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From E-Government to Connected Governance

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Department of Economic and Social Affairs
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UN E-Government Survey 2008

From E-Government to Connected Governance

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Preface

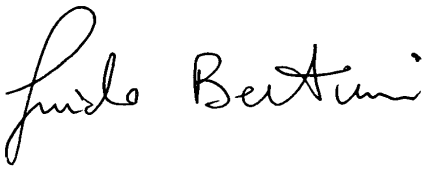
In a world characterised by rapid change driven by globalisation, the knowledge-based economy poses some challenges but also opportunities for the private sector and the public sector alike. According to OECD, Knowledge Management (KM) has for some time been at the core of government tasks - inseparable from strategy, planning, consultation and implementation. Nevertheless, indications are that the public sector has been falling behind in these practices, compared to the private sector. This realization has prompted some governments to put KM high on their policy agendas.

For citizens, the benefits to be reaped from KM include better services, more choices, more personalisation and greater accountability of how their money is spent. For the organization, KM provides the major benefit of improving the organization's performance through increased efficiency and innovation. But for these benefits to occur, the back office processes must be in place. KM is founded on the notion that the organization's most valuable resource is the knowledge of its people. This year's Survey therefore looks at the issue of connected governance from the perspective of how governments manage and how they should manage their back office processes.

Part II of the Report therefore, examines the idea of connected governance as the means to achieve maximum cost savings and improved service delivery. The underlying principle is to improve the internal workings of the public sector by reducing financial costs and transaction time, to better manage the work flow and processes, to improve institutional linkages between different government agencies, ministries and units, and enable a better flow of resources and allocation of responsibilities to promote the delivery of public services.

By bringing issues of connected governance to the mainstream of development thinking, the Report intends to stimulate thinking and debate around an important issue: *that e-government has great potential for public sector transformation.*

We hope that in doing so it will contribute to a better understanding of the multifaceted challenges of e-government and connected governance by decision makers around the world.



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The Report was prepared by a team closely supervised by Haiyan Qian, Chief, of the Knowledge Management Branch and coordinated by Michael G. Mimicopoulos who was also the substantive editor. In this team effort, Seema Hafeez authored Chapter I and Richard Kerby Chapters II to V. Part II of the Survey benefited from the valuable contribution of experts. The discussion on connected governance (Part II) is contributed by Jeffrey Roy (Chapters VI and VIII) with the editorial assistance of Elisa Oberman, and by Chris Harman (Chapters VII and VIII). Jason Qian, Lada Kyj and Maria Oset Serra provided back office case studies which constituted background material for the Survey. Patricia Penuen served as the administrative assistant to the team, and Elizabeth Danseco, Adriana Ribeiro and Silvia Schwarz as support, formatting and layout assistants.

Dr. Gregory Curtin, Managing Director of Civic Resource Group and Director of the E-Governance Lab at the University of Southern California led the senior research team which carried out the Web Measure Survey for 2008. This team included Simone Lawhun, CRG Data Manager; Elitsa Anguelova, CRG Coordinator; Shafiq Meyer, Senior Researcher; and Farhanaz Kermalli, Senior Researcher. The core research team included Fernando Guayasamin, Victoria Imsirovic, Wagd Alrabadi, Iva Bozovic, Meelis Kitsing, Isabelle Mazumdar, Mamta Nanavati, Inga Stasiulionyte, Andrea Vladar, Nelly Taha and Laura Hosman. More than 20 additional individuals from around the globe provided translation and other supporting assistance.

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Abbreviation Notes

EU	European Union
FAO	Food and Agricultural Organization
GEM	Gender Empowerment Measure
GDI	Gender Development Index
GDP	Gross Domestic Product
GNI	Gross National Income
HDI	Human Development Index
HP	Hewlett Packard
IT	Information Technology
ICT	Information and Communication Technologies
ITU	International Telecommunication Union
KI	Knowledge Index
NGO	Non Government Organization
MDG	Millennium Development Goals
OECD	Organization for Economic Cooperation and Development
PDA	Personal Development Assistant
PIAP	Public Internet Access Points
PWD	People with Disability
PPP	Purchasing Power Parity
UNDESA	UN Department of Economic and Social Affairs
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNPAN	United Nations Online Network in Public Administration and Finance
UNDP	United Nations Development Programme
USPTO	US Patent and Trademark Office
W3C	World Wide Web Consortium
WAI	Web Accessibility Initiative
WSIS	World Summit on Information Society
WWW	World Wide Web

Executive Summary

A trend towards reforming the public sector has emerged in many countries in recent years spurred, primarily by the aspirations of citizens around the world, who are placing new demands on governments. The success of government leaders is increasingly being measured by the benefits they are creating for their constituents, namely, the private sector, citizens and communities. These 'clients' of government demand top performance and efficiency, proper accountability and public trust, and a renewed focus on delivering better service and results.

Several countries around the world are attempting to revitalize their public administration and make it more proactive, efficient, transparent, and especially more service oriented. To accomplish this transformation, governments are introducing innovations in their organizational structure, practices, capacities, and in the ways they mobilize, deploy, and utilize the human capital and information, technological and financial resources for service delivery to citizens. In this context, the appropriate use of ICT plays a crucial role in advancing the goals of the public sector and in contributing towards an enabling environment for social and economic growth.

E-government can contribute significantly to the process of transformation of the government towards a leaner, more cost effective government. It can facilitate communication and improve the coordination of authorities at different tiers of government, within organizations and even at the departmental level. Further, e-government can enhance the speed and efficiency of operations, by streamlining processes, lowering costs, improving research capabilities, and improving documentation and record-keeping.

However, the real benefit of e-government lies not in the use of technology per se, but in its application to processes of transformation.

This year's *E-Government Survey 2008: From E-government to Connected Governance* presents an assessment of the new role of the government in enhancing public service delivery, while improving the efficiency and productivity of government processes and systems. It comprises two parts: Part I presents the findings of the UN E-Government Survey 2008 while the 'how to' approach connected governance is the focus of Part II of this year's Survey.

The UN E-Government Survey 2008

The results of the global survey indicate that governments are moving forward in e-government development around the world. However, given the high demands placed by e-government on a multitude of foundational pillars which include prerequisites of infrastructure, appropriate policies, capacity development, ICT applications, and relevant content that need to be in place to fully implement e-government services, progress is slow. Only a few governments have made the necessary investment to move from e-government applications *per se* to a more integrated connected governance stage.

In terms of connectivity, a robust broadband network is critical to the roll out of e-government applications and services. In this year's Survey, the governments that invested in broadband infrastructure scored relatively high. A closer look at the

infrastructure index reveals that investment in cellular phones has been dramatic over the past three years in both the developed and developing countries. Another issue that came to the forefront is that back office operations need to be seamlessly integrated into one system for effective governance. This was reflected in the Survey from the experience of a number of countries from Northern Europe that revamped their national and ministries' web sites towards an integrated program delivery.

There were large differences between the five regions in terms of e-government readiness, with Europe (0.6490) having a clear advantage over the other regions, followed by the Americas (0.4936), Asia (0.4470), Oceania (0.4338) and Africa (0.2739). Asia and Oceania were slightly below the world average (0.4514), while Africa lagged far behind.

This year **Sweden** (0.9157) surpassed the **United States** as the leader. Three Scandinavian countries took the top three spots in the 2008 Survey, with **Denmark** (0.9134) and **Norway** (0.8921) in second and third place respectively. The **United States** (0.8644) came in fourth.

In this year's global e-government readiness rankings, the European countries made up 70% of the top 35 countries while the Asian countries made up 20% of the top 35. A large part of the success of the European countries has been their investment in infrastructure and connectivity, most notably in broadband infrastructure. It is worth noting that in this year's Survey, there were no countries in the top 35 from the African, Caribbean, Central American, Central Asian, South American, and Southern Asian regions.

In terms of citizen engagement, the e-participation index indicated a modest upward movement with 189 countries online in 2008 as compared with 179 in 2005. A greater number of countries were in the middle to top one third in e-participation utilization. However, 82% of the countries surveyed still remained in the lower one third bracket.

The **United States** scored the highest on the e-participation index. This was primarily due to its strength in e-information and e-consultation, which enabled its citizens to be more interactive with their government. It was closely followed by the **Republic of Korea** (0.9773), which performed extremely well in the e-consultation assessment. **Denmark** (0.9318) and **France** (0.9318) were tied for third place.

From e-Government to Connected Governance

The management of knowledge is of increasing importance to governments in their effort to deal with the growing challenges created by the knowledge economy. The essence of knowledge management (KM) is to provide strategies to get the right knowledge to the right people at the right time and in the right format.[1] KM is based on the idea that an organization's most valuable resource is the knowledge of its people.

The three aspects of public sector KM that need to be considered when effecting KM strategies are: people, processes and technology. Identifying the right processes to capture, store and share knowledge is an essential aspect of KM, as is the identification

[1] Milton, N., Shadbolt, N., Cottman, H. and Hammersley, M. (1999), "Towards a knowledge technology for knowledge management", *International Journal of Human-Computer Studies, Vol.51, pp.615-641.*

and build up of the appropriate hardware and software which fits the organization's people and processes. But perhaps the most important aspect of KM is the people aspect.

Public organizations have traditionally been compartmentalised. One of the most basic notions in KM is therefore that of connecting the "silos". Silo in KM refers to the self-contained organizational unit, which has little or no communication with the other units of the organization.

With respect to human resources, the Report stresses the importance of: building an environment that instils trust among employees. This in turn implies the selection and development of leaders who promote information sharing. Effective knowledge sharing requires rewarding those who input information into the system by establishing a formal structure of incentives and rewards. Information sharing results in reduced information costs. As a result of reduced information costs, the new public sector organization is in an advantageous position vis-à-vis its predecessor organization.

