A TOOLKIT FOR e-GOVERNMENT:
ISSUES, IMPACTS AND INSIGHTS

For the IDB Regional Policy Dialogue

C C M D C C G

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Summary

This toolkit has been developed for the Inter-American Development Bank (IDB) in support of the Regional Policy Dialogue. It is designed to help Latin American and Caribbean (LAC) governments optimize their approach to e-government by framing the issues and identifying good practices, challenges, and lessons learned. It is hoped that this paper will generate focused and valuable debate.

The research for this project included a review of academic and business literature, as well as interviews with IDB officials, Canadian experts, and officials from three countries—Ecuador, Costa Rica and Chile—at different stages in their e-government journey.

E-government has been defined many ways, but in this paper speaks only to issues of public administration, and not to issues of democracy (e.g. it does not address e-voting). At its root, e-government involves users (i.e. citizens, business, or government employees) accessing government information or services via electronic means. However, government definitions generally build upon these core elements in order to reflect their unique realities and goals.

The potential benefits of e-government are many: increased user satisfaction, a more educated and e-literate populace, more efficient and effective government, better equipped businesses, and greater transparency and openness. Cost savings are often touted as a benefit of e-government, but whether such savings can be realized depends on the priorities and values of the government; it is primarily through the automation of large volume (or large cost) transactional services that cost savings can be generated. Conversely, e-government can have negative impacts such as a widening Digital Divide, large-scale consumption of resources, increased citizen expectations, and (within the bureaucracy) difficult cultural change.

For governments to successfully move forward with e-government, there are five strategic areas that must be addressed. These are discussed in the five parts of this toolkit.

Part 1 addresses the two dimensions of the e-government context—the needs of users and their capacity to use e-government on the one hand, and the supply of e-government on the other. To move ahead effectively and confidently with e-government, governments must first fully understand both dimensions of this context. Accomplishing this will require a comprehensive assessment of existing research (e.g. surveys, census statistics, competitiveness studies, etc.) and the execution of new research to fill information gaps (e.g. surveys, consultations, focus groups, etc.).

Users of e-Government

- *User Demand*—who wants e-government, and how do they want it delivered? This is important information if governments want to have a measurable impact in the eyes of citizens and businesses. With the exception of one organizational initiative, none of the three countries visited has assessed user demand in any systematic way.

- *User Capacity*—are citizens ready to interact online? Looking at core indicators such as age and education, we see that the LAC region has a young population that, especially in Costa Rica and Chile, are well educated. E-literacy tends to be greatest amongst the educated and wealthy.

- *Trust*—do users trust the technology and the government's use of the technology? Trust is key for growing and maintaining use of the Internet. Interviews suggest that citizen trust in technology is low to moderate; as with most governments and institutions, trust in Latin American governments does not appear high. For example, when surveyed, less than a third of Latin American young people indicated that they trust government institutions and their representatives (UNICEF Opinion Poll: What Young People Think, 1999). Perceived high levels of corruption in some countries may also hamper levels of trust. For example, in Transparency International's Corruption Perceptions Index (2002), Ecuador and Bolivia rate 89[th,] and Guatemala, Nicaragua, and Venezuela rate 81st.

- *Technological Accessibility*—can users access and afford the services? When considering accessibility, three costs need to be considered: cost of owning a computer, cost of telephone use, and cost of the Internet service. With the possible exception of Chile, the cost of a computer is very high for all but the wealthiest of citizens. Likewise, the cost of telephone and Internet service is astonishingly high. Using GDP per capita as a comparative baseline, Ecuador is the most expensive (dial-up access is 13 times more expensive than in Canada), followed by Costa Rica (3 to 5 times more expensive) and then Chile (which is three to four time more expensive). All of the countries visited, and especially Costa Rica, are combating cost barriers through community access centres.

  Once cost of access is overcome, culturally and locally relevant content must be available if citizens are to see a benefit and continue using the Internet. This is somewhat of an issue for all the countries visited, as the vast majority of content on the Internet is in English. In many countries the significant investment needed to generate and make available locally relevant content has yet to be made. As a result, a great deal of Internet traffic flows to sites outside of the native country (e.g. 90% in Costa Rica).

Supply of e-Government

- *Technological Infrastructure*—is the infrastructure available to support e-government? A fast and reliable backbone is critical for any e-government strategy, and many types of systems are available. Many LAC countries are moving towards high-speed access systems (e.g. fibre-optic backbone, and cable or ADSL broadband last mile connections). Of the three countries visited, Ecuador is limited to low-speed dial-up access, Costa Rica has limited high-speed access, and Chile has extensive high-speed access.

- *Public Service Capacity*—is the civil service ready to serve citizens in the knowledge age? The public service is both a supplier and user of e-government. To exploit the full potential of technology, public servants require both access to technology and the skills and knowledge to use it. In Ecuador technology is not yet integrated throughout the public service, so few public servants have access to computers. In Costa Rica most public servants have desktop computers (although it is unclear how many are linked to the Internet). And in Chile, access to technology is becoming universal in the public service. Training in support of e-government is presently limited in all three countries.

  In terms of the staff needed to implement the countries' e-government agenda, in two of the countries visited the number of dedicated staff appeared insufficient to significantly move the agenda forward.

- *Enterprise*—does the legislative and regulatory environment support e-government? To answer this question, three areas must be addressed: privacy, security, and cost/competition. Privacy involves the use of personal information solely for originally stated purposes. If citizens do not feel that their personal information (e.g. medical history) will be kept private, they will be apprehensive about providing such information electronically. While there was no privacy policy in the countries visited, it is worth noting that cultural expectations regarding privacy appear different in these countries than in North America.

  Online security involves three issues: authentication, encryption and non-repudiation. In essence, users need to know that their communications with government are secure, and that their electronic documents and transactions are recognized and protected by law. At present, Chile is the only country visited that is using encryption technology to any great extent; it is also the only country with a law in place to recognize digital signatures.

  Legislation can promote low-cost access via the regulation of costs charged by

monopoly service (e.g. Costa Rica), or by opening up the market to private sector competition (e.g. Chile). Ecuador represents a hybrid model—it is a public sector monopoly that allows limited private sector competition, although there have been no entrants thus far. Each approach exhibits unique strengths and weaknesses.

Part 2 moves from a strong foundation (knowing where you are), to the development of an e-government vision (knowing where you want to go). An e-government vision is important for the disparate parts of government to move forward collectively in a clear, consistent and purposeful fashion. Each vision of e-government will differ, but all should be rooted in the government's values and priorities, and in the contextual realities. Research suggests there are three purposes for undertaking e-government:

- *To improve access to government services.* This can be viewed as providing an extra service channel for citizens (as planned in Costa Rica) or as a sole service channel (e.g. as planned for at least some services in Ecuador). While all three countries aspire to putting services online, only Chile has made significant progress in this regard. Of particular note is its electronic tax filing system.

- *To accelerate transition to the knowledge age.* This involves liberating and leveraging government information to: 1) create a more healthy and educated populace (e.g. the distance education and distance medicine planned in Ecuador); 2) better equip and support businesses to compete (e.g. the business services provided by Sercotec in Chile and Procommer in Costa Rica); and 3) improve the quality of information used to make government decisions (e.g. the inter-ministerial fibre-optic network being developed in Ecuador).

- *To strengthen democracy* by making government more accessible, open and transparent, and thus reduce real or perceived corruption. To this end, many LAC governments are making budgets and expenditures available online, and adopting e-procurement. Going a step further, Chile's President is encouraging the use of technology to broaden the participation of citizens in democracy, although there does not yet appear to be concrete projects on this front.

Part 3 explores how to set objectives to move from the current state (as exposed through the assessment of the e-government context) to the fulfillment of the e-government vision. Objectives should be set in those areas that must be advanced in order to realize the vision. For example, if the vision is to connect all citizens to the Internet, then the objectives set will need to address infrastructure and access issues.

In order to generate a bias for action, many developed countries are using what some call SMART objectives—specific, measurable, achievable, relevant and time-bound. Such objectives seem rare in the countries visited, but this has not necessarily hampered progress (e.g. Chile).

When considering what objectives should be set, the first area to consider is resources. At the very least, a plan for investing in and maintaining the government's technology requirements is needed. Research has shown a lack of resources to be a serious challenge to advancing e-government in LAC countries.

Many governments have developed e-government agendas that bring together their objectives under a single umbrella. The challenge for each government is to critically assess whether its own agenda is sufficient and specific enough to achieve its e-government vision.

Reflecting on the components of the e-government context, the following illustrates the types of objectives set by governments:

Users of e-Government

- *User Demand* objectives involve gaining a better understanding of user needs and expectations via means such as surveys and focus groups. In the three countries visited, there are no plans to analyze user demand in any systematic way.

- *User Capacity* objectives tend to focus on the education of both adults and children. For example, Costa Rica has educated over 1.2 million elementary students through its Educational Computing Program.

- *Trust* objectives involve addressing privacy and security protection through legal and technological means. It also involves confidence-building communications from government, and a government track record exemplifying integrity and competence. None of the countries visited have deliberate plans in place to build citizen trust.

- *Technological Accessibility* objectives address issues of cost and content. With respect to cost barriers to purchasing a computer, objectives can include the provision of free or subsidized computers, low-cost computers (e.g. the Costa

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Rican government is working with Intel to develop a low-cost Internet-ready computer), or the reduction of import duties and consumer taxes. In addition, many free ISPs have emerged across Latin America, and all three of the countries visited have made some investment in the development of community telecentres.

In terms of content, most government organizations are working to make their information and services available online. However, there were no government-wide initiatives to put historical, cultural or political content online. One exception is the Province of Pichincha in Ecuador, which is working to make such content available through schools to students, parents and teachers.

Supply of e-Government

- *Technological Infrastructure* objectives address the need for a reliable high-speed network both between government ministries, and between consumers and the Internet. It is only through high-speed access that rich content and large documents can be shared and viewed in a productive and timely fashion. Most countries in LAC presently have, or are building, a fibre-optic backbone to support reliable high-speed Internet access. The choice of last-mile connection (e.g. dial-up, DSL or cable) is country specific, and depends largely on the existing infrastructure (e.g. density and integrity of phone and cable penetration), geography, and population dispersion. At present, Ecuador has just started to build its fibre-optic backbone, whereas Costa Rica has built its but must still complete the last-mile DSL connections.

- *Public Service Capacity* objectives should include both dedicated experts to support the implementation of e-government, and public servants' capacity to use technology in their day-to-day work. While the resources needed may not materialize, there were *plans*—sometimes just in pockets of organizations (e.g. Ecuador), other times at a government-wide level (e.g. Costa Rica)—to train public servants in the use of technology.

- *Enterprise* objectives involve issues of privacy, security and access cost. Privacy objectives tend to address the protection of privacy through the development of Acts, policies, or standards, such as the Canadian *Personal Information Protection and Electronic Documents Act.* In the countries visited, no such strategic action has been taken to address privacy concerns.

  Regarding security, many countries are working to advance their security through the adoption of digital signature legislation. In Ecuador, security has not yet emerged as a prominent issue. In Costa Rica, digital signature legislation is presently with Congress. And in Chile, Congress has recently

approved digital signature legislation.

With respect to access costs, legislation and regulations can also play an important role. As noted in the Context section, the three countries visited represent different market models.

- *Alignment with Other Government Priorities*—whatever the objectives set, they should be aligned with other efforts to modernize the state. If linkages and conflicts are not identified, redundancies, lost opportunities, and sub-optimal performance may result.

Part 4 explores how best to move from objectives (ideas) to implementation (action). More specifically, it explores the various approaches and tools needed to successfully implement e-government.

- *Establishing guiding principles.* This is important as a first implementation step, as the government's vision and values should drive technology, and not the converse. Once established, principles can help align the efforts of disparate players across government.

- *Leadership* at both the bureaucratic and political level is perhaps the most important element for successful implementation. Political leadership is key because many of the decisions necessary to make e-government a reality go beyond the authority of public servants. In each country visited, presidential leadership proved invaluable for motivating and aligning the efforts of ministers, and thus ministries, across the government.

  Bureaucratic leadership is also necessary for the operational planning, execution, coordination and day-to-day oversight of e-government initiatives. To maximize success, bureaucratic leadership should not come from technical experts, but from senior decision makers who understand the broader environment.

- *Governance* includes issues of structure, degree of centralization, and mandatory standards.
  ⇒ *An appropriate governance structure* must be aligned with the structure, lines of authority and culture of the government it serves. All the countries visited had some form of e-government governance structure in place. An optimal structure should factor in the degree of change required: for example, putting up a website for an organization requires little structure, whereas integrating various government services into a single window requires a more formal structure. Finally,

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the stage of development will influence the formality of structure. For example, a small informal shop may be appropriate at the idea-generation stage, but will be insufficient for implementation.

⇒ *Centralized or decentralized governance* addresses the balance needed between controls versus creativity. On the one hand, too much centralized control can undermine innovation, initiative and motivation. On the other hand, too much unchecked creativity and a lack of coordination can lead to interoperability and alignment problems. In general, the e-government governance approaches used in the three civil services visited are relatively decentralized, and consistent with the context and culture within which they exist. However, as these governments move forward with more cross-departmental and government-wide initiatives, their approaches may need to evolve in order to meet coordination needs.

⇒ Irrespective of the overall governance structure and degree of centralization, *mandatory coordination* should be considered in two areas: 1) for data sharing; and, 2) for website appearance and navigation. Data sharing is increasingly being addressed in LAC countries as government-wide systems emerge (e.g. finance and staffing systems in Chile). Poor planning in this area can lead to interoperability problems down the road. Website appearance and navigation issues have yet to be addressed by any government visited. Having said that, Chile's Standards Committee has plans to review the government's 213 websites and set necessary standards.

⇒ *Partnerships* with the private sector have proven more successful, according to recent studies, than government's "going it alone." Of course, in-house expertise is still needed to procure systems, create and oversee contracts, as well as to build and maintain partnerships. The fact is that partnerships can be difficult to manage due to complex networks of interdependent players, changing technologies, elaborate contract requirements, and a constantly changing environment.

⇒ *Risk management* is an essential tool for e-government, as technologies can generate many costs as well as benefits. As a result, the likelihood and severity of risk should be assessed and managed.

In the countries visited, some of the risks and challenges faced included gaining ministerial cooperation and support, changing the bureaucratic culture from paper-based to electronic-based, overcoming fears of job loss, and most importantly, insufficient resources. Research suggests

that persuasion, accommodation, co-option, consultation, and training are the best tools for overcoming such barriers.

Part 5 addresses the issue of measuring performance in recognition that e-government is not a one-off project, but a journey. Good performance measurement supports accountability and enables government to make informed adjustments to its e-government objectives and implementation. Furthermore, by conducting measurement in an ongoing fashion, a cycle of continuous learning and improvement can be generated.

When undertaking measurement, a number of decisions must be taken. For example, what will be measured: progress towards targets or client feedback? Within these areas, what elements and sub-elements will be measured, and what indicators will be used? Governments must also decide the unit(s) of measurement they want to investigate. Will performance be measured at the service/program, departmental, or government-wide level? A mixture of all three may be appropriate. As to the measurement process itself, it can be carried out via self-assessment or be done centrally by a government agency or private firm.

There are a few guiding principles to good performance measurement: the measurement approach should be simple to understand, administer and communicate, should focus on a select group of indicators, and should generate information that supports decision-making.

Each of the countries visited is just starting to think about measurement; thus far no significant progress has been made on this front.

Final Pointers
At the end of each part within the full toolkit, key questions are presented in textbox format. These questions challenge the reader to think through important issues within the context of their own country.   And finally, at the end of the toolkit, a graphic entitled "Toolkit Summary: An Alternative Perspective" provides a visual overview of the entire toolkit.

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INTRODUCTION

Nearly all nations are interested in exploiting the potential of e-government. But moving to e-government is not an easy undertaking. As an OECD study found, "Most governments experience problems when implementing large IT projects. Budgets are exceeded, deadlines are over-run and often the quality of the new system is far below the standard agreed when the project was undertaken."[1] Likewise, Gartner has reported "…60% of all e-government initiatives are likely (and perhaps expected) to fail or fall short of their initial goals."[2] So how can Latin American and Caribbean (LAC) governments best approach e-government? What are the relevant considerations, and how can e-government investments be optimized?

> Like the printing press, today's new Information and communication technology holds the potential to bring about revolutionary change in the concept of governance, and alter current views of democracy, society and public administration. For this reason the Internet has rightly been seen as the "spiritual successor to the printing press."
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> *Source: Commonwealth Centre for Electronic Governance, Electronic Governance and Electronic Democracy, October 2001.*

The Purpose of the Toolkit

This toolkit does not provide a score or quantitative assessment of e-government readiness (please see Appendix 2 for various e-readiness assessments). Nor does it provide a singular recipe for e-government. Instead, it provides a resource for LAC countries to learn from the (sometimes difficult) experiences of Canada and others. It provides a framework to help LAC governments optimize their approach to e-government.

E-government projects are typically initiated by individual government organizations; launching a departmental website in response to a specific need (such as solving a process problem) or opportunity (such as newly available funding or technologies) has been the most common entry to e-government. Often it is only when implementing such projects that larger questions begin to emerge, such as "Who are our clients?" "What kind of infrastructure do we need, and what kind of access do our clients have?" This inevitably leads to even broader questions such as: "Why are we doing

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[1] OECD, *The Hidden Threat to E-Government: Avoiding Large Government IT Failures*, Policy Brief No 8, March 2001.

[2] Carr, J. GartnerEXP Says a Majority of E-government Initiatives will Fail or Fall Short of Expectations—GartnerEXP Analysts Discuss E-Government at Gartner Symposium (April 30, 2002), http://www4.gartner.com/5_about/press_releases/2002_04/pr20020430b.jsp

this in the first place?" Thus the focus moves from the specific to the overarching and fundamental. The purpose of this toolkit is to help governments move in the opposite direction—to move from the strategic to the specific.

The toolkit begins by exploring the evolution, definitions, and benefits of e-government. Once this platform is established, the core elements of the toolkit are then discussed in five parts:

- **Part 1**: Considers the two dimensions of the e-government context—the needs of users and their capacity to utilize e-government on the one hand, and the supply of e-government on the other;
- **Part 2**: Addresses how to set a vision;
- **Part 3**: Explores how to set objectives to achieve the vision;
- **Part 4**: Looks at implementing the objectives; and
- **Part 5**: Discusses how best to measure performance and improve continuously.

Methodology

The methodology used to generate the toolkit was qualitative in nature, and has included:

1. *A Review of Documentation*
   - Academic and business literature
   - Government frameworks, reports, policies from a number of developing and developed countries
   - Private sector research, such as assessments conducted by large consulting firms.

