performance planning, personnel performance, management reporting, public relations, duration, budget and cost structures.

Web site: <http://www.cdt.org/egov/toolkit/fiji.html>

Benchmarking Example and Case-Study

Government on the Web II, United Kingdom: Report on e-government deployment efforts from the National Audit Office.

The National Audit Office issued a report analyzing in great detail the progress of e-government efforts in Great Britain with an eye on costs and benefits to the taxpayer. In deficient areas, the report provides detailed recommendations on how to improve quality and return on investment. Notable in this report are the numeric goals for e-government service delivery, such as delivery of specific services by certain dates, so officials and policy makers can be held accountable for results.

Web site: <http://www.nao.gov.uk/pn/01-02/0102764.htm>

International Benchmarking Report: Case Studies of e-government services: Interoperability and Data Standards, by the Office of the e-Envoy in the United Kingdom: http://www.e-envoy.gov.uk/publications/reports/benchmarkingV2/interop_hkong.htm

accessible at anytime vast amounts of government information and statistics administered by a handful of technicians, clerks and librarians. Governments have unique responsibilities to preserve the historical record. Preservation goals should be incorporated in system design.

EDUCATION AND MARKETING

E-government services are only useful if people know about them. Education and outreach programs will be needed.

Developing a good website is not enough. Successful projects also will require good marketing to encourage citizens to make

Education and Marketing Recommendations:

- **Develop publicity and training campaigns that will engage the public about e-government initiatives.**
- **Conduct research to ensure that online services respond to actual needs and that the implementation suits the target audience.**

use of them. People, especially if they are unfamiliar with technology, may be reluctant to try e-government services out of distrust or belief that online services will not meet their needs or due to lack of understanding of the technology. People must be coaxed into using these services, provided, of course, that these services were designed with members of the public in mind.

PUBLIC/PRIVATE COMPETITION/COLLABORATION

Issues of public vs. private collaboration and competition are already part of an international debate on governance. New rules may be needed to govern the relationship of the public and private sectors.

The question of where government controls end and the private sector takes over in e-government efforts is a difficult one to answer. Many governments are loath to cede power and authority to any private entity. The best way to proceed in joint or cooperative projects must be considered carefully, with public and private interests working together as partners, and not necessarily for political or economic gain. New partnerships and alliances can have unforeseen consequences, so it is important to be able to review new relationships frequently to ensure that both parties are pleased with the arrangement.

To foster public/private cooperation, the World Bank has created the "Country Gateways" portals, based on locally-owned and managed public-private partnerships whose mission is to facilitate innovative and effective use of the Internet and other ICTs to reduce poverty and promote sustainable development. <http://www.developmentgateway.org/node/137849/>

Public/Private Competition/Collaboration Recommendations:

- **Forge multi-sectoral partnerships.**
- **Review and reassess laws and policies that impede public/private cooperation**
- **Ensure that agreements with contractors and partners are equitable and can be reviewed and revised over time.**
- **Seek assistance and involvement from organizations that already have experience in providing services and information using the same or similar technologies.**

WORKFORCE ISSUES

Human resources must be structured and managed with e-government goals in mind.

A well-trained and motivated workforce is critical to e-government success. Civil servants need training and leadership in order to integrate themselves into the new information structure. Policymakers need to expect that civil servants will feel threatened by e-government, either because they fear being caught for corruption or simply because they fear a loss of power. Leadership can play an important role and create a positive atmosphere for change by ensuring adequate training and rewarding those who support e-government changes.

Workforce Issues Recommendations:

- **Articulate a timeline for implementation in a step-by-step manner so the reforms will not seem overwhelming to the bureaucracy.**
- **Hold regular meetings between e-government policy leaders and the affected workforce so employees are active participants in the process.**
- **Create incentives by rewarding individuals and agencies that apply the reforms rapidly.**

COST STRUCTURES

While planning and budgeting in a changing climate is difficult, governments should seek to invest in sustainable programs that can produce savings.

In order to implement a successful e-government program, policymakers need to develop specific and reasonably attainable goals and understand what resources are available to achieve those goals. Only then will they be able to formulate a plan that can be implemented in full, rather than being cut short before any gains are realized due to lack of resources.

Cost Structures Recommendations:

- **Avoid advertising-based or fee-based services. They have generally not been sustainable.**
- **Articulate functionalities clearly and try not to add details that will push budgets into deficit.**
- **Develop projects that are achievable with resources available.**
- **Consider the government's current use of technology and study past successes and failures.**
- **Designate an officer or organizing body that will oversee cost.**

BENCHMARKING

Governments must regularly evaluate the progress and effectiveness of their e-government investments to determine whether stated goals and objectives are being met on schedule.

