e-GOVERNMENT PRIMER

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ACKNOWLEDGEMENTS

GLOSSARY

A   Access to and the Delivery of Public Services

E   Efficiency in the design and delivery of government services, internal and external

P   Productivity of businesses, citizens, and employees

T   Transparency and Strengthening Democracy

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Chapter 1: Overview

This e-Government Primer was created in response to requests from donors and clients seeking a guide to the introduction of e-Government in countries at national and subnational levels. A major proportion of the material was collected and prepared in 2006. Since that time, while the frameworks included in the primer are sound, just as technology has changed, so has the range of insights and experiences applying ICT in the complex environment of government.

As a result, this primer is intended to be used as the starting point for a dynamic and collaborative knowledge source of good practices, issues, and resources around the world for policymakers and practitioners alike. It is the intention to develop a wiki-based facility to provide the means for users to refine and add content to the primer.

What is e-Government?

Introduction

E-Government is about change.

Governments, businesses, communities, and citizens around the world are recognizing the value that information and communications technologies can bring to their operations, relationships, and outcomes. In the context of government, this has been described as e-Government – or electronic Government. Properly designed and implemented, e-Government can contribute to the achievement of many government policies and priorities.

Not surprisingly, therefore, policymakers and managers have contemplated and initiated e-Government in all countries throughout the world.

The information revolution that started in the 1970s is the fifth technology revolution broadly impacting society and national economies and is expected to take 40-60 years to mature and spread across the world. History shows that technology revolutions have two components: the "installation" of an infrastructure phase and the "deployment" phase accompanied by creative destruction and innovation, separated by a period of uncertainty, institutional recomposition, and role shift. The adoption of "e" in government is now triggering significant changes in the institutional arrangements – structures, processes, roles, skills, relationships in government (Perez, 2008).

What is e-Government? It depends. It is a project, a process, a negotiation, a way of doing things. Done well, it can deliver many benefits to government and citizens. However, without effective leadership and an enabling environment it can be costly, time consuming, and ineffective.

E-Government is not easy. It is more about government than technology, and can require substantial change in many elements of government: roles, authority, processes and ultimately structures. E stands for "everything", not just the electronics. It therefore can encounter challenge and resistance from vested interests. Without sustained leadership and drive, careful planning, effective implementation, and performance reporting, programs and projects can easily fail – and many have. It is the purpose of this Primer to offer guidance and resources to policymakers, program managers, and practitioners in overcoming these challenges and to contribute to the achievement of governments' policy and service objectives for their citizens and stakeholders.

Definitions of e-Government

"E-Government" refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.

Traditionally, the interaction between a citizen or business and a government agency took place in a government office. With emerging information and communication technologies it is possible to locate service centers closer to the clients and for simple transactions to be done on a self-service basis. Access to services may be via an unattended kiosk in a government agency; a service kiosk co-located with other community organizations and facilities, or via a personal computer or mobile phone.

Analogous to e-commerce, which allows businesses to transact with each other more efficiently (B2B) and brings customers closer to businesses (B2C), e-Government aims to make the interaction between government and citizens (G2C), government and business enterprises (G2B), government and employees (G2E) and inter-agency relationships (G2G) more friendly, convenient, bi-directional, transparent, and inexpensive.

Building on the growing body of knowledge of e-Government implementations throughout the world, and the changing expectations of citizens in their relationship with governments, e-Government can now be described as: "the commitment and initiative of a government to improve its relationship with citizens and the business sector through enhanced, cost-effective, and efficient delivery of services, information, and knowledge using information and communication technologies (ICT). It boosts the efficiency of government operations as well as enhances good governance and transparency. A system of transparent administration can create a contributing environment that facilitates economic development and leads to a number of government projects in which the private sector can participate. E-Government not only provides benefits such as fast, inexpensive, trustworthy, and reliable services to households and businesses but also offers the potential to reshape the public sector and remake the relationships between citizens, businesses, and the government by allowing for open-communication, participation, and public dialogues in formulating national regulations." (Mirchandani, Johnson and Joshi, 2006)

E-Government is not an end; it is an enabler of change and can be a strong contributor to the achievement of government's policy outcomes. It can automate, change, and provide new insights – it deals with process, with information, and with people. It can also facilitate a stronger role for the citizen in his/her interaction with all levels of government and overcome the frustrations arising from interacting with the range of vertical structures that governments rely on to implement their policies – departments, agencies, and programs.

However, citizen-centric government does challenge much of the traditional culture and practices that have developed over many years. The real potential of e-Government is being realized when it is placed in the context of overall government performance and governance (for example Abu Dhabi Government Modernisation Initiative and Korea), rather than of a series of technology projects.

As a result, design and management of e-Government is both top-down and bottom-up – strategy, policy, and standards must be broad and applied across the whole of the system or country, and done within the vision and intent of the Government's broad strategy/goals and objectives. However, the individual initiatives or projects must be grounded in individual departments relying on sound governance and decision-making disciplines, preparedness to manage culture, capacity building and change, and active stakeholder engagement.

As the capacity of governments to exploit the value that information and technology can deliver matures and pervades all areas of policy and operations, the term "e-Government", may eventually disappear as a distinct concept. The key questions, therefore, are:

- how can the integration of government policies, commitments, and operations with information and technology best be designed and implemented to serve the interests of the public,
- what political and organizational leadership, policies, and capabilities are required to drive the change, and
- where to begin?

Experiences and forecasting of the sequence of interventions that underpin e-Government were described by Gartner in 2004. It produced an e-Government Hype Curve (see below) that reflects key capabilities and issues that most countries work through during the e-Government journey.
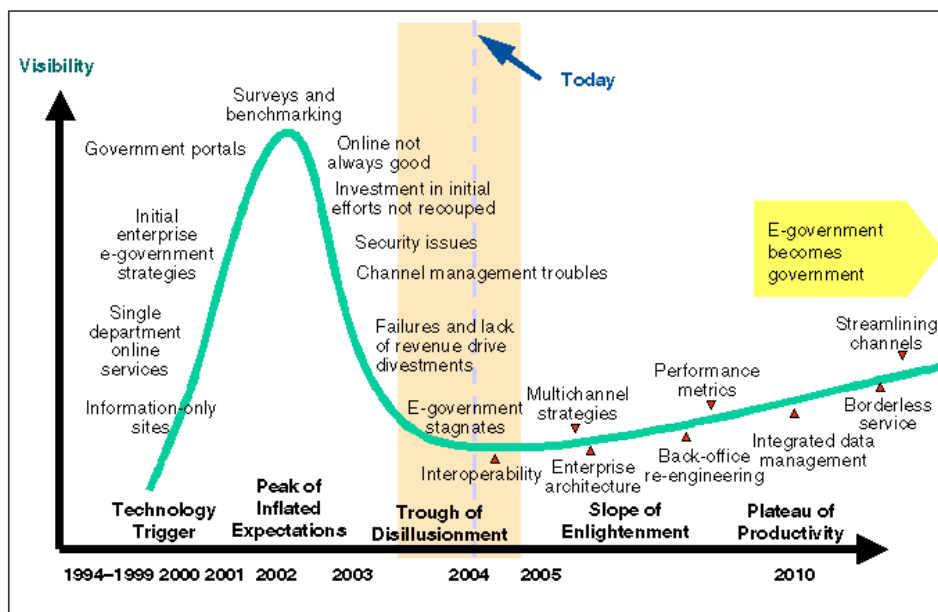
DiMaio, A and Kost, J, Hype Cycle Shows E-Government Overcoming Disillusionment, Gartner, 17 March 2004

A final, but crucial introductory point: e-Government is not limited to the richer countries. Indeed, as the examples cited in this Primer will demonstrate, some of the most innovative e-Government applications are appearing in the developing world: the drivers and motivation for better governance, anti-corruption, service improvement, and e-Government have converged so that the uniting of these agendas are assisting developing countries to leapfrog the developed countries in terms of ownership, speed of adoption, and benefits achieved.

The primer is organized in 9 chapters under three main themes: (I) Delivering Public Value Through e-Government; (II) Governance and Implementation of e-Government; and (III) Enabling Successful e-Government. Each chapter includes extensive links (URLs) to reference materials, which were current at the time the report was drafted. A separate References section compiles resources, ranging from academic research, official national reports, and NGO presentations to case studies.

Theme I: Delivering Public Value through e-Government

The delivery and enhancement of public value[1] [2] to citizens, businesses, communities, and employees and (other) governments in their interactions with government and the public sector offers a systematic framework to develop, assess, and measure policies, strategies, and business cases for e-Government. This requires consideration of the overall environment in which the new services will operate, the enablers and barriers, and the structures, systems, and processes that need to change (UNESCO, 2008).

Chapter 2. Value and Impact of e-Government

- The Drivers
- The Benefits
- The Objectives.

As the information revolution gradually permeates developing countries, more and more governments are embracing e-Government as a tool for enabling, enhancing and accelerating interaction with citizens, increasing effectiveness and efficiency in the delivery of government services, and improving transparency and accountability. The main drivers for e-Government (and reform) are:
- Limited trust and confidence in government
- Low levels of citizen and business satisfaction with public services
- Fragmentation and duplication of government services and information sources
- Knowledge economy (i.e., new and emerging technologies, demand for business intelligence and evidence to aid decision-making)
- National competitiveness – establishing investment platforms for further economic development.

The benefits to be expected from e-Government initiatives can be put into three major categories:
- improved achievement of economic and social policy outcomes (e.g., health, industry development, education, welfare, justice, agriculture)
- improved transparency, accountability, and democracy, with reduced levels of corruption, and
- citizen and business satisfaction and confidence with public services.

Identifying the benefits of each e-Government initiative is important for the purposes of making funding decisions based on sound investment analysis and in defining performance indicators to measure whether a project is yielding the expected benefits during the project's implementation and for the period of operation (see Chapter 4).

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[1] Term originally described by Mark H. Moore in, *Creating Public Value: Strategic Management in Government*, Cambridge, MA, Harvard University Press, 1995.

[2] There are three elements underpinning public value: the investment, the government operations affected, and the stakeholders (Centre for Technology in Government, 2006). There are two sources of public value: value that results from improving the government itself as an asset to society and value that results from the delivery of specific benefits directly to persons or groups.

Ensuring that e-Government initiatives are integrated into the achievement of the broader vision and goals of the nation or subnational jurisdiction provides the strategic context and management framework necessary for success.

Within this context, the objectives for e-Government initiatives can focus on:
- Improving access to and delivery of public services and information
- Enhancing transparency, openness of, and engagement with the administration
- Increasing productivity of businesses, citizens, and employees
- Improving efficiency in the design and delivery of government services, and
- Contributing to broader government economic and social outcomes.

Access to and the Delivery of Public Services and Information

Citizens in many countries often spend much time and money discovering and accessing government services. Rural populations are at a particular disadvantage in this regard given the distance required to travel to face-to-face services. The use of digital technology can facilitate decentralized access to services, saving time and money for citizens who would otherwise have to travel great distances and governments in running built infrastructure.

While e-Government will not eliminate bureaucracy, it offers the opportunity to streamline, rationalize, and reengineer processes, reducing not only the volume of paperwork, but also the layers of bureaucracy that are involved in conducting common transactions. Well-planned projects can also promote equity in service delivery and improve the ability of government to reach previously isolated groups.

Transparency and Strengthening Democracy

One of the most commonly cited goals of e-Government lies in promoting open processes that improve the transparency of government. Transparency is the ability to see through the operations of government, understand the actions and admit accountability and responsibility.

Prof. Subhash Bhatnagar has written that e-Government, carefully planned and implemented, can reduce corruption in several ways: "It takes away discretion, thereby curbing opportunities for arbitrary action. It increases chances for exposure by maintaining detailed data on transactions, making it possible to track and link the corrupt with their wrongful acts. By making rules simple and more transparent, E-Government emboldens citizens and businesses to question unreasonable rules and procedures and their arbitrary application." So far, however, there is anecdotal evidence rather than documented correlation of the relationship between e-Government investment and decreased perceptions of corruption.

As information becomes easier to access, it assists in building a democratic society in which citizens have a more equal position in terms of access to information appropriate to all public affairs (Vintar, 1999). To achieve this, public access to information must be provided in practical terms, requiring the documents and data being accessible to the public and providing an easy to understand guide to the decision making process and the associated terminology.

Online Engagement and Participation

By creating opportunities for online engagement and participation, e-Government can also strengthen democracy. Even in developed countries, many citizens feel isolated from elected leaders and other government officials. By making information and interactive services available, and by linking people across geographic boundaries, e-Government can increase participation in the processes of government. New social media tools are also providing opportunities and challenges for government to involve stakeholders in dynamic policy development, service design, co-production and feedback processes (see Chapter 9, Trends and Future Directions).

The manipulation of voter registers is a major problem in some developing countries. Fraudulent activities include the disappearance of voter registers from polling stations, the deletion of voters from the lists, and the registration of deceased citizens. Such activities facilitate the rigging of elections and dampen the enthusiasm of the electorate for participating in the political process. Digital voter registers offer part of the solution, providing a means of data storage and management that is accessible beyond polling stations and paper registers. For example, the Electoral Commission of Kenya (ECK), with donor support, upgraded its computer and communication network in 2002, so that it could promptly verify through online voter lists the eligibility of voters who had lost their voting cards or whose names were missing from the manual voter registers in their respective polling stations.

In 2007, Estonia held its and the world's first general Internet election. Voting was available from February 26 to 28. A total of 30,275 citizens (around 1 per cent of the population) used Internet voting. Key to the process was use of the e-ID which is smart-card enabled, and the enabling legislation which was enacted in 2002. Plans are now underway to support the use of mobile telephones to cast votes.

Example: Access to public sector information and performance statistics   T

The UK Government's Office of Public Sector Information (OPSI) is responsible for information policy, setting standards, delivering access, and encouraging the reuse of public sector information. OPSI provides a wide range of services to the public, information industry, government, and the wider public sector relating to finding, using, sharing, and trading information. Many governments in North America, particularly local government, are also providing access to their data, e.g., the District of Columbia, including performance information of their services, e.g., New York City's City Performance Report.

Example: Online Land Records   TEP

In Karnataka, India, the Bhoomi land registry system has automated 20 million land records since its inception in 1998, yielding benefits to farmers, financial institutions, and public officials. Farmers, for example, can quickly get their land records from kiosks and are protected from harassment and extortion. Whereas getting records formerly entailed a delay of up to 30 days, farmers now get their records in less than 2 minutes. In this as in other e-Government projects, benefits include not only increased efficiency but also reduction in opportunities for corruption: making government services available to citizens in a transparent and efficient manner can also empower them against corrupt and arbitrary bureaucratic action.
Sources: World Bank case study and "Land records: e-governance at work, successfully," Financial Express (March 17, 2006). Available here.

Example: e-Procurement   T

Online government procurement is one application that has been successfully implemented in several countries, with a range of benefits. Chile's e-Procurement system is often cited as a success. It is credited with making government procurement more transparent, reducing businesses' transaction costs, and reducing opportunities for corruption.

e-Parliaments

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A distinction may be drawn between those parliamentary websites intended to inform and engage the public and those intended to facilitate the internal decision-making processes of the parliaments. The former include websites that video-stream the sittings and disseminate information on proposed legislation and the legislative process, committees and members, parliamentary calendars, and transcripts and other materials from hearings or debates. Systems aimed at parliamentarians can include online notices and voting. An example of a website that contains both features is the site of India's Council of States. The website for South Africa's Parliament also includes a range of information for both the public and Members of Parliament.

Judicial Branch Websites

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Countries' judiciaries are also going online, posting opinions and other information about cases. The Supreme Court of India publishes court opinions and orders, as does the Supreme Court of Appeals in South Africa.

Personal Sites for Elected Officials

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Increasingly, elected officials are developing their own websites and are communicating with their constituencies via e-mail and other electronic media. Members of Parliament in India have their own home pages, and in Korea, they have Cyworld social network pages known as minihompys, whilst members of Parliament in South Africa post their contact information, committee assignments, and e-mail addresses.

Some prime ministers and presidents have their own websites. Canada's Prime Minister is one. The website of the Australian Prime Minister includes information on the PM's office, a biography, contact e-mail, blog, and also has a twitter site.

TheyWorkForYou is a website run by mySociety, a project of UK Citizens Online Democracy, a registered charity. It monitors all elected MPs, and their unelected Peers, and offers opportunities to comment on what goes on in Parliament. A number of MPs have linked their own websites to this dynamic source of information about their parliamentary activity. The copyright of Hansard remains under Parliamentary Copyright, used under license. Openaustralia.org is modeled on this.

Example: Single Window Trade   *P*
Customs – Egypt has introduced a single window for trade documentation and merged 26 approvals into five, while electronic filing of customs documents has been introduced in Ghana, Kenya, Mauritius, Rwanda, and Uganda.
Korea's e-Customs Service – In a 10-year period, the trade volume of Korea increased by 3.5 times and duties and taxes the KCS collected grew by three times, while the number of KCS employees actually decreased by 6 percent. The time required for clearance of exported goods has now reduced from more than a day to within 2 minutes, and for imported goods from 2.5 hours to 1.5 hours.