2. *Interviews and Discussions*
   - These were conducted to identify good practices and lessons learned in both developed and developing countries. This included interviews with individuals from LAC countries and Canadian experts via:
     ⇒ Interviews with Canadian authorities in the field. This was done to:
       ° validate the approach;
       ° validate the product; and
       ° capture lessons learned.
     ⇒ Interviews with IDB Officials to obtain an overview of the pertinent e-government issues in LAC countries
     ⇒ Interviews with e-government officials in Ecuador, Costa Rica and Chile. To help ensure this paper is applicable to all the members of the

Regional Policy Dialogue, the countries visited were chosen using the following criteria:

° they are at different stages of e-government development (e.g. well developed, moderate development, early development); and
° they are at different stages of overall IT infrastructure and e-readiness.

The interviews involved meeting with e-government leaders in the public, private, nonprofit and university sectors in order to:

° gain an understanding of unique challenges in LAC countries, and identify "key success factors"; and
° start "field testing" the toolkit .

In the three countries, 41 meetings were held with close to 100 individuals.[3] The meetings provided important insights regarding the challenges, successes and lessons learned with respect to e-government in LAC countries.   The logic of the framework used for this document was also successfully tested and validated with the official(s) leading e-government in each country.

What is e-Government?

E-government has been defined many ways by many people. The United Nations Division for Public Economics & Public Administration suggests the following definition: "[E-government] is a permanent commitment by government to improve the relationship between the private citizen and the public sector through enhanced, cost-effective and efficient delivery of services, information, and knowledge."[4] It is worth noting that this definition focuses on a one-way relationship between government and citizen. There is currently little agreement on an exact definition for e-government. The Crossing Boundaries series of consultations in Canada provides this definition: "E-government is smart government. It is government that is organized around the management and use of information. Smart government is essential in a society where information has become a cardinal resource."[5]

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[3] It is important to note that many of the points raised in this document were captured during meetings with a limited number of e-government leaders from each of the three countries visited, and do not draw from authoritative documentation. Furthermore, liberty has been taken throughout to freely translate into English various names, terms and pieces of information originally provided in Spanish. These are not officially authorized translations.

[4] See: http://www.unpan.org/egovernment2.asp

[5] Alcock, R. and Lenihan, D. *Changing Government Volume 2: Results of the Crossing Boundaries Cross-Country Tour*. January 2001.

These broad definitions provide a philosophical first step, but little else. In addressing the difference between providing services online (Canada's Government On-Line initiative) and e-government, the Privy Council Office of the Government of Canada recognized that, "Government On-Line is a precursor to e-government…. E-government will mean much more than putting existing Government-On-Line – [e-government is] a state of being where governments are interactive, inter-jurisdictional, fully connected to citizens, collectively working through issues and coming up with solutions to policy and program issues consistently and democratically."[6] This definition therefore goes beyond the one-way relationship characterized by most definitions by emphasizing an interactive and iterative relationship with citizens.

> **What Can e-Gov Do?**
>
> Each government has its own set of e-government priorities, for example:
>
> - Service Improvement (Canada, U.K.)
> - Export Markets (Costa Rica, India)
> - National Capacity/ Domestic Markets (Brazil)
> - Global Positioning (Malaysia)
> - Development Goals (South Africa, Estonia)
>
> *Source: Turner & Desloges, 2002*

Some definitions of e-government include elements such as "e-communities" and "e-business." Others refer to these elements as being part of a broader "e-strategy." Clearly, the content and scope of definitions vary. This is why a quick scan of the definitions illustrated above include descriptors such as: cost-effective, democratic, efficient, smart and interactive. In the end, each government must adopt or generate a definition of e-government that reflects its own realities and purposes. It is then important to ensure, when discussing e-government with others, that all players have a shared understanding of the definition.

In this paper, the term e-government is used broadly—it includes government, communities and the private sector—although the focus is squarely on the role of government.

The Evolution of e-Government

In most developed countries, e-government has followed a common evolution:[7]

1. *Inform*: making departmental information available on the web.
2. *Interact*: allowing citizens to provide comments and questions electronically, and receive replies.

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[6] Privy Council Office of Canada. *Towards a Government for the Knowledge Age: Regional Perspective*. May 2002.
[7] The first four stages reflect a continuum commonly used by experts and consulting firms.

3. *Transact*: enabling citizens and business to carry out service transactions with government.
4. *Integrate*: bringing services together in new ways—e.g. clustering via life events such as birth, marriage and death—so that services and programs are organized in ways that make sense for citizens. This has resulted in many government portals—a single entry point to all government services and information.
5. *Innovate*: using e-government to enable all operations of government, and to leverage new models of government and governance.

The first three steps are largely about using information and communication technologies (ICTs) to provide citizens with another service channel in addition to the over-the-counter, mail and telephone services that already exist. But more importantly, Steps 1 through 3 represent a fundamental move from the absence of ICTs, to employing ICTs for the first time, be that for service delivery or other purposes. This shift requires foundational work to be undertaken, such as the construction of an internal and external infrastructure.

As governments move through Step 4 to Step 5, they are no longer thinking about the introduction of technology or the use of technology for specific projects. Rather, not unlike the telephone, ICTs become an integrated and assumed enabler of all that government does—from consultation and policy creation through to program design and delivery. In this light, e-government is not viewed as an end state such as a government portal, but as government—enabled by technology—that is continuously adaptive to the challenges of its day.

Using the above categorization, Ecuador can be viewed as working in stage 1, Costa Rica is simultaneously in stages 1 and 2, and Chile is working in stages 1, 2, 3, and is now moving into stages 4 and 5.[8]

The Benefits of e-Government

Experience has shown that e-government can provide many benefits:[9]

- strengthen trust and confidence in public institutions by providing greater openness, transparency and accountability while protecting individual privacy;

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[8] It should be noted that while the steps provided above suggest a progression along a continuum, this is not necessarily the case. One stage is not inherently preferable to another. For example, putting services online as opposed to just information is valuable for citizens only if, given the choice of receiving information or services over the web, citizens value the latter more.

[9] Privy Council of Office of Canada. *A New Model of Government and Governance for the Knowledge Age: Towards a Conceptual Framework for E-Government in Canada.* June 2002.

- greatly improve government performance, by making government more responsive to citizens' needs and expectations;
- serve to legitimize government policies and programs, by engaging citizens as partners in policy making and governance;
- help strengthen national cohesion and inclusion by creating new public spaces for them to meet, debate and explore their community, their membership in it, their common interests, their values and their differences;
- enhancing government and society's ability to adapt to an ever-changing environment; and
- serve as a catalyst of an innovative and competitive economy by supporting knowledge creation and sharing through information networks.

The benefits of e-government can also be segmented for specific user groups, as provided in Table 1.

Table 1: Potential Benefits of e-Government[10]

Public sector transaction with	Examples	Benefits
Citizens	Information Culture Health Education Benefits Transactions Taxation	Wider choice of channels, convenience, lower transaction costs, more personal service, greater awareness of services and policies, greater democratic participation and openness
Business	Support programmes Advice and Guidance Regulation Taxation	Quicker, faster interactions, reducing transaction costs and the regulatory burden
Suppliers	e-Procurement	Reduced transaction costs, better inventory management, shared data environments
Other public sector bodies	Communication between departments and agencies and between central and local government policy making	Greater accuracy and efficiency, reduced transaction costs. Better use of the knowledge base. More nimble, flexible working arrangements.

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[10] Recreated from: UK Cabinet Office. *Modernising Government Paper, E-Government: A Strategic Framework for Public Services in the Information Age*. April 2002. Interestingly, transparency and openness are benefits that do not appear in this particular table.

Clearly e-government can have many benefits. But if not managed carefully, it can also have negative impacts (See Figure 1 below).

**Figure 1:
A Summary of Key Impacts**

Increased Trust
and Confidence

"Smarter Government"
• more efficient
• more effective

More Educated,
e-literate Citizenry

Better Equipped Businesses

Benefits

Increased Satisfaction

Greater Transparency
and Accessibility

**Potential Impacts of
e-Government**

Project Failures

Difficult PS Culture Change
• turf tension
• fear of job loss

Drawbacks

Widening of
Digital Divide

Undermine Trust if
Security or Privacy Breached

Resource Intensive
• money
• staff

Increased Citizen
Expectations

Opportunity for Cost Savings

Cost savings are often cited as a key benefit of e-government. In fact, if the goal of e-government is to save costs, research suggests that it can, at least in some cases, be accomplished. There are some initial reports of cost savings from many areas. For example:[11]

- In Alaska, the traditional vehicle registration process was a two-week process that cost the state $7.50 per transaction to handle the paperwork. With the state's new online procedures, the cost has been reduced to less than $1 per transaction, and the process has been shortened to 15 seconds.
- In New Jersey, early indications are that the Department of Environmental Protection has condensed the turnaround on its air permits from six weeks to six minutes with their new online permitting and payment system.
- Arizona's new online registration and renewal system for the Motor Vehicle Division (MVD) allows citizens to renew their registrations online 24 hours a day, seven days a week, at no extra charge to the citizen. Processing online

[11] These example are quoted directly from Texas Online: A Feasibility Report on Electronic Government, Nov 2000 (http://www.dir.state.tx.us/egov/report/finalrpt.htm)

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requests costs only $1.60 versus $6.60 for a transaction to be completed at the walk-in counter. With Arizona now processing 15% of their renewals online, the MVD will save around $1.7 million a year.

- In the province of Bahia, Brazil, Citizen Assistance Service Centers (SAC) combine federal, state, and municipal agencies in a single location. In addition to providing convenient and professional services to citizens (89% of users rated SAC performance as "excellent"), the government has realized cost savings based on reduced overhead.[12]

Generating cost savings, however, may be more difficult than originally thought. The greatest cost savings come by automating high-volume or high-cost services. But putting only these services online would lead to a strange and limited group of available services. This is why vision is so important. Governments must ask themselves "why are we undertaking e-government?" If the goal of e-government is more than cost savings, for example to advance citizen well-being and prosperity, then cost savings will likely be offset by investments in staff, infrastructure and citizen capacity building. In this sense, the "easy savings" of e-government is more a myth than a reality.

Appreciable savings will generally only be realized if: 1) high volume service transactions are automated; 2) redundant systems are eliminated; 3) significant help-desk staff is not required; 4) redundant employees are not kept on staff; and 5) the savings are not reinvested in areas such as infrastructure and access projects. It is possible that further savings will emerge as the Internet comes to provide the sole backbone for all services, regardless of channel. Under this scenario, when clients come to a government counter or call a government office, the staff person assisting them will be accessing the same information from the web as the clients would be if they connected to the service by Internet.

Overall, cost savings do not come easily in e-government. Having said that, e-government does enhance the traditional cost-benefit ratio of government programs and services—for the same total investment, more clients can be reached, and the quality and convenience to the client can be increased.

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[12] See "Citizen Service Centers in Bahia, Brazil" at:
http://www.worldbank.org/publicsector/egov/bahiSAC.htm

PART 1: THE e-GOVERNMENT CONTEXT

To successfully implement e-government, governments must first fully understand the reality of their e-government context. This understanding is necessary to optimize the success of specific e-government projects and to limit the negative consequences that can emerge from them, such as a widening of the Digital Divide.[13]

The Digital Divide can be described as differences in access to information through the Internet, and other information technologies and services, due to geography, race, economic status, gender or physical ability as well as the skills knowledge and abilities to use information, the Internet and other technologies.[14]

Addressing the Digital Divide is important to provide equal access to government services; to ensure that online initiatives reach a critical mass of the population; and to promote the spread of e-literacy and readiness for the networked economy. Indeed, some have argued that, "a fully implemented e-government will only exist if all citizens are connected to it."[15]

Part 1:
Two Dimensions of the e-Gov Context—the User and the Supply

Users of e-Government

• User demand and capacity
• Trust
• Access to technology

Supply of e-Government

• Technological infrastructure
• Public service capacity
• Enterprise: regulations & regulations

National
State/Provincial
Local
Other Sectors

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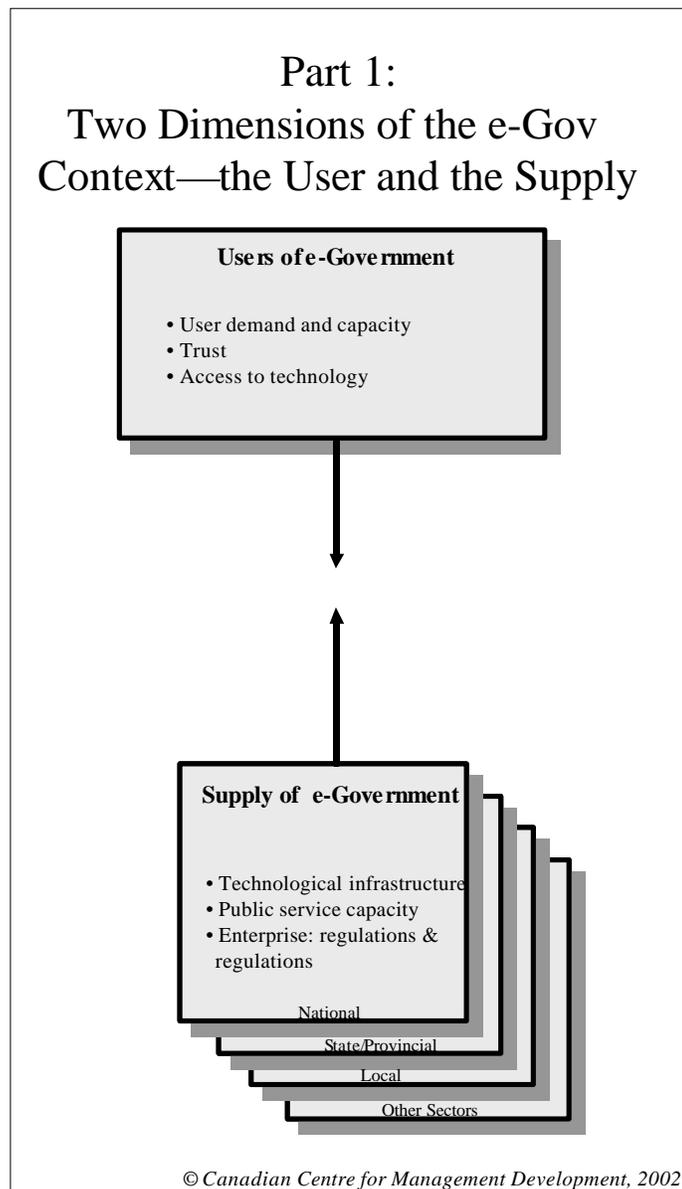
[13] An excellent document on the Digital Divide in Costa Rica has been generated by Monge, R. and Chacón, F. *Bridging the Digital Divide in Costa Rica*, CAATEC, 2002. Available at: http://www.caatec.org/caatec/asps/goto.asp?pag=default.htm&lang=esp_

[14] http://www.digitaldivide.org

[15] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001. pg. 88

E-government, therefore, is not a stand-alone, single-department project. The success of e-government depends on many supporting, or enabling, factors. Some factors to consider fall under the umbrella of citizen demand or capacity for e-government, including skills, access, trust and demographics. These factors are all associated with the Digital Divide. Other contextual factors are more related to the supply of e-government, such as technical infrastructure and enabling legislation/regulation. As a result, this toolkit examines two key and equally important dimensions of the e-government context:

Users of e-Government
- User Demand—who wants e-government, and how do they want it delivered?
- User Capacity—are citizens ready to interact online?
- Trust—do users trust the technology and the government's use of the technology?
- Technological Accessibility—can users access and afford the services?

Supply of e-Government
- Technological Infrastructure—is the appropriate technology available?
- Public Service—is the organization ready to serve citizens in the knowledge age?
- Enterprise—does the legislative and regulatory environment support e-government?

Users of e-Government

User Demand

As with any initiative, it is important to assess user (citizen, business or government) demand for specific types of services; after all, can there be true e-government without connected citizens and businesses? Yet governments often undertake e-government initiatives without having a clear understanding of what potential users want: do they want services available on line? What services do users want to access online, versus through other channels? How important is e-government as compared to other service channels?

If one of the goals of e-government is to improve services, then understanding user needs is a necessity before taking action. E-government should be organized from the users' perspective, not from the perspective of government organizations. By identifying the needs, priorities and expectations of users, governments can provide what users want as opposed to what they think they want. Optimally allocating

resources by targeting areas of priority to citizens is also an important consideration given the enormous financial and operational cost of failure.

In much of the world, the Internet, and specifically e-commerce, has created a demand for e-government services that match the speed and convenience of interacting with businesses on-line.[16] Internet use in LAC countries, however, still lags behind many other regions of the world (see Figure 2)[17].

Figure 2: ICT Indicators
LAC Region and Developed Nations
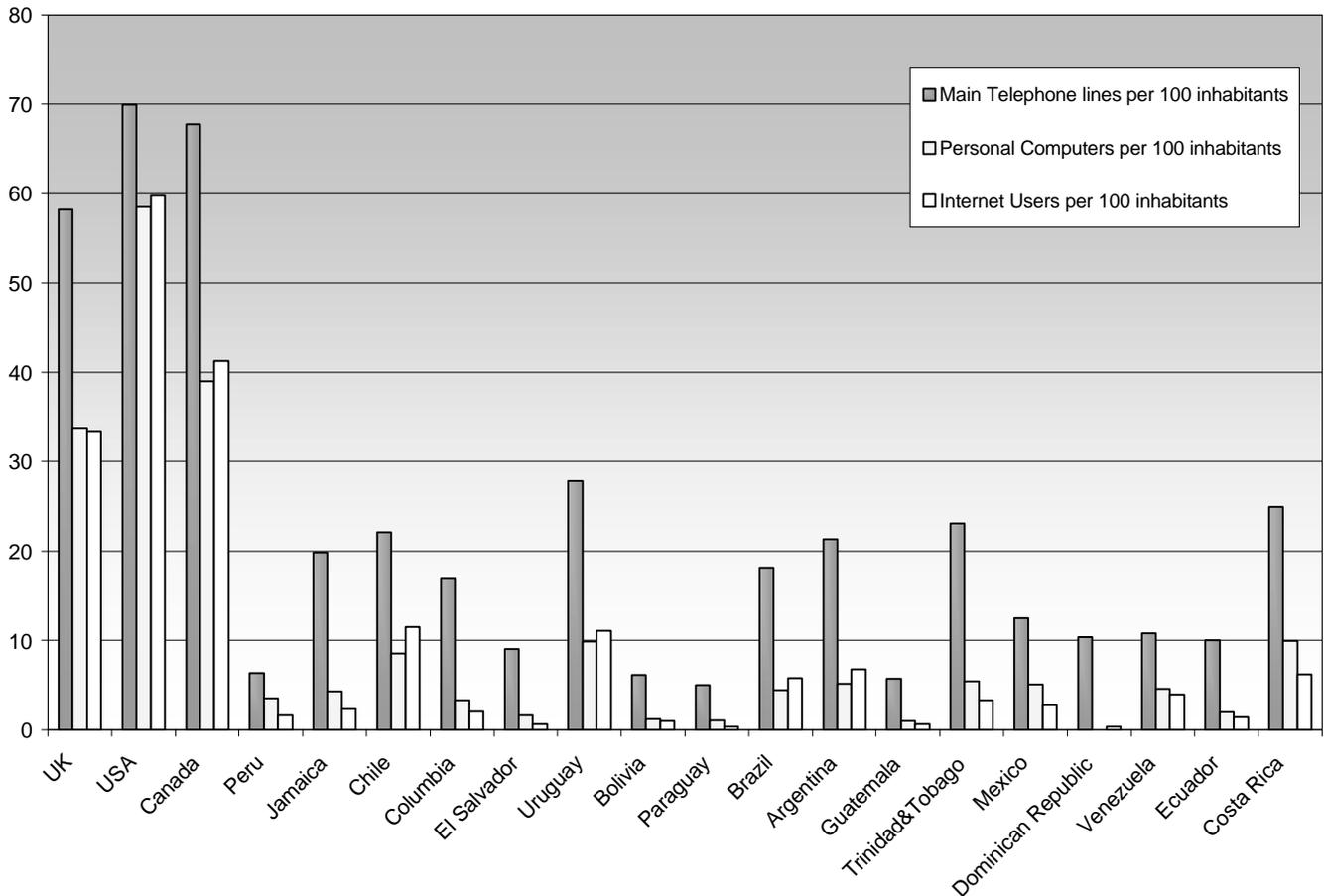
While the graph above shows that Internet use, and perhaps interest, is comparatively low in the LAC region, Internet use is in fact growing faster in the region than

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[16] Holmes, D. *E-gov: E-Business Strategies for Government*. Nicholas Brealey Publishing. London, UK. 2001.