Calculating the value and progress of e-government investments is a difficult but necessary step if governments want to maintain support for projects. Benchmarking can include quantitative or subjective measures. Benchmarks can include: number of agencies and functions online, reduction in average time for

processing citizen requests or applications, reduction in number of complaints about the level and quality of government services, increased voter registration and/or turnout, increased citizen participation in consultations and comment proceedings, lower costs to government in delivering services, and increased revenue.

Benchmarking Recommendations:

- **Create measurable goals during early planning stages.**
- **Designate an office to oversee e-government implementation.**
- **Make sure the office is sufficiently funded and is recognized by all relevant agencies and departments.**
- **Conduct regular audits to ensure progress is being made to achieve stated goals.**
- **Review benchmarks regularly to ensure that accurate measures are appropriate for rapidly changing technology.**
- **Create a data collection system to support program operations and "before and after" surveys of knowledge, skills, and applications among participating organizations to assess program impact.**
- **A common IT infrastructure and architecture standard is key to ensuring that ongoing development takes place in a coherent and integrated way.**
- **Advanced planning of common IT infrastructure standards result in a shortened development time and system compatibility.**
- **Quantitative measures can be as beneficial as qualitative ones.**

APPENDIX: THE RESOURCES

We have assembled a host of case studies, best practices and other online resources that illustrate the phases of e-government and the ideas and concepts discussed in this report. These resources provide empirical evidence of what actually works.

In this print version, we described only illustrative case studies. The companion online resource contains fuller descriptions of all sites and other resources, searchable electronically and linked to the three phases of e-government, as well as to the various elements of transformation, challenge, and opportunity. We encourage you to utilize the electronic version in CD form or at the website <http://www.cdt.org/egov/handbook/>

Following is an index of all case studies and resources that can be found in the online version:

PUBLISH

- **Brazil:** National Legislative Portal.
<http://www.redegoverno.gov.br> (In Portuguese).
- **Canada:** E-Government Portal. Considered one of the best government portals in the world.
<http://www.canada.gc.ca> (English and French).
- **Colombia:** E-Government Portal (Gobierno en Linea). A one-step portal for access to government information.
<http://www.gobiernoenlinea.gov.co/home/0,1351,ES-COgl,00.html> (in Spanish).
Case-study:
http://www.worldbank.org/publicsector/egov/comombiaportal_cs.htm.
- **Dubai:** The nation's e-government portal is the first of its kind in the Gulf region to offer government services online.
<http://www.dubai.ae>
Case-studies:
<http://www.dfn.org/news/uae/e-gov.htm>
<http://news.bbc.co.uk/hi/sci/tech/newsid1628000/1628610.stm>
<http://www.arabwideweb.com/english/channels/technology/news/12.htm>
- **Ghana:** Environmental Information Network Project. A web-based system containing environmental data for government ministries and citizens.
<http://www.epa.gov.gh/>
Case-studies:
http://www.iicd.org/base/story_read_all?id=4862
http://www.iicd.org/base/story_read_all?id=4756
- **Guyana:** Creating greater public access to information.
Case-study:
<http://sdnhq.undp.org/it4dev/stories/Guyana.html>
- **India:** JUDIS (Judgment Information System). Posts court records, case information and judicial decisions.
<http://indiancourts.nic.in/itinjud.htm>
- **Italy:** Bologna City Portal. Encourages citizen participation at multiple levels, including forums for interactive discussion and links to civic groups.
<http://www.comune.bologna.it/>
- **Kenya:** AfriAfya. A public/private consortium using the web to share medical information.
<http://www.afrafya.org>
Case-study:
<http://www.inasp.org.uk/health/hif-afriafya.html>
- **Lebanon:** Putting government documents and academic research online.
<http://www.sdn.org.lb/>
Case-study:
<http://www.sdn.undp.org/stories/lebanon.html>
- **Malaysia:** Tani-Net. Utilizes ICTs to bring vital agricultural information (such as prices and biotechnological information) and services to farmers in rural Malaysia and across the South Pacific.
<http://www.taninet.com>
Case-study and Reports:
http://www.iicd.org/base/story_search_read?id=4363
<http://arkib.gov.my>
- **Malaysia:** National Archives Homepage.
<http://www.informingscience.com/articles/vol3/v3n4p207-214.pdf>