Example: Customs Clearance, Philippines
Using an "off-the-shelf" customs application package as the main building block, the Philippines Customs Bureau has developed an online system to process clearance of imports, payment of duty, and delivery of release orders for shipments to leave the docks. The new online system has lessened the cost of trade for businesses, reduced opportunities for fraud, and helped the Bureau to maximize revenue collection. Improved service was a major benefit. Quick clearance of a majority of transactions has brought down the cost of trade significantly. Cargo is released between four hours and two days, compared to eight days previously. Business people also enjoy the greater convenience of making payments at familiar banks, instead of lining up for service at the Customs collection stations.

Example: Single Window for Business, Vietnam
Hanoi and Ho Chi Minh City each launched projects for business service agencies in 2000. The two websites (Hanoi Ministry of Planning and Investment and Ho Chi Minh Department of Planning and Investment) serve as the first point of contact for potential investors, especially foreign investors. They are interactive and content rich and set standards for related agencies elsewhere in the country. The total project cost was on the order of $200,000, half of which was spent on hardware and software for the agency, and the remainder on the Web development project. The site has been able to reduce turnaround time in processing by the agency and, most importantly, the search cost by prospective investors who traditionally pay professional services companies several thousand dollars for a simple registration process.

Productivity of businesses, citizens, and employees

Increased levels of convenience and reduction of time and cost expended produce higher levels of productivity and are outcomes of process reengineering. The aggregation and consolidation of services through single entry points into government and streamlining of decision-making and approvals are key elements of these initiatives.

Efficiency in the design and delivery of government services, internal and external

The reengineering, streamlining, and automation of internal processes can also have a substantial impact on the efficiency of government operations, productivity, and satisfaction of employees.

As content and document management capabilities grow, governments are connecting or combining departmental and agency intranets to provide the knowledge base for a single source of information and organizational transactions for their staff (see Chapter 7, Enabling Access to a Trusted, Connected, and Secure Environment).

Example: IRAS in Singapore **AEP**
In 1992, the Inland Revenue Authority of Singapore (IRAS) introduced an imaging system to electronically process the paper-based returns filed by citizens. Gradually, the interface with the citizen was changed, permitting filing by phone, and later through the Internet. A Voice Response System was installed to respond to queries and an Electronic Payment System (NETS Kiosk, GIRO, VPost) was added to facilitate payment of taxes. The IRAS brought the individual citizens online as well as all government departments and the major commercial entities in Singapore to directly transmit the income details of the employees.

A Note of Caution on Costs Savings to Government

The changes that the adoption of ICTs make possible will not be realized overnight. Moreover, while citizens and businesses may experience benefits, evidence to date suggests that governments in developing countries should not expect to significantly reduce their own costs through e-Government initiatives. The implementation of e-Government initiatives requires a serious commitment to capacity building, in terms of the infrastructure, personnel, and education and training. While improved processes for tax collection, for example, may eventually lead to higher tax revenues, it is likely to take time, particularly while public Internet access remains low and citizens and businesses lack trust in both government and in digital technologies. Revenue gains in moving toward e-Government do not necessarily offset the investments, at least in the short run.

Furthermore, the track record of e-Government to date, like that of e-development in general, has been short, complex, and difficult to measure. Difficulties in measuring progress include the potential time lag between project implementation and the period over which benefits begin to be delivered.

Given the opportunity cost of investing in ICT-dependent projects, rigorous evidence on impact and good practices needs to be incorporated into governance accountabilities of relevant officials and Ministers.

Broader Economic and Societal Outcomes

E-Government initiatives can have a number of broader economic and societal benefits. E-Government may contribute to the improved functioning of economic sectors in which the government plays an important role, either as actor, such as in public financial management, or as regulator, such as in trade, commerce, banking, and environmental protection, and in the health sector, where electronic health records will contribute to better coordinated care and health outcomes of individuals and populations.

The online availability of government content and services of value to individuals in their daily lives can also drive the demand for Internet services, supporting, for example, the growth of Internet cafes and mobile phone applications. These cafes, which can be a primary method of accessing the Internet for the vast majority of citizens in developing countries, in turn can become e-Literacy centers for their communities. See Information Society Commission, Department of the Taoiseach, Ireland, "e-Government" (2003) pp. 13-15, 26-28.

Chapter 3. E-Government Phases, Frameworks, and Services

- The Evolutionary Phases
    - Phase 1: Presence
    - Phase 2: Interaction
    - Phase 3: Transaction
    - Phase 4: Integration and Transformation
- Relationships Orientation
    - G2C+ G2B+G2G+G2E (and vice versa)

Introduction

The literature offers a number of development models for e-Government. Many describe it in terms of an evolutionary process, starting with a basic web presence and moving up through a number of levels (e.g., Gartner 2002, Gronlund 2005, Kunstelj 2004, Layne 2001, Ronaghan 2002). These levels typically consist of 4 stages: (1) Basic Web Presence; (2) Interaction; (3) Transaction; (4) Integration or Transformation. This latter stage is also known as "horizontal integration", where common government processes and information systems are integrated and span multiple departments and organizations. This is offered as an aspirational or long-term objective, where e-Government becomes a "one-stop shop" or "seamless experience" for the many constituents of government, and the "e" disappears – doing government this way is the norm.
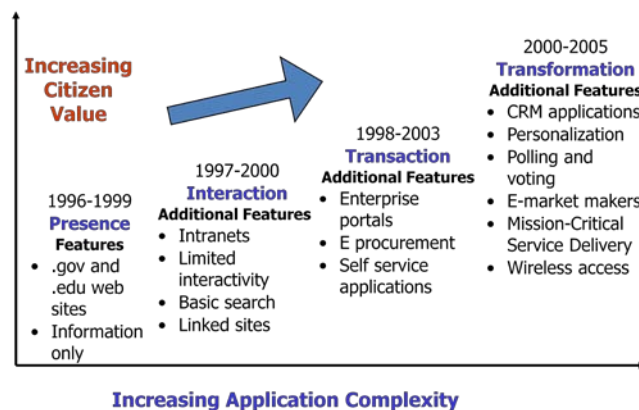
Source :Gartner Dataquest (November 2000)

The different levels can be considered in terms of complexity, consistency, value, cost, integration levels and time. Kunstelj (2004) found that most countries reach Level 2, which is easier to achieve (e.g., supplying application forms, e-mail contacts, and information requires little change in current systems). However fewer countries reach Level 3, which is harder to achieve because establishing real transaction services or "vertical integration" requires substantial intervention in the back-office systems and negotiation across different organizations and jurisdictions.

The Evolutionary Phases of E-Government

E-Government is an evolutionary, multi-faceted process and can be viewed as consisting of a set of phases not entirely sequential, but relying on growing levels of capability, knowledge and infrastructure.

Phase 1: Presence – government information is published online

This phase is characterized by the existence of a presence on the Internet. During this first phase, the Internet sites are rather static in nature and are only meant to provide general information. It may also include "push" systems that send information to users via e-mail, SMS, or other means and can be enhanced by links between official websites and dynamic updates of more and more specialized information.

According to the UN Global e-Government Readiness Report 2008, 94% of countries have websites, 90% provide information, such as publications, laws, policies; 70% offer databases of some kind; and 26% offer true "single-window" portals. Additionally, 164 governments have contact information online and 125 offer downloadable forms.

Information published online can include laws, regulations, policies, budgets, judicial opinions, official publications and reports, forms, executive decisions, and a wide range of government advice and information on matters such as health and agriculture. It also can include government directories, organizational structures, and contact information for government offices and key officials, including addresses and telephone numbers.

The quality of the websites depends on the amount of content, its usefulness and how often it is updated, as well as navigability, usability, search capacity, accessibility, and download time. Much of this is assisted by user-centered design techniques.

Websites designed with a focus on the user make it easier to find information. Directories of government agencies and services can facilitate browsing and searching. As an example, New Zealand has an "A to Z" directory of government services online. South Africa offers a list of national departments, which provides a single place for basic information about each ministry, contact information for government officials, and links to ministry websites.

As governments aggregate content and services into portals it becomes easier for users to find information from multiple websites hosted by different ministries. For example, New Zealand has used the concept of life events, providing access to content and services based on activities such as "starting a school" or "having a baby." Malaysia has a sophisticated portal segmented into citizen, business, government, and non-citizen users, with a government directory that links to ministry websites, online services, downloadable forms, and access to all other websites of federal and state governments. The UK Government's Directgov has a mixture of life events, government structures, help services and news. The Dutch government has surveyed its citizens to assist in the definition of the most relevant life events. Australia enables users to browse by service, topic, people, life event, and directories. Even more advanced portal applications provide "personalized" content. For example, Singapore enables users to create their own "my government" web pages, configuring e-Government content based on their individual needs and interests.

Advanced features can include disseminating content to cell phones and PDAs. This practice is known as mobile government or "m-Government." Japan's national site provides a wireless access alternative, whereby eight government entities provide content via a mobile phone or other wireless device capable of browsing. Citizens using the service can, for example, view information on road closures, traffic warnings, and weather and road surface temperatures, as well as access phone numbers used to report problems. The Ministry of Foreign Affairs offers passport and visa application instructions along with contact information for local offices, and the National Police Agency provides pictures of wanted suspects (see United Nations Global e-Government Readiness Report 2005, p. 45.) GovHK Mobile Version carries the most popular public information such as weather, traffic, air pollution index, and Government news. Users can also find a list of useful telephone numbers available within the Government, and links to other Government websites that have been tailor-made for access via mobile devices.

Types of e-Government Websites

The diversity of e-Government applications and functions can be presented to users through various types of websites and portals, organized within a whole-of-government architecture and applying the principles of no-wrong-door and content easily discovered on basis of user requirements, rather than government structures and integrated channel management.

National Entry Points: Gateways or Portals

National entry points or landing pages, sometimes called "gateways" or portals, aggregate and organize content and services, often with links to websites of individual ministries or programs. The goal of a portal is to efficiently guide users to the information and services they seek. Factors to consider in designing a portal include: organization and "navigation," design, administration, technology, and content management, as well as hosting and other operational factors.

National web portals can represent the face of a country to the world and the face of government to the citizenry. They are the most visible expression of a nation's approach to transparency and its commitment (or lack thereof) to citizen-centered government. Ultimately, national portals can affect government credibility, citizen trust, and public response to e-Government.

Portals are technically and administratively complex although they should appear straightforward and be easy for the average citizen to use. Getting multiple government agencies to harmonize the many aspects of user friendliness (presentation standards, authentication, data quality, and access rights, among others) is a major organizational and standards challenge. While technology considerations should not drive portal design, they must be given proper attention and resources to avoid operational failures.

Citizen- or Business-Centric Portals

Portals designed around the needs of citizens or businesses are on the rise in many developed and developing countries. These portals aim to package and deliver content and services in ways that directly fit citizens' or businesses' needs. The goal of these portals is to provide "one-stop shopping" so that citizens and businesses no longer need to go to a range of separate ministries, bureaus, or departments to find information on a particular subject or complete a transaction.

Governments are also organizing services and content by information type. For example, the US government has created sites that aggregate content from various government departments and

National Portals
Singapore Government Online
South Africa has a single e-Government portal. Its simple, streamlined design, with few data-heavy graphics to download, is well-suited for users with low-bandwidth connections.

The US government information and services portal is called – USA.gov, making it intuitively easy to find federal government information and services online.

Sweden's Online Public Service Gateway and the Canadian Portal for eGov services online (English and French) are other examples of comprehensive entry points that use a variety of indexing and organizational paths to government information and services.

Citizen- or Business-Centric Portals
User-focused portals include those of South Africa, Singapore, the Philippines, the United Arab Emirates, and Egypt.

Ministry Websites
Examples of dedicated ministry websites include the Philippines' Department of Finance website, the website of Cyprus' Ministry of Health, and the website of Australia's Department of Education, Science, and Training.

Provincial, Local, and Municipal Websites and Portals
Examples include the city of Bangalore, India, India's Andrah Pradesh province, and the Varna district in Bulgaria.

agencies into a single interface, one for federal regulations, one compiling forms from many agencies for download, and one permitting online payments to a range of agencies.

Ministry-level Websites

Many Ministries or departments create their own websites. However, as ministry-level websites proliferate and become more complex, they may interfere with the goal of providing user-centric access to information and services, unless there are detailed content and transaction links. Whole-of-government web architecture, standards, and information architecture is critical in ensuring that content is easily discovered, linkage enables logical aggregation, and the concept of no-wrong-door is implemented.

Provincial, Local, and Municipal Websites and Portals

Provincial, local, and municipal governments are also offering localized and specialized government services. Peru's "Public Window" system gives citizens in three cities the ability to learn how their local governments are structured, to access information on municipal officials, to see how public funds are spent, and to obtain information on procedures for obtaining a birth certificate, restaurant permit, and other official documents.

The UK national government has provided resources to help local governments create their own e-Government sites.

Phase 2: Interaction – users can interact with public officials and organizations

This phase is characterized by speedier interactions using electronic channels for some part of a service or transaction. Internet sites provide search capabilities and host forms to download and linkages with other relevant sites. In most instances, this stage enables the public to access critical information online, but requires a visit to a government office in order to complete the task.

Citizens and businesses may be able to comment on proposed regulations or file corruption complaints via e-mails, generate downloadable forms, submit forms and information, and search various specialized databases. Information and content is regularly updated.

Interact tools include e-mail, web-based forms, chat rooms, web forums, bulletin boards, list-serves, and online question and answer (Q&A) sessions with government officials. Some interesting examples of Interaction functionality include Mexico's online forum, and a feedback system in Singapore to cut government waste.

The development of Interaction services is sometimes combined with the establishment of government-owned or –sponsored access points, such as kiosks, community centers, or mobile units. The Bahia provincial government in Brazil has developed citizen assistance service centers, which are based in public places such as shopping malls and offer some 500 services.

Phase 3: Transaction - citizens and businesses can complete and secure entire tasks online

The "Transaction" phase of e-Government involves a mutual exchange of information (and sometimes funds) between government and citizens or businesses through step-by-step online self service processes. Citizens are able to file tax returns, obtain visas, passports, birth and death records, licenses, and permits, pay parking fines and utility bills, and apply for government jobs. Electronic identity and digital signatures may be recognized, and secure sites and user pins/passwords are also required.

Online "transactions" make government services available at any time from any Internet-connected computer and more and more frequently via a smart mobile phone, whose cost, accessibility, and wide penetration make it a suitable device to access e-Government services. Traditionally, government services may have required long waits, confrontation with time-consuming bureaucracy, and the occasional bribe. Innovations such as citizen service kiosks located in shopping centers in Brazil, portable government computers that can be carried into rural pockets of India, or medication reminders available through SMS bring e-Government directly to the citizens.

Business process reengineering is critical in the streamlining of time-consuming procedures, saving labor costs and increasing productivity in the long run. In addition, governments can help to stem corruption by utilizing new levels of automation and business intelligence to make transparent and/or electronically audit the processes, the transactions, and payments.

Consequently, online transactions may require significant investments in back-office consolidation and harmonization of information and technology systems, as well as changes for the government workforce. The success of these transactions, as with other e-Government applications, will likely depend on assessing and responding to the needs and capabilities of the intended users. One of the few available surveys of rural users of e-Government found the following services most in demand: personal documents, including birth, marriage, and death certificates, land registry or cadastral services, anti-corruption complaints and other grievances with public services, and transportation-related services, including car registration and purchase of bus and rail passes.

Examples of e-Government Services and Applications

Many nations now have hundreds of e-Government services available online, on-call, and over the counter, many of which have been recognized by national and regional e-award programs (see for example, the e-Europe Awards.)

There are several useful compilations of case studies and links to e-Government projects. One is the UNDESA "Compendium of Innovative E-Government Practices," issued in two volumes: Vol. I (2005) and Vol. II (2006). Another is the e-Government library of the United Nations Online Network in Public Administration and Finance (UNPAN). A third useful resource is the UN's Global e-Government Readiness Reports of 2004, 2005, and 2008, which provide both quantitative measures as well as illustrative examples of successful e-Government projects, and more recently underlying governance structures. The Network of e-Government Leaders of Latin America and the Caribbean (RED GEALC) has conducted workshops on best practices. Finally, ePractice compiles examples of portals, services, and resources from the developed countries of the EU.

To give e-Government planners some ideas, and to point to possible models, the following list illustrates just some of the innovative ways in which countries are implementing e-Government transactions:

Government to Citizen	Government to Business
Income taxes	*Social contribution to employees*
Job search	*Corporate tax*
Social security benefits	*VAT*
Personal documents	*Registration of a new company*
Car registration	*Submission of data to the statistical office*
Application for building permits, licenses	*Environment-related permits*
Declaration to the police	*Customer declaration*
Public libraries	
Birth and marriage certificates	
Enrollment in higher education	
Announcement re: moving house	
Health-related services	
Replacing a lost wallet (Portugal)	

Source: European Commission, Directorate General for the Information Society and Media, "Online Availability of Public Services: How is Europe Progressing"

Drivers license application   AP
South Africa has a website that provides detailed information on the steps required to apply for a driving license, along with the necessary forms. Similarly, a Philippines website allows citizens to download the necessary application forms for drivers' licenses, which then must be submitted in person.