Employees also have embedded knowledge of the organization's values and objectives, so they must be encouraged to use their own creativity and innovation to turn their ideas into valuable products and services. Innovation is an ongoing process in an organization which guides the organization in defining problems and then developing new knowledge for their solution. The leaders therefore must put in place strategies that encourage creativity and innovation among employees. They must also ensure better use of the knowledge that exists within the organization by sharing best practices and developing communities of practice.

Another dimension of KM is that of Customer Relationship Management, or CRM, which revolves around the issue of enhancing customer focus and building relationships with private sector partners.

Yet, another dimension of KM revolves around the issues of confidentiality, data integrity, and availability of information. While confidentiality deals with the unintentional disclosure of information outside the authorized parameters, and data integrity assures the trustworthiness of the information, availability ensures that the information is made available to requesting authenticated clients.

The benefits of KM for an organization come in the form of increased productivity, efficiency, innovation, and quality of public service delivery. The successful application of KM practices raises the awareness of leaders and managers, and also of frontline personnel of the advantages that KM can bring to an organization. At the individual level, KM practices provide opportunities to employees for career enhancement and development.

As a way of summing up the preceding discussion, the Organization for Economic Cooperation and Development has reported that e-Government initiatives have in recent years been refocused on a number of issues, such as how to collaborate more effectively across agencies to address complex intra-government and shared problems within and among the agencies, and how to enhance customer focus and build relationships with private sector partners.[2]

[2] OECD The e-government imperative: main findings, OECD Observer Report, www.oecd.org/publication/Pol_brief, 2003

Drawing on OECD"S observations, governments around the world are realizing that continued expansion in e-services is not possible without some kind of integration of back end government systems. Whereas earlier the emphasis of e-government was mostly on developing e-services, the increasing importance of cross-organizational coherence today has clearly shifted the focus towards building, and managing, integrated and coordinated government services. This is critical, since a lack of coordination in policy decisions and announcements can play a considerable role in undermining policy objectives, and also weakening the credibility of institutions and policies.

In an attempt to keep current in examining emerging issues, Part II of the Survey therefore assesses the challenges in moving from e-government to connected governance. The Survey postulates that governments are increasingly looking towards e-government-as-a-whole concept which focuses on the provision of services at the front end supported by integration, consolidation and innovation in back-end processes and systems to achieve maximum cost savings and improved service delivery. The distinguishing characteristic of the whole-of-government approach is that government agencies and organizations share objectives across organizational boundaries, as opposed to working solely within an organization.

The concept of connected government is derived from the whole-of-government approach which is increasingly looking towards technology as a strategic tool and as an enabler for public service innovation and productivity growth.

Connected or networked governance[3] revolves around governmental collective action to advance the public good by engaging the creative efforts of all segments of society. It is about influencing the strategic actions of other stakeholders. [4] ICT-based connected governance efforts are aimed at improved cooperation between government agencies, allowing for an enhanced, active and effective consultation and engagement with citizens, and a greater involvement with multi-stakeholders regionally and internationally.

This emerging approach to public sector service delivery stipulates the need to move from the model of government dispensing services via traditional modes to an emphasis on an integrated approach focusing on enhancing the ***value*** of services to the citizen.

A by product of this focus on the value for citizen is the recognition that an increase in the value of services is not possible without consolidating the way the back-end systems and processes work to bring about the front end service delivery.

The new approach maintains that genuine cost savings and quality improvements will occur only if there is a re-engineering of the internal structures and processes of the administration towards a connected form of governance. Connected governance is aimed at improving cooperation between government agencies, deepening consultation and engagement with citizens, and allowing for a greater involvement with multi-stakeholders regionally and internationally. Underlying the concept of connected governance is a systematic approach to collection, reuse and sharing of data and

[3] In this Report, connected government and networked government are used interchangeably.
[4] Robert D. Atkinson. 'Network Government for the Digital Age'. Progressive Policy Institute Policy Report. May 1, 2003. http://www.ppionline.org/ppi_ci.cfm?knlgAreaID=140&subsecID=290&contentID=251551. Accessed 26 November 2007.

information. However, it is essential to understand how ICT can contribute to realizing these goals of public sector reform.

Within the connected governance framework, inter-governmental processes can be integrated vertically between various government agencies, and/or horizontally between agencies at the same level, and/or with the inclusion of private sector and other stakeholders.

What is important is to think about connected governance with a view towards the re-engineering of technology, processes, skills and mindsets of public officials in the government within a holistic framework.

In practice, in the area of connected governance and back office integration, there is a continuing gap between what is promised and what is delivered – both to governments and to citizens.

Comparative examinations of country performances begin from the premise that no two countries are alike, and that national trajectories will be shaped by variables both within the public sector (including multiple levels of government) and across society at large. As a result, there is some invariable tension between mapping out global e-government trends and specific national trajectories and how they relate to such trends. In order to help frame this broad assessment, three main phases of e-government strategy and activity are put forth as ways of encapsulating the main focus of e-government on the one hand, and the major challenges facing public sector leaders and all stakeholders in pursuing e-government on the other hand. The three (inter-related and often overlapping) phases are as follows:

- *Infrastructure:* Creating an information infrastructure both within the public sector and across society at large, one based upon reliable and affordable Internet connectivity for citizens, businesses and all stakeholders in a given jurisdiction;

- *Integration*: Leveraging this new infrastructure within the public sector in order to better share information (internally and externally) and bundle, integrate, and deliver services through more efficient and citizen-centric governance models encompassing multiple delivery channels; and

- *Transformation:* Pursuing service innovation and e-government across a broader prism of community and democratic development through more networked governance patterns within government, across various government levels, and amongst all sectors in a particular jurisdiction.

In shifting from infrastructure to integration and then to transformation, a more holistic framework of connected governance is required. Such a framework recognizes the networking presence of e-government as both an internal driver of transformation within the public sector and an external driver of societal learning and collective adaptation for the jurisdiction as a whole. Accordingly, both developed and developing countries are increasingly seeking to articulate a vision of e-government that encompasses these multiple layers in a cumulative manner. In other words, a basic and continually upgraded infrastructure is required to facilitate integrative opportunities for delivering services and engaging citizens, whereas the exploitation of such opportunities demands engagement

and participation among all stakeholders in order to foster more systemic transformation individually, organizationally, and institutionally.

Drivers for integration arise at the operational and strategic levels. Typically these encompass achieving cost savings, improving service delivery and efficiency, creating service innovation, improving central control and decision making/resource allocation and the desire either political or operational, to modernize public service delivery. Where there are clear drivers for change, clearly articulated benefits and a clearly defined scope, the successful integration of back office functions is more likely to be achieved.

The primary delivery modes for back office integration include in-house delivery, a strategic partnership model and through outsourcing. Each of these modes has differing strengths and weaknesses in terms of the acquisition and utilization of resources (technological, financial and people) and the likely impact on benefits realization. Models of back office integration, irrespective of the delivery mode, fall into three broad categories: single function integration, cross functional integration and back office to front office integration.

The level of complexity, expressed in terms of the number of functions within the scope and the number of organizations involved, is the primary factor influencing a successful outcome – with a tendency amongst the more ambitious projects to fail to deliver the full anticipated benefits. The key variables involved in the delivery of back office integration are the people, process and technology required. Whilst the technology is increasingly resilient and 'fit for purposes', evidence indicates that success or failure is less a technological issue and more a people issue – in particular the ability to change public service cultures and motivate public sector workers to new ways of working, address trade union concerns and provide adequately skilled and competent management and leadership.

Connected governance provides better organized, aligned and often integrated information flows, new transactional capacities, as well as new mechanisms for feedback, consultation and more participative forms of democracy. For those engaged in the management and delivery of public administration, it is about driving down costs and improving the effectiveness and efficiency of 'back-office' functions and the basic machinery of government. For those working at the transnational level, it is about removing the barriers to international cooperation and development and creating an agenda of connected governance globally. For the various stakeholders, different facets will provide the driver for change and the motivation to engage with e-government and the modernisation agenda.

Although much of the developing world continues to struggle with deeper challenges rooted in infrastructure, there are growing examples of integration and transformation as well. A critical mission for the world as a whole is therefore to leverage the positive experiences of those jurisdictions that have embraced transformative change into endogenous capacities for connected governance that can be embraced and nurtured by the widest possible number of communities and countries around the world. Rising levels of commerce and human mobility also reinforce the notion of interdependence, as immigration, security, environmental and global health systems become more closely intertwined. E-government from a global perspective can accordingly be seen as a central dimension of the world's capacity to respond collectively – in terms of information sharing and learning and shared capacities for action. In an era of environmental,

economic and technological interdependence, a much greater degree of political interdependence is also required, rendering e-government as much a global as a national imperative.

Chapter I
Introduction

In the current era of technological advancement that is taking place all over the world, a new kind of rationalization has been introduced in the public sector by the use of modern information and communication technologies (ICTs). Increasingly the use of ICT tools and applications is leading to transformational shifts in public policy, processes and functions. E-government is being deployed not only to provide citizen services but for public sector efficiency purposes, improving transparency and accountability in government functions and allowing for cost savings in government administration. ICTs are changing the way the government does business for the people. In this context e-government is seen to be a lever for the transformation of government.

Most governments around the world started their e-government initiatives with a focus on providing information and services to the citizen while service delivery platforms remained separate and parallel across various government agencies. In this model, service delivery was built around individual agency functions, structures, information, systems and capabilities. With the private sector leading the way, advances in accessibility and a greater use of technology have allowed an expansion of innovative ICT solutions. Now citizens and businesses around the world are increasingly demanding that their governments follow suit. Citizen groups have come to expect a 24/7 convenient user interface with ease of use, in a language the user understands and which is tailored to individual needs.

At the government's end, with more services online has come the realization that continued expansion and improvement of online services is not possible without the integration of government systems.

The Need for Connected Governance

As an increasing array of public services is being brought online each year, a service delivery plateau is being reached in many countries around the world. Concomitant with this ongoing development is an increasing recognition that the new technologies need to be diverted towards improvements in service delivery through the integration of government processes which provide these services.