- **Mexico:** E-Government Procurement Portal (Compranet). Putting government procurement procedures online.
<http://www.compranet.gob.mx> (In Spanish).
- **Namibia:** Parliamentary web site. Allows citizens to access and comment on pending legislation.
<http://parliament.gov.na/parliament/content.htm>
- **Pakistan:** Anti-Corruption Web site, State of Punjab. Publishing the names and crimes of corrupt officials in an effort to stop graft.
<http://www.punjab.gov.pk.com>
- **Peru:** Oficina Registral de Lima y Callao (ORLC). Improving government services by making government records and documents available online.
<http://www.orlc.gob.pe/>
Ministry of Justice site:
<http://www.minjust.gob.pe>
Case-study:
<http://sdnhq.undp.org/it4dev/stories/peru.html>
- **South Africa:** Johannesburg Environmental Web site. Posts comprehensive environmental reports available to the general public.
<http://www.csoe.co.za/csoe>
Case-study:
http://www.iicd.org/base/show/_Ibd?=5&cat=x
- **South Africa:** The official portal for the South African government.
<http://www.gov.za>
- **United States:** California Voter's Guide. An NGO site, publishing information about elections and candidates.
<http://www.calvoter.org>
- **Vietnam:** Publishing information on licensing and investment, including necessary application forms.
<http://www.invest.mpi.gov.vn/>
Case-study:
http://www1.worldbank.org/publicsector/egov/vietnam2cities_cs.htm

INTERACT

- **Armenia:** Online Forum. An online community maintained by the Armenian National Academy of Sciences designed to foster public awareness and dialogue on public policy issues.
<http://www.forum.am>
<http://www.undp.am> (UNDP Armenian web site)
Case-study:
<http://www.undp.org/dpa/frontpagearchive/2002/january/8jan02/index.html>
- **China:** NGOs partner with ministries to assist in implementation of China's e-government strategy.
<http://www.acca21.org.cn/english/index.html>
Case-study:
<http://sdnhq.undp.org/it4dev/stories/china.html>
- **India:** The Central Vigilance Commission. Allows citizens to file online complaints about corruption.
<http://www.cvc.nic.in/vscvc/htm>
Case-study:
http://www1.worldbank.org/publicsector/egov/cvc_cs.htm
- **Italy:** Bologna City Portal. Encourages citizen participation at multiple levels including forums for interactive discussion and links to civic groups.
<http://www.comune.bologna.it/>
- **Namibia:** Parliament of Namibia web site. Allows citizens to obtain and comment on pending legislation.
<http://parliament.gov.na/parliament/content.htm>
- **South Africa:** Independent Electoral Commission. Registering voters and accurately capturing election results and conveying the information in a fast, dependable manner.
<http://www.elections.org.za>
Case-studies:
http://www.accenture.com/xd/xd.asp?it=enWeb&xd=services\microsoft\micr_saiec.xml
<http://www.cdt.org/egov/handbook/electionregister.shtml>

- **United Kingdom:** The Hansard Society. NGO web site that moderates policy discussion, the results of which are sent to Members of Parliament for consideration.

<http://www.democracyforum.org.uk/>

- **United Kingdom:** Electronic Voting in the United Kingdom. Reports on the results of experiments in voting online in several UK cities.

<http://www.local-regions.dtlr.gov.uk/egov/index.htm>

- **United Kingdom:** Citizen Space. A section of the British Government's web portal allowing citizens to comment on government policy.

<http://www.ukonline.gov.uk>

<http://www.ukonline.gov.uk/CitizenSpace/CSHome/1,1037,~801b22~fs~en,00.html>

<http://news.bbc.co.uk/hi/sci/tech/newsid-1628000/1628610.stm>

<http://www.arabwideweb.com/english/channels/technology/news/12.htm>

- **Guatemala:** SIAFSAG (Sistema Integrado de Administración Financiera y Control or Integrated System for Financial Control and Administration). Computerized payment system that tracks government budgets and pays workers and contractors.

<http://www.siafsag.gob.gt/> (in Spanish).

- **India:** Gyandoot community-based Internet access. Entrepreneurs funded by the state use portable computers with wireless Internet connections to provide rural villages access to government services.

<http://gyandoot.nic.in>

Case-study:

<http://www1.worldbank.org/publicsector/egov/gyandootcs.htm>

- **India:** VOICE (the Vijaywada Online Information Center). Making records of the Vijaywada Municipal Corporation accessible to the public via the Internet. Accessible information and services include property details, land records, birth and death data, and applications for certificates.

Case-study:

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

- **India:** Drishtee. Mobile, kiosk-based e-government for rural India.

<http://www.drishtee.com>

Case-study:

http://www.iicd.org/base/story_read?id=4956

- **India:** Computerized Interstate Checkpoints in Gujarat. Using ICT to automate highway toll and fine collection.

Case-study:

<http://www1.worldbank.org/publicsector/egov/gujaratcs.htm>

TRANSACT

- **Brazil:** Rede Govereno. Offers ATM-style kiosks that allows citizens to access government online portals and services.