Automobile registration   AP
Malta has a Transact website that allows individuals to renew the registration of their automobile online.

Land and property registration EP
The Government of Mozambique has worked with the Government of Italy and the Development Gateway Foundation to digitize land records through the e-Land Registry and the Land Information Management System (LIMS).

In Karnataka, India, the Bhoomi land registry system has automated 20 million land records since its inception in 1998. See World Bank case study and "Land records: e-governance at work, successfully," Financial Express (March 17, 2006).

Birth registration   EP
Bangladesh's Electronic Birth Registration Information System (BRIS) provides a basic citizen identification code and blends this with other data into a population database that can be shared with other public agencies. The Department of Health uses the system to help ensure immunization of all children, with vaccination lists provided for health workers. The system also is used to assist with the process of school enrollment.

e-Procurement   ETP
Well-planned projects that reengineer the existing "system" of management can have a dramatic impact. In 2002, Romania developed an electronic system for public sector procurements. The project "reengineered" the process for government tenders. As of March 2004, the system had been used by more than 1,000 public institutions, and more than 10,000 suppliers had requested registration in the system. The system had handled more than 230,000 public bids, and the resulting contracts had saved the government an estimated 70 million

Euros. Two years later, 650,000 electronic auctions had been held between 3/2002 and 10/2006 with savings of US$178 million.

Under Chile's e-Procurement system (ChileCompra), companies that wish to do business with the public sector only need to register one time in areas in which they do business. Whenever a public agency needs to purchase goods or services, it will fill out a request in the electronic system, specifying the kind of operation and including all the documentation and information associated with the request. Automatically the system sends an e-mail to all the private companies registered in that area, minimizing response time and providing an equal opportunity for all firms. At the end of the bidding process, the results are provided online, including details on the participants, the proposals, the economic and technical scores, and the winning contractor. ChileCompra has made business opportunities with the Chilean government more transparent, reduced firms' transaction costs, enhanced cooperation between firms and public agencies, and reduced opportunities for corruption. In 2008, there were 2 million procurement orders with 100,000 businesses and 900 public agencies participating, spending 3.5% of GDP and making an additional 5% savings on the national procurement budget.

Brazil's e-Procurement site is Bolsa Eletronica de Compras (BEC) (in Portuguese). From 2000 to 2006, 51% savings in transaction costs and 25.5% in price reductions were achieved.

The Government of Lebanon, through its Office of the Minister of the State for Administrative Reforms, is connecting five ministries through an e-Government system that aims to cut costs by streamlining their procurement processes and opening them to more competitive bidding online.

At the beginning of 2003, an e-Government Procurement working group was created under the Multilateral Development Banks (MDBs) Procurement Harmonization Process. Since then, the Asian Development Bank, the Inter-American Development Bank, and the World Bank have achieved a very high degree of harmonization in their approach to providing technical advice and support to their member countries in developing their e-GP strategies and solutions. The website provides a single entry point to all the information developed and the comprehensive tools created.

Invoicing   EP

In 2005, Denmark determined that all its public sector institutions could accept invoices only in electronic format. This affected any company that does business with public-sector customers. The system was implemented though a public-private partnership. It delivers savings of 120-150 million Euros per year and uses a secure technology, with a wide range of back-office innovations, including the use of XML. See Thomas Fjeldberg, Danish Agency for Governmental Management, "e-Invoicing in Denmark" (July 10, 2006).

Voting   AT

Estonia, Brazil, and India have led the developing world in adopting e-voting systems. The ACE Project compiles information on electronic voting, including a list of countries conducting e-voting developments.

Employment   EP

The Philippines Department of Labor and Employment has a web-based job service for job applicants and private sector employers, matching skills and job locations.

Education   AEP

E-Education, which in one sense represents the delivery of a government service through ICTs, is the focus of a separate and extensive set of resources compiled by *info*Dev.

Professional Training   **AEP**

The Open Source Distance Learning Web Portal for Judges and Prosecutors, sponsored by the government Center for Education of Judges and Prosecutors in Bosnia Herzegovina, started in 2004, with the aim of deploying and coordinating trainings and seminars in the areas of family law, business law, and new legislation.

Pensions   **ETP**

The India state of Himachal Pradesh implemented an automated pension disbursement system that involved various process reforms. A web interface allows pensioners to check to see if their pensions have been properly credited to their back accounts. Centrelink, Australia's Commonwealth service delivery agency provides an integrated support and payments system on behalf of numerous government departments and business customers to Australians, making available a wide range of personal, web, SMS, and speech recognition services.

Health Services   **EP**

Like education, health is a government service that has seen a huge amount of innovation in the application and integration of ICTs – to such an extent that it is beyond the scope to this Primer to catalogue or evaluate all the projects. Two examples will illustrate some of the trends:

- Turkey is seeking to improve healthcare services by developing a National Health Information System that will give healthcare providers, health professionals, and citizens electronic access to health records and related information.
- The Sri Lanka e-Health Initiative is designed to strengthen health services in Sri Lanka, especially in outlying areas and areas affected by the tsunami, by establishing the necessary ICT infrastructure and disseminating low-cost and easy-to-use technologies.

Tax Reporting and Payment   **AEP**

Peru's National Superintendent of Tax Administration initiated an online tax payment system in 2003. The social security and health systems of Peru are also part of the system. The system is credited with significantly increasing the efficiency of tax administration. For example, it identifies and automatically rejects incomplete returns, reducing the number of returns that require verification and correction.

Argentina also has an e-Tax system allowing both individuals and businesses to submit tax returns online.

Customs   **AEP**

The Automated System for Customs Data, developed by UNCTAD, is being used by most CARICOM countries.

Immigration and Border Control   **TEP**

Bahrain's eVisas System automates visa application, internal review, approval, and payment, improving efficiency and supporting the tourist industry.

Agriculture   **A**

China is building an information network for the dissemination of information on market conditions and agricultural technologies. The network employs radio, television, print, and Internet platforms and includes three levels of stations at the municipal, country, and township levels. In 2003, it responded to over 400,000 queries and welcomed 800,000 visitors to its website.

Phase 4: Integration and Transformation – user-centered experience, multiple agency connections

The fourth phase is characterized by redefined relationships between government, citizens, businesses, communities and employees delivering seamless experiences and rich levels of engagement derived from new connectivity, interoperations and business models for service, and policy design and development.

The integration of information, processes, and channels across multiple government, non-government, and private sector organizations enable a user to start and complete an entire task easily, confidently, and securely. This underpins the concept of integrated and transformational service. Users are able to access any service or information in a complete "end-to-end" package where the existing boundary between departments/ministry or organizations do not interfere with or interrupt the service outcome, and where the services are clustered along common "customer" needs. The integration demands are substantial and require:

- Understanding and regular monitoring of customer experiences and expectations
- Trained and informed staff
- Interoperability and standardization of information, processes, and technologies particularly at interfaces of organizations
- Multi-channel strategies – ensuring consistent and reliable experiences for users within and across individual channels of service (online, on-call, on-paper, onsite)
- Cross-organizational governance controls – i.e., Memoranda of understanding, contracts, funding, service level agreements.

The opportunities for enabling a stronger dialogue between citizens and government in governance and policy development is also reflected in this phase highlighting the two-way interaction and responsiveness expected of government – a new relationship compared to the traditional "government–to" approaches. The OECD's paper on Citizen Focus: Public Engagement for Better Policy and Services highlights the importance of having public engagement policy to utilize the technology that supports engagement and dialogue.

Example - Virtual Permit Center at Home Depot, Washington DC
This permit center offers a popular online service, DCRA's "Postcard Permit" for home improvements. The permit center is located at a site that is popular for home improvement professionals and do-it-yourselfers. It is also Metro-accessible, right next to the Rhode Island Ave Metro station. For the first time, District residents and licensed contractors planning home improvement projects can get both the materials they need, and the required permits, all in one trip. The Virtual Permit Center is easy to find in the front of The Home Depot store. There are two self-service kiosks each equipped with computers linked to the District's Postcard Permit system. The permit applicant submits the information required for the particular type of permit requested (e.g., plumbing, electrical, structural), pays the associated fee with a credit card, and prints out a paper permit for his or her records. .The applicant can also call the DCRA Permits Customer Service Center at any time for assistance in completing the process.

E-Participation

E-Participation tools are used to collect and discuss citizens' and businesses' views so their interests and needs are better represented in government programs or processes. The tools include online surveys and polls, electronic newsletters, e-mail, feedback forms, and web forums where citizens can express their opinions. They can be used to supplement public forums or meetings. E-Participation applications may have a publish feature, presenting relevant background information, decisions, and other materials to help citizens and businesses understand certain public policy or regulatory issues. New Zealand has aggregated its policies, community of practice, knowledge pool and ways to participate in government in one site, participatioNZ.

Feedback or comment forms may support anti-corruption measures. For example, the Philippine Civil Service Commission (CSC) implemented an m-Government system that enables citizens to text complaints or corruption charges on government officials, and mobile phone users can report grievances against the police using SMS.

More advanced e-Participation functionality can include personalization features. For instance, e-mails may be sent to interested citizens or businesses based on their registered interests, alerting them to new decisions, reports, or resources on e-Government sites.

E-Consultation

E-Consultation takes the process one step further than e-Participation, facilitating online comment on specific policy or regulatory issues, while those issues are under active consideration by the government. E-Consultation resources can provide online access to government proposals and other key documents including wikis, written filings of stakeholders, and audio and visual recordings of public meetings. Resources can be organized to facilitate online consultation with citizen or business stakeholder groups and to receive formal inputs into government policy or regulatory processes. Online consultations can reach a wider range of stakeholders and ensure that consultative processes are transparent.

Canada's government has created a useful site giving citizens access to all ongoing e-Consultations (as of April 10, 2006, there were 14). Singapore also has a site for e-Consultation. The UK, which in recent years has scored highest on the UN's global assessment of e-Democracy, has created resources for local e-Democracy.

e-Decision-making

e-Decision-making functionality facilitates intra-government decision-making processes. These applications are generally associated with cabinet-level decision-making or parliamentary procedures and aim to increase the efficiency of decision-making processes within governments. Estonia is among the countries that have implemented e-Decision-making processes. e-Decision-making applications may also be combined with Publish functions that provide the public with information about government decision-making.

These "phases" need not be pursued sequentially. Interaction, Transaction, and Integration/Transformation initiatives require established and sophisticated back-end capabilities and infrastructure. In fact, some e-Government projects have components of more than one phase and a government can offer information and services across all phases during the evolution of e-Government in a department, a jurisdiction, and a country.

Relationships Orientation

As e-Government matures, the growing level of service value to the customer/user is proportional to the better understanding, research, and engagement processes with various customer segments of the population through the design and delivery phases. Enhanced levels of efficiency and shared capability between government agencies, and even between government jurisdictions are possible when service delivery is (re)viewed through a prism of customer demand/expectation, the potential to aggregate/consolidate information and transactions, and channel preference for each transaction. Multi-channel strategies and multi-organizational end-to-end services create new challenges of governance, coordination, funding, and control for governments.

The typical segmentation, distinguished by different relationships, is the following:

- Government to Citizen (C2G2C) – provide information, services, and other functionality to citizens and receive input and feedback from citizens. More recently, active citizen engagement in government policy development using social networking technologies, as well as a number of surveying and consultation methodologies, is contributing to more effective citizen- and business-centric government policies, strategies, and services.
- Government to Business (B2G2B) – those that facilitate any of the range of relationships and interactions between government and businesses.
- Government to Government (G2G) – projects or systems that support information sharing and collaboration within or between government agencies
- Government to Employees (E2G2E) – information and internal services that provide easy access to government information and systems that enable staff to perform well, provide opportunities for feedback, engagement, and collaboration, and
- Government to Visitors/Foreigners (F2G2F) – information, advice, and services for individuals and businesses planning to invest, visit, work, study, and live in the country.

Theme II: Governance and Implementation of e-Government

Chapter 4. Governance of e-Government

- Governance Definition
- Leadership and Coordinating Bodies
- Establishing the Evidence Base
- Stakeholder Management
- Master Plans and Strategies
- Business Model, Architecture, Policies, and Standards
- Investment Management and Funding, including PPPs
- Accountability, Roles, and Responsibilities

Introduction

E-Government is best understood as an enabler of government priorities, policies, strategies, and services. Successful e-Government initiatives are therefore more likely to result and have the widest impact when planned and managed within the context of broader vision, strategies, and mechanism of government decision making, public sector reform, improved access to ICT, and human and economic development.

The early approaches to e-Government often focused on technology-based projects. This approach was not entirely successful. It has now evolved to incorporate planning and governance processes that define the value required, as well as the broader environment within which information and technology operate.

The effectiveness of e-Governance and ICT strategy/management can only ever be as effective as that permitted by the broader public sector governance arrangements. As a result, governance structures and processes throughout government are also undergoing significant adaptation to support the demands of citizens and key stakeholders for connected, real-time services delivered in a transparent manner.

Leadership is from the top is crucial. The ability to apply the concept of one enterprise to government, rather than allowing multiple departments and organizations to compete for limited resources and to duplicate assets, thus confusing users, is only able to be enforced by the most senior members of the government. Driving the changes to become one enterprise and deliver e-Government means pursuing a substantial shift in culture and the nature of relationships. Without key government leaders sponsoring this change and creating new governance systems to underpin them, time, money, and stakeholder commitment can be wasted.

Defining Governance

Governance of the planning and implementation of a national e-Government strategy and associated infrastructure, capacity building, and service projects should be embedded in each jurisdiction's and each ministry's, department's, and agency's decision-making processes, roles, and structures.

The World Bank defines governance as the traditions and institutions by which authority in a country is exercised for the common good. This includes:

- the process by which those in authority are selected, monitored, and replaced,
- the capacity of the government to effectively manage its resources and implement sound policies, and
- the respect of citizens and the state for the institutions that govern economic and social interactions among them.[3]

The more mainstreamed the organization and governance of e-Government, the greater the probability of success. In this way "e" applies to engaging 'everyone', and ensuring that all key leaders and managers accept responsibility for the implementation of e-Government, not only the experts in e-Government or the information and technology specialists or project managers.

Leadership and Coordinating Bodies

The end-point of e-Government is a networked society and government, where all the actors are able to exploit, access, and harness services and information anywhere, anytime within parameter of consent and law. For managers, this may be confrontational to the normal "ways of doing work". As a result, leadership from the top of government and coordinating structures to engage, inform, and implement are necessary to champion the change process.

The involvement of the Head of Government, as the champion of change, and other senior government leaders, is important at all stages of e-Government, but critical at the beginning. A number of country leaders have driven the e-Government agenda as a key government priority, e.g., Rwanda, Estonia, Colombia.

Central control versus decentralized autonomy is a key issue affecting e-Government. A "top-down" approach to planning requires close cooperation and coordination among various units of central government and may also serve to draw in regional and local institutions as well. Strong leadership and declared accountabilities must also ensure the long-term commitment of resources and expertise and encourage the cooperation of disparate factions. The World Bank's IC4D 2009. discusses the institutional

Example: Capturing the Learnings – Saudi Arabia

Analysis of the key learnings from 20 countries assisted in the preparation of Saudi Arabia's First National E-Government Strategy and Action Plan, 2006.

KEY LEARNINGS FROM BENCHMARKING 20 COUNTRIES

Vision & Objectives	Organization & Planning	Implementation
1. The vision statement needs to be user-centred and focused on the goal of providing better services to the user; specific objectives are needed to detail the vision 2. E-government facilitates transformation into an information society	3. The e-government champion is often the Head of State and commits openly to the program 4. E-government initiatives require substantial funding to be successful 5. A dedicated and influential office is needed to implement e-government 6. Opposition to e-government from inside government is to be expected 7. Redesign of processes is a must before automating them 8. Government-to-Citizen and Government-to-Business portals are organized around user-centred events 9. Laws 'legalizing' e-transactions are necessary for user adoption	10. Projects and quick-wins need to be publicized 11. Successful pilot projects have to address a wide audience 12. Multiple contact channels are needed for IT-illiterate & remote parts of population 13. Secure privacy, authorization and e-payments must be provided 14. Public private partnerships can be conducive in e-procurement, e-payment & IT 15. Citizens need to be proactively asked for feedback 16. Awareness and skills issues have to be addressed through a change management initiative 17. E-government implementation is difficult and slow in several countries

Source: Yesser

http://www.yesser.gov.sa/english/documents/National E-Gov Action Plan (F).pdf

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[3]http://web.worldbank.org/WBSITE/EXTERNAL/WBI/EXTWBIGOVANTCOR/0,,contentMDK:20678937~pagePK:64168445~piPK:64168309~theSitePK:1740530,00.html.

options for central ministry responsibility for e-Government: investment, administrative, or technical coordination.

Five different models of organizing leadership for any kind of e-Development (including e-Government) are evident:

- The shared responsibility model, in which each ministry or department develops and implements its own strategy;
- The policy coordination model, in which a policy coordination body situated in the office of the head of state provides policy guidance and coordination;
- The lead ministry model, in which one ministry develops plans;
- The ICT (or e-Government) agency in civil service model, in which a special purpose agency is created outside of any ministry;
- The ICT (or e-Government) agency as PPP (public-private partnership) model.