[17] Graphic created from data provided in Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001. It should be noted that other surveys provide different statistics for Canada: e.g. 98.4% of households have telephone service (World Telecommunication Development Report, ITU, 1999); 75% of Canadians have Internet Access (Ipsos-Reid, April 2002), with 65% accessing the Internet almost daily (Ekos, spring 2002).

anywhere else in the world.[18] One encouraging measure is the growth in Internet domains; domains registered in the LAC region have increased more than six-fold over the past three years.[19] Obviously, the trend towards online interaction and transaction is a strong one in the LAC region. But does this mean that the entire population is "ready" for e-government?

User Capacity

In order to exploit the benefits of e-government, citizens must first have the capacity to use it. This capacity requires a mixture of at least three elements: literacy, knowing how to use ICTs, and being aware of the benefits they can provide. Age and education have proven useful proxies of this capacity.

Age
Research indicates that the most accurate predictors of Internet use include age, education level and income (See Part 1, Cost of Access, for information on income-related issues).[20] The wealthiest and most educated members of a population are much more likely to use the Internet; age, on the other hand, has a negative correlation with Internet use, meaning that the youngest are most likely to be users. These relationships hold true in the LAC region as well; nearly half the online population of LAC countries are under 25 years of age. [21]

In some respects the LAC region has great potential for growth in the knowledge economy: unlike many developed nations that are facing the demographic crunch of an aging baby boom generation, the LAC region as a whole has a very young population. In most LAC countries, 30% or more of the total population is made up of children under the age of fifteen. As this cohort matures, the region should benefit from a large, Net-savvy workforce. Contrast this to Canada's 19% for the same group, and one gets a sense of the enormous potential in the region.[22] Certainly, from the perspective of population age, an argument can be made that LAC countries have the human capacity readiness to interact in the networked world; the young population should be more "teachable" in terms of ICT use than older citizens.

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[18] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.

[19] Proenza, F., R. Bastidas-Buch and G. Montero, *Telecenters for Socioeconomic and Rural Development in Latin America and the Caribbean*. IDB, Washington 2001.

[20] Gardner, J. and A. Oswald. *Internet use: the digital divide*. Available at: http://www.warwick.ac.uk/fac/soc/Economics/oswald/BSAgo12.pdf

[21] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001. pg. 12.

[22] see http://www.cia.gov/cia/publications/factbook/index.html

<u>Education</u>
E-readiness and education are intricately connected partners. On the one hand, the Internet presents great opportunities for sharing knowledge and information, and, through e-learning, to change the nature of education. On the other hand, those who may benefit most from the knowledge and resources are often not online; a lack of basic education and/or low e-literacy are primary barriers to Internet use. Research further suggests that the correlation between income and Internet use is unrelated to the correlation between education and Internet use. That is, formal education is an independent predictor of Internet usage,[23] and at present, almost two-thirds of "surfers" have some type of higher education.[24] In Costa Rica, three-quarters of households with Internet access are headed by family members with a university education.[25]

This correlation is not surprising when one considers the underlying skills required to use the Internet. As the most common form of interaction on the Internet is written language (as opposed to video or audio interaction), more literate individuals are likely to gain more benefit from its use. E-literacy can also be a function of education, either through adult training or through the incorporation of technology into the curriculum for young students. Later examples will demonstrate the various education approaches taken by government to deliberately prepare citizens for the knowledge age.

Trust

While e-government presents enormous potential for improving the relationship between government and citizens, it also presents a relationship challenge. Some citizens already have low levels of trust in government, and thus may be apprehensive to engage it. For example, when surveyed, less than a third of Latin American young people indicated that they trust government institutions and their representatives.[26] Perceived high levels of corruption (at least in some countries) may also undermine levels of trust. For example, in Transparency International's Corruption Perceptions Index (2002) Ecuador and Bolivia rate 89th, and Guatemala, Nicaragua, and Venezuela rate 81st. Adding a further layer of complexity, interviews suggest that many Latin American citizens are uncomfortable with technology and do not trust security and privacy measures already in place on the Internet. Conversely, some countries have in place seemingly accepted cradle to grave common identifiers and

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[23] Gardner, J. and A. Oswald. *Internet use: the digital divide*. Available at: http://www.warwick.ac.uk/fac/soc/Economics/oswald/BSAgo12.pdf
[24] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001. pg. 12
[25] Monge, R. and F. Chacon. "Bridging the Digital Divide in Costa Rica." CAATEC 2002.
[26] UNICEF *Opinion Poll: What Young People Think*, 1999

in Costa Rica, attempts to privatize the government-run monopoly ICE (the Costa Rican Electrical Institute) were met with vigorous grass-roots opposition.   All told, governments must address two dimensions of trust: 1) do citizens trust government; and, 2) do citizens trust technology?

Whereas a high level of trust in government and technology can facilitate the use of e-government, a lack of trust can be a barrier to both:

- initial use of the Internet (with non-users citing concerns about fraud, unwanted exposure to offensive material, lack of personal privacy, etc.); and
- intensive use of the Internet (e.g. for transactional purposes).[27]

If government is to engage citizens online in a meaningful, mature fashion (i.e. beyond simply providing information), this issue of trust must be addressed.

Technological Accessibility

Accessibility involves more than just the supply of e-government; it is about skills, convenience, culturally and locally appropriate content, and cost. Simply having an ICT backbone to carry information does not mean that the "last mile" solutions will be available, affordable or valuable. E-literacy and skills were discussed earlier; in this section, we focus our attention on the provision of accessible Internet services and content.

Cost of Access
High access costs are widely recognized as a barrier to ICT use. In fact, a Costa Rican survey found that, by far, the greatest consumer-reported barrier to Internet use is high cost.[28] Considering that the majority of people access the Internet through dial-up, there are three relevant costs to monitor:

- Cost of computer ownership
- Cost of telephone use
- Internet Service Provider (ISP) fees.

As illustrated in Table 2, any discussion of Internet access involving the countries visited must consider comparative costs. When using GDP per capita as a benchmark for relative income, it becomes apparent that the cost of Internet access is astonishingly high. In fact, dial-up access in Ecuador is roughly 13 times more costly than in Canada. Likewise, compared to Canada, the cost of access in Costa Rica is approximately 3 times more expensive for dial-up access and almost 5 times more expensive for high-speed access *in relative GDP per capita terms.* Chile is over three

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[27] *UK online: Annual Report 2001*
[28] Monge, R. and F. Chacon. "Bridging the Digital Divide in Costa Rica." CAATEC 2002.

times more expensive for dial up access and (on average) almost four times as expensive for broadband access. Given the negative impact that cost can have on a population's ability to exploit the opportunity offered by technology, Internet access costs may have a decisive role to play in the outcome of a nation's e-government agenda.

Table 2: A Comparison of Access Costs

	$US GDP Per capita[29]	Dial-Up Cost $US (per year)	Dial-Up Cost as a % of per capita GDP	Broadband Cost $US (per year)	Broadband Cost as a % of per capita GDP
Chile[30]	9 187	192	2.09	420	4.57
Ecuador[31]	3 068	240	7.8	n/a	n/a
Costa Rica[32]	9 236	180	1.95	468	5.07
Canada[33]	27 783	168	0.60	336	1.21

Content

An often-overlooked factor is the provision of culturally and locally appropriate content. While addressed in this section of the toolkit, content is both an access issue and a supply issue. If governments want citizens and business to access their services and information, then government must make desirable content available. This is no easy task. For much of the world, the English-based and North American-driven culture of the Internet is a barrier to accessibility. In Costa Rica, for example, 90% of Internet traffic flows to sites based outside of Costa Rica.[34]

Fortunately, the provision of e-government services and information may in fact boost interest in the Internet, as long as services are provided in local languages and reflect local issues. From this perspective, the relationship between e-government and preparation for the networked world is reciprocal; the investment in technology and

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[29] *CIA World Fact Book* 2001

[30] Information provided by VTR GlobalCom. The average cost per month for broadband residential access is around Ch$26,000 (approximately USD$35.00) for a 250/300kbps connection. It is estimated that 80% of connections are at this rate. This price includes the rental of the cable modem or ADSL modem or WLL infrastructure, and normally includes 4 or 5 e-mail addresses, a 10MB web space plus some sort of initial promotion (normally no installation charge, one or two months free, a related free device (web cam, mouse, etc.). There are other access plans that run from $14,900 pesos per month (for a 64kbps connection) up to $60,000 pesos per month (for a 960kbps connection), with differences in the number of e-mail addresses and other added value services.

[31] Information provided by CONATEL. Ecuador dial-up costs $USD20 for unlimited access, but users are still required to pay $USD.60/hour + 27% tax; high speed as yet unavailable.

[32] Source: interviews with RACSA employees. The dial-up cost in Costa Rica is $15 per month unlimited, but this does not include of a local telephone connection, which is approximately $USD.60 per hour.

[33] Based on dial-up costs of approximately $CAD24/month for unlimited access and high-speed costs of $CAD44/month including taxes.

[34] Interview with Costa Rican officials.

skills necessary to make e-government relevant also builds the foundation for the Networked World, and e-government services themselves can be a draw to entice citizens to participate on the Internet.

Supply of e-Government

Technological Infrastructure

To be useful on any scale, e-government relies on a supply of technological infrastructure. In this section we outline the different elements of connectivity and readiness with respect to infrastructure.

From Dial-up to Broadband
A fast, reliable ICT backbone is a critical part of any e-strategy, and there are at least as many options in backbone technologies as consumers have for last-mile connections. The vast majority of Latin American Internet users currently access the Internet via traditional dial-up subscriptions; given the low penetration of fixed-line telephone service in rural areas, however, this reality is expected to shift over the next few years.[35] This section outlines broadband alternatives to dial-up access.

Broadband is a term meaning "always on" high-speed access to the Internet.[36] Because broadband connections transmit information more quickly than dial-up, and can therefore provide richer interaction, some have said that "broadband means content." Sophisticated e-commerce or e-government sites incorporate images, video, audio and transaction mechanisms. The ability to access such content is severely limited by traditional 56kbps dial-up access.

Both the UK and USA have recognized the importance of broadband technology in building capacity for the knowledge age. Still, Internet access in LAC countries is anticipated to be 80% dial-up in 2002.[37] In order to reach the critical mass needed to reduce broadband access costs, significant investment in the ICT backbone is necessary.[38]

Mobile
Mobile Internet is one potential method of providing broadband access. Though currently limited to slow connection speeds, new technologies are making next-generation broadband mobile connections a near-reality.

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[35] Pyramid Research. *E-Business in Latin America*. 2000

[36] *UK online: Annual Report 2001*

[37] Pyramid Research. *E-Business in Latin America*. 2000

[38] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.

This potential method of Internet access is one that could fare well in Latin America and the Caribbean. Mobile phone users outnumber those who depend on a fixed-line connection in Paraguay, Venezuela, Mexico and Chile, with the rest of the LAC region not far behind.[39] In contrast with computers, mobile telephones seem to hold an even larger edge in the region; by 2005, it is expected that just 13% of LAC households will own personal computers, compared to 39% of the population owning mobile phones.[40]

Though current hand-held devices are limited by somewhat awkward interfaces such as wireless application protocol (WAP) and limited content, so-called 3G (Third Generation) mobile technologies hold some promise for LAC. "3G is a generic name for a set of mobile technologies…which use a host of high-tech infrastructure networks, handsets, base stations, switches and other equipment to allow mobiles to offer high-speed Internet access, data, video and CD-quality music services."[41] 3G mobile telephony is now available in limited areas. Factors to consider for 3G mobile access include:[42]

- With increasing availability of mobile data applications, handheld devices should become a good substitute for traditional access to data, reducing the need for larger, more expensive personal computers.
- Improvements in human interface technology, including voice recognition, may also lead to simpler, easier-to-use devices that will be more accessible to a broader population.
- Innovative solutions for extending access become available with the declining cost and increasing power of handheld devices. These include the development of "disposable phones," or prepaid plans with extremely low-cost telephones.

For additional discussion on mobile telephony and 3G technology, see the International Telecommunications Union at: www.itu.int/imt.

<u>Wireless at Home</u>
Aside from mobile wireless, there are many other technologies available or in development. Satellite Internet access is one such example. Though still too expensive for widespread consumer use, Microsoft is planning to launch 28Mbps

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[39] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.
[40] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.
[41] Please see: http://www.cellular.co.za/technologies/3g/3g.htm
[42] Please see: www.readinessguide.org/access2.html

space satellites that would provide access through individual dishes.[43] There is also the possibility of a fixed data connection to a base site, and only using wireless access for the "last-mile" connectivity. Wireless Local Loop (WLL) is one such technology.

Benefits of wireless infrastructure include:[44]

- Lower cost and less time to deploy the infrastructure than traditional fixed lines.
- Faster activation of individual connections than in fixed-line systems. This cuts down on subscriber waiting lists for access to the network.
- Avoids potential problems and costs related to theft of copper wire and other equipment.
- Mobile wireless offers convenience and flexibility to the user.
- Global experience suggests that the rollout of wireless networks can accelerate competition in the telecommunications market, leading to faster rates of innovation, rapidly declining prices, faster network growth and better service quality.

Television
Cable television offers yet another connectivity alternative, and one that may take advantage of existing technological infrastructure. Especially in countries where cable television penetration is high, utilizing this method to connect citizens can be both economical and offer good connection speeds (cable modems generally provide 300-400kbps, or up to 40Mbps when coupled with glass fibre). For example, Argentina has a cable television consumer base of over 60% of households, extraordinarily high compared to other countries in the region (20% in Brazil, for example).[45] Pursuing a cable-modem/television strategy may be very appropriate in some areas; again, like mobile telephony, television penetration is very high compared to computers. The entire LAC region has a television penetration of approximately 80%[46] while PC penetration ranged from 3%-10% across the region in 2001.[47] This use of a cable modem coupled with a television set-top box should be distinguished from cable modem/PC Internet access. Both options offer benefits and drawbacks, as the immediate take-up of set-top boxes might hold more potential, but screen resolution and flexibility on PCs is far greater for any application.

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[43] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.
[44] Please see: www.readinessguide.org/access2.html
[45] Hilbert, M. *Latin America on its path to the digital age: where are we*? United Nations Publication. Santiago, Chile. June 2001.
[46] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.
[47] Please see: www.ecommercetimes.com

Powerline
Yet another infrastructure solution is the ability to provide Internet access through existing electrical outlets. Transmission speeds are expected to be 1Mbps, depending on the number of users online.[48] Powerline technology may be more suited to building networks between computers and peripherals within a building, but the ability to connect to the Internet is being explored. In the summer of 2001 a German utility, RWE Powerline, began offering 2mbps powerline Internet access for 35 euros per month.[49] This technology is yet in its infancy, but does provide some promise for developing regions like the LAC where electricity is reliably available. It is worth noting that power is in fact a precondition for all the forms of infrastructure outlined above. That is, none of them are possible until citizens and business first have access to reliable and affordable electrical power.

Public Service Capacity

While it is critical to assess the readiness of citizens and the availability of technology, e-government is also about government. Much of the change to come will be designed and implemented by the public service. With this in mind, it is important to consider the impact that new technology will have on the business of government.

Many signs indicate that technology does have the power to transform; beyond service to citizens, and a step towards entering the knowledge economy on a national scale, technology utilization will have a major impact on the nature of work in the public service. Study suggests that in order to facilitate this change, government employees themselves need both access to technology, and the skills and knowledge to use it.

In Canada, the experience has been that increased technology utilization has allowed many public servants to focus on more complex, high value-added activities. Available computing technology can promote this change by handling repetitive, low value-added tasks.

Enterprise: Legislation and Regulation

Appropriate enabling legislation and regulation are fundamental to the successful growth of a networked economy. The favourable climate that regulation can create for Internet use, e-commerce and e-government encourages communities, organizations and individuals to invest in, and use, information and communication

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[48] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.
[49] Wayt, G.W. "The network in every room." *Scientific American*. 2002:286:2.

technologies. Important aspects of e-readiness dealt with elsewhere in the toolkit (such as Internet availability and affordability, hardware and software availability and affordability, ICTs in schools and electronic commerce) are all influenced by legislation and regulation. When considering the legislation and regulation necessary for robust e-government, it is important to consider three key areas:

- Privacy: ensuring that personal information is used only by consent, and for the purpose originally intended (e.g. medical files).
- Security: ensuring that personal information and transactions are secure from theft/manipulation by a third party.
- Affordable accessibility: establishing legislation and regulations that boost competition and foster an affordable supply of technology (e.g. Internet providers).

Privacy

It is a well-known fact that personal information has become a commodity that can be bought, sold and traded. Personal information crosses all boundaries, and most industries are not subject to any rules concerning its collection, use and disclosure.[50]

The key step that must be taken to support individual privacy is to determine how government itself will gather, utilize and store information. Indeed Canada has gone a step further, introducing legislation that will regulate how private sector institutions manage personal information. For the purposes of e-government, maintaining privacy is crucial to building and maintaining trust; citizens may be loathe to divulge any personal information online if they feel it may be used inappropriately. Some important elements of privacy include:

- Accountability: responsible governments must accept accountability for information gathered from citizens.
- Consent: government should obtain consent for the gathering and storage of any and all information.
- Disclosure & Accessibility: personal information should not be shared or used for any other purpose without consent; individuals should be able to access their own personal information.
- Accuracy: citizen information should be kept up to date and accurate.