<http://www.redegoverno.gov.br>

- **Brazil:** Citizen Service Centers in Bahia Province. Providing service kiosks in convenient locations like shopping centers, allowing the public to transact government business.

Case-study:

<http://www1.worldbank.org/publicsector/egov/bahiaSAC.htm>

- **Chile:** Government E-Procurement System.

http://www.compraschile.cl/Publico/entrada_publico.asp

Case-study:

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

- **Costa Rica:** SICERE. Provides instant billing for employment insurance and pension programs.

<http://www.info.ccss.sa.cr/sicere/scrind.htm> (in Spanish).

- **Dubai:** E-government portal.

<http://www.dubai.ae>

Case-studies and news reports:

<http://www.dfn.org/news/uae/e-gov.htm>

- **India:** Land and Property Registration in Andhra Pradesh. Internet-based system for registration and issuing of land records, eliminating the need for middlemen who often demanded high fees or bribes to access government services.
Case-study:
http://www1.worldbank.org/publicsector/egov/voice_cs.htm
- **India:** The Bhoomi Project. Delivery of land titles online.
<http://www.revdept-01.kar.nic.in/Bhoomi/Home.htm>
Case-study:
http://www1.worldbank.org/publicsector/egov/bhoomi_cs.htm
- **Mauritius:** Contributions/Tax Collections Network. Provides an automated tax submission network to foster efficiency and trust.
Case-study:
http://www1.worldbank.org/publicsector/egov/mauritius_CNPs.htm
- **Mexico:** E-Government Procurement Portal (Compranet). Transparent procurement procedures online.
<http://www.compranet.gob.mx> (In Spanish)
- **Phillipines:** Pilot E-Procurement System.
<http://www.procurement-service.net/Default.Asp>
Case-study:
http://www1.worldbank.org/publicsector/egov/philippines_eproc.htm
- **Phillipines:** Customs reform.
Case-study:
http://www1.worldbank.org/publicsector/egov/philippine_customscs.htm
- **South Korea:** OPEN. Provides citizens with forms, instructions and other government documents online; allows citizens to track the progress of their applications for government services online.
<http://www.metropolis.org/Metropolis/gcities.nsf/AllDocs/5E3C2014AAF141124A256B570003757D?OpenDocument>
- **Spain:** Barcelona City Portal. An easy-to-use site leading users to tools that allow them to transact multiple government services online.
<http://www.bcn.es/>

- **Vietnam:** Using the Internet to offer one-stop shopping for businesses and investors seeking to obtain government licenses.
<http://www.invest.mpi.gov.vn> (Hanoi Ministry of Planning and Investing) and
<http://www.http://www.hcminvest.gov.vn> (Ho Chi Minh Department of Planning and Investment)
Case-study:
http://www1.worldbank.org/publicsector/egov/vietnam2cities_cs.htm
- **United Kingdom:** Electronic Voting Report. Reviews experiments in voting online in several UK cities.
<http://www.local-regions.dtlr.gov.uk/egov/index.htm>

Process Reform

- **Chile:** Government E-Procurement System. Revamps offline rules and regulations in order to establish an efficient online procurement system.
http://www.compraschile.co/Publico/entrada_publico.asp
Case-study:
http://www1.worldbank.org/publicsector/egov/eprocurement_chile.htm
- **India:** The Central Vigilance Commission Web site. Transforming the way authorities deal with corruption.
<http://www.cvc.nic.in>
Case-study:
http://www1.worldbank.org/publicsector/egov/cvc_cs.htm
- **India:** Gyandoot community-based Internet project. Roving entrepreneurs funded by the state use portable computers with wireless Internet connections to provide rural villages with access to government services promoted by a crusading mayor as an anti-corruption measure.
<http://gyandoot.nic.in>
Case-study:
<http://www1.worldbank.org/publicsector/egov/gyandootcs.htm>
- **India:** Computerized Interstate Checkpoints in Gujarat. Generating increased revenue by automating the highway toll and fine collection system.
Case-study:
<http://www1.worldbank.org/publicsector/egov/gujaratcs.htm>

- **India:** The Bhoomi Project online delivery of land titles in Karnataka, India. Securing the cooperation of stakeholders and overcoming the resistance of bureaucrats to ensure success of computerization projects.

<http://www.revdept=01.kar.nic.in/Bhoomi/Home.htm>

Case-study:

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

- **South Korea:** OPEN. Giving citizens the ability to download forms, instructions and other government documents, as well as track online the progress of their applications for government services (primarily licensing).
- <http://www.metropolis.org/Metropolis/gcities.nsf/AllDocs/5E3C2014AAF141124A256B570003757D?OpenDocument>
- **Vietnam:** Using the Internet to offer one-stop shopping for businesses and investors seeking to obtain government licenses.
- <http://www.invest.mpi.gov.vn/> (Hanoi Ministry of Planning and Investment) and
<http://www.hcminvest.gov.vn/> (Ho Chi Minh Department of Planning and Investment).