The most common approach appears to be the centralized planning and decentralized administration for planning and managing e-Government. Under this approach (some variation of models 2, 4 or 5 above), strategists, including a Government Chief Information Officer, at the Cabinet or Prime Minister level, may define the overall concept of e-Government, mandate processes for stakeholder consultation, and address issues such as records compatibility, business model and technical architecture, and data security standards. However, the design and implementation of specific projects are best undertaken by the individual ministries or departments who are responsible for relevant policy and delivery.

A National Council or Committee can also be supported by a senior officials committee drawn from key ministries and/or an advisory group comprising private, non-government, academic, and R&D leaders of the country. Mechanisms used to encourage high-level ownership and co-ordination within the government's structures can include:

- e-Government being a standing agenda item for Cabinet, being addressed by committees of Ministers concerned with strategic policy, planning, and funding;
- committees and working groups of leading officials ensuring that the e-Government initiatives receive significant senior attention in order to deal with the dominance and traditions of vertical government. Their roles are to approve and oversee the funding and implementation of e-Government across government, remove obstacles and modify various policies, legislation and programs as circumstances demand; and
- a central strategic and advisory e-Government area of leadership, policy, performance monitoring, and knowledge building. This supporting Office and Secretariat, to be most effective, may be set up in the President or Prime Minister's office, where it will have a clear view across Ministries and divisions, or be centrally located in a Finance or Planning Department.

The e-Government office (or CIO/Information Management office or National Information Society agency) may guide information exchange and develop policies and standards and encourage interoperability between independently developed e-Government applications and their hosting agencies. It can facilitate the sharing of lessons learned across e-Government projects, becoming a repository for institutional knowledge about e-

> **Example: Lead Agency, Chile**
>
> *One approach for achieving top-level support is to designate a lead agency that is given responsibility for design and oversight. 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.*

Government; create the architectures for the broader use of existing applications to avoid "reinventing the wheel," applying the principle of build once, use many times; advise the Government on all budget proposals requiring information and technology; and lead the process of periodically refining and updating the e-Government strategy.

Increasingly, the role of the Chief Information Officer (CIO) is seen as a vital strategy to bridge the gap between management and technology (see Waseda University Institute of e-Government, "2009 World e-Government Ranking").

Establishing the evidence base

e-Readiness assessments measure a country's ability to exploit ICTs for the achievement of the government's policies, goals, and priorities for human, economic, or democratic development. The e-Readiness assessment process can help provide the baseline to frame realistic projects and identify underlying issues of technical and human capacity that will need to be addressed in order to effectively implement e-Government.

The range of e-Government ranking tools using a range of measurement methodologies, give insights on the key issues and performance measures to incorporate in the e-Government Strategy – e.g., ICT network preparedness and penetration, interface applications, management optimization, CIO capacity, web accessibility and usability, enabling environment factors, citizen engagement/participation, and service delivery capability. The United Nations Public Administration Network conducts e-Readiness Assessments of nations. It assesses the nation's capacity on six indicators: E-Readiness, Web Measure, Human Capital, Infrastructure, E-Participation, and E-Inclusion.

Another important first step in developing an e-Government strategy is capturing the key priorities of government for which ICT can be utilized, and eliciting evidence of demand and supply – e.g., need to understand citizen and business demands, service utilization and experiences, digital preferences, channel access options, and concerns.

A supply-side understanding of the current assets available, including skills inventory, IT inventory, and a service inventory of the public sector, current contracts, and existence or facility of inter-agency agreements provide a valuable baseline from which future investments can be determined.

Success = Stakeholder Engagement

Successful change programs, like e-Government initiatives are dependent on the active engagement, support, and contribution of key stakeholders, including citizens and businesses, as well as overcoming any infrastructure constraints, funding limitations, and immaturity of human capital development.

The benefits of consulting with the citizens, the business community, local governments and non-government organizations (NGOs) are the opportunities to:
- link services and technologies in national initiatives,
- ensure the quality of design of the services that enhance their likelihood of use, and
- optimize the levels of influence to support the push towards e-Government.

NGOs and ICT companies may also have useful expertise in ICTs and may be able to assist in organizing citizen/business consultations. They can also be helpful in building public awareness of projects once launched.

Stakeholders will have different interests and influences in e-Government programs and projects. One useful technique is to prepare a stakeholder management plan that identifies who each stakeholder is, their level of influence over the outcomes of the program, and the level of engagement they should have – e.g., active involvement, monitored, being kept informed, managed closely.

National and Master Strategies and Plans

Many countries and governments at national and subnational levels have defined their e-Government or Government Transformation Strategies within the context of creating a citizen-centric, innovative, and integrated government (e.g., UK, Singapore, Australia). Over time, these visions and strategies have been extended to incorporate elements of e-Governance, High Performance, and World Class government (e.g., India,

Example: Measuring Citizen Satisfaction, Canada

The Common Measurements Tool (CMT) of the Institute for Citizen Centred Service *was first released in 1998 as an easy-to-use client satisfaction survey instrument that would facilitate* benchmarking *across jurisdictions. Using the CMT, public-sector managers are able to understand client expectations, assess levels of satisfaction, and identify priorities for improvement. By using the questions set out in the CMT, jurisdictions can also compare their results against peer organizations, identifying best practices and sharing lessons learned. This tool has now been adopted by a number of countries and provinces/states across the world.*

Example: Measuring e-Services Satisfaction, Australia,
http://www.finance.gov.au/publications/interacting-with-government/index.html

Interacting with Government explores Australians' use and satisfaction with e-Government services provided through the Internet and telephone. It investigates:
- *how people contact government by Internet, telephone, in person, or by mail*
- *satisfaction with these means of contacting government, including reasons for satisfaction and dissatisfaction*
- *reasons why people choose to use or not use e-Government services*
- *preferences for future delivery of government services.*

The annual studies show that the way people interact with government has changed significantly in a relatively short period of time. In 2005, overwhelmingly, Australians made contact with government in person. In 2008, the Internet is the most common way people last made contact with government. The insights provided by this latest study provide an important guide for governments in improving service delivery. The focus for governments is changing from encouraging greater use of the Internet to providing e-Government services that meet the needs and preferences of the Australian population.

Saudi Arabia, Abu Dhabi, Jamaica) and also importantly its contribution to national prosperity (e.g., Nigeria and Norway[4]).

These Strategies accommodate ICT infrastructure expansion (often triggered by intended government use) and e-Government as well as elements of public sector reform and modernization.

The master plan can be thought of as operating in multiple tiers and can even consist of separate documents. At the most conceptual level, there will likely be a strategic vision – a document that sets out overall goals and objectives for e-Government, or which defines the application of ICT to any relevant Government initiative – embedding the strategy within other key government policies. This strategy might then be the basis for an action plan.

There are many common elements to the national and subnational strategies, as illustrated below (compiled from multiple national e-Government strategies referenced throughout this e-Government Primer).

Composite of a High Level Strategy	
The DESTINATION The WHY The WHAT	• Vision • Mission and Rationale • Networked Society • Public Service Delivery – Improving Access and Services • Citizen Participation, Engagement, and Inclusion • Technology Capabilities and Infrastructure • Contribution to Social and Economic Development, Competitiveness • Capacity Building, e.g., e-Government Building Blocks • e-Government/CIO leadership roles, structures, responsibilities, and whole-of-government assets • Training and development of politicians, public sector policymakers, broad employee base, and ICT/e-Government practitioners • Information, Intelligence, and Knowledge Management • Enabling Environment – Legislation, Business Model and Architectures, Policies, Security, Controls • Government structures and organizational developments, e.g., shared services, Centers of Excellence
The HOW	• Priorities, Principles, Methods, and Funding (incl. PPPs) • Implementation Plan
By WHEN	• Measurement and Reporting Timeline
The WHO	• Coordinating and Collaborating Structures, Relationships, and Accountability

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[4] eNorway 2009 is described as supporting government policy for economic growth and increased value creation, prosperity, and welfare development and change in the public sector.

Business Model and Enterprise Architecture, Policies, and Standards

Few governments or companies invest substantial funding in buildings, roads, services, or communities without detailed plans and understanding of their "fit" or compliance with town planning schemes and requirements.

The network or information highway connecting structures, services, and assets of government to each other, to individuals, and other entities creates a new business model for governments. Rather than allowing the network to grow in an ad hoc and expensive way, many governments have recognized the need to manage the new and evolving business model of government (how all the parts will connect and "interoperate" to deliver results), especially if many systems and services are designed and/or operated by third parties (e.g., outsourced).

The value of the "enterprise architecture" (EA) is that it documents a pathway for the practical achievement of government's vision and policies; ensures alignment to business operations and efficiency of connections between agencies and organizations, known as interoperability, and guides investments to improve business performance and reduce duplication of assets. It also provides a "map" to guide donor funding to the areas of greatest priority.

It generally has two aspects: mapping of the current situation, and depicting the future state, or "to-be" situation. The EA will provide a comprehensive description of the interconnecting layers of government's business (e.g., organizations, services, channels, and processes), information, applications and technology infrastructure, and the way of managing them. It becomes a tool to aid investment decision making, and in some jurisdictions, such as the US federal government, the production of an EA is a legislative requirement.[5]

Common new features of the government business model include consolidation and reengineering of "back-office" processes and associated technologies, as well as one-stop shops with the creation of integrated access to "frontline" government services. For example, many countries and provinces or states have pursued the establishment of shared IT infrastructure services as an efficiency, center of excellence, and value for money measure, many are

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[5] Clinger-Cohen Act, 1996, USA.
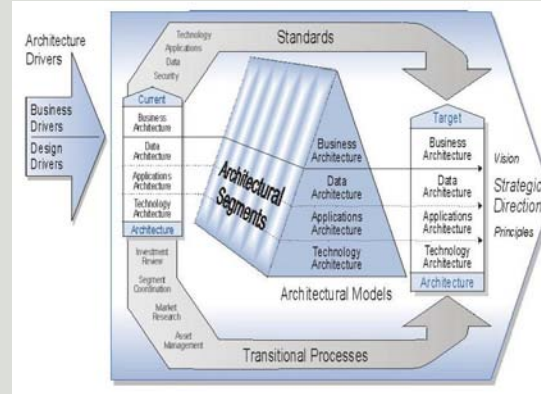
Source: A Practical Guide to Federal Enterprise Architecture, CIO Council, February, 2001

Commonwealth of Virginia

Source:
http://www.vita.virginia.gov/oversight/default.aspx?id=353

concentrating ownership and responsibility for certain categories of information and data in one ministry or agency, and some are allocating "process ownership" to particular government processes, for example, identity authentication, registration, and licensing.

The central office of the CIO or e-Government is best situated to build the national or government enterprise architecture. This can be done in collaboration with other ministries and agencies in a federated system. The associated policies, standards, and guidelines to support implementation, frame advice to government on funding proposals, and review existing operating models in light of new policies and new technologies are part of the duties of the e-Government leadership bodies and governance mechanisms required to shape the effectiveness and efficiency of implementation.

Funding the Strategy and Projects and ongoing Operations – Investment Management

Funding of the entire e-Government Strategy/ Master Plan and its individual projects is complex as it is likely to impact many areas and functions of government. It demands an overall investment and benefits management approach in the context of whole-of-government priorities, capabilities, and desired outcomes, as well as details of benefits, performance measures, risks, options, costs (development and Total Cost of Ownership), and enablers/barriers to implementation for each of the associated projects and initiatives.

In general, e-Government projects and ICT-dependent projects have experienced high rates of failure.[6] Failure rates are even higher in developing countries; by some measures, more than 60-80% of projects are partial or total failures (see United Nations, World Public Sector Report 2003, "E-Government at the Crossroads", October 2003, p. 60). The cause of these failures, still evident today, can be attributed to:

- Gaps between information system design and user needs and capabilities
- Poor planning
- Unclear goals and objectives
- Objectives changing during the project
- Unrealistic time or resource estimates
- Lack of executive support and user involvement
- Failure to communicate and act as a team, and
- Inappropriate skills.

As a result, governments have introduced more disciplined approaches to decision-making including the use of a business case model to be produced for each proposal and judging the design against a whole-of-government enterprise architecture and whether it is consistent with agreed standards of interoperability, connectivity, security, etc.

In 2006, the OECD developed a set of indicators (Annex C in linked document) designed to support the development of business cases for e-Government, and the Local e-Democracy National Project in the UK has developed a Business Case Toolkit, which will produce a generic business plan that can later be edited into house style to support the implementation of e-democracy tools.

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[6] The Chaos Report 1995, The Standish Group – http://net.educause.edu/ir/library/pdf/NCP08083B.pdf

Understanding Costs and Benefits

A key component of the business case is the documentation of existing and proposed costs, not only for the development project, but also to sustain the service's or capability's ongoing operation. More recently it has also captured the time and cost impacts on the users/ customers and third parties.

The costs to governments of launching successful e-Government projects can be sizeable, and many are not directly related to technologies. The requirement for substantial infrastructure capital investment can be the trigger for the use of long-term financing instruments or strategic sourcing arrangements, particularly if it is a fundamental building block for multiple e-Government services.

Identifying Benefits

As noted in Chapter 2 the benefits to be expected from e-Government can be categorized into three broad categories:

- improved achievement of economic and social policy outcomes (e.g., health, industry development, education, welfare, justice, agriculture, etc.);
- improved transparency, accountability, and democracy, with reduced levels of corruption; and
- greater citizen and business satisfaction and confidence with public services due to improved delivery and cost savings to the government, to businesses, and to individuals.

Using a comparable framework, the OECD developed the following model, which includes direct and indirect benefits to government and non-government stakeholders (citizens and businesses).

Type of Benefit	Government Beneficiaries	Non-Government Beneficiaries (Citizens & Business)
Direct Financial Benefits	**1) Reducing Costs:** freeing resources for public and private innovation; increasing value of products and services	**2) Reducing Burden:** administrative simplification; providing higher valued and faster services; saving time and money and improving equity
Direct Non-Financial Benefits	**3) Capturing Total Benefits of Investment:** achieving synergies across service delivery channels; enabling the sharing and reuse of data for more proactive service delivery; promoting access as part of channel management strategy	**4) Increasing User Satisfaction:** 24/7 service; improving personalization and service quality; improving access and equity; addressing security and privacy concerns; transparency and choice
Indirect Benefits: "Good Governance" as a Public Good	**5) Supporting Legitimacy:** supporting security and trust at an aggregate level; modernization and transformation of the public sector; ensuring equity; increasing responsiveness, accountability and participation	**6) Supporting Growth:** improving the business environment; creating an information society; establishing an infrastructure for secure and reliable transactions

Source: OECD e-Government Project, "Proposed Outline for Assessing e-Government Benefits" (2006).

Financing

Financing e-Government can pose a major challenge for developing countries, especially given the range of needs competing for funding. Accordingly, governments often utilize donor support to launch e-Government initiatives, and they might explore a range of funding mechanisms in addition to established government ones.

Government Funding

Governments are using a range of mechanisms for funding e-Government projects. According to a study commissioned by SIDA, primary mechanisms for funding include:

- Central funding – appropriate for initiatives relating to general values (standards/interoperability, openness, transparency, democracy) and value-added services (e.g., security, identification, search).
- Ministry-level financing through normal budget allocation processes – best for projects aimed at service process redesign and capacity building.
- Budget guidelines or requirements – central government mandates to ministries and departments to allocate a certain percentage of their budgets to e-Government.
- Budget offsets through cost saving brought on by greater efficiency – assuming that the computerization of manual processes can save money, it can free up resources that can be reallocated and used to fund additional e-Government projects.

In addition, governments can finance e-Government projects by issuing bonds on either the domestic or international capital markets, with the interest on the bonds to be paid for by proceeds from the project or from general tax revenues. Bond financing may be cheaper than bank loans. Issuing bonds may allow the government to obtain all the funds it needs for a project upfront. Issuing bonds may also allow for longer maturity debt than bank loans. See Michael G. Mimicopoulos, "E-government funding activities and strategies," UNDESA (2004), pp. 14-15.

Donor Support

For many developing countries, foreign assistance (sometimes referred to as ODA or "official development assistance") is an important source of funding for a range of development and institutional reform projects. Donors have in recent years increased their support for e-Government projects.

A separate Annex to this Primer focuses on working with donors, and contains an extensive catalogue of assistance from international, regional, and bilateral government-to-government donors as well as from private foundations.

Private Sector Relationships

Governments enter into many different kinds of contracts with private sector entities to provide various resources, assets, and services for an e-Government program. The conventional relationship is that of a contracted supplier for specific products and service elements. However, this is rapidly expanding to include a range of sourcing arrangements including the outsourcing of services (e.g., community service access point, or IT help desk), and as a partner in the development and/or management of an e-Government service or capability.

In some cases, the government may choose a path of selective outsourcing, in contrast to total outsourcing. This implies that rather than handing over the entire e-Government project from concept through implementation, subsequent maintenance, and upgrade, it utilizes the strengths of different vendors in a selective manner. This approach may yield substantial benefits, with the government retaining the key areas of operations in its own hands. See e-Governance Action Plan for India, Chapter 17: Policies, strategies and guidelines for outsourcing of e-Government projects (2002).