Security

Security is about ensuring that unauthorized parties cannot access information shared or transactions conducted over the Internet. The key objective is for electronic exchanges to be as secure as in-person exchanges. For e-commerce to flourish, citizens need to establish a level of confidence that they are conducting transactions

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[50] Please see: http://www.connect.gc.ca/en/ar/1001-e.htm

in a secure environment. One of the primary policy steps necessary to enable e-transactions is the recognition of digital signatures. Digital signature legislation recognizes that contracts or agreements made online are as valid and legally binding as paper contracts with traditional signatures. Computers and networks must be able to confirm that people are who they say they are; digital signatures can provide an acceptable level of verification to conduct online transactions.

For further information, please see the Superhighway Safety Pack at:
http://www.safety.ngfl.gov.uk

Affordable Accessibility

Ensuring affordable access means providing the legal framework to support investments and competition. An important aspect of this for the LAC region, therefore, is appropriate regulation of the telecom industry. Limiting regulations in an effort to promote competition and reduce barriers to infrastructure investment is generally seen as a necessary first step to participating in the networked world.[51] While the LAC region has been a leader in the privatization of incumbent telecom companies, with 70% privatized by 2000,[52] competition does not necessarily follow from privatization. In many cases, the public monopolies have become private monopolies.

Though many different regulatory bodies have attempted to control the LAC telecom market (eighteen different regulatory agencies created in the 1990s alone),[53] the net effect appears limited; penetration of fixed-line infrastructure is low, and has grown equally slowly under private and public scenarios.

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[51] *Building the Foundation of the Networked World.* Available at: www.cspp.org
[52] See: www.itu.int
[53] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.

From Context to Vision

This section has explored the core contextual elements that governments need to consider. The key is to use sufficient scans, assessments, surveys, statistics and consultations to build an accurate and complete picture of both the user and supply dimensions of the e-government context. Once this is done, governments, and government organizations, will have a strong foundation from which to build an e-government vision.

Key Questions to Consider

✓ How has your country assessed its context?

✓ Is the information valid, reliable and complete?
  ⇒ If not, how can that information best be generated… surveys, vital statistics, etc?

✓ Do decision makers have a clear understanding of both the user and supply dimensions of the context in your country?

PART 2: SETTING AN E-GOVERNMENT VISION

A vision is an image of a desired future that some collective of people, in this case government, wants to create. An e-government vision is also the image that government would like to portray to others. To this end, governments must consider what its vision will mean for citizens, public servants, industry, and stakeholders. Since few, if any, Latin American governments possess the resources to undertake all aspects of e-government at once, the need for focus, prioritization and sequencing is key.

It can be argued that a vision is not mandatory to move forward with e-government. However, for all the components of government to move forward collectively in a clear, consistent and purposeful fashion, a concise expression of overall purpose is helpful in developing common purpose and understanding. To maximize buy-in and support, the vision should not only indicate "what is being sought," but provide compelling reasons as to "why." As has been demonstrated during the country visits, it is not uncommon for government's purpose and priorities to be perceived differently by different stakeholders.

Part 2: Setting a Vision

Users of e-Government

• User demand and capacity
• Trust
• Access to technology

Gap

E-Gov Vision

Gap

Supply of e-Government

• Technological infrastructure
• Public service capacity
• Enterprise: regulations & legislation

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Local
Other Sectors

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Both dimensions of the e-government context—users of e-government and the supply of e-government—provide an important foundation and reality check for the e-vision. The context ensures that the vision established is not only relevant for the state and its stakeholders, but that it is in fact achievable. However the context should inform but
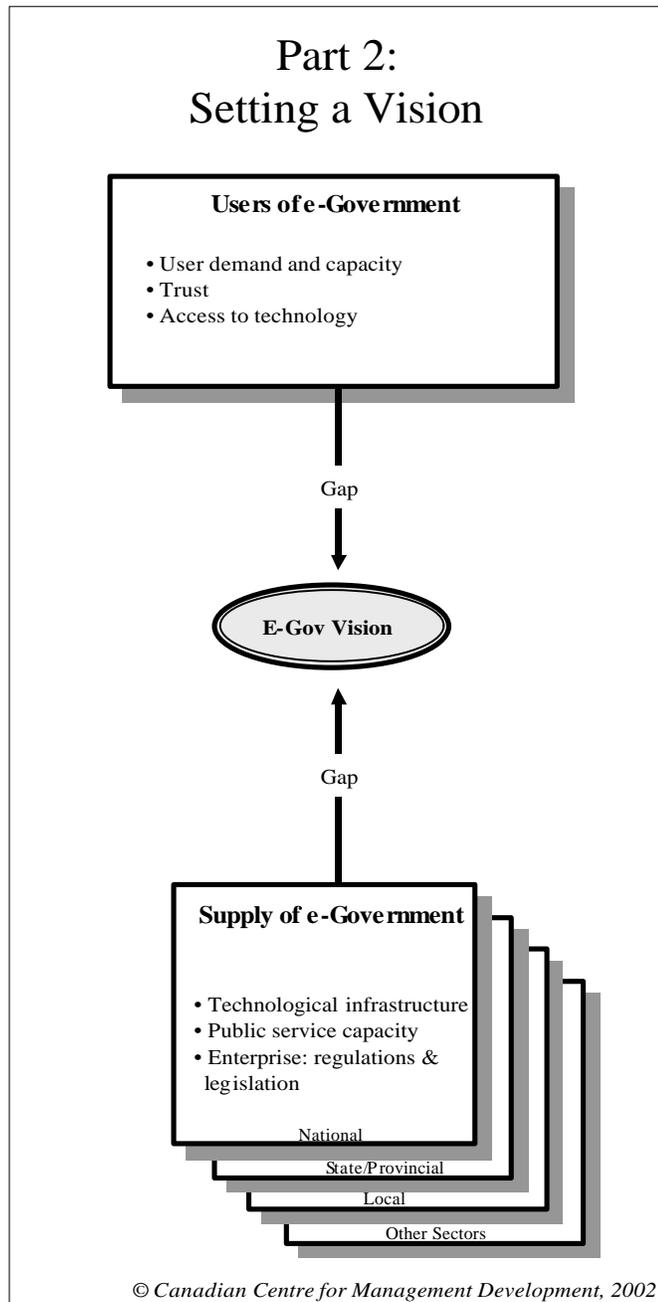
not dictate the vision. The vision should also reflect the priorities and values of the government of the day.

Done well, an e-government vision can help ensure that government is not swept along with technological changes, but that it purposefully and proactively charts its own course—a course that is rooted in its unique values and priorities. Both Ecuador and Chile have expressed some form of e-government vision. Ecuador's vision is broad and is tied to its connectivity agenda: to guarantee every person democratic access to the benefits and opportunities generated by the knowledge society, and to be a more integrated, efficient and competitive country at a regional and international level. Providing a more service-oriented focus, Canada's vision for its Government Online initiative is to use "…information and communication technology to enhance Canadians' access to improved citizen-centred, integrated services, anytime, anywhere and in the official language of their choice."[54]

While some governments have not articulated a single vision, many have outlined an e-government or connectivity agenda.   Such agendas will be addressed more fully in the "Objectives" section of the Toolkit.

Considering the Key Purposes of e-Government

Ultimately, the purposes of e-government will be—and should be—unique to each nation. For example, it can involve service improvement (UK, Canada), cost savings (USA), export market focus (Costa Rica, India), national capacity/domestic market focus (Brazil), global positioning focus (Malaysia), or development goals focus (South Africa and Estonia).[55]   What is important to note is that technology should be used as an enabler of the government's business directions and priorities—e-government is not an end in itself.

Research suggests that governments generally use ICTs and e-government to support one or more of three purposes:

1. to improve access to government services;
2. to accelerate transition to the knowledge age; and
3. to strengthen democracy.

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[54] This is drawn from Fine, E., *Managing Change: How Canada is Meeting the e-Government Challenge*, Treasury Board of Canada Secretariat, Presentation to the National Institute of Administration e-Government Conference, Estoril, Portugal, June 28, 2002.
[55] Turner, M and C. Desloges. *Strategies and Framework for Government On-Line: A Canadian Experience*. World Bank E-Government Learning Workshop, Washington D.C., June 18, 2002.

Improving Access to Government Services

Adding or moving entirely to an electronic channel can improve service to citizens by improving accessibility for citizens that have Internet access. Some countries are planning on forcing citizens to move to an electronic platform by removing in-person and telephone services (e.g. Ecuador for social security services), while others see the Internet as an additional channel from which to choose (e.g. Costa Rica). Either way, this work involves departments putting services on the web, organizations bringing related services together via single windows, or governments providing a single portal (entrance) for all services. Government to business service is also important. In fact, e-procurement is one initiative that has been pursued quite extensively in the LAC region, and it is addressed below in the section on "Strengthening Democracy."

While all the countries visited aspire to one day providing all services online, Chile is the only country that has made significant progress in this regard thus far. Of particular note is the electronic tax filing service provided through the Internal Revenue Service. This work was initiated in 1999 for personal income tax returns. In the first year the government could only receive taxes. By 2001, citizens received their personal tax information electronically to help them fill out their returns. Starting this year, the government actually prepares tax returns on behalf of citizens, who merely accept or submit changes to their prepared return. This has made it easier for citizens to file taxes. Whereas 450,000 returns were received electronically in 2000, 800,000 were received in 2001, and 1,138,000 in 2002. At present, 65% of all tax returns are received electronically.

Ecuador and Costa Rica are not yet in a position to offer transactions online. They are at the planning stages, but it is unclear whether the resources will become available for these plans to be realized. For example, the department of Foreign Affairs in Ecuador provides information online, and is interested in online service delivery, but does not yet have the necessary financial resources. Whereas the site used to host only 30 visitors per week, it now hosts a reported 1700. As mentioned, the government is also planning to put all social security services online. In Costa Rica the Ministry of the Economy is looking to simplify procedures by developing single windows for construction processes, registration for small business, exports, and local government.

Putting services online can also further development towards other goals. Online business services, for example, can pay dividends in time saved, reduced complexity, and improved access to information. Competitiveness studies indicate that Latin America in particular could benefit from such initiatives. As can be seen in Table 3, [56]

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[56] Adapted from Sachs, J. and J. Vial. "Can Latin America compete?" *Global Competitiveness Report 2001-2002.*

Latin American nations fare particularly poorly in the amount of time required to complete the necessary procedures to start a new business.

Table 3: Procedures to Start a New Business

	LAC countries	non-LAC countries
Average number of procedures required to start a new business	13.5	9.6
Average time to complete necessary procedures (days)	92.7	57.9
Proportion of private sector senior mgmt. time spent with government bureaucracy	26%	21.7%

An effort to automate (and of course, streamline) these procedures could reduce the amount of time invested by prospective businesses dealing with regulation. This in turn would help boost competitiveness.

Accelerating Transition to the Knowledge Age

As Alvin Toffler noted some time ago, the new economy is primarily about minds, not muscle or money.[57] To this end, technology can assist: 1) government; 2) business; and, 3) citizens. For *citizens*, government information made available online can contribute to a more educated, computer literate and healthy population. For *businesses*, government can provide important information and services regarding business registration and other business-related matters. Sercotec in Chile and Procommer in Costa Rica are providing such services, for example. Sercotec provides three channels of service: 1) support to managers; 2) publishing opportunities and making business information available; 3) supporting communities by providing information on events and promoting conversation. As part of this service, businesses can submit requests for advice, and will receive an answer within 48 hours of their query. In some countries (but none of the countries visited for this project), services include more sophisticated export and market analysis information. This is the case with Canada's major website for businesses, Strategies, which receives approximately 30,000 visits per day.

Whether serving business or citizens, government is the guarantor of valuable and accurate information. Indeed, if government information is a public resource, it should be liberated and—to the greatest extent possible—be made available to all.

E-government can also provide services to *government* itself. Traditionally

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[57] See Toffler, A, *Powershift: Knowledge, Wealth, and Violence at the Edge of the 21st Century*, Bantam Books, New York, 1990.

governments have based decisions on two forms of evidence: anecdotal and ideological. Both these forms of evidence make assumptions, draw inferences, and are limited in terms of validity and reliability. Information technology allows governments to better collect, create, analyze and share information. In short, it allows government to improve the completeness and accuracy of the information used to make decisions,[58] thus strengthening management practices and the government's capacity to introduce reforms. Also, as with citizens and business, technology can help governments to streamline and simplify their internal procedures.

In Ecuador, the President's office is leading work to connect the ministries with a fibre-optic ring to facilitate information management, document management, e-mail and address books.   Perhaps the best use of technology in Ecuador, according to one interviewee, would be a public service-wide financial system. This would be a relatively simple system (some see the World Bank-endorsed SIGEF system as fairly complex) that could provide the Central Bank and Ministry of Finance with key financial information regarding revenues, expenditures and debt(s) in a real time fashion. In Chile, a public service-wide personnel management system is being developed to provide a minimal standard of management and to support organizations that don't have their own personnel management system. On the financial side, Chile is developing a national automated invoicing system that will make it mandatory for businesses of a certain size to invoice all transactions online. Since all invoices are reported to the government for tax recovery purposes, this will automate a manual process while simultaneously supporting a constant revenue stream. Chile is also implementing a public service-wide financial management system to provide accurate, timely and transparent financial management information in a system of decentralized budgeting. It will link budgeting with results and provide more strategic information to decision makers.

Strengthening Democracy

E-government can also create more accessible, accountable, open and transparent government that reduces perceived and real corruption. For example, corruption can be reduced when services are automated, and the potential for bribery eliminated. This is equally true of tendering and contract awarding that can be viewed online by all citizens and businesses. E-government can also provide an avenue for citizens to contribute to the policy-creation process in meaningful ways, thus enhancing citizen consultation, engagement and debate prior to decisions being made. In this way, the public service is enhancing the input it brings to bear on its advice to government, but it is not altering the democratic decision-making process (as direct democracy could,

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[58] As noted in Lenihan, D. *Realigning Government: From E-Government to E-Democracy*, Centre for Collaborative Government, Volume 6, April 2002.

for example), which is the purview of elected officials. An example is Chile's Presidential directive "Instructions for the Development of E-Government," which includes an emphasis on the deeper participation of citizens in democracy.

E-procurement is being pursued by all three governments, with Chile being the most advanced in the area; Chile provides information online, but it not yet conducting transactions.[59] E-procurement is seen as important because it facilitates transparency and a more level playing field. Furthermore, government procurement accounts for 10% to 15% of a country's GDP, and e-procurement has been shown to generate a savings of up to 20%.[60] As a result, some governments are justifiably prioritizing e-procurement as a first step towards e-government as it can generate savings that can then be reinvested in other areas of the e-government agenda.

From Vision to Objectives

Once an e-government vision has been clearly articulated and communicated, the challenge then is to set objectives that will enable the government to move from its current state (i.e. its context) to the realization of its e-government vision. This is the focus of Part III.

Key Questions to Consider

✓ What is your government's vision?… What *exactly* does it want to achieve and by when?
  ⇒ Is the vision:
    ° to put services online?
    ° to strengthen democracy?
    ° to position the country for the knowledge age?
✓ If the government wants to do all of the above, does it possess the necessary resources?
✓ If it doesn't possess the necessary resources, is there a particular area of focus or priority?

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[59] For more on Chile's e-procurement system, see Orrego, C. *Chile's Government Procurement e-system*. The World Bank Group, December 2000.
[60] Interviews with IDB officials in Washington, July 25-26.

PART 3: SETTING OBJECTIVES

As the diagram for Part 3 illustrates, e-government objectives should be rooted in the findings of the assessment of both the users of e-government and the supply of e-government, as discussed in the context section of this toolkit. For example, if the context analysis shows that most citizens are not computer literate and thus cannot navigate the Internet even though they have access to the technology, then one objective could be to build citizen capacity to use ICTs. At the end of the day, the objectives set should be sufficient for the government to realize its vision.

Western developed countries tend to set very specific objectives; what some call SMART objectives—specific, measurable, achievable, relevant and timebound. The benefits of SMART objectives are many; most notably, they are measurable, their timelines provide a bias towards action, and they are specific enough to inform resource allocation decisions. The researchers for this paper were not exposed to SMART objectives in any of the three countries visited. Instead, the objectives set were more general and broad.[61] As demonstrated in Chile, however, this approach can be valid and effective.

Part 3:
Setting Objectives

Users of e-Government

• User demand and capacity
• Trust
• Access to technology

Set Objectives to Achieve Vision

E-Gov Vision

Set Objectives to Achieve Vision

Supply of e-Government

• Technological infrastructure
• Public service capacity
• Enterprise: regulations & legislation

National
State/Provincial
Local
Other Sectors

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[61] It is possible that more specific objectives have been set that the researchers were simply not exposed to.

Financial Resources

A prerequisite for the achievement of any e-government vision is financial resources. Business plans should be developed and assessments conducted to determine if there are the financial resources available to realize the vision. Financial resources proved to be a serious issue in at least two of the countries visited. When there are insufficient funds to realize the vision, governments should act diligently to ensure credibility is maintained with stakeholders.

Research suggests that a shortage of resources (financial or human) can significantly undermine e-government initiatives. As noted by the Commonwealth Secretariat:

> *Implementing e-government is an expensive, time-consuming, and highly professional undertaking. Governments can only hope to succeed if the money, staff, and expertise are actually invested. The principles, objectives, or goals in e-governance plans are not what will actually deliver electronic services to constituents. Only sufficient resources, intelligently employed can give results.[62]*

Acquiring the necessary resources can therefore become the first, and most critical, objective to realizing the e-government vision. Supporting this point, Canada's experience has shown that along with e-government objectives should be a plan for investing in technology in order to ensure adequate and ongoing funding.

Agendas

Latin American countries have tended to label their collection of key objectives as an "agenda for e-government" or an "agenda for connectivity" (see Table 4). In fact, connectivity is being considered in most Latin American countries as demonstrated by the Assembly of the Inter-American Telecommunication Commission's Agenda for Connectivity in the Americas.

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[62] Commonwealth Secretariat. *From Virtuality to Actuality: the prospects for e-governance*, May 2002.

Table 4: Agendas for e-Government

Ecuador[63]	Costa Rica[64]	Chile[65]
Infrastructure	Modernization of Telecommunications Infrastructure	Infrastructure
Distance Education	Universal Access	Universal Access
E-commerce	Promote the New Economy	Education
Online government	Encourage government's use of ICTs	Advance government's use of ICTs
Distance Medicine	Modify the Regulatory Framework	Modify the Legal Framework

While the three agendas outlined in the table above look fairly similar at first glance, in fact they are quite distinct. All three countries share just two elements: infrastructure and advancing government's use of ICTs. This is because—articulated or not—the vision of each government is different given its own unique context, priorities and values.