Case-study:

http://www1.worldbank.org/publicsector/egov/vietnam2cities_cs.htm

Leadership

- **Colombia:** E-Government Portal (Gobierno en Linea). Demonstrating how top leadership is critical in developing e-government services web site.

<http://www.gobiernoenlinea.gov.co/home/0,1351,ES-COgl,00.html> (in Spanish).

Case-study:

http://www1.worldbank.org/publicsector/egov/colombiaportal_cs.htm

- **Estonia:** The Tiger Leap Initiative. Mobilizing the bureaucracy with a unifying concept and Presidential leadership.

Case-study and report:

<http://www.sdn.undp.org/it4dev/stories/estonia.html>

<http://www.undp.ee/tigerleap/conclusion.html>

- **South Korea:** OPEN (Online Procedures Enhancement for Civil Applications) Allows citizens to download forms, instructions and other government documents, as well as track online the progress of their applications for government services.

<http://www.metropolis.org/Metropolis/gcities.nsf/AllDocs/5E3C2014AAF141124A256B570003757D?OpenDocument>

Strategic Investment

- **India:** Computerized Interstate Checkpoints in Gujarat. Generating increased revenue by automating the highway toll and fine collection system.

Case-study:

<http://www1.worldbank.org/publicsector/egov/gujaratcs.htm>

- **India:** The Drishtee Project. Seeks to develop mobile, kiosk-based e-government throughout rural India.

<http://www.drishtee.com>

Case-study:

http://www.iicd.org/base/story_read?id=4956

- **Phillipines:** Customs reform. Streamlining inspections and payments required to clear customs.

Case-study:

<http://www1.worldbank.org/publicsector/egov/philippinecustomscs.htm>

- **United Kingdom:** Electronic voting report. Reviews experiments in voting online in several UK cities where investments were made in technology to boost voter turnout.

<http://www.local-regions.dtlr.gov.uk/egov/index.htm>

Collaboration

- **China:** UN-sponsored NGOs partner with ministries to assist in implementation of China's e-government strategy.

<http://www.acca21.org.cn/english/index.html>

Case-study:

<http://sdnhq.undp.org/it4dev/stories/china.html>

- **Estonia:** The Tiger Leap Initiative. Collaborating with industry to wire schools and put the entire country online.

Case-studies:

<http://www.sdnp.undp.org/it4dev/stories/estonia.html>

<http://www.undp.ee/tigerleap/conclusion.html>

- **India:** The Bhoomi Project. Delivering online land titles in Karnataka, India.

<http://www.revdept-01.kar.nic.in/Bhoomi/Home.htm>

Case-study:

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

- **India:** The Drishtee Project. Mobile, kiosk-based e-government service operated by private entrepreneurs.

<http://www.drishtee.com>

Case-study:

http://www.iicd.org/base/story_read?id=4956

- **Kenya:** AfriaFya. A public/private consortium using information exchange to improve health care services to the rural poor.

<http://www.afriafya.org>

Case-study:

<http://www.inasp.org.uk/health/hif-afriafya.html>

- **Mauritius:** Contributions/Tax Collections Network. Working with businesses to create an automated tax submissions network.

Case-study:

<http://www1.worldbank.org/publicsector/egov/mauritiu CNPcs.htm>

- **Brazil:** Project Rede Govereno. Allows citizens to use ATM-style kiosks to access government online portals and services.

<http://www.redegoverno.gov.br>

- **Canada:** Government portal. Considered one of the best in the world.

<http://www.canada.gc.ca>

- **Namibia:** Parliamentary interactive web site. Allows citizens to access and comment on pending legislation

<http://parliament.gov.na/parliament/content.htm>

- **South Africa:** Official government portal.

<http://www.gov.za>

- **United Kingdom:** Citizen Space. Part of the British government's web portal allowing citizens to comment on government policy.

<http://www.ukonline.gov.uk>

<http://www.ukonline.gov.uk/CitizenSpace/CSHome/1,1037,~801b22~fs~en,00.html>

- **United Kingdom:** The Hansard Society. NGO web site that moderates policy discussion, the results of which are sent to Members of Parliament for consideration.

<http://www.democracyforum.org.uk/>

- **United Kingdom:** Electronic Voting report. Report on the results of experiments in voting online in several UK localities.

<http://www.local-regions.dtlr.gov.uk/egov/index.htm>

CHALLENGES AND OPPORTUNITIES:

Civic Engagement

- **Armenia:** Online forum. An online community maintained by the Armenian National Academy of Sciences designed to foster public awareness and dialogue on public policy issues.