Public-Private Partnerships (PPPs)[7]

E-Government projects and operations often require substantial financial resources and interdisciplinary skills to plan, install, and manage new systems and services effectively. Where public sector skills and resources are limited, governments can leverage the strengths and resources of its partners in the private and non-government sectors.

While full privatization of certain government services (water, telecom) has been a practice for some time, a different form of collaboration between the public and private sectors is now being deployed in the form of Public-Private Partnerships (PPPs). When first conceived, PPPs were used mainly for physical infrastructure projects, such as prisons, hospitals, and power plants. As the need for modern communications systems has increased, PPPs have been developed around access to ICT resources and e-Government projects and services.

As the International Monetary Fund points out "There is no clear agreement on what does and what does not constitute a PPP." IMF, "Public-Private Partnerships" (March 2004). Basically, however, PPPs are contractual agreements between public agencies (national, regional, provincial, or local) and private companies to supply infrastructure assets or services that traditionally have been provided by governments. Further, in a true PPP, the private sector partner not only stands to profit from a successful project, it also assumes some of the risk of failure. (In contrast, under ordinary procurement contracts, the private sector vendor is likely to be paid whether the project is successful or not.).

While they have benefits, PPPs also poses accountability, security, and privacy issues that must be addressed. The key to a successful PPP is a tightly drafted contract between the government and the private sector partner entity, spelling out the responsibilities of each party.

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[7] *info*Dev, World Bank, has produced a separate Knowledge Map and Handbook on PPPs in e-Government. See: . http://www.infodev.org/en/Publication.821.html and http://www.infodev.org/en/Publication.822.html

Examples: PPPs and e-Government

e-Seva
A frequently cited example of an e-Government public-private partnership is e-Seva, an innovative project between the government of India's Andhra Pradesh province and Tata Consulting. e-Seva provides more than one hundred services, ranging from the payment of utility bills to the registration of motor vehicles. In response to access barriers, e-Seva was launched with 43 service centers in the city of Hyderbad, later expanded to 213 towns, and most recently has been extending into rural areas. As a measure of success, e-Seva completes over 1.6 million transactions per month in the city of Hyderbad alone. In this case, Tata Consulting, under the "Build-Own-Operate-Transfer (BOOT)" model, built the e-Seva portal and runs the service, charging normal fees for the various government services and keeping part of the revenue. See Department of Information Technology and Communications, Government of Andhra Pradesh, "Profile of e-Government Projects," (July 2002), p. 5. The state of Karnataka announced development of the "Bangalore One" portal under a similar model. See Indiainfo.com, "Bangalore One kiosks to deliver services from April".

e-Perolehan (Malaysia)
E-Perolehan is the secure e-procurement service of the government of Malaysia. e-Perolehan is financed through a build-operate-transfer (BOT) scheme involving Commerce Dot Com Sdn. Bhd., which is financing the project. Suppliers can host their products and prices online free of charge, reducing their overhead costs, while government departments can easily access the pricing information online. Commerce Dot Com Sdn. Bhd receives a transaction fee charged on each completed sale. See "Net Value: ePerolehan Gains Momentum" (2005).

Significantly, the government's commitment to e-Perolehan was coupled with the establishment of a network of procurement telecenters nationwide to enable smaller-sized suppliers to trade online with the government. The telecenters, located in all state and district capitals, help non-IT savvy suppliers submit registration applications and provide catalog details. See Patricia J. Pascual, e-ASEAN Task Force, UNDP-APDIP, "e-Government" (May 2003). Significantly, the government's commitment to e-Perolehan was coupled with the establishment of a network of procurement telecenters nationwide to enable smaller-sized suppliers to trade online with the government. The telecenters, located in all state and district capitals, help non-IT savvy suppliers submit registration applications and provide catalog details.
Source: Patricia J. Pascual, e-ASEAN Task Force, UNDP-APDIP, "e-Government" (May 2003).

Models of Public-Private Partnerships
The National Council for Public-Private Partnerships (US) has identified a number of models that can be used in the financing of e-Government projects, infrastructure, and services:

- Design-Build-Finance-Operate (DBFO): In this PPP, the government specifies the services that it wants the private sector to deliver and the private partner designs and builds a dedicated asset for that purpose, finances its construction, and operates the asset, providing the public services required.
- Build-Own-Operate (BOO): The private partner builds and operates a facility/service without transferring ownership to the public sector. Throughout the process, the private sector partner owns the facility.
- Build-Operate-Transfer (BOT): The private partner builds a facility to the specifications agreed to with the public agency and operates (but never owns) the facility for a specified time period under a contract or franchise agreement with the agency. At the end of the franchise period, the public partner, which always retains ownership, can assume operating responsibility for the facility, contract the operations to the original franchise holder, or award a new operating contract or franchise to a new private partner.
- Build-Own-Operate and Transfer (BOOT): The private partner owns the project, invests resources, undertakes its development, owns and operates it for some time, and then transfers the assets to a public agency.

Methods of funding PPPs include "shared revenue" and "shared cost savings." Shared revenue assumes that a service will generate revenue that can be shared between the government sponsor and the private sector partner. In the e-Government context, the shared revenue may be filing fees, licensing fees, or application fees traditionally collected by governments, or, in the case of online tax collection, the tax payments. In shared costs savings PPPs, costs savings often come in the form of a reduced government workforce: assuming the private partner can perform a certain task more efficiently, with fewer employees, or have less opportunity for corruption with the savings being split between the government and the private partner.

Important Considerations for PPPs and Other Contracts

There is no set formula for crafting a successful partnership with the private sector. However, UNESCO, the National Council for Public-Private Partnerships (US), and the European Commission, Guidelines for Successful Public – Private Partnerships, among others, suggest that the following elements should be taken into account:

- Political Leadership
- Planning and clarity of respective roles and expectations of each party
- Legal and Policy Framework for the implementation of each partnership
- Private Partner Compensation and Commitments
- Public Sector Oversight
- Consultation with Stakeholders in planning, implementing, and overseeing any PPP
- Selecting the Right Partner on the best value is critical.
- Intellectual Property Rights of products, technologies, and business models is defined and agreed
- Security and Privacy of government and individual data.

Policy and Regulatory Environment for PPPs and Service Contracts

Governments may have to amend their laws to ensure that PPPs and service contracts with the private sector are permitted and that the responsible government agency has the authority to enforce the terms of the arrangement. Policy reforms that may be necessary include:

- Defining a clear legal framework that reduces the risks of regulatory uncertainty for private investors.
- Adopting transparent procurement rules and legislation that allow fair competition, and removing exclusivity rights in order to allow SMEs to compete with the main operator.
- Ensuring that the responsible government body overseeing the PPP has authority to apply sound financial and operational targets and accounting systems.
- The legal framework must clearly allocate risk and liability. Since PPPs are a form of public procurement, appropriate rules on competition, tenders, and selection criteria must be formulated.

Source: European Commission, "Initiative on Public Private Partnerships and Community Law on Public Procurement and Concessions."

Accountability, Roles and Responsibilities

The planning, design and implementation of e-Government introduces new agencies, new committees, new processes, new projects, new roles, and changes to existing ones. Unless roles and responsibilities for each step and stage of development are well defined and the relationship between each group and position understood, conflict and waste may result. Defined accountabilities of each Minister, Department, CEO/Secretary, and staff assist in shaping the overall web of inter-dependencies, reliance on resources, and timeframes for delivery and results. The central e-Government or CIO Office is best situated to

monitor progress and performance in association with other central monitoring/reporting agencies to Cabinet or the most senior leadership committee.

The RACI (Responsibility, Accountability, Consultation, Information) Model is a tool that has been used widely in identifying activities and the roles performed by organizational units in a change process. This can apply to preparing the National Strategy, or in the conduct of a specific project. It clarifies who is the doer, who is accountable for the decision, who should provide input or resources to the activity or decision, and who should be informed about the activity or decision. It is typically supported by a RACI Chart which can then be discussed, agreed, and communicated to all parties.

Chapter 5. Designing and Implementing e-Government Projects

- Project Governance
- Managing Responsibilities
- Design and Reengineer First
- Change Management
- Training and Development of Government – Leaders and Civil Servants
- Awareness, Promotion, and Education of Customers

Once the overall e-Government strategy and master plan is in place, a set of core initiatives must be identified, funded, designed, and implemented. This may be captured in the form of a National Action Plan or Roadmap. Depending on the overall vision and strategy, and the criteria used to assess priorities (e.g., impact versus readiness), these projects may be a mix of citizen- or business-facing **access** points (e.g., one-stop shops, single phone number for government, kiosks), priority **e-services** in areas such as land reform, procurement, customs, health or education, and infrastructure, or capacity-building developments upon which they all rely (e.g., telecommunications and broadband expansion, enabling legislation, information and content management systems, e-Government and ICT leadership positions). Skilled resources, a range of management disciplines, stakeholder engagement, and user training are key critical success factors.

Project Governance

The governance and management of each of these projects needs to, be complementary to, and consistent with, that of the National Strategy and Action Plan (see Chapter 4.). The linkage is enabled through the leadership and co-ordination committees, and the reporting framework that monitors delivery time, budget and expenditure, and scope, consistent with approved changes and the overall project plan. Formal mechanisms are needed for making corrective adjustments in light of actual experience, changing conditions, and new ideas and opportunities, especially if the scope is broad and spans multiple stakeholders and years.

A number of countries and jurisdictions have adopted international standards for project and program management to ensure consistency of approach which provides greater likelihood of success. PRINCE (Projects IN Controlled Environments) 2 was initially developed in 1989 by the UK Government for information systems (IT) project management. It has become a de facto standard for project management in the UK and more than 50 other countries. Access to expertise and skills in these disciplines can be gained through a mixture of staff development and contracting, and in some cases organizations have engaged companies to provide the Program or Project Office and all associated management disciplines and standards as a capacity building investment.

Establishing and recruiting the project team is a fundamental step. Depending on the size and

PRINCE 2 Process Model
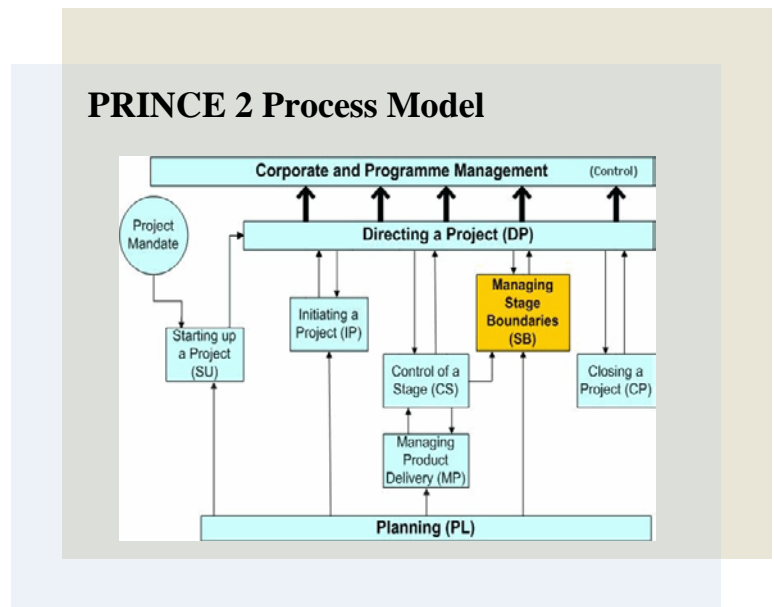
nature of the project, the Project Manager should have an experienced team comprising people with skills in policy development, business analysis, process reengineering, architecture, IT (various domains), communication and marketing, stakeholder management, training, finance and budget control, administration, and reporting.

The methodology to be selected for individual e-Government projects can vary according to a range of factors: the type (e.g., service, infrastructure), number of agencies involved, policy and process complexity, and level of technology required. The range of methodologies includes waterfall, spiral, agile, and iterative development.

In addition, related management disciplines associated with risk and issues management, quality management, sourcing and procurement, financial management, stakeholder management, change management etc., strengthen the e-Government project's implementation and integration process. International standards can be adopted rather than designing from scratch, although the majority of the effort is in the process of learning and applying these disciplines or processes.

Managing Responsibilities

Responsibility for overseeing and implementing each of the core initiatives has been variously allocated in countries, depending on the level of accountability assigned to Ministers for the e-Government Strategy; the priority allocated to e-Government by Cabinet; and ready access to available skills and expertise.

Experience has demonstrated that concentrating responsibility in one e-Government organizational unit will not build ownership and grow understanding or capacity. Many countries are now pursuing a decentralized model for project implementation, within a "controlled" environment that has been centrally defined, agreed, and facilitated, e.g., principles of design using process reengineering, whole-of-government procurement, compliance with enterprise architecture principles and technology standards, and regular reporting on performance and progress.

Design and Reengineer First

Effective implementation of e-Government often requires the simplification of regulatory requirements, streamlining of processes, and cross-agency integration. Costs will vary greatly depending on the complexity of processes involved and the number of agencies that must work together, but can be substantial. Implementing an e-Government solution may bring additional inefficiencies into the open, which must then be addressed, adding to the overall costs of the project. A 'rule of thumb' is that only 30% of the overall costs will be technology-related; the remainder covers the non-technology process, people skills, and organizational changes.

Investing resources and time in the stakeholder engagement and design phase of the project has been proven to deliver greater likelihood of project success. The process of designing e-Government projects, like the process of developing an overall strategy, does not start with technology. Rather, the needs of the intended users and the objectives of government should determine the end result.

Therefore, government leaders responsible for e-Government projects should first examine the objectives and policy outcomes required of the function or operation to which they want to apply ICT. For 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 end-to-end process by which the government publishes solicitations and qualifies bidders, as well as the requirements for filing bids, to see where the process can be reformed before purchasing or developing software solutions or creating a website. Or, how ICT use in the education system might contribute to improved learning outcomes and school retention rates, rather than the number of computers in schools. This is known as business process reengineering.

The idea is to build a virtuous feedback loop among process, policies, and ICT implementations. An emerging trend in e-Government is to take a holistic approach to any given area of public administration (such

Example: Implementing e-Government in Saudi Arabia

Within the context of a National e-Government Strategy and Action Plan, a number of priority projects were identified and have begun implementation. The following steps are taken.

WORKPLAN AND TIMELINE OF PROJECT

	Step 1: Set vision	Step 2: Establish fact base	Step 3: Design pilot services	Step 4: Develop action plan & impl. bluepr.	Implement- ation
Timeline	◄───────────────── 6 months ─────────────────►				◄ 1-5 years ►
Activities	▪ Articulate vision and objectives	▪ Benchmark six coun- tries ▪ Conduct surveys ▪ Prioritize services ▪ Assess overall IT readiness ▪ Select pilots and Cate- gory 2, 3 services ▪ Map proc- esses	▪ Redesign business processes for 6 pilot services ▪ Develop budget ▪ Define IT require- ments ▪ Develop user adoption strategy	▪ Develop national action plan and implem- entation blueprints for pilot services	

as tax collection), including harmonization of reporting across government agencies and establishment of a comprehensive administrative process. Likewise, user-centered design is becoming more popular where the customer – a citizen or staff member – actively contributes to the design of the service and software application to gather insights throughout the design and testing process (see 10 Guidelines for User-Centered Web Design). It is driven from the premise that the best-designed services result from a clear understanding of the needs of the people who will use them.

One way to look at the project design process is in terms of:

- Business and Process Architecture – What are the existing policy and legislation, the organizational arrangements, structures, and workflow that will best optimize the delivery of the service to users? Since the goal of e-Government is not simply to use technology to automate how things were done with paper, this is the stage to redesign the business/process model – the workflow – and to reconsider what information is collected and how it is processed, and where the role of people can add value. Process reform does not automate inefficiencies – they are eliminated, streamlined, and consolidated offline before being implemented online.
- Information and Data Architecture – Planners must identify what data the agency needs access to in order to deliver the service. For example, is all of that data in the control of one agency, or will it be necessary to share it with other agencies?
- Application Architecture – When the business structure has been determined, then planners and architects, cognizant of what is available from vendors in the market, can outline what solutions are needed to optimally deliver the service.
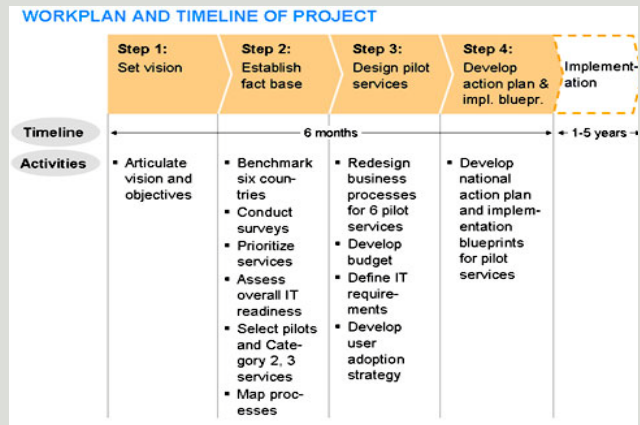
- Technology Architecture – After the foregoing have been determined, project managers can define the infrastructure requirements and assess/procure the technology that best supports the delivery of the service.