The focus on service delivery is becoming intertwined with an emphasis on achieving cost savings and enhancing efficiency. The role of ICT in public service delivery is accordingly being revisited to enable effective inter-organizational linkages and consolidation of government systems. 'While initially the political and managerial focus was on developing e-services within each public institution, with limited consideration being given to cross-organizational coherence, the focus today has clearly shifted towards coordinated services offering one-stop shops to citizens and businesses.'[5] Advances in technology have ushered in an era of new thinking about increasing

[5] OECD. *E-Government as a Tool for Transformation*. 2007. p 16. http://www.olis.oecd.org/olis/2007doc.nsf/8d00615172fd2a63c125685d005300b5/c5bfb886ebcafe06c12572ac0057513c/$FILE/JT03224646.PDF. Accessed 5 October 2007

integration in service delivery based on commonality of infrastructures, data, and business processes.[6]

The need for the consolidation[7] of government systems also stems from the fact that ICT tools have the ubiquitous power to make time and distance irrelevant thereby increasing manifold the efficacy of public service delivery. The Internet and the World Wide Web eliminate boundaries and allow for integrated services to be available 24/7 while promoting faster and efficient connection between agencies, processes and systems.

Moreover, in the last few years ICTs have become increasingly affordable. As technologies have advanced, the cost of infrastructure and accessibility has drastically been reduced around the world. For example, broadband prices for DSL connections across 30 developed countries fell by 19% while the speed of connection increased by 29% in 2006.[8] Reduction in the costs has led to a jump in the adoption of new technologies in many developing countries as well, without the national governments having to incur heavy investment in land-based infrastructure. In particular, mobile telephony has increased manifold in the last few years allowing for an unprecedented accessibility for the average user. For example, cellular subscribers increased more than threefold in Cote d'Ivoire from around 473,000 in 2000 to 1.53 million in 2004. In the Central African Republic the increase in cellular subscribers was even more dramatic during the same period: from 4,000 in 2000 to 60,000 in 2004. As with cellular telephones, the use of the Internet has gone up exponentially, even in developing countries. In Guyana for example, in the last few years Internet users have gone up from a negligible 500 in 1996 to 145,000 in 2004.[9]

Innovations in information and communication technologies have also provided an opportunity for effective working modalities across government agencies. Whereas at an early stage ICT was viewed as an important tool for improving efficiency, as organizations become more mature and more complex, the role of ICT needs to evolve to enable inter-organizational linkages and, with it, the need for e-government co-ordination.[10] As such, ICT is being viewed as a key tool to bring about a change in service delivery approaches.

The Second Generation e-Government Paradigm

The emerging ICT-for-development approach towards public sector transformation is creating new perceptions about government and governance. The twin objective of achieving further improvements in service delivery and efficacy in government functioning is bringing about a rethinking of the role of ICT. Governments are

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[6] OECD. *E-government for Better Government*. 2005. http://puck.sourceoecd.org/vl=16470954/cl=30/nw=1/rpsv/cgi-bin/fulltextew.pl?prpsv=/ij/oecdthemes/99980096/v2005n30/s1/p1l.idx Accessed 2 Nov 2007. p 132.

[7] Integration and consolidation are being used interchangeably in this chapter.

[8] BBC News. 16 July 2007. http://news.bbc.co.uk/2/hi/technology/6900697.stm Accessed 26 November 2007.

[9] UNDESA. Statistics Division. http://unstats.un.org/unsd/cdb/cdb_help/cdb_quick_start.asp Accessed 26 November 2007.

[10] OECD. *E-government for better Government*. 2005. http://puck.sourceoecd.org/vl=16470954/cl=30/nw=1/rpsv/cgi-bin/fulltextew.pl?prpsv=/ij/oecdthemes/99980096/v2005n30/s1/p1l.idx Accessed 2 Nov 2007. p 132.

increasingly looking towards *e-government-as-a-whole concept* which focuses on the provision of services at the front end, supported by integration, consolidation and innovation in back-end processes and systems to achieve maximum cost savings and improved service delivery.

Back office refers to the internal operations of an organization that support core processes and are not accessible or visible to the general public.[11] These are government functions that normally do not interact with outside entities[12], and involve such diverse tasks as calculating benefits or enforcement of environmental laws. The term *front office* refers to government as its constituents see it, meaning the information and services provided and the interaction between government and both the citizens and business.[13] In general, front office processes are often labelled "services", though service delivery has both front-and back-office components. The element of contact in service processes fundamentally distinguishes them from the more production oriented processes in the back office.

The *whole-of-government* concept refers to 'public service agencies working across portfolio boundaries to achieve a shared goal and an integrated government response to particular issues.'[14] The distinguishing characteristic of the whole-of-government approach is that government agencies and organizations share objectives across organizational boundaries, as opposed to working solely within an organization. It encompasses the design and delivery of a wide variety of policies, programs and services that cross organizational boundaries.[15] The whole-of-government concept is a holistic approach to ICT-enabled public sector governance.

Within the ambit of the whole-of-government approach, the focus of the second generation e-government initiatives has shifted from the provision of services to the use of ICTs to increase the *value* of services. As Figure 1 indicates the approach to public sector service delivery has evolved over time from the traditional model of government dispensing services via traditional modes to an emphasis on e-government and e-services *per se,* to an integrated approach for enhancing the value of services to the citizen. In many countries around the world, public sector development strategies are being revisited to address the question: how can the *value* of the public services be enhanced?

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[11] e-Government for Better Government. OECD e-Government Studies. http://puck.sourceoecd.org/vl=16470954/cl=30/nw=1/rpsv/cgi-bin/fulltextew.pl?prpsv=/ij/oecdthemes/99980096/v2005n30/s1/p1l.idx. Accessed 22 November

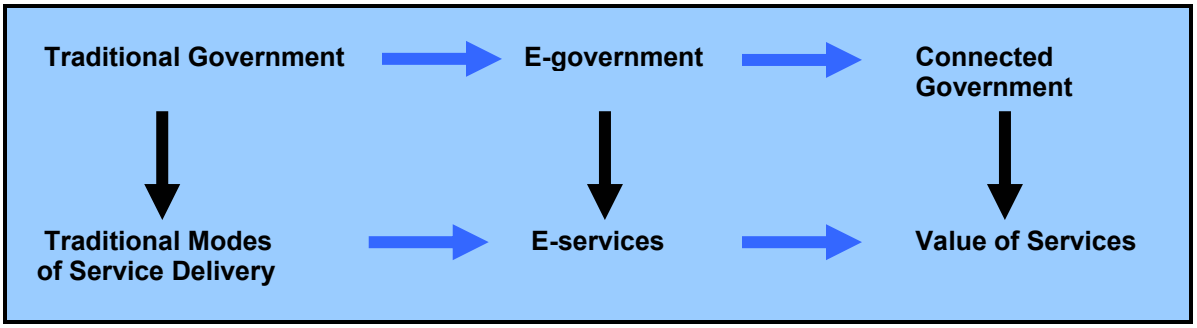
[12] http://bridgefieldgroup.com/bridgefieldgroup/glos1.htm

[13] [13] e-Government for Better Government. OECD e-Government Studies. http://puck.sourceoecd.org/vl=16470954/cl=30/nw=1/rpsv/cgi-bin/fulltextew.pl?prpsv=/ij/oecdthemes/99980096/v2005n30/s1/p1l.idx. Accessed 22 November

[14] For a whole-of-government concept see *Connecting government: Whole of Government Responses to Australia's Priority Challenges.* Management Advisory Committee Report 4. 2004. http://www.apsc.gov.au/mac/connectinggovernment.htm. Accessed 20 November 2007.

[15] For a whole-of-government concept see *Connecting government: Whole of Government Responses to Australia's Priority Challenges.* Management Advisory Committee Report 4. 2004. http://www.apsc.gov.au/mac/connectinggovernment.htm. Accessed 20 November 2007.

Figure 1.1. Evolving Approach to Public Service Delivery



A corollary of the focus on the *value for citizen* is the recognition that an increase in the value of services is not possible without consolidating the way the back-end systems and processes work to bring about the front end of service delivery. The new approach maintains that genuine cost savings and quality improvements will occur only if there is a re-engineering of the internal structures and processes of the administration.[16] There is a growing recognition that using a broader spectrum of delivery channels enabled by ICT is better suited to delivering individually-tailored, high-quality services to users while at the same time, allowing for the harvesting of efficiency gains through effective service delivery.

Despite a shift in the approach, however, it should be borne in mind that the goal remains the same: better service delivery for the citizen. The emerging paradigm shifts the focus from the provision of service delivery to provision of service delivery *with value.* In other words, the new approach is about *government for more with less.*

The emerging paradigm maintains that to achieve greater value in service delivery and reduce costs, integration and redesign of government organization and processes is a necessity.

From e-Government to Connected Governance: A Framework

Advances in technology have ushered in an era of new thinking about increasing integration in service delivery based on commonality of infrastructures, data, and business processes. The focus on strengthening the interlinkages between e-government and connected government is forming the underpinnings of the new e-government strategies in many developed countries. In many countries the cornerstone of the e-government strategy is becoming service innovation achieved by moving to multi-channel service delivery and a better use of back end processes and systems. This is creating a drive towards more collaborative models of service delivery that can be referred to as connected government or networked government.[17] One of the diktats of this new paradigm is that government agencies rethink their operations to move from

[16] Jeremy Millard. *ePublic Services in Europe: Past, Present and Future, Research Findings and New Challenges*. Final Paper, Prepared for the Institute for Prospective Technological Studies (IPTS), September 2003, ftp://ftp.cordis.europa.eu/pub/ist/docs/epublic-services.pdf. Accessed 9 Nov 2007

[17] OECD. 'E-government for Better Government'. 2005. http://puck.sourceoecd.org/vl=16470954/cl=30/nw=1/rpsv/cgi-bin/fulltextew.pl?prpsv=/ij/oecdthemes/99980096/v2005n30/s1/p1l.idx Accessed 2 Nov 2007. p 132.

being system-oriented to chain-oriented with respect to their structure, functioning, skills and capabilities, and culture and management.[18]
The concept of connected government is derived from the whole-of-government approach which is increasingly looking towards technology as a strategic tool and as an enabler for public service innovation and productivity growth.