<http://www.forum.am> (in Armenian).

Case-study:

<http://www.undp.org/dpa/frontpagearchive/2002/january/8jan02/index.html>

Infrastructure Development

- **India:** Drishtee Project. Mobile, kiosk-based e-government throughout rural India

<http://www.drishtee.com>

Case-study:

http://www.iicd.org/base/story_read?id=4956

- **Jamaica:** SDNP Jamaica project. Offers Internet access in local post offices, training postal employees to help the public utilize ICT services.
<http://www.jsdn.org.jm>
Case-study:
<http://www.sdn.undp.org/stories/jamaica.html>
- **Kenya:** AfriAfya. A consortium of the seven largest health NGOs improving medical care using ICT.
<http://www.afriafya.org>
Case-study:
<http://www.inasp.org.uk/health/hif-afriafya.html>
- **Malaysia:** Tani-Net. Utilizes ICT to bring vital agricultural information (such as prices and biotechnological information) and services to farmers in rural Malaysia and across the South Pacific.
<http://www.taninet.com>
Case-study and article:
http://www.iicd.org/base/story_search_read?id=4363
<http://www.informingscience.com/articles/vol3/v3n4p207-214.pdf>

Law and Public Policy

- **Chile:** Government E-Procurement System. Revamped offline rules and regulations in order to establish an efficient online procurement system.
http://www.compraschile.cl/Publico/entrada_publico.asp
Case-study:
http://www1.worldbank.org/publicsector/egov/eprocurement_chile.htm
- **India:** The Bhoomi Project. Online delivery of land titles in Karnataka, India.
<http://www.revdept-01.kar.nic.in/Bhoomi/Home.htm>
Case-study:
http://www1.worldbank.org/publicsector/egov/bhoomi_cs.htm
- **Palestine:** The Election Register. Provided a modern and efficient election registration and tabulation system utilizing ICT.
Case-study:
<http://www.aceproject.org/main/english/et/ety02.htm>

E-Literacy

- **India:** The Gyandoot project. Offers community-based Internet access from roving entrepreneurs funded by the state to provide access in rural villages.
<http://gyandoot.nic.in>
Case-study:
<http://www1.worldbank.org/publicsector/egov/gyandootcs.htm>
- **Jamaica:** SDNP Jamaica project. Putting Internet access in local post offices and libraries, while also training employees to teach the public on how to use this new technology.
<http://www.sdn.undp.org/stories/jamaica.html>

Accessibility

- **United States:** U.S. Government Accessibility Standards under “Section 508”
<http://www.section508.gov>

Digital Divide

- **Estonia:** The Tiger Leap Initiative. Uses public access centers and public/private cooperation to put the entire country online.
Case-studies:
<http://www.sdn.undp.org/it4dev/stories/estonia.html>
<http://www.undp.ee/tigerleap/conclusion.html>
- **India:** The Dristee Project. Offers mobile, kiosk-based e-government for rural India.
http://www.iicd.org/base/story_read?id=4956
- **Jamaica:** SDNP Jamaica project. Offering Internet access in local post offices and training postal employees to help the public use the technology.
<http://www.jsdn.org.jm>
Case-study:
<http://www.sdn.undp.org/stories/jamaica.html>

Trust

- **International Telecommunication Union (ITU):** World E-Trust Memorandum of Understanding. A basic framework for global e-services trust efforts.
http://www.itu.int/ITU-D/e-strategy/MOU/world_e.html

Privacy

- **Canada:** Privacy Impact Assessment, Ontario, Canada. An online guide to fair information practices.
<http://www.gov.on.ca:80/MBS/english/fip/pia>

Security

- **ACE:** Explores ICT applications in the electoral process, including security and reliability issues.
<http://www.aceproject.org/main/english/et/et.htm>
- **European Union:** The eEurope initiative. Providing cyber-security guidelines for public entities.
Case-study:
<http://europa.eu.int/ISPO/eif/InternetPoliciesSite/Crime/CrimeCommEN.html>

Transparency

- **Chile:** Government E-Procurement System. Posts online results of government solicitations and performance of winning builders.
http://www.compraschile.cl/Publico/entrada_publico.asp
Case-study:
<http://www1.worldbank.org/publicsector/egov/chile.htm>
- **Costa Rica:** SICERE. Provides instant billing for worker and employer employment insurance and pension quotas.
<http://www.info.ccss.sa.cr/sicere/scrind.htm> (in Spanish).
- **Guatemala:** SIAFSAG or Sistema Integrado de Administración Financiera y Control (Integrated System for Financial Control and Administration). Computerized payment system that tracks government budgets accurately and pays workers and contractors on schedule.
<http://www.siafsag.gob.gt/> (In Spanish)