As noted, agendas ultimately breakout into objectives. In the case of Ecuador, its objectives are the following: [66]

Infrastructure for access
⇒ Objective: Develop the necessary infrastructure to ensure access to ICTs, by integrating citizens to the knowledge society throughout the national territory.

Online government
⇒ Objective: To offer public services in an efficient, simple, opportune, low-cost way, guaranteeing probity and transparency in every state action.

E-commerce
Objective: To develop new markets, new businesses and a new vision for services, increasing opportunities for the production sector.

Distance education
⇒ Objective: To improve the quality of education and national reach through the incorporation of ICTs in the learning process.

Distance medicine
⇒ Objective: To improve the quality of health services for Ecuadorians (medical diagnosis and attention to patients) through the efficient use of ICTs.

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[63] Presentation by Conatel, *Agenda Nacional de Conectividad*, Ecuador, September 11, 2002
[64] Costa Rica, *Agenda Digital*, Un impulso la sociedad del conocimiento (Date unknown)
[65] Interview with SERCOTEC Servicio de Cooperación Técnica, Chile, September 11, 2002
[66] Presentation by Conatel, *Agenda Nacional de Conectividad*, Ecuador, September 11, 2002

As was noted earlier, the e-government vision Ecuador is seeking to achieve with the above-listed agenda and objectives has two primary components: 1) guarantee every person access; and 2) be a more integrated, efficient and competitive country. The issue for Ecuador, and for every country, is to critically question whether its objectives are sufficient to move the country from its present state to the realization of its vision. Is anything unnecessary or absent? Are there sufficient resources? Are the objectives specific enough to guide action? Can all objectives be pursued at once or is there a value in prioritizing objectives for strategic sequencing purposes? In Ecuador the President's office has expressed its intent to focus its limited resources first on developing a network to link all ministries, and then on e-procurement. This is a strategic decision designed to help drive savings that can then be reinvested in other e-government areas.

Below is a discussion of the areas around which e-government objectives are most commonly set.

Users of e-Government

User Demand

Understanding user demand is important to ensure that users receive what they want as opposed to what government thinks they want… these are often not the same thing. This point was demonstrated by Sercotec in Chile, an organization that provides information and services to SMEs. The initial focus was top-down and services were not catered to users' needs. The resulting early failures led to a redesign of services based on pilot programming and focus groups with their clientele. The revised second phase has proven more successful, leading to increased client usage.

To understand user needs, surveys, focus groups and consultations have proven helpful. However, one of the challenges of e-government is that it can involve offering something that citizens have never had—and often have never considered before. Without knowledge and experience with e-government, it can be very difficult for potential users to provide complete information as to what they might want and how they would want it presented. But even in these cases, there are ways to work with citizens to help uncover what they would want from e-government if it could be provided. For example, see the Harvard Business School article regarding customer involvement in innovation, called "The Customer Knows Best? Better Think Again."[67]

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[67] "The Customer Knows Best? Better Think Again," *HBS Working Knowledge*, March 4, 2002.

User Capacity

<u>Education</u>
As part of a broad e-government or national online strategy, many nations have announced e-literacy strategies ranging from adult training to the incorporation of computers and Internet access in schools. Among other things, Canada has connected 100% of its schools and libraries to the Internet, and has a program to provide computers to schools (for more information see http://www.connect.gc.ca). Likewise, the United Kingdom has outlined a series of initiatives designed to promote e-skills:

- over 99% of secondary schools and 96% of primary schools are connected to the Internet;
- standards have been set for e-literacy in the educational system (the Department for Education and Skills [DfES] expects that by 2004, 75% of 14 yr-olds will achieve Level 5 in ICT);
- similarly, the DfES has created a "Computers for Teachers" program, wherein teachers may apply to be reimbursed for 50% of the purchase price of a personal computer;
- to reach adult users the "learndirect" program was launched in October 2000. This program offers 460 online courses and 1200 learndirect centres; and
- the "TeacherNet" portal provides a forum for teachers to share best practices.[68]

> Our focus on education and learning and closing the skills gap is not only a democratic issue of haves and have-nots, but primarily an economic issue of increasing productivity and competitiveness by investing in human capital and by helping new structures to develop.
>
> *Swedish Trade Minister Leif Pagrotsky, on the impact of a government program to boost PC ownership.*

Costa Rica has been similarly focused on providing ICT training through the formal education system. The national per capita investment in school computers and Internet access is outstanding even when compared to developed nations. This investment is also well leveraged; high school computer labs are kept open after school hours for the use of anyone in the community.[69] Recent research suggests that this focus on education has benefited Costa Rica by helping to attract foreign direct investment in the technology sector.[70]

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[68] *UK online: Annual Report 2001*

[69] Holmes, D. *E-gov: E-Business Strategies for Government*. Nicholas Brealey Publishing. London, UK. 2001.

[70] Sacks, J. and J. Vial. "Can Latin America compete?" *Global Competitiveness Report 2001-2002*.

One example of this investment is Edufuturo, a program run by the Costa Rican province of Pichincha. This program is linked to the province's goal of being the most competitive province in Ecuador. The program includes:

1. Making ICTs available in schools.
2. Building the capacity of educators through training.
3. Developing of a website that includes areas such as education, culture, library, information, news and contact information. The site is targeted to parents, teachers and students. For parents it provides information on psychology, relating with children and tips for stimulating children. For teachers it provides information on methodology, psychology, pedagogy, learning methods, etc. For students from grades 2-7, it provides information on language, social studies, math and science. Students are also tested on what they have learned, and the results are captured automatically in a database.
4. Making educational software available on CD-Rom—whereas the website is about information, the CD-Rom is about e-learning.
5. Connecting schools to the Internet.

Presently only five schools in the province have Internet access, but every school has at least one computer. The program is facing the challenge of doubling the number of available computers, from the current level of 4000 to the anticipated need of 8000 computers. The goal is to have the necessary technology in place by October 2003, the date by which the provincial government hopes to have connected all 1200 schools to the Internet.

Costa Rica is also working to improve IT education on a national level, through the programs of the Omar Dengo Foundation. Since 1988, the foundation has helped train over 1.2 million elementary school students through their Educational Computing Program. This project works in partnership with the Ministry of Education, and is aimed at socially vulnerable and rural zones specifically to combat the Digital Divide.

A project aimed at rural elementary students is also proving successful in the Santa Elena peninsula of Ecuador. CTI-ESPOL, a polytechnic institute, is providing multi-faceted support to twenty elementary schools to build IT capacity among young students. Over 8000 students from 6-12 years of age have now participated in the program, which aims to breed familiarity with technology through fun, intelligent applications, rather than skills training. Teachers from the participating schools are also trained to ensure maximum effectiveness. The program has proven successful enough to grow beyond its current reach to include a mobile computer lab unit and fixed, school-based labs in the eastern jungle area of Ecuador.

Trust

Building trust is important if citizens are to voluntarily engage government via the Internet. If citizens don't trust government or the technology, they simply won't engage electronically. So why should citizens trust government? Trust is a function of at least four factors: 1) legislation and policies that protect citizens' privacy and security (e.g. cyber crime legislation); 2) the employment of technologies to ensure personal security and privacy; 3) communications from government that reassure citizens that it is safe to use the Internet; and, 4) a track record that demonstrates government's integrity and competence.

The British government has undertaken a fairly comprehensive approach to building trust (See Appendix 3 for the full details of this approach) that includes:[71]

Improving access to, and awareness of, consumer rights and redress mechanisms on the Internet.

1. Improving access to, and awareness of, consumer rights and redress mechanisms on the Internet.
2. Facilitating development of a flourishing market in trust services (authentication).
3. Promoting best practice in protecting the security of online information assets.
4. Ensuring the prevention, detection, investigation and prosecution of crimes where new technologies, including the Internet, are being used or misused.

Technological Accessibility

Cost of Access
In attempting to reduce access costs, there are several common approaches. Access cost is usually based on three factors discussed earlier: cost of computer ownership, dial-up phone access, and ISP cost. As access cost related to the telecommunications sector as a whole is discussed under Enterprise: Legislation and Regulation, this section focuses on the cost of computer hardware and ISPs.

Efforts to temper the cost of personal computers to promote access to the networked world can be implemented in several ways. A comprehensive approach was taken by Singapore not only to provide access to computers, but to the Internet as well; the project equipped 30 000 low-income households with second-hand personal computers, Internet access and provided training to promote access for those facing

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[71] *UK online: Annual Report 2001.*

financial barriers.[72] A Canadian example of such an initiative is available in the province of New Brunswick, where the government offered a $500 rebate to anyone purchasing a new home computer. The local telephone company, NBTel, partnered in the initiative by offering three months free dial-up Internet access to anyone participating in the program. Such hardware-based approaches are also appearing in the LAC; the Costa Rican telco, ICE, is working with Intel to design and produce a low-cost, Internet-ready computer that could lower the access cost barrier for many citizens. The Costa Rican government has also attempted to reduce the ultimate consumer purchase price of computers by eliminating all import duties on computer hardware, though the extent of the savings passed on to the consumer is currently not clear. Still other jurisdictions are attempting to make computer ownership more affordable by reducing, or eliminating, consumer sales taxes on personal computers and hardware.

One specific market reality in North America can be seen as a decided advantage in the promotion of Internet use; flat-rate local telephone use. Unlike many parts of the world, including Europe and Latin America, North Americans pay for telephone line access, but not per-minute use fees. This may be one reason why demand for mobile telephone services have grown quickly in Latin America and Europe when compared to North American penetration.[73] Though dial-up access is the most popular choice today, the low penetration and high cost of fixed-line telephones, the quick uptake of mobile phones, and the advantages of broadband access suggest that this trend will change in the LAC.

With regard to Internet Service Provider charges, ISPs in LAC countries have generally followed the progression of the industry world-wide; indeed, some of the largest ISPs in the region are multinationals like Starmedia, Prodigy, and AOL Latin America.[74] The barrier of ISP charges has been tackled by the emergence of many "free" ISPs across Latin America. The popularity of free ISPs has been remarkable, especially since the free ISP users seem to be entirely new to the Internet, rather than clients drawn from existing fee-for-service ISPs.

Free ISPs tend to attract lower-income users who may not otherwise access the Internet, or who may do so sporadically through public access sites.[75] There are several business models for free ISPs, including call charge sharing, advertising, and cost reallocation. The latter is perhaps most interesting, and is at the root of a successful system in place in Brazil. In order to promote Internet banking, the

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[72] Holmes, D. *E-gov: E-Business Strategies for Government*. Nicholas Brealey Publishing. London, UK. 2001.

[73] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.

[74] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.

[75] "Building the Foundation of the Networked World." Available at: http://www.cspp.org/.

Bradesco Bank began offering free Internet access to existing clients; the cost of providing this service is offset by lower transaction costs for the bank. In Chile, the Bank of Santiago is also planning to offer ISP services to interested clients, though they do not presently foresee utilizing a free ISP model to drive their banking business.

Free ISPs that operate through call-charge sharing have also proliferated, though are limited in some LAC countries due to lack of enabling legislation. In order to enable this business model as a viable one for free ISPs, governments must ensure that local phone service providers split call-charge revenue with ISPs. Such legislation is in force in Chile, where the local telephone company can only charge a fraction of the normal telephone cost if the call is for Internet use. This policy has contributed to Chile having one of the lowest Internet access costs in the LAC region.[76]

Yet another common strategy used to combat the Digital Divide is the deployment of telecentres. Telecentres, or infocentres, can be defined as "shared site[s] that provide public access to information and communications technologies."[77] Common telecentres in the LAC region consist of several computer terminals connected to the Internet and basic furnishings for office use and classroom space. Telecentres can be targeted at citizens or SMEs (as is the case with Chile's SERCOTEC infocentres), and offer a range of services from simple Internet connectivity to "office" suite software and ICT skills training. Telecentres are an economical way of providing service to rural or underdeveloped urban areas; a telecentre with fourteen terminals may require an investment of $15 000 to $25 000 USD.[78] The sustainability of telecentres has, however, been called into question. Careful scrutiny of all associated costs, including repair and maintenance, hardware and software purchases to remain current, and administration, will assist in forming a realistic picture of long-term costs and reduce the threat of economic failure.

All three of the countries visited have made at least some investment in the development of telecentres. In Chile, the first infocentre was opened this year, and plans are in place to provide every county in Chile with at least one infocentre by spring of 2003. In total, the government plans to build 300 infocentres.

Ecuador has received funding from the World Bank to launch a major telecentre project that would equip each county with at least one telecentre, and a total of 150 centres nation-wide. FODETEL, the government fund for investment in ICTs, will contribute 40% of the investment cost for the telecentre program. Independently,

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[76] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Pulication. Santiago, Chile. June 2001.

[77] Proenza, F., R. Bastidas-Buch and G. Montero. *Telecentres for Socioeconomic and Rural Development in Latin America and the Caribbean*. IDB, Washington 2001.

[78] Proenza, F., R. Bastidas-Buch and G. Montero. *Telecentres for Socioeconomic and Rural Development in Latin America and the Caribbean*. IDB, Washington 2001.

FODETEL is also working with one of the telcos, PacificTel, to create three telecentres in the Galapagos Islands, and has plans to install four telecentres and 35 phone booths in the Santa Elena peninsula. CONATEL is also negotiating reduced fees at commercial Internet cafés for special groups such as students and the urban poor.

The "Communications without borders" program in Costa Rica is multi-faceted, including the promotion of free e-mail and Internet use, the creation of a technology-savvy culture, and the introduction of telecentres. Of the 187 planned telecentres, 52 are currently operational. Costa Rica also has an interesting program called "LINCOS," or "little intelligent communities." These mobile units travel to rural areas in a determined effort to integrate isolated communities into the national economy. The units include provisions for e-mail and Internet access, computer training, and lecture space.[79]

Content
Governments must take care to make e-government services accessible to all members of the population; countries like Suriname, for example, face a challenge due to their diverse population. While the official language is Dutch, English and Surinamese are widely spoken, and Hindustani and Javanese are also common. It is possible that providing e-government services in only the official language of a nation could alienate many citizens and serve to reinforce the Digital Divide.

Providing e-government services in several languages can be a difficult process. For the Canadian approach to bilingualism online, please see http://www.cio-dpi.gc.ca/clf-upe/7/7_e.asp.

Another facet of content is cultural accessibility. The promotion of unique culture and heritage in online content is sometimes undervalued: "Companies and countries that produce high-quality, compelling content today will generate large global audiences for themselves and become the Information Highway leaders of tomorrow."[80] The benefits of a cultural presence online include drawing national and international interest.

Without solid local content, the usability and appeal of the Internet will be limited. In this regard Chile seems to be performing quite well; the government has 213 websites currently in operation (representing 92% of national agencies), with plans to evaluate those sites based on navigation, accessibility and transactions. Of the three countries visited, Chile's local governments also seem most advanced in their use of the Internet; 43% of agencies in the region of Santiago have stage 1-2 websites. In

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[79] Holmes, D. *E-gov: E-Business Strategies for Government*. Nicholas Brealey Publishing. London, UK. 2001.
[80] Please see: http://www.connect.gc.ca/en/ar/1006-3.htm.

addition, the national government has grouped related services and made them accessible through a portal at: www.tramitefacil.gob.cl.

There are many ways to generate local content. For example, Canada's Digital Collections is a program that pays young people to create Websites featuring Canada's vast information resources. For more information about this program, see http://www.connect.gc.ca).

Supply of e-Government

Technological Infrastructure

Perhaps the greatest investment a government can make is to facilitate the creation of a technological backbone through which the Internet can be made available to citizens.   While many systems have been used in the region (e.g., satellite, microwave relay and coaxial), many countries are now moving to adopt fibre-optic technologies. Chile already has such a backbone. Costa Rica has completed its fibre-optic network and is now working to complete the "last mile" connections. Ecuador is presently in the process of building its fibre-optic network.

The Costa Rican network is being built by ICE and the Ministry of Science and Technology (MICIT). The network is called the Advanced Internet Project, and it is hoped that by the end of the year 100,000 people will be connected to this high-speed network via asymmetric digital subscriber line (ADSL) technology. However, it is uncertain whether this objective will be met, given that only 1000 lines had been completed, with only a few months left in the year. The timeline of the project is also at risk due to financial constraints. Nevertheless, this technology holds great promise for the country as it uses telephone lines for the last mile of the network, and 54.3% of homes in Costa Rica have at least one telephone line which means that a large percentage of the population can be reached. But it is important to note that when completed, connectivity will be much higher in urban areas (where two-thirds of homes have telephone access) compared to rural areas (where only one-third have access to service).

In Ecuador, AndinaTel and PacificTel plan to work together to provide a fibre-optic backbone for the country. Though requested by CONATEL four years ago, this work is yet in very preliminary stages. Plans call for a connection to Columbia's fibre-optic lines in the north, and Pan-America submerged lines in the southwest. With these contact points established, the two telcos would build fibre-optic lines in their own territories with the intention of connecting their systems to provide a backbone across the nation. The parties hope to complete this backbone in one year's time, but plans for related last-mile connectivity are not yet available.

As has been noted, providing a system between public sector organizations is also important. In Ecuador the President's office is leading work to connect the ministries with fibre-optic cables to facilitate communication and information management and sharing. Similarly, Chile is working to create a public service-wide personnel management and finance system. An interdepartmental network is necessary if governments want to optimize the quantity and quality of the information that feeds into decision-making processes.

Ultimately, there is no one "optimal" Internet access technology. The decision to pursue one infrastructure over another should be made in the context of social geography, existing technology, take-up amongst the population, and, of course, cost. Furthermore, a diversified strategy may be appropriate to connect different sectors; for example, television may well be appropriate for private home use, but business applications will likely require a different solution.

Public Service Capacity

Providing a sound infrastructure is a necessary, but not sufficient, condition for successful e-government. There must also be sufficient capacity within the public sector to both operate and use e-government. At the simplest level, sheer staff numbers are important. In Costa Rica, for example, the Ministry of Science and Technology, which is responsible for much of the implementation and enforcement of e-government, has a very limited staff dedicated to e-government. Ecuador is also experiencing a shortage of staff to drive its e-government agenda forward. This seems due not so much to a lack of skills as to the lack of financial resources necessary to maintain a larger payroll.

New technologies also mean a need for new staff skills, knowledge and attitudes. Research shows that too often "…too little attention is paid to training."[81] Often there are insufficient skill sets within the public service to implement e-government. This can hamper in-house implementation and quality control.[82]

The level of education and training among public servants in all three countries appeared lower than in countries with more developed e-government initiatives. In many cases the need for training was recognized, but given an environment of limited resources, was not viewed as a priority. Nevertheless, training is planned for pockets of the public service. For example, the Ministry of Foreign Affairs in Ecuador is

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[81] Star, S. L. and K. Rujleder. (1996). "Steps Towards an Ecology of Infrastructure: design and access for large information spaces." *Information Systems Research*, 7(1): 111-134.