Connected or networked governance[19] involves the governmental promotion of collective action to advance the public good, by engaging the creative efforts of all of society. It is about influencing the strategic actions of other stakeholders.[20] ICT-based connected governance efforts are aimed at an improved cooperation between governmental agencies, allowing for an enhanced, active and effective consultation and engagement with citizens, and a greater involvement with multi-stakeholders regionally and internationally.

Box 1. Achieving Connected Governance: What the Government Does

1. Intra-Government Process Re-engineering → efficient, responsive and tailored government to reflect citizen needs
2. Inter-Government Process Re-engineering → efficient, joined-up and borderless government:
   - vertical cooperation/integration between levels
   - horizontal cooperation/integration between agencies at same level
   - multi-stakeholder cooperation (with private and third sectors)
3. Re-engineer legacy technology, processes, skills and mindsets

Source: Jeremy Millard. *ePublic services in Europe: past, present and future: Research findings and new challenges* ftp://ftp.cordis.europa.eu/pub/ist/docs/epublic-services.pdf . Accessed 9 Nov 2007. P 42.

Governments in recent years have primarily focused on improving citizen e-services rather than organizing government agency functions and services. An emerging focus is to link tools of ICT to the consolidation of back end systems and processes in order to improve the seamlessness and the quality of service delivery and free up resources for additional service innovation.[21] Though many of these new arrangements are enabled by ICTs, they also require deeper cultural and management changes, including often re-engineering in the way a government functions.

Box 1 illustrates what is involved in achieving successful connected governance. A government which strives for excellence needs to undertake a re-engineering of both intra - and inter-governmental processes which is likely to lead to a more efficient, responsive and tailored government reflecting the citizens' needs. In this context, inter-governmental processes can be vertical with integration between various government agencies and strata, and/or horizontal between agencies at the same level and/or with

[18]OECD. 'E-government for Better Government'. 2005. http://puck.sourceoecd.org/vl=16470954/cl=30/nw=1/rpsv/cgi-bin/fulltextew.pl?prpsv=/ij/oecdthemes/99980096/v2005n30/s1/p1l.idx. Accessed 2 Nov 2007. p 132.
[19] In this Report, connected government and networked government are used interchangeably.
[20] Robert D. Atkinson. 'Network Government for the Digital Age'. Progressive Policy Institute Policy Report. May 1, 2003. http://www.ppionline.org/ppi_ci.cfm?knlgAreaID=140&subsecID=290&contentID=251551. Accessed 26 November 2007.
[21] OECD. 'E-government for Better Government'. 2005. http://puck.sourceoecd.org/vl=16470954/cl=30/nw=1/rpsv/cgi-bin/fulltextew.pl?prpsv=/ij/oecdthemes/99980096/v2005n30/s1/p1l.idx . Accessed 2 Nov 2007. p 68.

the inclusion of private sector and other stakeholders. What is important is to think about connected governance with a view towards the re-engineering of technology, processes, skills and the mindsets of public officials within a holistic framework.
An effective connected government is about a 'bigger and better' front end with a 'smaller and smarter' back-end.[22]

Underlying the concept of connected governance is a systematic approach to collection, reuse and sharing of data and information. The key platform on which connected government is built upon is the concept of interoperability which is the ability of government organizations to share and integrate information by using common standards. 'Successful service innovation and multi-channel service delivery depend on strategies, policies and architectures that allow data, IT systems, business processes and delivery channels to interoperate, so that services can be properly integrated. If channels and back-office processes are integrated, different channels can complement each other, improving the quality of both services and the delivery to government and citizens simultaneously. The ideal is to create an environment in which data, systems and processes are fully integrated and channels become interoperate instead of merely co-existing'. [23]

Effective strategies for achieving connected governance are multi-faceted. They focus on the development of a single authoritative source for information and data as part of information management policies. A technical interoperability framework outlining the standards, policies and practices to support interoperability between ICT systems and applications is generally part of a holistic strategy. The framework includes citizen access and distribution strategies, including a channel management strategy that takes into account the needs and priorities of citizens, and those of the government, and encompasses a built-in stakeholder engagement and market research component to enhance governments' knowledge of their customers.

Improving the government agencies' capability to transfer and exchange information is critical and will require the improved interoperability between agencies' information systems. In the longer term it will require agencies to adopt and implement common information policies, standards and protocols. Potential common frameworks, policies and standards will need to be flexible enough to respond to agencies' varying business requirements'.[24]

Strengthening connected governance concepts within e-government is an important step towards improving the coordination of processes and systems within, and across, government agencies and organizations and changing the way that government operates.

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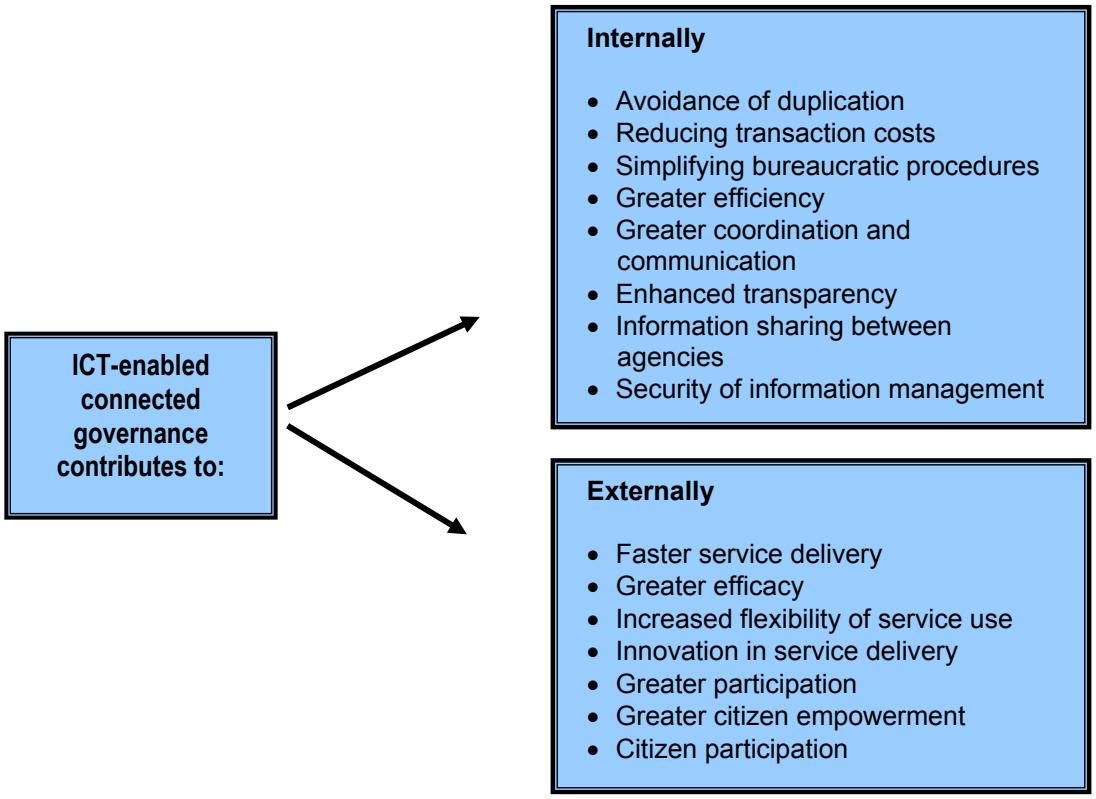
[22] Source: Jeremy Millard. *ePublic services in Europe: past, present and future: Research findings and new challenges* ftp://ftp.cordis.europa.eu/pub/ist/docs/epublic-services.pdf. Accessed 9 Nov 2007. P 41-42.
[23] e-Government for Better Government. OECD e-Government Studies. http://puck.sourceoecd.org/vl=16470954/cl=30/nw=1/rpsv/cgi-bin/fulltextew.pl?prpsv=/ij/oecdthemes/99980096/v2005n30/s1/p1l.idx. Accessed 22 November 2007.
[24] Government of Australia. *Connecting Government: Whole of government responses to Australia's priority challenge.* http://www.apsc.gov.au/mac/connectinggovernment.htm. Accessed 22 November 2007

Figure 1.2. ICT-enabled Connected Governance



E-enabled connected governance is likely to contribute to the transformation of the public sector and result in greater cost savings, enhancing efficiency and reducing administrative burden. Figure 2 illustrates the potential of internal and external benefits in achieving connected governance. More efficient functioning of government operations, between and across agencies, both vertically and horizontally can also increase the transparency of operations and result in improvements in the overall quality and functioning of internal work processes, thereby effectively changing managerial and organizational arrangements. An overall improvement in the public sector management and systems allows for enhanced service delivery and an overall improvement in the functioning of government.

A key element of connected governance is the ICT-enabled ability to respond instantaneously with information from across several government agencies, multiplying manifold the government's ability to respond to crisis. Connected governance also allows for the close collaboration in information sharing between governmental agencies such as for instance, between disaster relief agencies with housing and health agencies.

Further, a connected governance approach incorporates the compatibility of systems, security, and privacy through common standards towards a seamless service provision. With the sharing of data and information it is possible to achieve greater policy coordination between several governmental agencies and a more timely and effective implementation of government policy decisions.

Often government policy formulation cuts across several agencies and departments. Connected governance allows for malleable organizational boundaries towards a holistic policy development and an integrated policy implementation.

Finally, an integral part of successful e-government around the world implies the provision of an effective platform of e-participation. Citizen involvement in public policy making is requiring governments to engage in multi stakeholder citizen engagement. As more governmental agencies become involved this will lead to the need for a common language clarifying expectations and agreeing on dispute resolution processes through the framework of connected governance.