Case-study:

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

- **India:** Computerized Interstate Checkpoints in Gujarat. Using ICT to automate highway toll and fine collection.
<http://www1.worldbank.org/publicsector/egov/gujaratcs.htm>
- **India:** The Central Vigilance Commission Web site. Publishes the names of government officials accused of corruption.
<http://www.cvc.nic.in>

Case-study:

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

- **Mexico:** Compranet, Mexico's E-Government Procurement Portal.
<http://www.compranet.gob.mx>
- **Philippines:** Pilot E-Procurement System. Increasing transparency by an online procurement system.
http://www1.worldbank.org/publicsector/egov/philippines_eproc.htm
- **South Korea:** OPEN (Online Procedures Enhancement for Civil Applications). Gives citizens the ability to download forms, instructions and other government documents, as well as track online the progress of their applications for government services (primarily licensing).
<http://www.metropolis.org/Metropolis/gcities.nsf/AllDocs/5E3C2014AAF141124A256B570003757D?OpenDocument>

Interoperability

- **Chile:** Government E-Procurement System.
http://www.compraschile.cl/Publico/entrada_publico.asp
Case-study:
http://www1.worldbank.org/publicsector/egov/eprocurement_chile.htm
- **Hong Kong:** Electronic Service Delivery (ESD). Adopting a common Chinese language interface for message exchange between the front-end ESD system and the back-end systems.
<http://www.esd.gov.hk>

Case-study:

http://www.e-envoy.gov.uk./publications/reports/benchmarking/V2/interop_hkong.htm

- **United States:** US CIO Council's Practical Guide to Federal Enterprise Architecture. A guide to interoperability providing descriptions of how to map an enterprise life cycle, establish management structures, develop a sequencing plan including identifying gaps and migrating systems, etc.

Web site for the CIO Council's Guide Version 1.0:

<http://www.gao.gov/bestpractices/bpeaguide.pdf>

Web site for the US Government's E-Government Strategy:

<http://www.whitehouse.gov/omb/inforeg/egovstrategy.pdf>

Records Management

- **Egypt:** Decision Support Systems and Strategic Public Sector Decision Making. Provides better information management.

Case-study:

http://idpm.man.ac.uk/idpm/isps_wp3.htm

- **India:** Land and Property Registration in Andhra Pradesh. Converted paper records to computers, allowing online registration.

Case-study:

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

- **Lebanon:** Placing government documents and academic research online.

<http://www.sdn.org.lb/>

Case-study:

<http://www.sdn.undp.org/stories/lebanon.html>

- **Peru:** Oficina Registral de Lima y Callao (ORLC). Making government records and documents available online.

<http://www.orlc.gob.pe/>

Ministry of Justice:

<http://www.minjus.gob.pe/>

Case-study:

<http://sdnhq.undp.org/it4dev/stories/peru.html>

Permanent Availability and Preservation

- **Malaysia:** National Archives.

<http://arkib.gov.my>

- **United States:** National Archives and Records Administration.

<http://www.nara.gov>

Education and Marketing

- **Dubai:** E-government portal. Uses training and awareness programs to encourage people to use online services.

<http://www.dubai.ae>

Case-study and news reports:

<http://www.dfn.org/news/uae/e-gov.htm>

<http://news.bbc.co.uk/hi/sci/tech/newsid-1628000/1628610.stm>.

<http://www.arabwideweb.com/english/channels/technology/news/12.htm>

- **Estonia:** The "Tiger Leap Initiative." Using Presidential leadership and other steps to promote public awareness.

Case-studies:

<http://www.sdn.undp.org/it4dev/stories/estonia.html>

<http://www.undp.ee/tigerleap/conclusion.html>

- **Jamaica:** SDNP Jamaica Project. Offering Internet access in the local post offices and training postal employees to help the public use the technology.

<http://www.jsdn.org.jm>

Case-study:

<http://www.sdn.undp.org/stories/jamaica.html>

Public/Private Competition/Collaboration

- **Honduras:** SDNP Honduras – Civil Society Information System. Using email after natural disasters to open new avenues of communication and aid during a crisis.

<http://www.sdnhon.org.hn>

Case-study:

<http://www.sdn.undp.org/stories/honduras.html>

- **India:** The Gyandoot Project. Provides Internet access in rural communities by partnering local entrepreneurs with the government.

<http://www1.worldbank.org/publicsector/egov/gyandootcs.htm>

- **Mauritius:** Contributions/Tax Collections Network. Working with businesses to develop an automated tax submission network.