[82] OECD, *The Hidden Threat to E-Government: Avoiding Large Government IT Failures*, Policy Brief No. 8, March 2001.

planning 1600 hours of training for its staff. In Costa Rica, ICE is planning to train 4000 to 5000 government employees to help accelerate the implementation of government online. And in Chile, the need for training is recognized for heads of organizations, IT specialists, and basic skills for all staff. In addition, for certain purposes Chile is making the use of ICTs mandatory for public servants. For example, requests for holiday time must be submitted electronically.

The UK government has created a paper called *Skills in Information Age Government* that expands on the issues of knowledge and skills (see http://www.e-envoy.gov.uk/oee/oee.nsf/sections/guidelines-skills/$file/skills4iag.htm).

The government of Canada also has available a number of skills-related resources, including a glossary, competency profile, competency rating, and IT Career Progression Profile Form. These tools are all provided on the website of the Chief Information Officers Branch at http://www.cio-dpi.gc.ca/oro-bgc/program/program_e.asp.

Enterprise: Legislation and Regulation

Privacy

If e-government is to be successful, citizens must feel the same degree of privacy protection as they have with paper-based transactions. Privacy is related to trust in government to use information only for the purpose for which it was originally collected. Canada has developed a Privacy Impact Assessment to identify relevant privacy issues during the design or redesign of electronic services. Using this tool, issues can be identified and addressed before services and programs are launched. Ultimately, the protection of privacy requires the creation and enforcement of appropriate policies.

The privacy component of the Canadian *Personal Information Protection and Electronic Documents Act* was designed to cover all types of personal information used in the private sector. As well, it provides a basic set of fair information practices to govern personal information, independent oversight by a data protection authority and redress through the courts. The Act is consumer-friendly while following a private sector standard that is not overly burdensome for industry, especially for small and medium-sized enterprises.

With this legislation, Canada has become the first country in the world to develop a standard for managing personal information. The Act incorporates and makes law the fair information principles established in CSA International's *Model Code for the*

Protection of Personal Information. The code's 10 principles address:

- accountability
- identifying purposes
- consent
- limiting collection
- limiting use, disclosure and retention
- accuracy
- safeguards
- openness
- individual access
- challenging compliance.

An interesting factor to consider is the relative importance of privacy in different cultures. While in Canada breach of privacy ranks as one of the primary deterrents to online transactions, the same may not necessarily be true in the LAC. For example, Chile has long used a single, unique identifying number for citizens. This number is used for social security, driver's licenses, and other national documents. In Canada the government maintains no such single identifying number, or its requisite information database. In Costa Rica, the online vehicle registration database currently allows any citizen to search the database by license plate number. With that simple piece of information, any person can find the home address of an automobile owner; again, access to this type of information may not be possible in North America, but seems accepted in the cultural context of Latin America.

Security
Security is generally thought to include three key aspects: authentication (the ability of a system to verify someone's identity online), encryption (security against theft or manipulation of data), and non-repudiation (legal and technological framework that eliminates the possibility of claiming one was impersonated online).

Many countries plan to advance their security agenda through the implementation of digital signatures. Digital signatures come in various forms; the e-Sign Act in the USA states that a signature is whatever two entities agree it to be; "an electronic sound, symbol, or process, attached to or logically associated with a contract or other record."[83] Passwords are the most commonly used digital signatures, required for everything from banking transactions to e-mail access.

Another key element to an appropriate policy framework is anti-cybercrime legislation. Many countries have enacted legislation that includes penalties for: falsification of information on-line; divulging secret information; modification or

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[83] Holmes, D. *E-gov: E-Business Strategies for Government.* Nicholas Brealey Publishing. London, UK. 2001, pg. 220.

alteration of an information system, etc. The UK set in law an act that enables the justice system to monitor and deal with crime on the Internet. The Regulation of Investigatory Powers Act 2000[84] provides for the lawful interception of communications, including the Internet, as well as a legal framework for the disclosure of communications data and other electronic data.[85]
For examples from the LAC region, please see:
http://www.mcconnellinternational.com/services/country/brazil.pdf
http://www.mcconnellinternational.com/services/country/chile.pdf.

Affordable Access

The legislative and regulatory frameworks for investment and competition can affect users' cost of access, and the LAC region employs several different models. Indeed, each of the three countries visited revealed a different example of telecommunications sector regulation.

Ecuador provides a ready example of a public monopoly system, with two major state-owned telecommunications companies with distinct territory. In total, there are three publicly owned telecommunications companies in Ecuador, yet fixed-line penetration hovers around 10 lines per 100 inhabitants.[86] AndinaTel and PacificTel are the two major providers, each with separate operating territory, administration and reporting. The third telecommunications provider operating in Ecuador is ETAPA, run solely by, and for, the municipality of Cuenca. This system of regional monopolies seems to provide few of the benefits of a complete monopoly (e.g. standardization of operations and services, financial leverage, and purchasing power), and yet does not promote competition in any area. The telecommunications sector has recently been opened to private sector companies who wish to establish telecommunications infrastructure and services in currently under- or un-served areas. To date, there have been no bids from private sector telecommunications companies.

In Costa Rica the experience with ICE, the state-owned monopoly, has been more positive. Unlike Ecuador, all of Costa Rica is served by the single telco. In terms of fixed-line penetration, the Costa Rican model seems to have achieved some success; there are nearly 25 fixed-lines per 100 inhabitants.[87] This relatively high penetration of fixed-line telephony is attributable in part to an investment in infrastructure and affordable services. ICE also provides ISP services through its wholly owned subsidiary, RACSA, and mobile telephone services. Currently, no part of the telecommunications sector is open to private interests or competition; government debate around the possible privatization of ICE two years ago resulted in great public

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[84] Please see: www.homeoffice.gov.uk/ripa/ripact.htm.
[85] *UKonline Annual Report 2001*.
[86] Ecuador country profile, from the *Global Information Technology Report*, Harvard University. Available at: http://www.cid.harvard.edu/cr/profiles.html.
[87] Costa Rica country profile, from the *Global Information Technology Report*, Harvard University. Available at: http://www.cid.harvard.edu/cr/profiles.html.

unrest, and neither the public ownership of ICE nor the opening of the sector to competition has since been revisited.

The Chilean telecommunications sector is different once again; whereas Ecuador and Costa Rica have elected for differing forms of publicly-owned monopolies, Chile has a privatized, competitive system. With more than 22 fixed-lines per 100 inhabitants,[88] the Chilean system is considered successful, especially given the low cost for consumers. One drawback of the current environment is the rampant competition for consumers in small areas: in single districts or neighbourhoods as many as six different telecommunications providers may exist. Yet, in outlying areas, competition and availability are severely limited compared to urban areas.

Overall, telecommunications industry reform should target increased availability and reduced cost to the end user. To this end, mobile wireless communication providers seem to have been more successful, and may provide a model for LAC fixed-line providers.[89]

Alignment with Other Government Priorities

E-government objectives should not be seen as separate from other initiatives to modernize the state. If linkages, conflicts and synergies are not identified, dislocation, redundancies, lost opportunities, and sub-optimal performance may result. The fact is that technology is part of a modern, high performing public service, and it is therefore inextricably linked with other elements. As a result, e-government should be considered within the context of other government priorities and other public service initiatives such as anti-corruption, workplace well-being, citizen engagement, service improvement, and performance measurement. In Chile, for example, their work on e-government is linked to the Ministro Secretario General De La Presidencia's plan for Reform and State Modernization Project: Plan of Acitivities for 2002, which includes a section on electronic government. Likewise, the President's Office in Costa Rica views technology as a critical tool for advancing the priorities of the state. So whereas some may see technology as distinct from priorities such as debt and poverty, the President's office sees it as a fundamental tool for addressing these priorities.

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[88] Chile country profile, from the *Global Information Technology Report*, Harvard University. Available at: http://www.cid.harvard.edu/cr/profiles.html.
[89] Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Publication. Santiago, Chile. June 2001.

From Objectives to Implementation

Once objectives have been set and prioritized, it is time for government to consider how to move from ideas to action. How will the objectives be realized? How will the process be organized, led, and overseen? In short, how will e-government be implemented?

Key Questions to Consider

✓ Has your government articulated specific e-government objectives?

✓ Are they rooted in the reality of the e-government context?

✓ Are they well-communicated and well-understood by all relevant stakeholders?

✓ Are the objectives sufficient to move the government from its present state (context) to the fulfillment of its vision?

✓ Are the objectives aligned with the government's overall values and priorities?

✓ Does the government have the necessary resources to implement all the objectives at once, or is a strategic prioritization needed?

PART 4: IMPLEMENTING THE OBJECTIVES

The number of tools and approaches available to help governments in the implementation of e-government is almost endless. As shown in Figure 4, this section explores six key implementation tools and approaches:

- Establishing guiding principles
- Leadership
- Governance
- Partnerships
- Risk management.

Establishing Guiding Principles

Automation of government will not necessarily mean

Part 4:
Implementing the Objectives

Users of e-Government

- User demand and capacity
- Trust
- Access to technology

Set Objectives to Achieve Vision

E-Gov Vision

Implementing the Objectives

- Establishing guiding principles
- Leadership
- Governance
- Partnerships
- Risk management

Set Objectives to Achieve Vision

Supply of e-Government

- Technological infrastructure
- Public service capacity
- Enterprise: regulations & legislation

National
State/Provincial
Local
Other Sectors

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more transparent and open government, unless that automation is based on principles of transparency and openness. It is the intent behind the technology that is important—the technology can be used to serve any end (e.g. to hoard or to liberate information). There can also be seductiveness to dazzling new technologies that can lead organizations to owning expensive technology they don't need. To help ensure that e-government projects stay aligned with the government's vision and values and are not, for example, driven by technology, some organizations and governments have developed guiding principles.
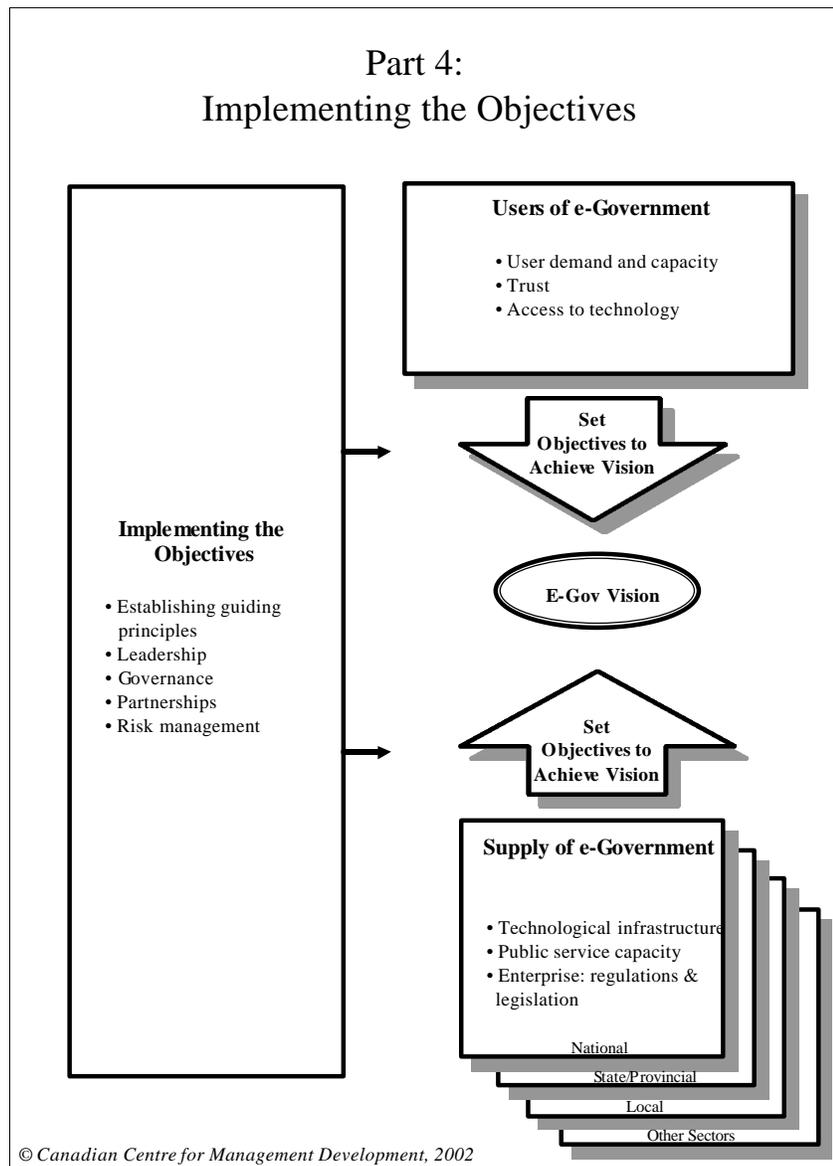
Principles are an important tool for helping to ensure the actions of disparate actors are aligned with the core purposes and values of the government. As an example, the Government of Canada's GOL website introduces e-government with a statement of the following principles:[90]

1. Accessible to all, easy to use and organized to meet Canadians' service priorities
2. Less time-consuming and costly to use
3. Higher quality and more comprehensive
4. Private and secure
5. Responsive to what Canadians' want.

Some Latin American countries have set such principles. For example, Chile's Presidential directive "Instructions for the Development of E-Government" indicates the need to advance a number of principles, such as:

- improving procedures and efficiency;
- availability to everyone;
- being user friendly;
- benefits for citizens;
- security and privacy; and
- decentralization.

Again, the point is not to let technology drive the project, but have the project principles drive the technology.[91]

Leadership

Leadership is perhaps most important for successful implementation. Depending on the project, leadership can be necessary at three levels: government, community and commercial levels. However, country visits suggest that most critical for success is leadership within government, which is the focus of this section.

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[90] Government of Canada, GOVERNMENT ON-LINE, http://www.gol-ged.gc.ca/pub/serv-can/serv-cantb_e.asp.

[91] Canadian Centre for Management Development and Treasury Board Secretariat of Canada, *Getting Wired: Case Studies from the E-Government Frontier (draft)*, March 31, 2002.

Government

Political Leadership

Political leadership is important because many of the decisions necessary to make e-government a reality go beyond the authority of public servants, and therefore require the involvement of elected officials. In fact, given the extensive degree of cross-departmental work and the need to generate sustained buy-in, "…sustained senior-level sponsorship is, perhaps, the most important determinant of success for e-government."[92] In all the Latin American countries visited, presidential leadership has proven critical for success. For example, in Costa Rica the President sets the direction, vision and strategy for e-government. To this end, the President released a directive which states that all ministries will have a website, and will inform the President's office of their e-government projects, and will submit a technology plan approved by the Minister of each department. The country visits demonstrate that without Presidential support, significant and collective progress on e-government would simply not be possible.

Research suggests that it is important to demonstrate the value of e-government to elected officials. As one Canadian politician has said, "When my constituents come to see me, it is not to ask about e-government."[93] If e-government is viewed simply as putting existing services online, then it will be difficult to achieve ministerial leadership. On the other hand, if e-government is viewed as fundamental to what governments do and how they do it, it may be easier to achieve ministerial involvement and commitment.

One challenge to the progressive implementation of e-government is the continuation of the e-government agenda when there is a change of government. While there has been continuance of the agenda in Costa Rica and Chile, the forthcoming change in government in Ecuador threatens to thwart continuance of the e-government agenda. This is driving many actors to focus their energies primarily on short-term planning and goals. The justification for this is to ensure projects are completed prior to the change of government under the assumption that the value of these completed projects cannot be ignored and thus will be supported by the next government. To help support the continual development of e-government, stakeholders (e.g., the private sector and communities) are being involved in order to promote buy-in, shared responsibility and continuity.

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[92] Culbertson, S. *E-Government and Organizational Change,* OECD Public Management Service-E-Government Project, August 2002.
[93] Lenihan, D. *Realigning Government: From E-Government to E-Democracy,* Centre for Collaborative Government, Volume 6, April 2002.

<u>Bureaucratic Leadership</u>
Senior bureaucratic leadership is critical to ensure championing within the public service, as well as operational planning, execution, coordination and day-to-day oversight of e-government initiatives. Bureaucratic leadership is also critical for the cultural shirt required for e-government; arguably leaders are the most important element in the change management equation.[94]

Because e-government is a tool to help governments achieve desired results, projects should not be led by IT experts but by senior decision makers. This leadership can also be transnational in scope, as evidenced by the work of the Assembly of the Inter-American Telecommunication Commission, currently being chaired by the head of Ecuador's Telecommunications Agency.

In all the countries visited, whether in regard to the construction of infrastructure, the establishment of internal systems, or putting services online, the commitment, leadership and expertise of senior officials was impressive, and undoubtedly fundamental to the progress being made in all aspects of e-government.[95]

Governance

Coordination and governance are both important and difficult. Unlike the limited and focused products and services of private sector companies, governments deal with a broad range of programs and services. Government offerings generally range from agriculture, parks, natural resources and the environment to health and safety, security and protection, education and training, and employment and labour; from the regulation of utilities, taxation, infrastructure and industrial development to immigration, international trade, foreign affairs, and national defence.[96] Coordinating across these diverse and distinct areas is clearly not an easy undertaking.

Establishing a Governance Structure

The optimal governance structure will depend on the objectives, lines of authority and accountability, and culture of a given government. The key is to ensure that governance structures are aligned with these factors. In the United Kingdom, for example, it is the responsibility of the e-Envoy and e-Minister to oversee the e-

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[94] Good change management is a necessary element behind any shift to e-government. Because many authoritative sources exist on change management, it is not addressed extensively within this Toolkit.
[95] The same is true of all meetings with elected officials, although there was a limited number of such meetings.
[96] This list is taken from Dinsdale, G. and B. Marson, *Citizen/Client Surveys: Dispelling Myths and Redrawing Maps*, Canadian Centre for Management Development, March 1999.

government strategy. They report directly to the Prime Minister and are supported by officials from each department called "e-Champions." The governance structure therefore is relatively centralized. Another model, which can provide a mild to extreme form of centralization, is the corporate Chief Information Officer. This position is invested with some degree of corporate authority and accountability,[97] and can help facilitate e-government strategies that cut across the traditional silo-based interests and authorities of organizations. This kind of approach has been used in countries such as the UK (i.e. the Office of the e-Envoy) and Canada.

In the Latin American countries visited, the political systems are similar to the American model of government. As a result, they require structures that respect distributed administrative authority yet sufficiently induce and coordinate collective efforts. In all the countries, coordination was based more on negotiation and persuasion than command and control. As a result, coordination was largely organic in nature. As one interviewee said, "You need to build a community of people that want to modernize and then give them the opportunity to lead."