For countries at all stages of development, starting the project in a few agencies is helpful as it can assist in refining improvements to new processes, software quality, customer marketing and staff training before rolling it out more broadly. Pilot or Stage 1 projects may proceed alongside strategy development, creating knowledge that enhances strategy.

Change Management

Successfully managing all the change to achieve "acceptance" and utilization of the new e-Government process and system starts at the beginning of the project and continues throughout the development, implementation, and "warranty" periods.

The problem

In some cases, civil servants and key third parties or stakeholders may feel threatened by e-Government, either because they fear the transparency and loss of individual power that can come with the introduction of new processes and technology or because they fear that they will be replaced by computers or private service providers. Understanding and dealing with their concerns and issues; providing education and training opportunities; and building incentives and rewards for positive behavior change is an important element of senior responsible government officials.

Motivation begins even before employment, at the recruiting stage. E-Government managers in all countries face competition from the private sector for skilled workers. In order to attract and retain skilled staff, governments may initiate special recruitment programs and offer special salary scales to attract personnel with e-Literacy skills and knowledge of e-Government. (See UNESCO, "E-Government Toolkit for Developing Countries," Chapter 4.2.3 (2005)). Colleges, universities, and vocational training centers should be encouraged to establish professional or vocational courses to create ICT-qualified personnel. They also may play a significant role in the recruitment process.

Example Overcoming Staff Resistance, Karnataka, India

When Karnataka, India was developing a system for online delivery of land titles, computerizing the antiquated and inefficient land registration records, the political leadership encountered resistance from government employees. The civil servants feared that computerization would result in job losses and/or radical changes in the way they performed their duties. Senior officials and managers worked to ensure that staff understood and supported the proposed changes. And when Peru launched the Public Window project in three cities, it emphasized training local civil servants and sensitizing them to the project's goals and long-term benefits.

Leadership, employee engagement and honest communication are prerequisites for successful change.

■ *Soft Factors* ■ *Hard Factors*

Top management sponsorship	92
Employee involvement	72%
Honest and timely communication	70%
Corporate culture that motivates and promotes change	65%
Change agents (pioneers of change)	55%
Change supported by culture	48%
Efficient training programs	38%
Adjustment of performance measures	36%
Efficient organization structure	33%
Monetary and non-monetary incentives	19%

Source: IBM Institute for Business Value, 2008

Investing in Change Management Skills and Actions

The reluctance or inability to manage change properly is often one of the key reasons for the failure of technology enabled and e-Government projects. The discipline of change management identifies and addresses the leadership, human resources, and organizational factors that can drive or obstruct change. Since planning and implementation of e-Government involves a series of complex reforms, e-Government sponsors, planners, and project implementers can benefit from integrating formal change management processes into project management.

Insufficient attention to the people, or "soft" factors in an e-Government project can have unintended consequences with staff, including loss of productivity, low morale, high turnover rates, rising costs and increased absenteeism, and poor adoption rates by customers.

Detailed analysis of 1,500 project managers revealed that managing "soft factors" were more challenging than the "hard factors" and a highly significant correlation exists between project success and four important areas of focus (see Making Change Work Study, IBM Institute for Business Value, 2008 – sidebar):

- Real Insights – Having a clear understanding of the change challenge
- Solid Methods – Using formal change methods consistently
- Better Skills – Percentage of organizations using change managers for change projects
- Right Investment – Percentage of project budget invested in change management

Training and Development of Government Leaders and Civil Servants

Leaders, managers, and staff throughout the network of organizations and government agencies involved in e-Government projects will be impacted by many changes to their "status quo". Breaking through the internal "digital divide" within government takes significant time, comprehensive and integrated programs that both educate and encourage culture change through performance targets, and mainstreaming ICT awareness/e-Government in politician, executive, and staff development courses.

Cabinet ministers and senior officials will be more likely to support e-Government initiatives and drive them effectively if they have a basic understanding of ICTs, their role in economic and human

Example: e-Government Training, Austria

The Austrian Government's Federal Chancellery in overseeing their e-Government Program has targeted and developed specific curriculum for 4 priority groups for e-Government development. The curriculum has been developed with the cooperation of: the Austrian Federation, provinces, municipalities & cities, other public institutions, and partner organizations.

Source: www.epma.cz/Docs/5C%20P%20Reichstadter.ppt

Case Study on User Awareness and Training: Kerala, India

The Akshaya project in rural Kerala, India was established with the goal of creating the knowledge society. The project is centered around multi-purpose community technology centers, equipped with high bandwidth wireless connectivity and run by private entrepreneurs. The centers have a strong e-Literacy program, which allows every household to send one member to the local center to acquire training in the basics of computing. By increasing e-Literacy among citizens, the project supports the roll out of other services in e-Government, e-Health, e-Commerce, and e-Education.

development, and the basic building blocks of ICT policy. They should also be aware of specific strategic issues such as the role of inter-organizational collaboration, donor solicitation, public-private partnerships, and process reform.

Targeted education and training programs and engagement at each of the levels of decision-making and operation in what is e-Government, new ways of working, opportunities to find solutions to difficult problems, and using the new tools and systems is crucial to acceptance, and adoption as well as limiting resistance.

Seminars, conferences, membership in regional forums, and consultations with peers from other countries can also help familiarize senior officials with trends and issues of concern and assist them in building a knowledge network on e-Government (See UNESCO, "E-Government Toolkit for Developing Countries." Chapter 4.2.1 (2005)).

Awareness, Promotion, and Education of Customers

A significant dimension of e-Government implementation involves preparing the customers (citizens and businesses) for the rollout of e-Services. In order to enjoy the benefits of e-Government, citizens, including small business owners, must have access to the Internet or a mobile phone, and be both literate and e-Literate. Research and development into opportunities for those with low levels of literacy through "voice activated websites" in India is also showing promise.

Publicity campaigns and educational efforts aimed at users can raise awareness of new e-Services in advance of their launch. Such programs can notify citizens of the practical benefits of e-Government, encouraging them to take advantage of e-Government services in their daily lives. Involvement of the customers or users throughout the design and implementation process can enhance the targeting of the communication and marketing programs (see user-centred design).

Theme III: Enabling Successful e-Government

Chapter 6. Accessing a Trusted, Connected, and Secure Environment

- The Broader Context of Telecom and other ICT Policy
- Laws and Policies enabling e-Government Services
- Laws on Access to Government Information
- Laws and Policies on Privacy and Data Protection
- Information Security
- Data, Records, and Content Management
- Interoperability

The enabling environment for e-Government spans many areas. Appropriate legal, policy, and technical infrastructure is a prerequisite to a smooth and timely implementation of e-Government. Most successful e-Government programs have introduced new enabling legislation. Laws designed for the paper world can hinder implementation of e-Government. Conversely, legal reforms can facilitate the development of e-Government and deliver better, smarter, and faster government as a result. **Therefore, countries implementing e-Government strategies should examine their legal framework to ensure that there are no barriers to providing information and services online.**

These reforms may have to go well beyond laws specifically affecting government electronic information systems. The accessibility of e-Government depends on the diffusion and affordability of access to the ICT infrastructure, which in turn depends on the regulatory framework for telecommunications and other ICT services. Other issues affecting e-Government – particularly the legal validity of electronic documents, cyber-security, privacy, and the availability of online payment mechanisms are crucial for confidence and adoption. Still other issues that may relate specifically to government documents and data – such as interoperability and the right of citizens to obtain government information and control access to personal information – may be addressed most effectively on a government-wide basis by national laws, policies, and architectures.

The legal issues that e-Government planners may have to address include:
- the sharing of data within and across government departments;
- the legal validity of electronic documents, including whether documents submitted to the government electronically are legally binding and satisfy requirements that forms or declarations be filed "in writing", and the status of e-Signatures;
- the public's right of access to government records and data;
- the ability to contract with the private sector for the creation and maintenance of government information systems, including agreement on where the data is held (within or beyond national borders);
- privacy and security obligations;
- e-Payment; and
- criminal laws defining cyber attacks and other crimes that affect electronic data or networks.

Broadly speaking, there are three options for countries planning to legislatively enable e-Government:

- adoption of comprehensive e-Government legislation spanning all aspects of government, its relationships, and its operations;
- incremental specific laws and policies on elements of e-Government, such as Malaysia, aligned to the evolutionary phases of e-Government; and
- in legislation or normative acts dealing with online transactions specifically.

The Broader Context of Telecom and other ICT Policy

When everyone – citizens, businesses, government employees, suppliers, etc. – has access to affordable ICTs, e-Government will finally be able to achieve its full potential. Therefore, to some degree the success of e-Government depends on the adoption of a broader ICT policy and regulatory framework, which can facilitate the development and penetration of communications services.

Over the past two decades, in many countries, the legal establishment of a competitive ICT market has been a key factor in expanding the communications infrastructures. The reforms include, among other policies:
- the introduction and enforcement of competition and interconnection rules;
- universal access policies;
- the establishment of strong, independent regulatory agencies;
- the elimination or simplification of individual licensing requirements; and
- the reform of spectrum management to promote wireless Internet access.

As a result of these policies and other factors, growth has been especially strong in the wireless sector, and many commentators are now anticipating a second wave of regulatory or market reform given the potential of next generation networks; and the opportunities for sharing broadband network infrastructure given the costs of deployment. As the International Telecommunication Union (ITU) has concluded, "the introduction of competition into the second-generation mobile sector has been one of the key factors linked to its success in increasing teledensity in developing countries (along with prepaid cards and cheaper network deployment costs)." (ITU, "Trends in Telecommunication Reform 2006: Regulating in the broadband world" (7th edition, 2006) and Trends in Telecommunication Reform 2008: Six Degrees of Sharing (9th edition, 2008)).

Laws and Policies enabling e-Government Services

Offering e-Government services online can present important legal questions about the validity of electronic documents versus paper ones. Separate, and complex, issues also arise concerning identification and authentication of individuals and businesses wishing to transact electronically, privacy, security, access to government information, data protection, and freedom of information. The key principles to guide policy-makers include:
- ensuring functional equivalence under the law with pre-existing forms of communication and authentication;
- technology neutrality;
- protection of identity; and
- capacity to conduct business and rights of access to information in a digital economy.

Electronic Documents

As a starting point, laws specifying that certain information must be submitted "in writing" may have to be amended to make it clear that an electronic submission is legally valid – ensuring functional equivalence. The Model Law on Electronic Commerce developed in 1996 by the UN Commission on International Trade Law (UNCITRAL) recommends legislative language to make it clear that a document cannot be denied legal effect as a copy or as an original solely because it is in electronic form. If there is any doubt about the legal validity of electronic submissions, this is a baseline reform.

Electronic Signatures

More complex questions are presented by requirements that documents be "signed." In a number of countries, policy-makers seeking to create an environment of trust for both e-commerce and e-Government have adopted electronic signature legislation in order to provide legal certainty to electronic signature techniques as a substitute for handwritten signatures and other traditional procedures. The most common model for such legislation is the 2001 UNCITRAL Model Law on Electronic Signatures. In the same vein, in 1999 the European Union adopted a directive setting out a community framework for electronic signatures (the E-Signature Directive).

Authentication

Authentication is the process of confirming someone's identity. To use certain government services or receive payments, people may need to verify who they are. Equally, users also need to know they are dealing with a real government agency and to avoid phishing scams, such as e-mails requesting personal details that purport to come from a government agency. Both of these are enabled by "authentication" which is the process of establishing, to the required level of satisfaction, the identity of one or more parties to a transaction.

An identity can be authenticated in three ways:

- by something the user knows (such as a password or personal identification number);
- something the user has (a security token, digital certificate or smart card); or
- something the user is (a physical characteristic, such as a digitized fingerprint, retina/iris scan, hand geometry (also called "palm prints"), voice pattern and face recognition, and digitized (electronically stored), called a biometric.

Example: Comprehensive approaches to e-Government legislation in Finland and Italy

Finland has adopted an "Act on Electronic Services and Communication in the Public Sector."

Italy has formalized its e-Government strategy in the Public Administration Digital Code. The Code works as a "Digital Constitution." In more than 70 articles, it states all the rights/duties, principles, obligations and targets to overcome barriers and cultural norms to boost the use of ICTs in the Italian public sector. The Code mandates public administrations to: share relevant information among them by electronic means, in order to make life easier for citizens and businesses; make a minimum set of contents and services available on their websites; communicate by e-mail, namely for the exchange of documents and information; accept online payments from citizens and businesses (as from 1 January 2006); and use the Electronic ID Card and the National Services Card as standard means of granting access to online services (as from 1 January 2007).

More complex transactions are now requiring two or three authentication mechanisms which is known as multi-factor authentication.

Biometric technology is gaining the interest of governments and companies because, unlike other forms of ID such as cards or papers, it can be more difficult to alter or tamper with an individual's own physical or behavior characteristics. Important considerations include the effectiveness of automated biometric matching techniques, particularly for large-scale applications.

A Note of Caution on Public Key Infrastructure

The UNCITRAL model bases "digital signatures" on public-key cryptography. This is a mathematical technique that can be used not only to "scramble" messages for confidentiality, but also to sign messages to prove that they came from someone holding a unique key. A public key infrastructure (PKI) is a way to reliably link users and their unique cryptographic keys using a system of policies, procedures, people, hardware, software, and structures (Certification and Registration Authorities). The objective is to ensure valid identity in transactions between two parties. The CAs may be operated by government agencies or private entities. See Sang Young Lee, "Boosting e-Government Through PKI."

However, creation of a functioning PKI is costly, difficult in practice yet feasible and scalable (see Oxford University's Digital Certificate Operation in a Complex Environment (**DCOCE**) project). Moreover, there is growing recognition that the levels of authentication required for many G2B and G2C transactions will be relatively low and not require cryptographically-based e-signatures or PKI. The area of biometric authentication is also becoming more commonplace.

E-Government policymakers would benefit from further research into the actual experience and effectiveness with implementation of digital signature and biometric laws. It would also be useful to identify and highlight cases where e-transactions succeeded without a digital signature infrastructure (James X. Dempsey, "Creating the Legal Framework for ICT Development: The Example of E-Signature Legislation in Emerging Market Economies" (2003)).

Digital or Electronic Identity (ID)

A corollary to digital signatures has been the introduction of digital identity cards, which can also serve as online authentication devices (see Sweden's Electronic ID site). Electronic or digital identification methods are subject to risks of theft, loss, and misrepresentation, and they raise serious privacy issues. However, a number of countries have implemented national electronic ID arrangements as a result of various drivers including: evolution from traditional system of national identifier numbers (Sweden); strong border security/anti-terrorism controls (e.g., Pakistan); or expansion of public administration enrollment or e-Government initiatives (Austria).

Laws on Access to Government Information

Concurrent with implementing e-Government programs, some countries have adopted legislation defining the right of public citizens to access government records. Sometimes called Freedom of Information Acts (FOIAs), these laws are broadly similar, providing a general right to access official documents and other information held by government bodies, subject to exemptions for certain sensitive information. Most of the laws establish appeals and oversight processes. As of July 2006, 68 countries had adopted FOI laws (see Freedom of Information Around the World, 2006). Many of these laws enacted in the latter part of the 20th century are now under review in recognition of the impact of the Internet and heightened public expectations of accountability and transparency.

Laws and Policies on Privacy and Data Protection

Privacy and security are often cited as major concerns of Internet users. Individuals and businesses will assess the trade-off between convenience and confidence in the way that personal data collected through e-Government services is managed and protected from misuse and abuse.

Privacy is internationally recognized as a human right in Article 12 of the 1948 Universal Declaration of Human Rights and in Article 17 of the International Covenant on Civil and Political Rights (ICCPR). On the regional level, treaties that make privacy a legally enforceable right include the European Convention for the Protection of Human Rights and Fundamental Freedoms and the American Convention on Human Rights.

In the context of e-Government, "privacy" specifically refers to principles for the fair use of information. The concept of fair information practices holds that the citizen retains an interest in the information collected by the government in the course of a required or voluntary interaction. The citizen's rights include a right to insist that the information be used only for the purposes for which it was collected, that it be retained no longer than necessary, that it not be redisclosed, and that it be kept in accurate form. Taken together, these rules for the fair use of information are known as "fair information practices." They are globally recognized by international and regional bodies and are enshrined in key human rights instruments (see the Council of Europe (COE) Convention for the Protection of Individuals with Regard to the Automatic Processing of Personal Data and the Organisation for Economic Co-operation and Development Guidelines on the Protection of Privacy and Transborder Flows of Personal Data.

Both instruments articulate a similar set of guidelines regarding the responsible handling of personal data. These guidelines form the foundation of many national privacy laws and regional data protection frameworks, including the EU Data Protection Initiative and the APEC Privacy Framework.

Based on these principles, a growing number of countries have adopted national data protection laws. Such laws may apply to data about individuals collected by the government, to personal data in the hands of private sector businesses, or to both. While details vary, there is a deep worldwide trend toward establishment of legal protections for personal data in both commercial and governmental systems [OECD At a Crossroads: Personhood and Digital Identity in an Information Society, (2008)]. A privacy framework developed by the Government of Australia provides guidance to government agencies and businesses on how to implement privacy policies including website compliance guidelines.