Recent Trends towards Connected Governance

Governments around the world are fully cognizant of the benefits of employing ICTs for improving public sector management practices and relationships with internal and external stakeholders. Many are seeking to harness this potential for further gains in service delivery, efficiency and transparency. To ensure better functioning, many governments have embarked upon strategies aimed at tapping new synergies between technology and development to find innovative solutions to government and governance. Recent evidence shows that in many developed countries, where most services are already online, citizens and businesses prefer to have both traditional and non traditional channels of delivery at their disposal, depending on where and when they wish to access services and on the nature and type of service required.

In a move towards efficiency and efficacy many countries are in the process of integrating e-government policies and strategies with transformation policies and strategies. Most OECD countries are in the vanguard of such an approach. Under its new e-government strategy, Switzerland is establishing a common body to co-ordinate policies, including data sharing policy, based on agreements between the federal government and the cantons which have signed the agreement.[25] The Dutch government is employing common public sector e-government building blocks for providing a seamless service to the public, in the effort to reducing administrative burden.[26]

Other countries are also making efforts at reducing government administrative burden and improving efficiency. Australia and Austria have established a central body to co-ordinate information and data sharing policies within the public sector. Portugal has integrated its e-government and administrative simplification policies/strategies in the SIMPLEX programme.[27] To address the e-government and simplification strategy, the

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[25] OECD. *E-Government as a Tool For Transformation*. 2007. P 16. http://www.olis.oecd.org/olis/2007doc.nsf/8d00615172fd2a63c125685d005300b5/c5bfb886ebcafe06c12572ac0057513c/$FILE/JT03224646.PDF. Accessed 5 October 2007

[25] OECD. *'E-government for Better Government'*. 2005. http://puck.sourceoecd.org/vl=16470954/cl=30/nw=1/rpsv/cgi-bin/fulltextew.pl?prpsv=/ij/oecdthemes/99980096/v2005n30/s1/p1l.idx Accessed 2 Nov 2007. p 28.

[26] *OECD E-Government Studies: Netherlands* http://www.oecd.org/document/15/0,3343,en_33873108_33873309_38988943_1_1_1_1,00.html Accessed 22 November 2007.

[27] *Building Bridges Towards Better Administration: State Modernization in Portugal.* http://www.compras.gov.pt/NR/rdonlyres/F1D003C7-AAF8-4ED3-9C8D-9D850E9601D7/0/060918_Compras_Publica%C3%A7%C3%A3o_Conjunta_4QC_vfinal3.pdf Accessed 29 November 2007.

Office for Public Services Reform (UCMA) along with the Knowledge Society Agency (UMIC) and the Directorate General of Public Administration (DGAP) is developing a new way of delivering public services, focused on citizens' needs and based on a multi-channel integrated structure.

The integration of government processes to achieve enhanced service delivery is being adopted in developing countries as well. For example, the Environmental Information Network (EIN) Project in Ghana has used ICT to link the databases of the Environmental Protection Agency (EPA) and the Forestry Research Institute of Ghana (FORIG). The project has provided up to date information on the environment for industry, commerce, and management and for research purposes, as well as enables partner organizations to access information from each other's databases at the click of a mouse. It has reduced travel costs and vastly improved the retrieval and quality of data.[28] In Mauritius, the joint public and private sector *Contributions Network Project (CNP)* connects all large firms, and the majority of small ones, to the relevant government tax departments via a single channel for electronic submission of payments such as contributions, tax returns, etc. that Mauritian firms make to various government departments.[29]

In many developed countries which are in the vanguard of applying connected governance, including OECD countries, e-government development is focused on creating back-office coherence and efficiencies to enable the delivery of e-services as part of an expanded public sector service delivery portfolio.[30] At the same time, government back office process integration and re-engineering is also becoming an important objective for some of the developing countries. In Bangladesh, the Department of Public Health in Rajshahi City Corporation (RCC), was successful in integrating births and immunization schedules for children in the online *Birth Registration Information System (eBRIS)* which has led to significant improvements in the drop out rates of immunization as well as to better service delivery.[31] In an attempt to streamline government operations, the Government of Pakistan has merged Pakistan's National Database Organization and the Directorate General of Registration in the National Database and Registration Authority (NADRA) which, has resulted in significant benefits in terms of the electronic database registration authority and the strengthening of homeland security through Automated Border Control, Multi-biometric E-Passport, and Vehicle Identification & Tracking Systems.[32]

However, even though governments share common challenges, they start from different stages in terms of e-government and administrative development suited to their own needs and within the parameters of their own stated developmental objectives. For most developing countries which are still in their infancy in terms of ICT services roll-out, it is

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[28] The Ghanaian Environmental Protection Agency (EPA). For more information on the project go to:
http://www.iconnect-online.org/Stories/Story.import4862
http://unpan1.un.org/intradoc/groups/public/documents/Other/UNPAN022294.pdf

[29] More information on the project:
http://siteresources.worldbank.org/INTEGOVERNMENT/Resources/702478-1129947675846/mauritiusCNPcs.htm

[30] OECD. *E-Government As A Tool For Transformation.* 2007. P 16.
http://www.olis.oecd.org/olis/2007doc.nsf/8d00615172fd2a63c125685d005300b5/c5bfb886ebcafe06c12572ac0057513c/$FILE/JT03224646.PDF. Accessed 5 October 2007

[31] More information on the project:
http://unpan1.un.org/intradoc/groups/public/documents/UNPAN/UNPAN023588.pdf
http://www.inderscience.com/storage/f112410896121375.pdf
http://www.egov4dev.org/rajshahi.htm

[32] More information on the product:
http://www.egov4dev.org/nadra.htm
http://www.nadra.gov.pk/

important for policy makers to think of a multiple channel service delivery approach to government services through both electronic and non-electronic media. Online services must not be thought of as a substitute in countries where large numbers of citizens may be without access. As past UN Global E-government Readiness Reports have stated, any ICT-led strategy needs to take into account the level of development, access to infrastructure and the skill level in the country. In that sense, connected governance initiatives need to be placed within the context of the e-development goals of national governments.

Connected Governance: The Key Message

The promise and the excitement of connected government should not obscure a key principle, namely, that: *the end-goal of all e-government and connected governance efforts must remain better public service* delivery. Improvements in the quality of governance and the responsiveness and effectiveness of government should still serve to empower the citizen. In that sense, citizens must be given the chance to play a role in influencing these e-government solutions.

The Survey presents a discussion of the importance of the role of the government in moving towards technology-led connected governance. It offers insights and experiences from around the world on the challenge of encouraging greater use of e-government and ICT while ensuring the opportunity for access is available to all. Presenting models and approaches to assist Member States in drawing upon concepts and systems, the Report provides a reference point for comparison and lesson sharing for countries with similar, but not identical, challenges in e-government applications and development.

Within the backdrop of connected governance, Part I of the Survey presents a comparative ranking of the Member States' e-government readiness in 2008 By ranking countries' performance on a relative scale, it provides a valuable tool for policy making and agenda setting for the future. As such the Survey aims to inform and improve the understanding of policy makers' choices in shaping their e-government programs in the service of development. The Survey offers insights for government officials, policy makers, researchers, and the representatives of civil society and the private sector, in the effort to assist them in gaining a deeper understanding of the need for building a framework for connected governance as the next step in e-government programmes. In doing so, it hopes to contribute to decision makers' quest for a better understanding of the multifaceted challenges of e-government.

Chapter II
Assessing e-Government Readiness

The UN Global e-Government Readiness Survey 2008 presents a comparative assessment of the 192 UN Member States' response to the ever-pressing demands of citizens and businesses for quality government services and products. The Survey evaluates the application of information and communication technologies by governments. The aims to which these technologies are put to use vary, but include: better access and delivery of services to citizens, improved interaction with citizens and business, and the empowerment of citizens through access to information. Overall, they result in a more effective and efficient government in general. This evaluation of e-government readiness places citizens at the forefront, by focusing on the governmental services and products that primarily affect them.

This is the fourth edition of the UN Global e-Government Readiness Survey, with the first Survey having been conducted in 2002. As is the case with previous surveys, this survey seeks to provide governments with a measuring tool that shows their respective areas of strengths and weaknesses within the e-government readiness domain. By providing an objective assessment of the e-government readiness of each UN Member State, the Survey aims to enhance policy makers' capacities by presenting them with an understanding of their country's respective ranking. The Survey also outlines the benefits and challenges ahead in implementing e-government services and provides policy makers with examples of successful e-government services and products, and lessons learned that could be adopted to enhance service delivery.

In order to track the various trends in e-government readiness, UNDESA has developed an "e-Government Readiness Knowledge Base", http://www.unpan.org/egovkb/ which is a compilation of all survey data since 2002. This Knowledge Base allows policy makers, researchers, and academics to assess trends in infrastructure development, online access, citizen participation and inclusion, and each UN Member State's ranking.

UN Member States are at different phases of delivering e-government services. Some of the developed countries are beginning to migrate beyond e-government to i-government, or "connected government", which provides the basis for the transformation from a bureaucratic government to a people-centred one. Some States are in the transactional phase of e-government and still other States are at the initial phase of e-government, where very few services are delivered online. Yet, each State has faced a number of the same challenges in moving forward from phase to phase.

The 2008 Survey looks more deeply at the issue of e-government leadership. As in the past, the survey will continue to assess citizen inclusion, infrastructure development and the absorption capacity of citizenry.

The Conceptual Framework, Methodology and Data Measurement

The conceptual framework of the survey is based on a holistic view of development that incorporates human capacity, infrastructure development, and access to information and knowledge. This year's survey is slightly different from previous surveys, as it incorporates more information about the demand side of "government to citizen"

interactions (G to C). It also includes some aspects of "government to business" interactions (G to B), as well as the issue of e-government leadership. As e-government moves towards connected government, the survey will be continuously adjusted in order to keep it focused on the latest changes and developments in e-government service delivery and citizen participation.