Another factor to consider when developing a governance structure is the degree of change required. If a government seeks to integrate services across organizations, then it will require a greater degree of political leadership and coordination, as well as more sophisticated risk-management and partnership skills. How far along the government is in its e-government journey is also important. When at the idea and research stage, an informal structure (e.g. "skunk works") may be the best way to go. But once a decision has been made and implementation begins, a more formal structure is needed.

Centralized or Decentralized Governance

Should there be central controls over e-government objectives and how they are pursued, or should governments "let a thousand flowers bloom?" The challenge of coordination is to find the right balance between autonomy for persons responsible for organizational results on the one hand, and government-wide needs for interoperable systems and information-sharing on the other.

While letting a thousand flowers bloom might maximize creativity, it can also

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[97] A useful overview of the characteristics of the CIO role is provided in Culbertson, S. *E-Government and Organizational Change,* OECD Public Management Service-E-Government Project, August 2002. This article also makes reference to a study of 10 CIO-style organizations in the International Council for Information Technology in Government Administration (ICA) paper, entitled *ICTs and the Structures of ICA Member National Governments,* January 2001.

introduce many difficulties down the road, such as:[98]

- Interoperability problems: without data and technology standards, systems may be unable to work together.
- Interface problems: unless services are brought together in ways that make sense to citizens, the complexity of the bureaucracy will be reflected on the web and citizens will have to struggle to navigate sites successfully.
- Alignment problems: without alignment between the goals and approaches of the different departments and orders of government (e.g. state/provincial and national) citizens will have to deal with a patchwork of inconsistent services and usability when dealing with different governments.

To over-simplify, there are two approaches to coordination: centralized and decentralized. Centralized approaches often involve a single Chief Information Officer who oversees the development of e-government. For this role to be effective, there must be a culture and acceptance of centralized approaches, and the centre must be able to offer incentives and/or wield some degree of authority in order to induce action and enforce standards. Decentralized approaches depend much more on collegiality, shared interests, negotiation and persuasion. Relatively speaking, all three Latin American countries visited could be seen as decentralized in their approach. Having said that, the President in each of the countries visited clearly plays a central and strategic role with respect to e-government.

Again, the degree of coordination needed is also related to where the country is at in its e-government journey. If the government is committed to developing portals and service integration, a greater degree of coordination will be necessary to ensure interoperability, information management, a common look and feel, etc. Likewise, if departments are simply intending to put up stand-alone websites, then limited coordination is needed.

When considering levels of coordination, it is important to consider the forms of coordination necessary for the government to achieve its e-objectives. For example:

- *Coordination within the organization* (e.g. regional offices with headquarters). Is there a need to share client information or ensure similar service processes are used? How much autonomy is desirable?
- *Coordinating across organizations.* For example, sharing financial systems between departments and central agencies, or sharing searchable data with other organizations (such as data on criminals across security agencies).
- *Coordination across government*s. This is important in areas of intergovernmental responsibility, especially in the case of federations such as

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[98] These issues draw from Forrester, Canada's e-Government Blueprint, April 2001.

Brazil and Argentina.
- *Coordination across sectors.* This can be necessary when partnering with private and/or non-profit sectors.

While the degree of coordination needed will be different for each country, there are some characteristics common to all forms of good coordination. They tend to:[99]

- Provide sufficient flexibility and incentives for organizational innovation. Incentives are important for getting things done. For example, central funding can be a powerful mechanism for ensuring that corporate (i.e. cross-departmental) objectives are met.
- Avoid the creation or maintenance of duplicative systems.
- Provide forums for decision makers to come together to discuss, learn, make decisions, and build interpersonal trust.
- Create a culture that helps officials move beyond territory-related issues and focus on a common purpose. For example, in Canada the culture of the public service was shifted from an "inside-out" perspective—organizing programs and services from the perspective of the organization, to an "outside-in" perspective—organizing programs and services around the needs of citizens.

It is also important that operational and regional departments be involved in the setting of objectives. Both have unique perspectives and strengths to bring to the issue. Whereas central agencies may be most concerned with issues such as privacy, secrecy, sharing information, learning and structures, experience shows that in the regions, issues such as a culture of risk aversion, different concepts of client, and the need to have regional sensitivities reflected in national approaches may be of greater concern.[100] Both sets of issues are important, and both deserve attention when developing e-government objectives and strategies.

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[99] The first three bullets draw from and build upon an excellent discussion of coordination provided in Sorgaard, P. *Implementing e-Government Leadership and Coordination*, OECD, June 2002.
[100] This was noted for example, in the *Outcome Report of the E-Government Network Regional Workshop* (April 29-30), led by the Privy Council Office, Canada, in Regina, Saskatchewan.

Mandatory Coordination

Depending on the objectives sought, there are at least two areas where coordination and standards should be considered: sharing data (interoperability), and website appearance and navigation. Whether or not these standards should take the form of policies (must do), guidelines (should do) or good practices (a good idea to do) will depend on the purposes and culture of each government.

With respect to data, coordination is important once organizations begin to work together (e.g. in the case of single-window service) because information must be searchable and shared across organizations. One approach to

> **Canadian Standards**
>
> Canada has set standards in a number of areas, including:
> - Data interchange and Media
> - Databases and Documentation
> - Information Management
> - Operating Systems, Services and utilities
> - Programming languages and Software Engineering
> - Quality assurance
> - User Environment
> - Network Services, Application and Management
> - Common Look and Feel

accomplishing this has been to adopt XML (extensible markup language), a non-proprietary technology. This is a method of coding that allows information to be shared and searched over the Internet by different computers. Because information can be coded in different ways using XML, centrally managed standards for coding are required. If standard approaches and coordination are not enforced, significant work may be necessary later. For example, the "information officers at the [U.S.] Defense Departments…are now sorting out how to handle a single piece of information: the format for names. The [present] format is not consistent even within the department, and information officers are deliberating over whether to spell names out, use a middle initial or just list the first and last name. The process is tedious…."[101]

Common website appearance and navigation has also proven necessary for success, given that most governments deliver hundreds of programs, and thus have hundreds of websites. Chile, for example, has 213 websites. Standards which emphasize a common look and feel allow users to distinguish government programs and services from other websites, and help them to navigate successfully from one government site to another and find information relevant to their needs. In Chile, a Standards Committee is in place that will evaluate all government websites on accessibility, navigation and transactions. This is consistent with the President's direction for the government to promote a unified image on the Internet.

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[101] Fairly Raney, R. *The New York Times*, 8 July 2002, pg. 4, column 5.

Partnerships

When undertaking projects with external impacts, e-government requires governments, the private sector and communities to work together. Community involvement is especially important for advancing connectivity. All parties must be involved in order to comprehensively address both "supply-" and "user-" related issues. To this end, a shared forum can bring together all players to explore relevant issues, and determine the best way to move forward together.

In terms of the supply of e-government, research has shown that public-private partnership approaches can be more successful than attempts by governments to "go-it-alone." Not only does the private sector drive the economy, but it generally has the greatest capacity to construct the infrastructure and applications needed for connectivity.[102]

Governments can lack the necessary IT competence, have difficulty staying abreast of developments, and lack incentives to innovate.[103] Furthermore, a recent OECD study observed that "…in-house development is risk-prone and expensive."[104] According to the study, large IT systems are procured from the private sector for numerous reasons:[105]

- competition between providers brings down the price of building systems;
- private sector providers are more innovative and have more qualified staff;
- the public sector should not produce what can be purchased from the private sector; and
- the public sector should concentrate on its core business (which does not include building large IT systems).

This does not mean in-house expertise is not needed. Knowledge and skills are required to successfully procure an IT system, as well as to build, manage and sustain partnerships.[106]

Providing integrated and coordinated services to citizens requires all orders of government—municipal, provincial and federal—to work together. Thus far, evidence in the countries visited suggests that municipalities have not yet adopted, or

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[102] This point draws from CITEL/RES.33 (III-02), *Implementation of the Agenda for Connectivity in the Americas*.

[103] Stiglistz, J. Orszag P. and J. Orszag, "The Role of Government in the Digital Age," Computer and Communications Industry Association [website], p. 45, http://www.ccianet.org/digital_age/report.pdf

[104] Sorgaard, P. *Implementing e-Government: Leadership and Coordination*, OECD, June 2002.

[105] OECD, *The Hidden Threat to E-Government: Avoiding Large Government IT Failures*, Policy Brief No 8, March 2001.

[106] OECD, *The Hidden Threat to E-Government: Avoiding Large Government IT Failures*, Policy Brief No 8, March 2001.

are just starting to adopt, ICTs. In order to support this development, national governments must consider how best to work with other orders of government, as well as related organizations such as the Federación de Municipios del Istmo Centroamericano.

Managing Partnerships and Contracts

There are many unique characteristics of and challenges to public-private e-government projects, including:[107]

- Interdependence: if governments go beyond asking partners to create and run systems, i.e., to manage and deliver functions, sophisticated skills are needed to manage such a relationship successfully.
- Alliances: beyond bilateral partnerships, making e-government a reality requires what J. Segil calls a "spider network." This is a complex and cross-functional network of relationships.[108]
- Instability: over time alliances can become unstable as a result of changes such as mergers and corporate reorganization.
- Flexibility of terms: more so than traditional contracts, the terms and goals of agreements may need to be somewhat flexible. "Since information technology is constantly evolving, the solution envisioned at the beginning of a project may no longer apply by the time the system is procured."[109] As a result, there needs to be room for goals to change with the partnership, environment and priorities.

Evidence suggests that when working with partners, government should focus more on process than product. One way to address this issue is to follow a phased approach that incorporates smaller contracts, allowing for dissolution of individual contracts and the avoidance of being tied into an all-or-nothing approach.

So as not to be constrained by rigid requirements and lowest-cost imperatives, the federal government of Canada has adopted the benefits-driven procurement model which seeks to foster vendor-client cooperation and alignment. In this model, vendors share the risks and rewards.[110] Likewise, Nova Scotia's cooperative business solutions procurement methods, among other things, have the client and vendor solve problems collectively as opposed to providing predetermined solutions.

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[107] Drawn from Langford, J. and Y. Harrison. "Partnering for e-Government: Challenges for Public Administrators" *Canadian Journal of Public Administration*, Vol 44, Nov. 4 (Winter), p. 399-400.
[108] As noted in Langford, J. and Y. Harrison, "Partnering for e-Government: Challenges for Public Admnistrators." *Canadian Journal of Public Administration*, Vol 44, Nov. 4 (Winter), p. 399.
[109] Mornan, R. "Benefits-driven procurement: a model for public and private sector collaboration," *Optimum: The Journal of Public Sector Management* 28, no. 1 (Summer 1998), p38.
[110] Mornan, R. "Benefits-Drive Procurement ," *Optimum*, p. 38

In general, governments often use consultants to initiate and oversee e-government projects, especially when they lack in-house expertise. But research shows that while consultants can be helpful, depending on them completely is not wise:[111] because e-government initiatives can drive the need to reengineer processes and services, internal expertise is critical in order to guide and advise on such courses of action. As one Canadian official stated, "You want people that will not only give you the best technology advice, but that will give you the best organizational advice."

Risk Management

Risks are the expression of the likelihood and impact of an event with the potential to influence an organization's achievement of objectives. The negative aspects of risk include things such as loss of money or damage to reputation. Managing risks requires one to be deliberate and systematic about managing the likelihood or severity of unwanted consequences.[112]

Risk management is an important aspect of the management of IT projects, and "…the risk of failure is proportional to the size of the project."[113] Collaborative work can increase risk, as the involvement of numerous players can complicate matters and reduce control over certain variables, but it can also provide opportunities. "The challenge of managing risks within a partnership arrangement is optimization: understanding and managing risk in the context of prudence and innovation." [114]

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[111] "Management of Large IT Projects." Canada, Treasury Board Secretariat, Chief Information Officer Branch, *Organization for Economic Co-operation and Development* [website], p. 26.

[112] This draws from Hills S., and G. Dinsdale, *A Foundation for Developing Risk Management Learning Strategies in the Public Service*, Canadian Centre for Management Development, 2001

[113] OECD, *The Hidden Threat to E-Government: Avoiding Large Government IT Failures*, Policy Brief No 8, March 2001.

[114] Rounce, A. and Beaudry, N. *Using Horizontal Tools to Work Across Boundaries: Lessons Learned and Signposts for Success*, Canadian Centre for Management Development, 2002

The basic steps in a risk management decision-making process:[115]

Figure 3. The Basic Risk Management Cycle
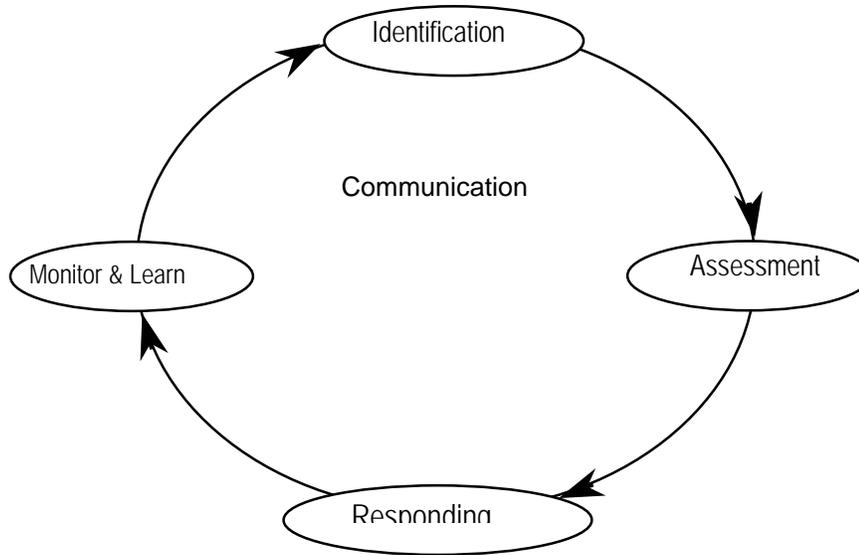
When considering e-government, a formal and rigorous risk assessment of the approach and the projects is warranted. Resources such as the approach to risk management promoted by the Software Engineering Institute, or the Continuous Risk Management Guidebook can be very helpful, and can be linked to from the Treasury Board Secretariat of Canada website at http://www.cio-dpi.gc.ca/emf-cag/risk-risques/risk-risques_e.asp.

Overcoming Challenges and Barriers

As with any innovation, implementing e-government can give rise to a number of challenges and barriers. Recent research into implementing innovations in the US and Commonwealth countries has generated information of relevance for those undertaking e-government. The obstacles to innovation most commonly faced can be divided into three groups.[116] The first group of barriers arises primarily within the bureaucracy. This includes such things as skeptical attitudes, turf wars, the difficulty of coordinating organizations, maintaining the enthusiasm of program staff, implementing new technology, and the issue of union or middle management opposition. The second group of obstacles arises from the political environment and

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[115] This draws from Hills S., and G. Dinsdale, *A Foundation for Developing Risk Management Learning Strategies in the Public Service,* Canadian Centre for Management Development, 2001
[116] Drawn from Borins, S. p. 18., as presented in Dinsdale, G. et al, *Organizing for Deliberate Innovation: A Toolkit for Teams*. Canadian Centre for Management Development, 2002.

includes issues of financial and other resources, as well as regulatory constraints. The third group stems from the environment outside the public sector. This includes public doubts, difficulty reaching the program's target group, opposition by affected private sector interests, public opposition, and opposition from private sector entities that, as a result of the innovation, would be forced to compete with the public sector.

In the three countries visited, the most common challenges include:

⇒ getting elected officials to see the benefits of e-government;
⇒ the natural reaction of ministries to not share their information, and to hold back financing for shared projects;
⇒ the simple fact that people love paper; "it is how we have always done things";
⇒ changing governments which threatens progress and continuity to date (Ecuador);
⇒ lack of staff training;
⇒ staff fears over the possibility of being replaced by technology; and,
⇒ lack of resources to implement stated plans.

Real or perceived, these are concerns that important stakeholders have, and they will need to be addressed if governments are to move forward successfully. There are many tactics that can be used to address such obstacles; these require greater consideration as organizations move into the implementation stage of e-government. Among the most common are "persuasion – showing the benefits of an innovation, establishing demonstration projects, and social marketing – and accommodation – consulting with affected parties, co-opting affected parties by involving them in the governance of the innovation, and providing training for those whose work would be affected by the innovation."[117]

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[117] Drawn from Borins, S. *The Challenge of Innovating in Government*, PricewaterhouseCoopers, February 2001, p. 21.

From Implementation to Measurement

Once e-government has moved from planning to action, it is time to start measuring progress. The next section draws good practices in measurement from the Canadian experience, and demonstrates how e-government is not an end, but a continuous journey of learning and improvement.

Key Questions to Consider

- ✓ Does your government have effective political and bureaucratic leadership?
- ✓ Is your governance structure and degree of centralization optimal? If not, what would work better?
- ✓ Have a minimum set of mandatory standards for coordination been established? Are such standards necessary?
- ✓ Are risks being managed systematically? Have the severity and likelihood of risks been identified, and contingency plans formed?
- ✓ Are partnership and contracting arrangements optimal?
- ✓ Does the public service have the capacity to successfully implement e-government? If not, what can be done?

PART 5: MEASURING PERFORMANCE

Governments need to measure and track their progress to ensure that monies are being spent appropriately and optimally, and that commitments are being met. There is truth to the old adage: what gets measured gets done.

As the diagram for this section of the toolkit indicates, performance measurement information should also be used to assess progress and make adjustments to objectives and implementation approaches. Used this way, performance measurement will drive continuous improvements in efficiency and effectiveness.

Part 5: Measuring Performance

Users of e-Government

- User demand and capacity
- Trust
- Access to technology

Set Objectives to Achieve Vision

Implementing the Objectives

- Establishing guiding principles
- Leadership
- Governance
- Partnerships
- Risk management

E-Gov Vision

Measuring Performance

- use findings to strategically adjust objectives and implementation

Set Objectives to Achieve Vision

Supply of e-Government

- Technological infrastructure
- Public service capacity
- Enterprise: regulations & legislation

National
State/Provincial
Local
Other Sectors

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Measurement Considerations[118]

Measurement generally speaks to two areas: 1) progress towards e-government objectives (objectives are discussed in Part 2 of this toolkit); and, 2) client ratings (e.g. user satisfaction). The first involves objective measures of progress towards targets. The second is more subjective as it is based on the perceptions of individuals. Measures taken from both areas can provide a fairly complete picture of progress to date. The unit of analysis is also important. Should measures focus on the performance of services/programs, departments, or the whole of government? A mixture of all three may well be appropriate. This decision will require consideration of the scope of the e-government initiative and who is accountable for what.

Once the areas and level of measurement is determined, it is necessary to specify what areas will be measured and to identify appropriate indicators for those areas. For example, in support of Canada's service-oriented Government Online Initiative, three areas are measured:

⇒ citizen/client-centred government—convenience, accessibility and credibility;
⇒ better, more responsive service—critical mass of services, take-up, service transformation, and citizen/client satisfaction; and
⇒ capacity for on-line delivery—security, privacy, efficiency (ROI) innovation.