Implementing Privacy

An effective privacy protection regime, whether legislative or policy-based, will include mechanisms for oversight, enforcement, and guidance.

A number of countries have created an office or agency to oversee privacy or data protection and to designate within each ministry or agency a senior official to serve as "chief privacy officer" or "privacy coordinator". Several countries also have privacy officials or offices at the provincial level. While the powers of these officials vary widely by country, eight inter-related roles can be attributed to data protection commissioners: ombudsman, auditor, consultant, educator, policy advisor, negotiator, enforcer, and international ambassador. Many have authority over both private sector and governmental databases.

A **privacy impact assessment** ("PIA") is "an assessment of any actual or potential effects that an activity or proposal may have on individual privacy and the ways in which any adverse effects may be mitigated" [Blair Stewart, Privacy impact assessments, Privacy Law and Policy Reporter (1996)].

While a PIA is performed before a system is launched, privacy audits are conducted periodically on systems that are operational to identify any deficiencies that need to be corrected. The audit can be conducted internal to a Department, or across government by the Privacy Commissioner or equivalent, and assists in reinforcing the need for agencies to conform to applicable government privacy standards.

Many commercial and government websites include a **privacy notice** or a more detailed privacy policy, informing individuals that personal information about them is being collected; how it will be used, stored and disclosed; and how long the information will be retained.

At a regional level, the European Union's STORK and APEC's Data Privacy Pathfinder projects are focused on cross-border identity management and authentication, and data flows respectively, signaling the future economic and citizen drivers for cross-national accountable identity/information exchange and recognition processes.

Information Security

As governments become more dependent on computers, both internally and in their relations with citizens, they become increasingly vulnerable to a range of risks, from interruption of operations to loss of confidential data. Government agencies at all levels (national, provincial, and local) must protect the computer and communication systems that they own and operate. Information security requires a combination of business, management, and technical measures in an ongoing process. Security is costly, but loss of data, and associated loss of trust or government reputation, can be a more significant risk.

Principles underpinning Privacy Laws

- *Purpose Specification*
- *Anonymity & Pseudonomity*
- *Collection Limitation*
- *Retention Limit*
- *Choice*
- *Security*
- *Accountability and Enforcement of entities holding the data*
- *Identifiers' independence*
- *Notification*
- *Data Quality*
- *Use Limitation & Disclosure*
- *Access and Correction*
- *Openness*
- *Cross-Border Data Flows*

Sources: Composite including from Cyberspace Law and Policy Centre, 2008; OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data.

Privacy Impact Assessments (PIAs)

PIAs are used in Hong Kong, Canada, New Zealand, Australia, and the United States to assess how the adoption of new information policies, the procurement of new computer systems, or the initiation of new data collection programs will affect individual privacy. It starts with a description of the proposed project, the types of personal data that will be collected or used, and how they will be disseminated or retained. To the extent that the proposed action or program is found to pose a risk to privacy, the PIA reviews the technical, procedural, or other safeguards that can be adopted to protect privacy and recommends how to implement the system in a manner consistent with fair information practices.

Like privacy, it should be addressed at national policy, architecture, operational, and infrastructure levels, as well as at the individual project design phase and periodic review.

Information security is achieved by implementing a suitable set of controls, including policies, processes, procedures, organizational structures and software, and hardware functions. These controls need to be established, implemented, monitored, reviewed, and improved, where necessary, to ensure that the specific security and business objectives of government and its agencies are met and continue to keep pace with demand and technological change.

Developing a National Cyber-Security Strategy

The process of developing a "national cyber-security strategy" can be an effective vehicle for assessing what a nation's cyber-security vulnerabilities are, what the government's responsibilities should be, and what policies and legal reforms need to be adopted. A national cyber-security strategy addresses not only the security of government systems but also defines the role of the government in responding to cyber-security threats faced nationally and by the private sector.

A number of countries have gone through a series of steps in addressing the cyber-security issue, including:
- assessment by a high-profile board, thereby conceptualizing and drawing attention to the problem;
- Presidential designation of leadership within the executive branch to push the development of policy;
- preparation of a national plan based on dialogue with all affected sectors; and
- adoption of legislation strengthening duties and authorities within the federal government.

Cyber-security programs often include the following basic elements:

- establish a baseline inventory of information-based operations, systems, networks, hardware, and software
- identify threats, vulnerabilities, and risks, as well as damages that would be caused by various attacks or failures
- form a strategy to weigh and manage the risks
- implement the strategy
- test the implementation continuously and monitor the environment to improve upon protections.

The international standard on Information Security, ISO/IEC 17799:2005 establishes guidelines and general principles for initiating, implementing, maintaining, and improving information security management in an organization. The objectives outlined provide general guidance on the commonly accepted goals of information security management.

International Standard on Information Security

ISO/IEC 17799:2005 contains best practices of control objectives and controls in the following areas of information security management:

- *security policy;*
- *organization of information security;*
- *asset management;*
- *human resources security;*
- *physical and environmental security;*
- *communications and operations management;*
- *access control;*
- *information systems acquisition, development and maintenance;*
- *information security incident management;*
- *business continuity management; and*
- *compliance.*

Steps that can be taken to safeguard the confidentiality, integrity, and availability of computer-based assets include, but are necessarily limited, to:
- installing firewalls, anti-virus software, and intrusion detection systems

- deploying strong cryptographic protection of sensitive data
- undertaking constant training of personnel
- maintaining network surveillance and security monitoring
- conducting testing and ethical hacking
- establishing an incident response and recovery capability, including back-ups and alternate site operations if appropriate.

Similar to e-Government, and other whole-of-government matters, information security poses leadership and organizational challenges. Some countries have placed responsibility for information/computer security in existing ministries responsible for national security, law enforcement, economic affairs, or information technology/Office of Government CIO. Others have also established inter-ministerial or inter-jurisdictional committees managed in association with the Head of Government's office and have ensured processes of accountability that require all ministries and departments to comply with approved security standards, conduct annual cyber-security audits, and report results to the Office or Cabinet.

In recent years, many countries have updated their criminal codes to cover explicitly various forms of **cybercrime**. Strictly speaking, cybercrime involves intentional acts of interference with the confidentiality, availability, or integrity of data or computer networks; interference with or disruption of computer services; destroying or altering data; interception of data in transit (unauthorized access to communications); and unauthorized access to data (cyber trespass). The Council of Europe has adopted a [Convention on Cyber-crime](#) which is now being adopted also by non-European countries.

However, it is best to recognize that the criminal law is likely to have only limited effect in this domain. The solution to the cybercrime problem requires international cooperation, better technology design, and the education of users.

Data, Records, and Content Management

The ability to reliably access, store, interpret, and reuse data and information is fundamental to the daily operations of government. Its importance and complexity will grow as the type of information being created and repurposed goes beyond the basic data and records in paper and electronic files, to more sophisticated content including e-mails, images, geospatial coordinates, videos, and other multimedia sources. E-Government automates and expands the demand for and value of these critical assets through e-administration, e-commerce, e-procurement, the delivery of services to the public through e-Services, and new forms of interaction in policy development and service design. The associated architecture and management systems for their capture, classification, storage, preservation, and sharing is a critical infrastructure for effective and efficient government.

From an e-Government perspective, a sound records management system serves two key purposes:
(1) promoting efficiency, by ensuring that the information necessary for reliable decision-making is readily available; and
(2) providing a basis for accountability in all its forms.

The International Standard for Records Management (ISO 15489) guides the implementation of records management programs to ensure that adequate records, in all formats and media, are captured and managed adequately throughout their lifespan. ISO 15489 is available from the [International Organization for Standardization](#).

A fundamental concept in records management that applies to both analogue and digital records formats is that there is a direct link between records and business processes. Records are the documents and data that provide the information required to initiate, execute, and complete business functions. They serve as evidence that a particular

business process or transaction was carried out, and they provide authentic and trustworthy information about the details of that transaction for future reference, for instance for audit purposes, customer confidence, or for analysis and research.

Therefore, a first step in developing a systematic records management system is to analyze business processes (i.e., the steps in a function or service) to determine which information should be captured as the record of a transaction, decision, or process. This forms part of the information and process architecture of the agency or government. Once a record is captured, it should be managed by a set of processes and controls to protect its ongoing integrity and accessibility. If the authoritative record of a given transaction is in paper format, then manual processes, controls, and measures need to be in established. These include, for example, procedures for indexing the paper record and filing procedures that will both keep it secure from loss or alteration and ensure that it can be found when needed again in the future. If the authoritative record of a given transaction is generated in digital format, then automated processes need to be in place to electronically file the record (often referred to as 'capture' in electronic records management) in a secure and adequate storage location. Of course, in many instances, the total set of records for a business process may be in both paper and digital format.

Meta-Data

Meta-data is information about information: standardized labels, tags, or other descriptors that make it possible to find data relating to the same subject, even though it is stored in different systems and different formats. "The aim of meta-data is twofold: to make content findable, and to make it manageable," (UK Government). For example, meta-data tags, properly defined and applied, make it possible to retrieve records in disparate formats and databases about the Hilton Hotel in Paris without confusing them with records about Miss Paris Hilton. Use of meta-data becomes increasingly important with the growth of the amount of information held by government and the need for integrated services.

New Zealand, the UK and Australia have each established standards for meta-data tagging in government. The UK Government also maintains a list of various taxonomies and thesauri produced by other governments as well as international standards bodies.

XML (eXtensible Mark-up Language) is perhaps the leading meta-data schema for documents, text, data, or video recordings. The UK Government, for example, has adopted XML, which it describes as "a language that allows information about the meaning of documents to be stored in those same documents. Information systems that can read XML can then translate and act on that information."

Permanent Availability and Preservation

Maintaining records systems is a difficult but necessary and legally required task in many jurisdictions. Ironically, electronic records are in some ways less durable than paper records. Rapid and ongoing changes in the technology of storage media, data formats, and IT systems have presented substantial problems for governments. As database technology continues to improve, governments (like other enterprises) will need to manage multiple versions of software and storage media in order to read older electronic records that are stored in formats incompatible with the newer technologies.

In addition to technological obsolescence, large organizations like government agencies tend to misplace electronic files if they are not used frequently. To avoid these problems, agencies must map their data systems clearly and plan upgrades and adoption of new technologies with care.

Transferring paper records to electronic databases efficiently is time consuming and can be complicated if there are many data fields and a lack of consensus on what the fields should be. Creating consistent data entry rules and automated checks for duplicates can help limit these risks, but it requires effort and knowledge in the area of records management. It is also debatable whether paper records should be destroyed or stored, as electronic data storage formats may actually be less durable than paper. e-Records should be backed up regularly, as those that are stored on fragile tapes and discs may become unusable if damaged or lost.

On the political front, changes in leadership and restructuring may result in loss of data. In particular, government upheavals often lead to destruction of important documents, but even peaceful transitions can result in the loss of the institutional knowledge necessary to find data on government systems unless action is taken to require its preservation from the technical experts.

Interoperability

Interoperability is one of the core ingredients for effective e-Government. It refers to the ability to communicate, share information, and, ultimately, integrate business operations across multiple organizations that share stakeholders, have different internal processes and technologies, and retain control of data and finances. It facilitates the use of data across horizontal organizational boundaries, such as sharing within a ministry or department or within the federal government as a whole, as well across vertical boundaries, such as between federal and provincial governments.

Interoperability is a policy issue that requires "whole-of-government" attention, usually through the central coordinating e-Government body. It can yield substantial cost savings by pushing agencies to rely on off-the-shelf products and open or commonly accepted standards. Requiring managers to address interoperability forces them to talk to their counterparts at other agencies, with the

Example: Local Government and Regional Interoperability in Germany

Germany has subsidized the costs of interoperability platforms for local governments by creating regional platforms that do not require any significant investment or reorganization of local governments in order for them to participate. There are also opportunities for private sector investment and minority stakes in designing and implementing these regional centers, and some models have been explored in other German cities. See Norbert Benamou, "Bringing e-Government Interoperability to Local Governments in Europe" (December 2005).

Example: MyGIF, Malaysia

Malaysia produced an interoperability framework entitled "Standards, policies, and guidelines – Malaysian Government Interoperability Framework (MyGIF)." in 2003. It has been enhanced by the creation of the Malaysian Public Sector open source software portal. The objectives of MyGIF are:

- *to enable different government systems and applications, both within government and external to government, to communicate and interoperate efficiently and effectively;*
- *to promote and foster the adoption of eXtensible Mark-up Language (XML) that enables the exchange of data between applications;*
- *to promote the addition and use of meta-data;*
- *to align with the Internet by adoption of common specifications (standards) used on the Internet and World Wide Web for all government information systems; and*
- *to adopt open standards and specifications which are widely supported by the market in order to reduce the total cost of ownership of Government information systems.*

Instead of creating new standards or specifications, MyGIF adopts internationally recognized open ICT standards and technical specifications in five areas:

- *interconnection;*
- *data integration;*
- *information access;*
- *security; and*
- *meta-data.*

expectation that they will reuse solutions and avoid repeatedly paying vendors to develop the same functionality.

Donors also have a responsibility to advance interoperability. Too often, developing countries face the situation where different donors are pushing applications that cannot be integrated because they use incompatible standards, formats, or platforms.

The European Union has identified three elements of interoperability:
- Organizational: focused on the workflows and other organizational processes involved in delivering e-Government services. May involve creating agreements on how organizations will interact with each other;
- Semantic: using meta-data terms and taxonomies to identify information and make it easier to access; and
- Technical: ensuring interoperability among different IT systems and applications through commonly accepted standards (see "EIF – European Interoperability Framework for pan-European eGovernment Services", 2009).

In an effort to promote collaboration and interoperability, the US government has created a Component Organization and Registration Environment (CORE) where component developers in government can search for and locate components that meet their needs, avoiding duplication of effort and supporting interoperability.

e-Government Interoperability Frameworks (e-GIFs)

Increasingly, governments are developing e-Government interoperability frameworks (e-GIFs) to define the architecture and standards for interoperability. They provide guidance for planning new e-Government systems and applications, ensuring that new applications are able to communicate with existing systems and technologies. Like other elements of e-Government, interoperability is best achieved by consultation with affected stakeholders – in this case, the originators and users of government data. Hong Kong went one step further and conducted public and industry consultations on its interoperability framework, reports of which are available online.

New Zealand also has adopted a comprehensive e-GIF, addressing both technical standards and management processes. New Zealand has a website dedicated to its interoperability framework, which includes standards toolkits, web guidelines, and the current e-Government strategy, as well as planning tools, such as checklists for program managers. Similarly, the UK Government e-GIF mandates that federal agencies adhere to interoperability policies and specifications, and its interoperability website contains tools and guidance for designers of information systems.

Standards enable Interoperability

A "standard" is an agreed set of definitions that describe specifications for the creation and implementation of a technology or process. Standards are usually created by international bodies, such as ITU's Telecommunication Standardization Sector (ITU-T) or regional entities, such as the European Telecommunications Standards Institute (ETSI), (Jonathan Zuck, "Public Services Interoperability in Europe", December 2005). Much of the functionality of the Internet is based on international standards developed by the Internet Engineering Task Force, the World Wide Web Consortium, and the Organization of Structured Information Standards (OASIS).

The UK government identifies the criteria by which to measure the acceptability of a standard:
- Interoperability – only standards that are relevant to systems' interconnectivity, data integration, e-Services access, and content management meta-data are specified.
- Market Support – the specifications selected are widely supported by the market, and are likely to reduce the cost and risk of government systems.
- Scalability – standards selected have the capacity to be scaled to satisfy changed demands made on the system, such as changes in data volumes, number of transactions, or number of users.

- Openness – the standards are documented and available to the public.
- International Standards – preference will be given to standards with the broadest remit, so appropriate international standards will take preference over EU standards, and EU standards will take preference over UK standards (UK e-GIF).

Open Standards

Variously defined by countries, companies, and individuals, "open standards" are recognized national or international platform independent standards. They are developed collaboratively through due process, are vendor neutral and do not rely on commercial intellectual property, and imply an underlying philosophy and set of principles and practices (see Tom Perens, Open Standards, Principles and Practice). Appropriate principles for defining open standards include:
- Availability
- Maximize End-User Choice
- No Royalty
- No Discrimination
- Extension or Subset
- Protection Against Predatory Practices.

Proprietary vs. Open Source Software (OSS)

While governments are using both proprietary software and Open Source Software (OSS), OSS offerings have received a significant amount of attention in recent years due to perceived benefits in terms of costs, security, and flexibility. Some also argue that the use of open source in developing countries may speed the growth of local peer-to-peer open source communities and associated service industries. An EU-commissioned study explored both the spillover benefits of OSS and how governments can better support the development of open source industries.

It is important to note that OSS is rarely ever "free". While there may not be an initial fee associated with an open source license, there may be long-term costs associated with support and management. Given that many OSS products are continually evolving, specialized knowledge is needed for ongoing maintenance and support. This is a risk factor in the use of OSS applications. In comparison, proprietary software has higher initial licensing, software support, and update fees, but support is generally more stable.