There are four basic roles played by actors in an e-government system: (i) politicians who enact/legislate a law; (ii) public administrators who define the processes for realizing a law; (iii) programmers who implement these processes for realizing a law; and (iv) end-users who use e-government services. Whereas politicians are the suppliers of the e-government system, the end-users are its customers.[33]

As more governments move towards viewing their citizens as customers, the issue of "take-up" becomes a main driver. Take-up can be defined as the relative number of citizens accessing online services. In some instances, governments have spent vast amounts of money building online systems and products only to observe that their citizens do not fully utilize them. This could be due to a lack of willingness and/or interest in understanding the needs of the people they serve. Other factors include: inadequate infrastructure, inadequate delivery of services, content accessibility, usefulness and accuracy, language, social and cultural issues, lack of trust, lack of marketing, and/or lack of confidentiality. For e-government to be successful, people must be willing and have the confidence to use online services on a regular basis.

The Global e-Government Survey responds to this situation by looking beyond assessing the available online services. It also looks at the methods of delivery (such as the Internet and cellular phones, as well as access to PCs) and the capacity of the country to absorb content and services. Governments need to take into consideration their citizens' level of comfort with the various ICTs available in order to deliver effective online services. For the youth, it might mean providing online services via cellular phones and/or an efficient and robust portal that can respond to their need for speed and portability. For senior citizens, it might mean providing one-stop centres where they can receive assistance to access online services without needing an even moderate knowledge of ICTs. For others, it might mean providing integrated portals, whose back-office operations are interlinked; thereby providing a seamless transition from one service to another. For the disadvantaged, it might mean providing more ICT centres that allow them free or subsidized access to services. For the functional illiterate, it might mean providing different forms of communication such as audio in lieu of text. For the physically impaired, it might mean designing tools than enable them to easily access online services.

The conceptual question behind the survey is: how ready are Member States to take advantage of the opportunity provided by advances in information technology?

[33] On Managing Changes in the ontology-based E-Government, Ljiljana Stojanovic, Andreas Abecker, Nenad Stojanovic, Rudi Studer, FZI Research Centre for Information Technologies at the University of Karlsrushe, Institute AIFB, University of Karlsrushe, Germany

The objectives of the survey are to provide a:

1. Comparative assessment of UN Member States' ability to transform their governments by using information and communication technologies to deliver online services and products to their citizens.

2. Benchmarking tool to monitor the advancement of governments in implementing e-government services.

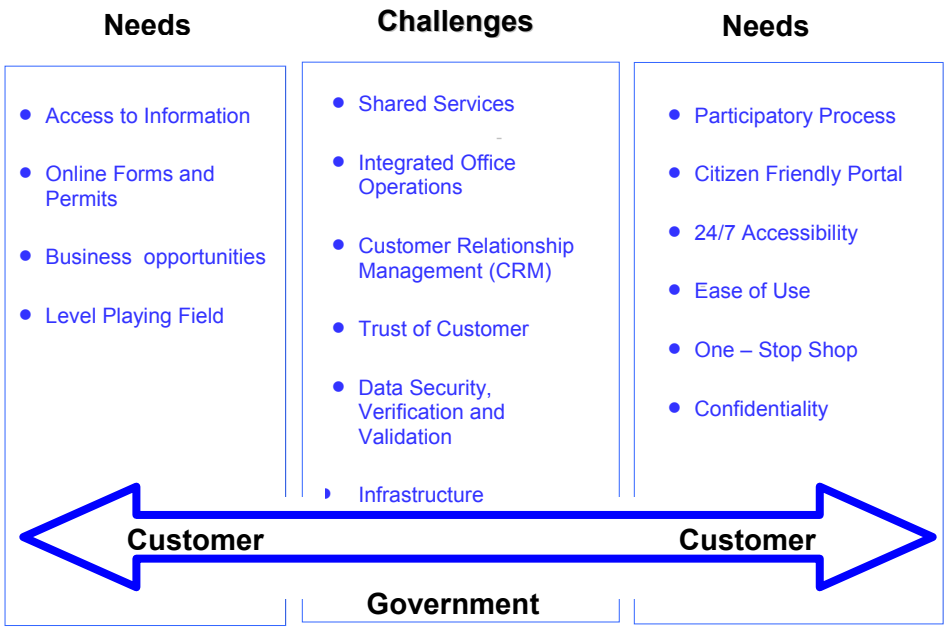
As in previous years, Member States will be able to gauge their ranking globally and regionally. This comparative ranking will allow States to look at other states in their region and identify the reasons why they are lagging behind or leading the way, which also should enable these States to be more focused in the development of their e-government strategies and policies. In addition, the report identifies those States that have leap-frogged stages to achieve a higher e-government rating, and reviews the steps they took in this effort.

The UN Global e-Government Readiness Index 2008

The e-Government Readiness Index is a composite index comprising the Web Measure Index, the Telecommunication Infrastructure Index and the Human Capital Index.

This report focuses mainly on the "government to citizen" (G to C) and "government to government" (G to G) aspects of e-government. Although, this current survey captures some elements of "government to business" (G to B), it is a relatively small part of the survey.

Figure 2.1. E-Government Model



The Web Measure Index

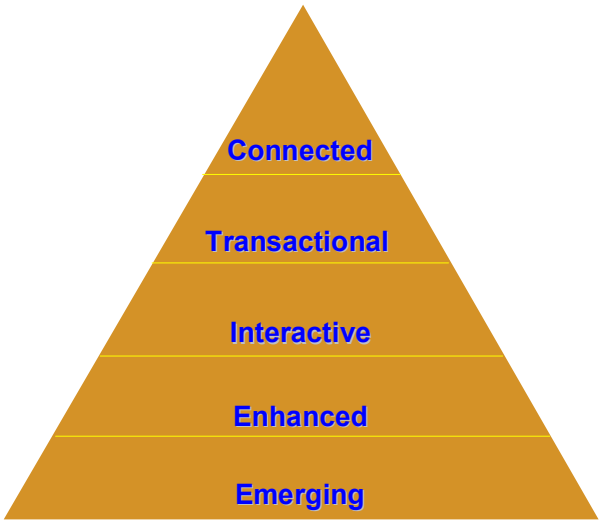
As in previous surveys, the Web Measure Index 2008 is based upon a five-stage model, which builds upon the previous levels of sophistication of a UN Member State's online presence. As a country migrates upwards through the various stages, it is ranked higher in the Web Measure Index.

All of the 192 UN Member States were assessed in 2007. The web measure survey assessments were based on a questionnaire, which allocated a binary value to the indicator based on the presence/absence of specific electronic facilities/services available. The primary site was the national portal or the official government home page of the Member States. Where no official portals were available, other governmental sites were assessed.

The survey assessed the same number of functionalities of the same or similar sites in each country to ensure consistency. In keeping with its conceptual framework of human development, these are the Ministries/Departments of Health, Education, Social Welfare, Labour and Finance, which are representative of the government services citizens require most. Each ministerial site was assessed on the basis of the same set of questions.

This assessment of online services was conducted in October and November of 2007. All the sites were checked several times during those months before the data was validated in order to capture the most recent information and services from these sites.

Figure 2.2. Phases of Web Measure Index



As countries move upwards towards the stage of connected government, they pass through many thresholds in terms of infrastructure development, content delivery, business re-engineering, data management, security and customer management. Each State faces a number of similar challenges as it moves up the pyramid, and the issue of

how States meet those challenges will determine the pace at which they migrate upwards.

The Web Measure Index provides UN Member States with a comparative ranking on their ability to deliver online services to their citizens.

Stages of e-Government Evolution

Stage I - Emerging: A government's online presence is mainly comprised of a web page and/or an official web site; links to ministries or departments of education, health, social welfare, labour and finance may/may not exist. Much of the information is static and there is little interaction with citizens.

Stage II - Enhanced: Governments provide more information on public policy and governance. They have created links to archived information that is easily accessible to citizens, as for instance, documents, forms, reports, laws and regulations, and newsletters.

Stage III - Interactive: Governments deliver online services such as downloadable forms for tax payments and applications for license renewals. In addition, the beginnings of an interactive portal or web site with services to enhance the convenience of citizens are evident.

Stage IV - Transactional: Governments begin to transform themselves by introducing two-way interactions between "citizen and government". It includes options for paying taxes, applying for ID cards, birth certificates, passports, and license renewals, as well as other similar G to C interactions, and allows the citizen to access these services online 24/7. All transactions are conducted online.

Stage V - Connected: Governments transform themselves into a connected entity that responds to the needs of its citizens by developing an integrated back-office infrastructure. This is the most sophisticated level of online e-government initiatives and is characterized by:

1. Horizontal connections (among government agencies)
2. Vertical connections (central and local government agencies)
3. Infrastructure connections (interoperability issues)
4. Connections between governments and citizens
5. Connections among stakeholders (government, private sector, academic institutions, NGOs and civil society)

In addition, e-participation and citizen engagement are supported and encouraged by governments in the decision-making process.

Telecommunication Infrastructure Index

The Telecommunication Infrastructure Index 2008 is a composite index of five primary indices relating to a country's infrastructure capacity as they relate to the delivery of e-government services. These are:

1. Internet Users /100 persons
2. PCs /100 persons
3. Main Telephones Lines /100 persons
4. Cellular telephones /100 persons
5. Broad banding /100 persons

Each index represents 20 percent of the overall telecommunication infrastructure index.

The source of the telecommunication infrastructure data obtained for each UN Member State is the UN International Telecommunication Union (ITU). Constructing five separate indices for the indicators standardizes the data across countries.

(See Technical Note for details on constructing the indices.)

Human Capital Index

The Human Capital Index is a composite of the adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio, with two thirds weight given to the adult literacy rate and one third to the gross enrolment ratio. The data for the adult literacy rate and the gross enrolment ratio was drawn primarily from UNESCO. This was supplemented with data from the UNDP Human Development Report.