For each of the sub areas listed above, a set of indicators exists. For example, for the sub area of accessibility, the indicators are: 1) information and services are accessible to persons with disabilities; 2) government websites are easily identifiable and easy to navigate; and, 3) information and services available in both official languages. These indicators can be considered equally, or can be weighted to reflect priorities and relative importance.

In terms of administration, it is necessary to determine if the process should be conducted via self-assessment, or be done centrally by a government agency or private firm. On the one hand, self-assessment approaches can help remove the ominous idea of winners and losers. On the other hand, centralized approaches help provide consistency and comparability.

As a guiding principle, measurement approaches should be simple to understand and administer, and should (at least at the beginning) focus on a select group of indicators. The key is to focus specifically on the information desired, and to prioritize efforts. In terms of reporting, results should be summarized in a manner that is easy

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[118] Much of this section draws from Accenture: *Performance Measurement for Canada's Government On-Line Initiative*, Chief Information Officer Branch, Treasury Board of Canada Secretariat; and, Government of Canada, *Measuring e-Government Success: Canada's Experience*, October 8, 2002

to understand. In addition, to help ensure that e-government is not seen as separate from regular business, it is also useful to use existing reporting mechanisms such departmental performance reports.

The countries visited are only starting to consider performance measurement. This is not surprising or uncommon. Experience with measurement is limited in all countries (developed and developing) and reliable knowledge and practices are only emerging. Having said that, plans are being developed and measurement is beginning. Costa Rica, for example, has followed up on the elements of its original Digital Agenda, and made this information available in a report. Likewise, Chile's Presidential directive, "Instructions for the Development of E-Government" includes a provision that indicators be created in order to check progress every three months with respect to procedures and services, both traditional and electronic. Furthermore, as noted earlier, a Standards Committee will be evaluating all websites for accessibility, navigation and transactions. Ecuador is still focusing on the planning and implementation of its e-government initiative, and is therefore not yet at the stage of measuring its progress.

Canada's Treasury Board Secretariat has brought together a number of resources for measuring the performance of information management and information technology projects. Among many other things, these resources include a measurement framework, an executive "dashboard," and an Executive Guide. For more information, see:
http://www.cio-dpi.gc.ca/emf-cag/measure-mesure/measure-mesure_e.asp.

Key Questions to Consider

✓ Does your country have a plan to measure progress with e-government?
✓ If so:
   ⇒ have targets been set and indicators identified?
   ⇒ is the measurement approach linked to the government's agenda and objectives for e-government?
   ⇒ is performance information used to identify and implement improvements?

TOOLKIT SUMMARY: AN ALTERNATE PERSPECTIVE

Context

Users

- User Demand
- User Capacity
- Trust
- Access to Technology

Supply

- Technological Infrastructure
- Public Service Capacity
- Legislation and Regulation

Vision

Improve Access to Services

Transit to Knowledge Age

Strengthen Democracy

Objectives

Financial Resources

- Communicate Results
- Adjust Objectives
- Adjust Implementation

Users of e-Government

User Demand

Identify Needs
- Surveys, Consultations, Focus Groups, etc.

User Capacity

Education

Trust

Legislation and Policies
- Privacy and Security

Technologies
- Security

Communications

Track Record of Integrity

Technological Accessibility

Cost of Access

Cultural Accessibility
- Local Content
- Language of User

Supply of e-Government

Technological Infrastructure

- Broadband
- Mobile
- Wireless at Home
- Television
- Power line

Public Service Capacity

Number of Staff

Training
- Knowledge, Skills, Attitudes

Legislation and Regulations

Privacy

Security

Affordable Accessibility

Measurement
- Accountability
- Measuring Results

Implementation

Leadership
- Political
- Bureaucratic

Governance
- Structure
- Centralized/Decentralized
- Mandatory Coordination

Guiding Principles

Partnerships
- Managing Partnerships
- Managing Contracts

Risk Management
- Identifying and Overcoming Barriers and Challenges

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APPENDIX 1: COUNTRY OVERVIEWS

Chile

General Overview

Chile is the most advanced of the three countries visited in terms of its e-government readiness. Beginning in 1998, the Reform and State Modernization Initiative began to focus on e-government as a tool to advance government priorities. This initiative was strongly supported by the President. There are five underlying strategies that have propelled Chile towards its current success: a focus on providing infrastructure; universal access; a legal framework; education; and the provision of government services online. Online government service delivery in Chile has been successfully advanced by the development of incentives to encourage business and citizen use. The emphasis for 2002-2005 is in three main areas: improve service offerings through business process re-engineering, improve efficiencies within government and improve the transparency of government. There is evidence to suggest the central executive support has waned over the last year, and that the momentum established by the success of the Internet income tax application, the business data reporting system, and digital signature legislation and regulations may be lost.

Many user capacity issues are understood, though little demand analysis has been conducted. Citizens appear to trust government as evidenced by acceptance of cradle-to-grave identification numbers and widespread use of the online tax system. Through an increasing number of infocentres and other relatively low-cost means, citizens appear to have reasonable access to technology.

On the supply side, good technology infrastructure exists, due at least in part to a competitive telecommunications industry. Public service capacity is developing, and the enterprise issues of legislation and regulation seem to have been addressed with the recent introduction of digital signature legislation and regulations.

Plans are in place to link 80 out of 1400 government services through a single government portal. The Ministry of the Economy plans to enhance the tax collecting capabilities of government by introducing an on-line invoicing system. Internally, government is developing a public-service wide financial and staffing system. The national government e-government presence is currently well advanced compared to local government.

Little work to date has been done to measure e-government progress from the perspective of government or users.

Good Practices
- Internal revenue services
- Deregulated telecom industry
- Government to business applications
- SERCOTEC (assessing user needs)
- Infocentres (presently being implemented)

Challenges
- Broadband access
- Public service culture change
- Application content
- Relative cost of internet access

Ecuador

General Overview

Ecuador's e-government initiative is a shared effort primarily involving the President's office, the Ministry of the Economy and CONATEL – the public sector regulator of the telecommunications industry. An information transparency directive issued by the President has mandated ministries to put information online. Projects are underway to develop a secure infrastructure to connect the President's office with ministers' offices and departments. Major infrastructure initiatives are planned by the country's two major public sector telecom providers (AdninaTel and PacificTel) to develop a fibre-optic ring joining Quito, Guayaquil and Cuenca. Another link is planned to connect the northern provinces and Columbia in order to provide connectivity redundancy.

With current public access to the Internet between 1.6% and 2.4% (LAC average is 4%), Ecuador faces many challenges in moving ahead with government and commercial use of the Internet. Client demand for electronic banking for example is perceived to be high, though the banking industry is hampered by a legal environment that lacks the necessary regulations to optimize e-commerce.

Since Ecuador is dealing with a recent fiscal crisis and one of the region's highest corruption levels, among other challenges, it is having difficulty moving its e-government agenda forward. In addition, elections presently underway will no doubt have an impact on existing government initiatives. However, an attempt has been made to ensure that various stakeholders hold ownership of the connectivity agenda (e.g., civil society, NGOs, etc.). There is hope that despite political change, the

recommendations of various stakeholder groups will be accepted and implemented.

Good Practices

- CyberEspe – R&D of low-cost non-conventional technologies through public/private partnerships.
- Education initiatives targeted at elementary schools through the Escuela Superior Politecnica del Litoral and Edufuturo (province of Pichincha)

Challenges

- Legal framework – e.g., e-signature
- Infrastructure – affected by limited competition in telecom industry
- Low access to Internet by public
- Relevant content in short supply
- Changing government
- Relative cost of Internet access
- Limited financial and staff resources

Costa Rica

General Overview

Costa Rica's potential for technology development in both the private and public sectors is high. A commitment to education has driven an agenda to attract foreign investment, which has in turn generated a need for improved connectivity and Internet accessibility. The appetite for Internet use domestically in Costa Rica is also high, however lack of relevant local content results in less than 10% of Internet traffic staying in Costa Rica.

The President's Office and Ministry of Science and Technology lead the e-government agenda in Costa Rica. The government refers to a technology advisory committee with representatives from private sector Costa Rican and multinational companies to help assess the e-government context and to recommend strategic directions.   The government agenda includes developing government portals and applications (tax filing, e-procurement); working with the banking industry to create a legal framework to promote e-commerce (digital signature legislation is currently before Congress); aggressively promoting an education program delivered to children; promoting a culture of innovation; and actively developing a national policy on science and technology to address diminishing levels of graduates in university technical programs.

Costa Rica is a study in contrasts in terms of the technical resources necessary to develop and implement an e-government agenda. With an established broadband backbone, Costa Rica ironically lacks the last mile infrastructure needed to exploit its technical potential. The state-owned telecommunications regulator and service

provider (ICE-RACSA) may see its plans to aggressively implement last mile connectivity affected by the country's debt re-payment schedule.

Good Practices	*Challenges*

Good Practices

- Use of public/private partnership to help assess the e-government context and provide policy advice (CAATEC)
- Development of foreign direct investment from high-tech sector
- Investments in computers for schools and internet access
- ICT education (e.g. Omar Dengo Foundation)
- Citizen access to free email (component of Communications without Borders)

Challenges

- Lack of deregulated telecom industry
- Broadband access
- Relative cost of internet access
- Limited financial resources

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APPENDIX 2: TOOLS FOR ASSESSING E-READINESS

Though this toolkit does not provide an assessment of e-readiness, there are several resources for checklists or "scoring" a region's progress towards the networked economy in general, or e-government in particular. Two assessment models are described here; each is free, and available online.

Readiness for the Networked World: A guide for developing countries
This assessment was designed by the Information Technology Group at the Centre for International Development, Harvard University. The online assessment includes a narrative guide and simple diagnostic questionnaires, covering areas such as access, learning, policy, and economy. This assessment is available in several languages, including Spanish. See:
http://www.readinessguide.org/index.html

Computer Systems Policy Project: e-readiness guide
The CSPP is a policy advocacy group comprised of a group of IT sector executives. The readiness guide is based around the areas of economy, access, infrastructure, applications and services, and enablers. Scoring is similar to the four-stage model found in the model developed by Harvard, noted above.
http://www.cspp.org/projects/readiness/

APPENDIX 3: THE UK APPROACH TO BUILDING TRUST

The British government has undertaken a fairly comprehensive approach to building trust.[119]

Improving access to, and awareness of, consumer rights and redress mechanisms on the Internet. The Government will:

- Undertake a publicity campaign on safe Internet shopping in partnership with the private sector
- Raise awareness of the national consumer complaints and enquiries website which provides a single window for consumer complaints or advice for e-commerce
- Work with the EU to develop EEJ-Net, an out-of-court dispute resolution body

Facilitate development of a flourishing market in trust services (authentication). The Government will:

- Launch public consultations on policy frameworks for take-up of trust services early in 2002, setting out the barriers to wider use of trust services amongst business and citizens, and explaining the action the Government will take to overcome these barriers;
- Review the many applications of smart cards and other smart tokens within the UK, developing policy to maximize the benefit from these schemes and ensuring that they can be used to simplify authentication mechanisms, making secure electronic transactions available to all who want to use them; and
- Identify and remove the barriers to the widespread take-up of authentication services by individuals and business users. In particular, we will work with industry to promote the critical importance of authentication and security for enabling e-business and e-Government.

Promoting best practice in protecting the security of online information assets. The Government will:

- Continue the outreach program (warnings and alerts of electronic attack) in partnership with industry and expand as resources allow
- Continue to promote international cooperation on these issues
- Continually assess the threat, provide information, and issue alerts and warnings to clients.

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[119] This is taken directly from *UK online: Annual Report,* 2001

- Continue to raise awareness amongst UK companies of the need for information security and continue to promote information security best practice through BS ISO/IEC 17799
- Continue to promote information security through international fora.

Ensure the prevention, detection, investigation and prosecution of crimes where new technologies, including the Internet, are being used or misused. The Government will:

- Deliver a public awareness campaign on Internet safety relating to chat room use;
- Publish a National Hi-Tech Crime Strategy; and
- Consult publicly on specific measures for tackling child safety on the Internet.

APPENDIX 4: ELEMENTS OF CANADA'S E-GOVERNMENT STRATEGY

Key Sites and Initiatives

Broadband for Rural and Northern Development
http://www.broadband.gc.ca

Chief Information Officer Branch
Government of Canada, Treasury Board Secretariat. (This site offers a broad range of resources on e-government, including information on infrastructure issues, organizational readiness, common look and feel for the Internet, information management, and it provides an Enhanced Management Framework. The website also provides information on the work of Canada's Chief Information Officer Branch)
http://www.cio-dpi.gc.ca/cio-dpi/index_e.asp

Connecting Canadians
This is the Canadian government's vision and plan to make Canada the most connected country in the world.
http://www.connect.gc.ca
This site addresses many connectivity issues, and includes the following sub-sites:

⇒ Canada On-line (This vast site addresses many connectivity initiatives, such as: providing a "cyberwise" strategy; affordable Internet access sites for rural, remote and urban communities; supporting the voluntary sector; skill development; technology discounts for educators; developing post-secondary students to provide training to SMEs; generating local content; providing job and career information; linking schools and libraries to the Internet; providing computers for schools; and, improving Canada's Internet system.)

⇒ Smart Communities (Fostering communities that make the most of the opportunities that new technologies afford—for better health care delivery, for better education and training, and for growing business.)

⇒ Canadian Content On-line (Helping Canada supply online content, software and applications)

⇒ E-Commerce (This addresses Canada's strategy to encourage the development of e-commerce)

⇒ Government Online (see below)

⇒ Connecting Canada to the World (Helping attract foreign investment and position Canada as a global hub for the new knowledge-based economy)

Government On-Line:
The Government of Canada's project to provide information and services on the Internet by 2005.
http://www.gol-ged.gc.ca/index_e.asp

Government Telecommunications and Informatics Services
GTIS is a key delivery agency of the Government of Canada's IM/IT Infrastructure.
http://pwgsc.gc.ca/gtis/index-e.html

Strategis
This is Canada's largest business website.
http://strategis.gc.ca

Canada's Approach to Governance[120]

Canada's approach to the governance of its e-government strategy includes the following elements:

⇒ Committee of ministers forms the Management Board
⇒ External advisory panel acts as sounding board
⇒ Committee of department heads provides oversight
⇒ Chief Information Officer co-ordinates government-wide plans, provides frameworks, monitors progress
⇒ Department heads are accountable for government-wide e-service targets
⇒ Department leads ensure horizontal co-ordination within departments

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[120] This is drawn from a presentation delivered by Basil Crozier of Industry Canada entitled "Combining Market Innovation with Technology Innovation."

APPENDIX 5: KEY RESOURCES

While all sources in this document are cited via footnote, below are a few of the documents that proved particularly valuable.

Assembly of the Inter-American Telecommunication Commission (CITEL), *Implementation of the Agenda for Connectivity in the Americas*, July 29, 2002.

Government of Australia. (Checklists have been developed by the Australian government for Providing Forms Online; Navigation, User Testing, Use of Cookies, Online Sales, Metadata, Archiving Web Resources, Managing Online Content, and Electronic Payment. The site also includes "better practices" in a variety of areas). http://www.govonline.gov.au/projects/strategy/better_practice/index.htm)

Government of Canada, Industry Canada (Connecting Canadians (This site provides the Canadian government's vision and plan to make Canada the most connected country in the world.)
http://www.connect.gc.ca

Government of Canada, Treasury Board Secretariat. (This site offers a broad range of resources on e-government, including information on infrastructure issues, organizational readiness, common look and feel for the Internet, information management, and it provides an Enhanced Management Framework. The website also provides information on the work of Canada's Chief Information Officer Branch). http://www.cio-dpi.gc.ca/cio-dpi/index_e.asp

Government of the United Kingdom, UK Office of the E-Envoy. (This site provides a particularly rich set of documentation regarding e-government, and how it is being pursued by the UK).
http://www.e-envoy.gov.uk/oee/oee.nsf/sections/index/$file/index.htm

Culbertson, Stuart. *E-Government and Organizational Change,* OECD Public Management Service-E-Government Project, August 2002.

Hilbert, M. *Latin America on its path to the digital age: where are we?* United Nations Pulication. Santiago, Chile. June 2001.

OECD Guidelines for the Security of Information Systems and Network: Towards a Culture of Security, 2002.

OECD, Ten Guiding Principles on E-Government, see CITIZENS AS PARTNERS. http://www.oecd.org/puma/citizens/01NovOECD.ppt

OECD, *The Hidden Threat to E-Government: Avoiding Large Government IT Failures*, Policy Brief No 8, March 2001.

Pacific Council on International Policy's document, A ROADMAP FOR E-GOVERNMENT IN THE DEVELOPING WORLD.
http://www.pacificcouncil.org/pdfs/e-gov.paper.f.pdf

United Nations Organization. GLOBAL SURVEY OF E-GOVERNMENT.
http://www.unpan.org/egovernment2.asp

APPENDIX 6: E-GOVERNMENT AS AUTOMATION OR INNOVATION?

There is a continuum of actions that can be undertaken with respect to e-government. One could imagine a conservative end of the continuum (putting present practices online) and a radical end (using technology to innovate):

- *Present practices and services online (Automation):* this would not significantly affect what and how work is done within government. As a result, it risks replication of present service shortcomings. For example, where citizens have had to go to numerous government service counters to fulfill a particular service need, by simply putting those services online citizens would no longer go to counters, but would still need to go to numerous websites. So the channel of delivery has changed, but the shortcomings remain. In fact, a proliferation of technology (in 2001 Canada had over 400 primary government websites) can further confuse users and reduce their satisfaction with government service delivery.

- *New practices and services online (Innovation)*: this entails improving the full range of what the public service does and how it does it. To continue with the service example, instead of going to the websites of numerous organizations to get a number of related services, they could be obtained through one site or portal. This way, citizens would not need to know what department they are dealing with in order to get the service they need. This approach is about innovating, not just automating.

The Purposes of e-Government: Examples of Automation and Innovation

	Present Value Available Online (Automation)	New Value Available Online (Innovation)
Services	- put information about existing organization services online - provide transactional services online - keep services only on website of those organizations responsible for delivering them	- provide a portal for all government services - provide service clusters (e.g. for life events) - organize services from the citizens' perspective - integrate services across organizations (e.g. services for youth or employment)
Transition to Knowledge Age	- make existing and presently publicly available paper information available electronically	- manage knowledge better to improve public management - use information and knowledge management to better create, collect and integrate information for public consumption - allow citizens to search data bases
Extend Democracy	- make existing publicly available paper information available electronically - make policies available online - make department budgets, plans and performance available online	- "liberate" information for benefit of all - inform citizens of policies in development - involve citizens in issue identification and policy development via methods of electronic consultation and engagement - make contracting information available online - make government budgeting, spending plans and performance available in one location with links to department-specific information