Case-study:

<http://www1.worldbank.org/publicsector/egov/mauritiuscnp.htm>

Case-study:

<http://www.sdnj.org/stories/jamaica.html>

Cost Structures

- **Chile:** Government E-Procurement System. Redesigning offline rules and regulations in order to establish an efficient online procurement system.

http://www.compraschile.cl/Publico/entrada_publico.asp

Case-study:

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

- **India:** Computerized Interstate Checkpoints in Gujarat, India. Generating increased revenue by automating the highway toll and fine collection system.

Case-study:

<http://www1.worldbank.org/publicsector/egov/gujaratcs.htm>

- **India:** Project VOICE (the Vijaywada Online Information Center). Online delivery of municipal services (in particular, tax collection) in Vijaywada, India.

Case-study:

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

Workforce Issues

- **Brazil:** Citizen Service Centers, Bahia Province. Placing service kiosks in convenient locations like shopping centers, allowing the public to transact government business with less hassle.

Case-study:

<http://www1.worldbank.org/publicsector/egov/bahiaSAC.htm>

- **India:** Gyandoot community-based Internet project. Entrepreneurs are funded by the state provide access in rural villages where services are sparse.

<http://gyandoot.nic.in>

Case-study:

<http://www1.worldbank.org/publicsector/egov/gyandootcs.htm>

- **India:** Project VOICE (the Vijaywada Online Information Center). Online delivery of municipal services (in particular, tax collection) in Vijaywada, India.

Case-study:

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

- **India:** Project Bhoomi, Karnataka, India. Online delivery of land titles.

<http://www.revdept-01.kar.nic.in/Bhoomi/Home.htm>

Case-study:

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

- **Jamaica:** SDNP Jamaica. Training postal employees to help the public utilizing ICT.

<http://www.jsdnj.org.jm>

Benchmarking

- **United Kingdom:** 2001 E-government Progress Report from The National Audit Office. Measuring progress on e-government initiatives in the United Kingdom.

Case-study:

<http://www.nao.gov.uk/pn/01-02/0102764.htm>

REPORTS AND OTHER RESOURCES

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http://www.adb.org/Documents/Papers/E_Government/egovment.pdf

- E-Government: The Message to Politicians, Crossing Boundaries (Canada), October 2002.

http://www.crossingboundaries.ca/site/reports/ktapublication_vol7e.pdf

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http://www.crossingboundaries.ca/site/reports/ktapublication_vol8e.pdf
- **eGovernment for Development Information Exchange**: Coordinated by the University of Manchester's Institute for Development Policy and Management and moderated by Richard Heeks, categorizes e-government case studies according to success or failure
<http://www.egov4dev.org/topic1cases2.htm>
<http://www.egov4dev.org/cases.htm>
- **Global E-Government Report**, Darrell M. West, Brown University, September 2002.
<http://www.INSIDEPOLITICS.org/egovt02int.html>
- **In the Service of Democracy: A Consultation Paper on a Policy for Electronic Democracy**, UK Online (UK), July 2002.
<http://www.edemocracy.gov.uk/downloads/e-Democracy.pdf>
- **Information Technology Research, Innovation, and E-Government**, National Academy of Sciences (US), 2002.
http://www7.nationalacademies.org/cstb/pub_egovment.html (Outline and order info)
- **The Roadmap for E-Government in the Developing World**, The Pacific Council on International Policy, April 2002.
<http://www.pacificcouncil.org/pdfs/e-gov.paper.f.pdf>
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- **2001 E-government Progress Report**, The National Audit Office (**United Kingdom**), April 25, 2002.
<http://www.nao.gov.uk/pn/01-02/0102764.htm>
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[http://www.e-envoy.gov.uk/oeo/oeo.nsf/sections/reports-top/\\$file/int_comparisons.htm](http://www.e-envoy.gov.uk/oeo/oeo.nsf/sections/reports-top/$file/int_comparisons.htm)
- **A Best Practices Review: Local E-Government Services, Wisconsin Legislative Audit Bureau (United States)** December 2000.
http://www.legis.state.wi.us/lab/Reports/01-0_E-GovFull.pdf
- **Creating A Development Dynamic**: Final Report of the Digital Opportunity Initiative, sponsored by Accenture, the Markle Foundation and UNDP, July 2001.
<http://www.markle.org/news/pages/contents.html>
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http://www.mckinseyquarterly.com/articlece_page.asp?ar-1020&L2=33&L3=94
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<http://idpm.man.ac.uk/idpm/igov11abs.htm>
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<http://katherine.reilly.net/e-governance/reports.html>
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<http://www.cdt.org/egov/handbook/tanzania.pdf>
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<http://www.cdt.org/egov/handbook/texas.pdf>

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