The e-Participation Conceptual Framework 2008

"E-Participation has the potential to establish more transparency in government by allowing citizens to use new channels of influence which reduces barriers to public participation in policy making."[34] How a country can access and realize this potential is measured in the e-Participation Index.

Online communities are being created on a daily basis on themes such as: environment, politics, education, social, and economic issues among others. An increasing number of citizens are becoming bloggers and are posting their views on these and other subjects for the world to see and react to. They are creating their personal forms of e-participation. Politicians are also entering into the blogosphere and are creating their own blogs to reach out to the cyber-world constituency that is growing in number and influence.

Further proof that the lines between politics and citizens are becoming blurred was the YouTube sponsored Democratic Presidential Debate in the United States, where ordinary citizens had a platform to question candidates on issues that mattered to them. This direct interaction using ICT tools was unprecedented and ushered in an era of direct dialogue between politicians and citizens.

For e-participation to be successful and to become the norm, governments need to create an environment that allows citizens to voice their views online and more importantly, to create a feedback mechanism which shows citizens that their views are taken seriously. This requires trust between citizens and their governments, as well as a robust infrastructure that allows citizens access to decision makers.

[34] Hacker, K.L.& van Dijk, J. (ed. 2000) Digital Democracy: Issues of Theory and Practices, London, Sage

As in previous years, the e-Participation Index assesses the quality and usefulness of information and services provided by a country for the purpose of engaging its citizens in public policy through information and communication technologies.
Accordingly, UN Member States are assessed by:

1. Their institutional capacity, leadership role, and willingness to engage their citizens by supporting and marketing participatory decision-making for public policy; and
2. The structures that are in place which facilitate citizens' access to public policy dialogue.

Data and Methodology for the e-Participation Index

In total, 21 citizens' informative and participatory services and facilities were assessed across 189 countries, in instances in which these services and facilities were online and where data was available. Questions were grouped under three categories: e-information; e-consultation, and e-decision-making. Each country was assessed on a scale of 0-4.[35] The index was constructed by standardizing the scores.

E-Information

The government web site offers information on the list of elected officials, government structure, policies and programmes, points of contact, budget, laws and regulations and other information of public interest. Information is disseminated through a number of online tools such as: community networks, blogs, web forums, text messages (micro democracy), newsgroups, and e-mail lists.

E-Consultation

The government web site provides the tools necessary for e-consultation. It allows citizens to set the agenda for the debate through e-petitioning. The government ensures that its elected officials have a web site to communicate directly with their constituents. It maintains an archive of their discussions and provides feedback to citizens.

E-Decision-Making

The government is willing to take into account the e-inputs of citizens into the decision-making process. The government informs its citizens on what decisions have been taken based on the consultation process.

[35] More information on the World Wide Web Consortium's (W3C) Web Accessibility Initiative

Chapter III
Global e-Government Readiness Rankings

The world average of the global e-government index continues to increase as more countries invest resources in developing web sites that are informative. Most countries have e-information on policies, laws and an archive section on their portals/web sites. The gap between e-information and e-consultation and e-decision-making is still wide for developing and developed countries.

For the first time since this survey has been produced, there is a new leader. In the 2008 survey, **Sweden** (0.9157) took the number one spot from the **United States**. The Scandinavian countries took the top three spots in the 2008 survey, with **Denmark** (0.9134) and **Norway** (0.8921) in second and third place respectively. The **United States** (0.8644) came in fourth.

In this year's global e-government readiness rankings, the European countries make up 70 percent of the top 35 countries. The Asian countries make up 20 percent of the top 35 and the North American and Oceania regions 5 percent. The European countries as a group have invested heavily in deploying broadband infrastructure, coupled with an increase in the implementation of e-government applications for their citizens. Yet, according to the ITU, the European countries make up none of the top ten countries in broadband subscribers per hundred, with **Denmark**, the **Netherlands** and **Iceland** being the top three countries.

Figure 3.1. Regional Average of e-Government Readiness

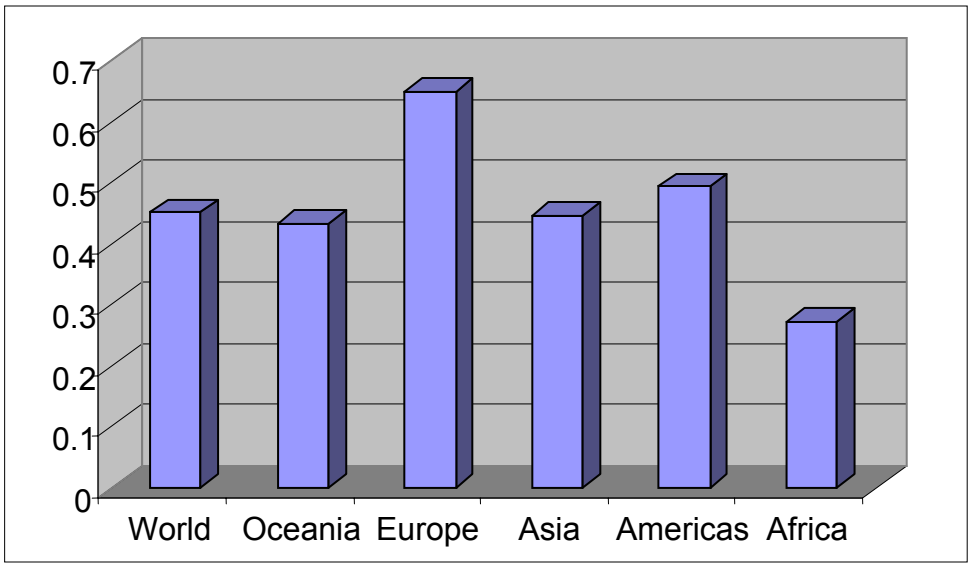


Figure 3.1 clearly shows the difference between the five regions, with Europe (0.6490) having a clear lead over the other regions, followed by the Americas (0.4936), Asia (0.4470), Oceania (0.4338) and Africa (0.2739). Asia and Oceania are slightly below the world average (0.4514), while Africa lags far behind.

Table 3.1. Top 35 Countries in the 2008 E-Government Readiness Index

Rank	Country	e-Government Readiness Index
1	Sweden	0.9157
2	Denmark	0.9134
3	Norway	0.8921
4	United States	0.8644
5	Netherlands	0.8631
6	Republic of Korea	0.8317
7	Canada	0.8172
8	Australia	0.8108
9	France	0.8038
10	United Kingdom	0.7872
11	Japan	0.7703
12	Switzerland	0.7626
13	Estonia	0.7600
14	Luxembourg	0.7512
15	Finland	0.7488
16	Austria	0.7428
17	Israel	0.7393
18	New Zealand	0.7392
19	Ireland	0.7296
20	Spain	0.7228
21	Iceland	0.7176
22	Germany	0.7136
23	Singapore	0.7009
24	Belgium	0.6779
25	Czech Republic	0.6696
26	Slovenia	0.6681
27	Italy	0.6680
28	Lithuania	0.6617
29	Malta	0.6582
30	Hungary	0.6485
31	Portugal	0.6479
32	United Arab Emirates	0.6301
33	Poland	0.6117
34	Malaysia	0.6063
35	Cyprus	0.6019

It is worth noting that in the 2008 Survey, there are no countries in the top 35 from the African, Caribbean, Central American, Central Asian, South American, and Southern Asian regions. The high cost of deploying a robust infrastructure capable of handling e-government applications is one reason for this discrepancy. In addition, many developing countries have been unable to fully implement their e-government policies, mainly due to other competing pressing social issues that need to be dealt with in the context of tight budget constraints, such as: health, education, and employment, to name a few. Table 3.2 presents the next 35 countries.

Table 3.2. The Next 35 Countries

Rank	Country	e-Government Readiness Index
37	Mexico	0.5893
38	Slovakia	0.5889
39	Argentina	0.5844
40	Chile	0.5819
41	Ukraine	0.5728
42	Bahrain	0.5723
43	Bulgaria	0.5719
44	Greece	0.5718
45	Brazil	0.5679
46	Barbados	0.5667
47	Croatia	0.5650
48	Uruguay	0.5645
49	Liechtenstein	0.5486
50	Jordan	0.5480
51	Romania	0.5383
52	Colombia	0.5317
53	Qatar	0.5314
54	Trinidad and Tobago	0.5307
55	Peru	0.5252
56	Belarus	0.5213
57	Kuwait	0.5202
58	Andorra	0.5175
59	Costa Rica	0.5144
60	Russian Federation	0.5120
61	South Africa	0.5115
62	Venezuela	0.5095
63	Mauritius	0.5086
64	Thailand	0.5031
65	China	0.5017
66	Philippines	0.5002
67	El Salvador	0.4974
68	Dominican Republic	0.4943
69	Seychelles	0.4942
70	Saudi Arabia	0.4935

Regional e-Government Readiness

Table 3.2 below, shows a further breakdown by sub-regions for Africa, the Americas, Asia, Europe and Oceania. In the Africa region, there is a big gap between the West African region and the Northern and Southern African regions. The Central and Eastern Africa regions are close in rankings, with Eastern Africa ranking slightly ahead.

In the Americas, North America is dominated by the United States, yet Canada is far ahead of the Caribbean, Central and South American regions. The regions of the Caribbean and Central America are close to the world average, with the South American

region ranking slightly ahead.