Several governments, including Bahrain, China, Costa Rica, Malaysia, Philippines, and South Africa, now have a stated policy preference for OSS. Others, including Argentina, Venezuela, Brazil, Peru, and Bulgaria, have gone a step further and mandated the use of OSS. A 2004 survey by the Center for Strategic and International Studies outlined the use of OSS in more than twenty developed and developing countries. In 2005, the EU conducted a survey of OSS use in e-Government.

There are many open source templates, software applications, and tools available for building websites and "interact" and "transact" applications. Open source software providers are often non-profit organizations and websites are their primary vehicle for distributing products.

Chapter 7. Challenges – closing the Digital Divide and ensuring social inclusion

- The Digital Divide: A Policy Challenge
- Ensuring Access through Infrastructure Development
  - Wireless Solutions to the "Last Mile" Problem
  - Creating Public Access Points
- Ensuring e-Literacy
- Addressing Language Localization and Advancing Cultural Development
- Enabling Access for People with Disability
- Overcoming Gender Bias

The challenges of e-Government are very common throughout the world (see D.C. Misra, Emerging E-Government Challenges, Past Imperfect, Present Tense, but Future Promising, 2008, and Spremic et al, E-Government in Transition Economies, 2009). The difference between countries lies in the priority and rate at which they are addressed, which are likely to be context-specific. The basic foundations addressed in earlier sections of the Primer are crucial, but in addition to the issues of growing capacity within government enabled by legislation and policy, there is also the need to consider the factors affecting widespread population adoption.

The Digital Divide: A Policy Challenge

People without access to the Internet or the knowledge of how to use it effectively are limited in their ability to share in the benefits of e-Government. A widely accessible and affordable communications infrastructure is critical to the successful delivery of government services online, and associated benefits. In addition, the availability of e-Government services that save citizens and businesses time and money can drive demand for ICT access, boosting infrastructure development.

The digital divide is a policy issue for countries throughout the world. It exists between countries and regions and also within a country's borders, most commonly between rich and poor, between men and women, between urban and rural areas, between able-bodied and disabled, between old and young, between literate and illiterate. The digital divide correlates not only with income but also with education levels and cultural attitudes towards technology. Given the centrality of ICTs to both education and economic opportunity, those without access to ICTs are likely to fall further behind in a vicious cycle.

Many factors contribute to the digital divide. They include: the level of commitment to education and IT training; the policy environment for investment in science and technology; and the telecommunications regulatory framework.

In the last few years, a new focus on the concept of "e-inclusion" or social inclusion has emerged. A central premise is that the ability to access, adapt, and create knowledge using information and communication technologies is critical to social inclusion. This focus highlights a shift from the sole focus on technology, to a focus on equity of disadvantaged groups having access to economic, educational, social, and cultural advantages enabled by technology (see UNDESA, "Global E-government Readiness Report 2005: From E-government to E-inclusion", 2005).

Ensuring Access through Infrastructure Development

Many countries have included efforts to build out their ICT infrastructure within the e-Government strategy efforts. Countries have set up telecenters, Internet cafes, and kiosks where people have access to telecommunications services and have combined this with education and training. Innovative technologies – especially those associated with wireless access – enable countries to make leaps into technological development.

At the same time, many countries have placed e-Government within the context of their Information Society development strategies, for example, Cape Verde's Information Society Strategic Program.

In many countries, the introduction of privatization and competition has been coupled with the establishment of a Universal Service Fund or a Universal Service Obligation to support the build-out of access in underserved areas. The creation of public access telecenters, including mobile kiosks, has been successful in a number of countries, not only in terms of direct access, but also in terms of e-Literacy and demand. UNCTAD recommends public investment in Internet backbones to provide neutral connection points for competing services.

Wireless Solutions to the "Last Mile" Problem

Just a few years ago, the only way an individual could access the Internet was by connecting a computer with a telephone link to an Internet Service Provider. This meant that Internet access required both a computer and telephone service. In a remarkably short period of time, new technologies have introduced cost-effective and efficient options for ICT access. These technologies include wireless broadband networks, such as WiFi and WiMax. See Adlane Fellah, "WiMAX/BWA in Africa" (June 15, 2005). With the development of third and fourth generation mobile phone technology, Internet access is now also available from handheld phones or from plug-in attachments for laptop computers.

Creating Public Access Points

Governments can provide Internet access at telecenters, post offices, government branch offices, and even schools and community centers. Internet cafes and kiosks are also becoming popular access points. The success of these programs is contingent on, among other factors, training users and encouraging entrepreneurs. Many projects have been successful because for-profit entrepreneurs have been involved in building and sustaining access points in small communities (see sidebar).

Examples: Public access elements of e-Government

Drishtee Program in India brings e-Government services to rural India using kiosks run and maintained by entrepreneurs who charge a small fee for access.

Citizen Service Centers in the Bahia Province of Brazil used a similar model, placing service kiosks in convenient locations like shopping centers, allowing the public to transact government business.

Jamaica's SDNP Jamaica Project offers Internet access in local post offices, training postal employees to help the public utilize ICT services.

Kyrgyzstan eCenters Project set up four pilot eCenters in rural Kyrgyzstan to stimulate access to ICTs, to improve economic growth, and to lead to employment training and job creation.

Kenya AfriAfya Project consortium using information exchange to improve health care services to the rural poor.

The Tiger Leap Initiative in Estonia collaborated with industry to wire schools and put the entire country online.

Romania Information Technology Initiative – Access which provides support to entrepreneurs to develop economically viable telecenters, partnering with local NGOs to expand the usage of ICTs and integrate them into existing development programs.

Ensuring (e)-Literacy

Comfort and familiarity with using technology and the Internet can be achieved using multiple strategies such as community training in local government centers such as libraries, local government offices, and school ICT labs or as part of workplace training and development. Addressing the issue of literacy is more fundamental. "Education for all" has become a priority in developing countries, as recognized in the Millennium Development Goals, and strategies and plans are being put in place to ensure that every child has access to basic education, at least at primary level. As part of this commitment, ICTs are gradually being embedded in the educational system and the delivery of a range of subjects.

However adults who are no longer in the education system can be denied access to the benefits of ICTs due to a range of issues including lack of recognition of distance learning as a legitimate educational mechanism, and the lack of accreditation systems for non-formal education. Simpler services and information available via mobile phones are beginning to address these difficulties.

Strategies to overcome these limits can be found in an options paper presented to the Kenya Ministry of Education, Science and Technology and in the T4 (Technology Tools for Teaching & Training) project in India. Online educational programs can be accredited and supported by the government to bridge the learning gap for citizens who were left behind in the mainstream education system. Information on institutions approved to offer distance learning can be posted on government education portals. Online educational programs can be especially valuable to women who cannot participate in mainstream classroom learning due to family responsibilities. The *info*Dev webpage on ICTs in education has a host of resources and the educational technology debate website (www.edutechdebate.org) provides a forum for discussion.

Countries like India that have invested heavily in human ICT capital development continue to reap the benefits of higher e-Literacy. The Indian Government created an enabling environment leveraging its high population density by offering ICT training to create a critical mass of citizens who have pushed the country to participate in the digital economy.

Addressing Language Localization and advancing Culture Development

While English is spoken in many developing countries, it is typically a second or third language, used for conducting business. Even native language use poses a challenge in countries that have many local or ethnic dialects. Effective e-Government strategies should emphasize content in the national language or languages and should also provide for translation into various ethnic dialects.

Enabling Access for People with Disabilities

Individuals with limited mobility, who may be blind or deaf, are able to benefit greatly from e-Government information and services with sufficient forethought, planning, and appropriate modification of the computers.

The World Wide Web Consortium develops protocols and guidelines to support accessibility to the Internet for people with disabilities. Those efforts include software solutions, policy initiatives, and educational conferences. Governments may use a range of tools to measure the accessibility of their websites.

Overcoming Gender Bias

In formulating e-Government strategies, gender-blind does not mean gender-neutral. Policymakers should be aware of the different contexts in which women and men live. Policy that does not take gender into account may have significant, unanticipated negative impacts. E-Government will be most effective if diverse perspectives, including those of women, are sought (see Strategies to Cross the Gender Digital Divide, DOT-COMments e-Newsletter, (February 2006)).

Research on the impact of the Internet in Kenya indicates that as a result of family responsibilities, women and girls have their first encounter with the Internet at a much later age than men and boys, who normally have the flexibility of going into an Internet cafe at a very early age. Accordingly, programs to provide public access points should include locations that are easily accessible to women and girls.

It is important for governments to encourage high-level participation of women in the ICT sector, including policymaking positions. At present, the ICT field is male-dominated in most developing countries. Most ICT policymakers are men, and ICT programs are more likely to be managed by men than women. As a result of the current imbalance, it is likely that men will reap the majority of the benefits of e-Government, including business opportunities associated with e-Government software development and support services. Programs that address women's participation in the ICT sector could also provide funding and mentoring services on establishing and managing businesses related to e-Government. Women and ICT Policy, DOT-COMments e-Newsletter (February 2006).

Chapter 8. Trends and Future Directions for e-Government

The objectives of e-Government are to:
- Improve access to and delivery of public services and information
- Enhance transparency, openness of, and engagement with the administration
- Increase productivity of businesses, citizens, and employees
- Improve efficiency in the design and delivery of government services, and
- Contribute to broader government economic and social outcomes.

Implementation has been shown to occur in a number of stages or waves over years and decades. The process and impact is as much cultural, both societal and public sector, as technological. The successful implementation and evolution of e-Government in organizations, jurisdictions, countries, and regions relies on multiple factors. With dedicated leadership, experience, and the establishment of foundation capabilities, governance structures, and technologies, and growing demands for smart government and reduced costs, "more attention is being focused on opportunities to share resources, meet common operational and program-related needs, and coordinate service delivery" (David McClure, Government Transformation, Getting Joined-up Governance Right, 2007).

Six trends contributing to the transformation of government have been nominated by IBM's Center for The Business of Government (see sidebar). Certainly the role of the network as co-producer; the real-time expectations of citizen engagement and responsiveness; the demand for "just right" business intelligence for managing policy and operations; and the potential to draw and share resources and capabilities from many government, private, and non-government sectors have all been able to be accelerated by ICTs.

The iterative nature of new technologies impacting the operations of government, which can change the way in which technology is used and by whom, highlights the interdependency between government and technology.

This is evident in the connectivity provided by telecommunications to networks and partnerships, new access to and interactions with citizens and capabilities held by external organizations, either shared or contracted, and new insights from information and business intelligence. A wider span of actors, leaders, and practitioners are ultimately able to collectively deliver more value as a result under the right conditions, highlighting the essential ingredient of effective governance.

Six Trends Transforming Government Performance
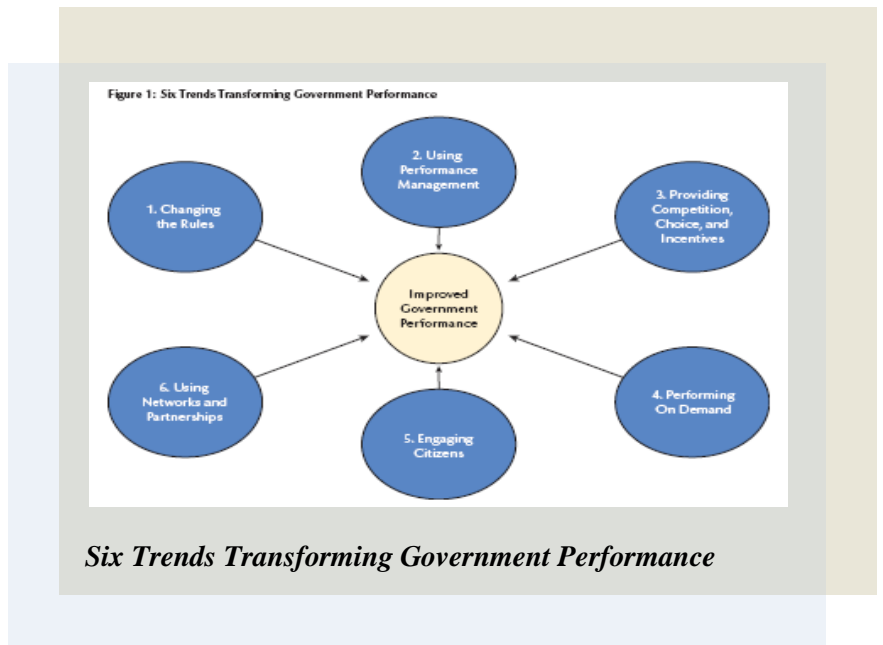
The range of emerging technologies expected to influence e-Government depending on the program, budget, and political and risk dynamics operating in each jurisdiction over the next 5-10 years includes:

- Advanced speech recognition (natural language, speaker-independent)
- Automatic translation (near real-time)
- High-Speed Broadband Communications (>100 Mbps, e.g., FTTH)
- Interactive TV
- Smart Cards (used as identity cards, e-passports, etc.)
- Citizen Data Integration Hubs
- Wearable Computing
- Future Web Technologies (Web 2.0 and beyond, mashups, Semantic Web)
- Advanced authentication/security technologies (e.g., Biometric Identity Documents)
- Advanced Mobile/Wireless networks (3G/4G and beyond, WiMax)
- Virtual/Augmented Reality
- Ambient Intelligence (AmI)
- Cloud Computing
- Service Oriented Architectures

Public administrations are expected to be responsive, plan ahead, and future-proof their investments. The trends support high performance, transformational government. The key change elements are the way in which governments respond and the tools and capabilities they use. This applies equally in developed and developing countries, with the developing countries having the advantage of utilizing lessons learned from others, and possibly also having less "legacy" hardware, software, and processes committed to retaining the status quo.

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Cyber-security Principles and Guidelines: International Models

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- EU Council Resolution of 28 January 2002 on a European approach towards a culture of network and information security.
- European Commission proposal for a Council framework decision on attacks against information systems.
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- US National Strategy to Secure Cyberspace.

Data, Records Management, and Content

- Archives New Zealand, "Continuum – A Guide to Developing RecordKeeping Strategies for Websites", 2003.
- Australia has developed a methodology for designing and implementing recordkeeping systems (DIRKS).
- Copies of ISO 15489 can be purchased from the International Organization for Standardization.
- European Commission's Model Requirements for the Management of Electronic Records (MoReq).

- The State of New South Wales (Australia) has an extensive set of materials on records management issues.
- US Department of Defense's DoD 5015.2 – Design Criteria Standard for Electronic Records Management Software Applications (RMA).
- The World Bank in partnership with the International Records Management Trust conducted a multi-year project on Evidence-Based Governance in the Electronic Age. The Project produced a very useful set of papers, reports, and tools.

Records Management Tools

- The E-Records Readiness Tool provides governments a simple, high-level assessment of the various components of a records management infrastructure including legal policy, technology capability, and human resources.
- The Records Management Capacity Assessment System (RMCAS) is a tool designed to help assess records and information systems capacity in the public sector, particularly for developing countries.
- A Guide to Integrating Records Management Requirements into Financial Management Systems is available from IRMT.
- The International Records Management Trust has played a prominent role in researching electronic recordkeeping issues in developing countries and in developing tools for governments moving from manual to electronic systems.

International Organizations for recordkeeping and electronic records

The following organizations have extensive resources for the management of records in an electronic environment:

- AIIM
- ARMA International
- International Council on Archives
- International Records Management Trust offers a Summary of Key Policy Issues and an online study program on the management of public records. Other results of the IRMT project are available at http://www.irmt.org/consultancyProjects.html.

National and state recordkeeping processes

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Denmark
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- E-Government Act of 2002 (US) – selected provisions on interoperability and XML.
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- IDABC, "European Interoperability Framework for Pan-European e-Government Services" (2004).
- Korea Government's Efforts for Information System Interoperability (2005).
- Open Standards.net
- Sun, Definition of Open Standards
- UK Government, Open Source, Open Standards and Re–Use: Government Action Plan, February 2009.

Open Source Software

- Apache Foundation, which developed the Apache web server, a search engine known as "Lucerne," an anti-spam product known as "Spam Assassin," and a server known as "Geronimo."
- European Union inventory of Free, Libre and Open Source Software (FLOSS) applications, covering a range of areas including e-Learning, workflow and workload management, healthcare, middleware, e-Justice, and human resources.
- Free Software Foundation (FSF).

- *info*Dev study outlining the use of OSS in developing countries.
- Kenneth Liew, Computer World Singapore, "Open Source for Governments" (December 2005).
- Mozilla Foundation, which provides the Firefox web browser.
- Open Source in E-government. Danish Board of Technology, October 2002.
- Open Source Initiative.
- Open Source Software Resources
- Open Source Web Design (OSWD), a provider of some 1,600 free web design templates.
- Rishab Aiyer Ghosh, "License fees and GDP per capita: The case for open source in developing countries".
- Source Forge, a repository for approximately 130,000 open source projects.
- South African government website on OSS policy.
- UNDP primer on OSS in e-Government in the developing world.

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- [W3C Accessible Web Guidelines](#) and draft on [Web Accessibility and Mobiles.](#)
- [Universal Usability in Practice](#).
- [Universal Design Principles](#).
- [UK accessibility guidelines](#).

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