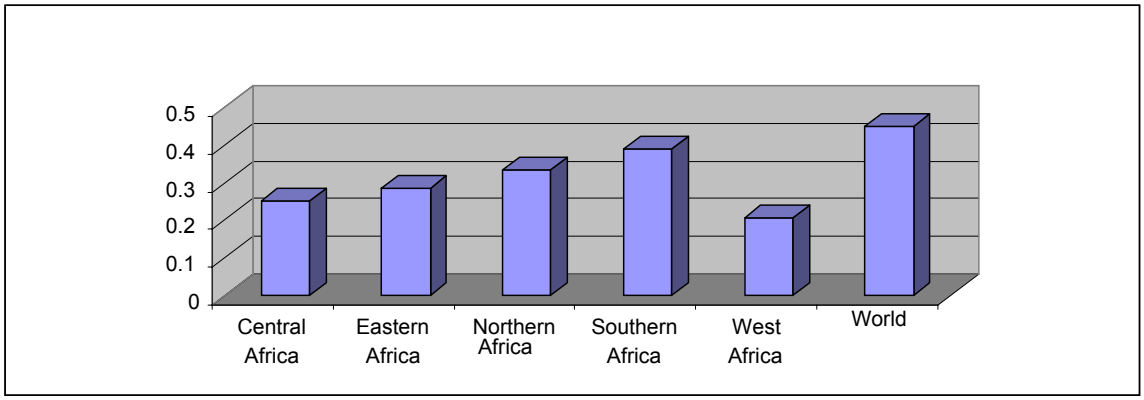
Table 3.3. Regional e-Government Readiness Rankings

Region	2008	2005	Region	2008	2005
Africa			Americas		
Central Africa	0.2525	0.2397	Caribbean	0.4480	0.4282
Eastern Africa	0.2879	0.2836	Central America	0.4604	0.4255
Northern Africa	0.3403	0.3098	North America	0.8408	0.8744
Southern Africa	0.3893	0.3886	South America	0.5072	0.4901
West Africa	0.2110	0.1930			
Asia			Europe		
Central Asia	0.3881	0.4173	Eastern Europe	0.5689	0.5556
Eastern Asia	0.6443	0.6392	Northern Europe	0.7721	0.7751
Southern Asia	0.3395	0.3126	Southern Europe	0.5642	0.4654
South-Eastern Asia	0.4302	0.4388	Western Europe	0.7329	0.6248
Western Asia	0.4857	0.4384			
Oceania	0.4338	0.2888			
World Average	0.4514	0.4267			

In the Asian region, there is major gap between Eastern Asia and the other regions. It should be noted that the regions of Central and Southern Asia are far below the world average. In the European region, there is a significant gap between Northern and Western Europe and Eastern and Southern Europe. Europe is the only region that has all of its sub-regions above the world average.

Africa

Figure 3.2. E-Government Readiness of Africa



Central Africa

As a region, Central Africa is far below the world average of 0.4514. **Angola** (0.3328) leads the region in the 2008 e-government index and has moved up almost 30 positions from the 2005 survey. Its ministries improved their enhanced and interactive phases by providing more archival information and news items, with clear links to the national home page. The Ministry of Finance provided web access to its databases and downloadable financial forms. Angola is closely followed by **Gabon** (0.3228). Although the overall difference between Angola and Gabon is negligible, there is a big gap in the web measure index, with Angola obtaining a score of 0.4381 and Gabon 0.0769. Gabon received much higher scores in the education and infrastructure indices thereby closing the gap. **Cameroon** also had an impressive showing in the 2008 Survey by moving up 24 positions to 121st, which was mainly due to an increase in its infrastructure index. Its PCs per 100 doubled from .6 to 1.2. What really made the difference was a big increase in cellular phones which rose from less than 1 per 100 (.5) to almost 14 per 100 (13.80). One of the major surprises in this region was **Equatorial Guinea,** which was not online in the 2005 Survey and achieved a ranking of 146 in 2008. The **Democratic Republic of the Congo**, which also was not online in 2005 ranked 162nd in 2008.

Table 3.4. E-Government Readiness for Central Africa

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Angola	0.3328	0.1840	129	158
Gabon	0.3228	0.2928	131	131
Sao Tome and Principe	0.3215	0.2827	132	135
Equatorial Guinea	0.2890	…	146	…
Congo	0.2737	0.2855	149	134
Cameroon	0.2690	0.2500	121	145
Democratic Republic of the Congo	0.2177	…	162	…
Central African Rep.	0.1412	…	179	…
Chad	0.1047	0.1433	182	169
Region	0.2525	0.2397		
World	0.4514	0.4267		

The Ministries of Labour and Social Welfare http://www.mapess.gv.ao/ of **Angola** received high marks (80%) for the enhanced stage, by providing their citizens with a one-stop shop web site, news section and archived information.

Eastern Africa

The Eastern African region showed little improvement in this year's e-government readiness index. Its e-government readiness ranking in 2005 was **0.2836,** compared with **0.2879** in 2008. **Mauritius** (0.5086) and the **Seychelles** (0.4942) continued to lead the region. It should be noted that the majority of the countries surveyed had a lower ranking in 2008 compared with 2005. Furthermore, with the exception of Mauritius and the Seychelles, all the other countries in this region had low infrastructure scores, which reduced their overall e-government index. The one positive aspect of this region was **Zambia,** which went from not having an online presence in 2005 to being ranked 158th in

2008.

Table 3.5. E-Government Readiness for Eastern Africa

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Mauritius	0.5086	0.5317	64	52
Seychelles	0.4942	0.4884	70	63
Kenya	0.3474	0.3298	124	122
Uganda	0.3133	0.3081	134	125
Madagascar	0.3065	0.2641	135	141
Zimbabwe	0.3000	0.3316	138	120
Rwanda	0.2941	0.2530	142	143
United Republic of Tanzania	0.2929	0.3020	144	127
Malawi	0.2878	0.2794	147	137
Mozambique	0.2559	0.2448	152	146
Djibouti	0.2279	0.2381	157	149
Zambia	0.2266	…	158	…
Eritrea	0.1965	0.1849	169	157
Comoros	0.1896	0.1974	170	155
Ethiopia	0.1857	0.1360	172	170
Burundi	0.1788	0.1643	174	166
Somalia	…	…	…	…
Region	0.2879	0.2836		
World	0.4514	0.4267		

The Kenyan government enhanced its online presence for the benefit of visitors and citizens. The welcome page at http://www.kenya.go.ke is well laid out and easy to navigate. As a step towards a "one-stop shop" design, it provides citizen service sections on "Crime & Justice", "Education & Learning", "Health & Wellbeing" and other thematic issues. Kenya is also continuing to work towards realizing its commitment to online service through its dedicated "Directorate of e-Government" http://www.e-government.go.ke that can be found within the Office of the President. The Directorate highlights e-government resources and provides news on items such as the "e-transaction bill" being developed by the government. Kenya's example shows how even countries with constrained resources can make solid progress in e-government.

The Ministry of Finance in Rwanda http://www.minecofin.gov.rw improved its web site by enhancing its feature to download statistics and to access the Ministry's database. It is also available in two languages, namely English and French. The Ministry of Education of Mauritius http://ministry-education.gov.mu allows citizens to register online and download forms and has a business section for the online application of tenders, permits, and clearances.

Box 2. Best Practice – European Union

Launched in March 2006, Debate Europe allows European citizens to share their thoughts, concerns and ideas on the future of the European Union. Discussions on the forum focus on three topics: Europe's economic and social development; feelings towards Europe and the Union's tasks; and Europe's borders and its role in the world. Citizens can either participate in these debates or view the thoughts of other citizens on the web site. Debate Europe is available in the 21 languages of the European Union. In addition, citizens can participate in national debates concerning their country in their local language.

http://europa.eu/debateeurope/index_en.htm

North Africa

Egypt (0.4767) continues to lead the North African region and continues to move up the rankings. It should be noted that Egypt was ranked 140th in the 2005 Survey, moving to 79th in the 2008 Survey. Egypt also scored high in the web measure index (0.6054), ranking 28th globally. Egypt's national web site has downloadable forms, and allows the online submission of forms and payment by credit card, all on a secured link. The national web site also provides interaction with PDAs and WAP (wireless application protocol). Egypt has also invested in multimedia with video and audio links on their web site. **Libyan Arab Jamahiriya** came online in 2008 and attained a ranking of 122, which was largely based on the strength of its education index. **Algeria**, **Morocco** and **Tunisia** improved slightly in the 2008 index, due to their improvement in the infrastructure index.

Table 3.6. E-Government Readiness for North Africa

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Egypt	0.4767	0.3793	79	99
Libyan Arab Jamahiriya	0.3546	…	122	…
Algeria	0.3515	0.3242	123	123
Tunisia	0.3458	0.3310	126	121
Morocco	0.2944	0.2774	141	138
Sudan	0.2186	0.2370		150
Region	0.3403	0.3098		
World	0.4514	0.4267		

The Ministry of Education of Egypt http://knowledge.moe.gov.eg/arabic/ has improved its web site by making it more interactive. Citizens can receive information via email, download registration forms, and see and hear video and audio clips. The Ministry of Finance of Morocco http://www.finances.gov.ma allows its citizens to create accounts online, download financial statistics and retrieve achieved information. It also has e-finance applications for customs.

Southern Africa

The Southern African region showed little improvement from the 2005 survey. Most of the countries surveyed had a lower ranking in 2005 than in 2008. **South Africa** (0.5115) continues to lead in this region followed by **Lesotho** (0.3805). **Botswana** experienced a major drop of 29 places declining from being ranked 90th in 2005 to 119th in 2008. This was due to a lower score in the web measure index in stages II and III. Botswana did not improve its sites from the 2005 survey and with the new questions being added, it did not score well.

Table 3.7. E-Government Readiness for Southern Africa

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
South Africa	0.5115	0.5075	61	58
Lesotho	0.3805	0.3373	114	114
Botswana	0.3647	0.3978	119	90
Swaziland	0.3454	0.3593	127	108
Namibia	0.3445	0.3411	128	111
Region	0.3893	0.3886		
World	0.4514	0.4267		

The Ministry of Finance of Lesotho http://www.finance.gov.ls permits its citizens to download forms and access financial statistics, retrieve archival information, and also offers a news section: an online feedback mechanism that allows citizens to ask questions or make a suggestion.

As a standout e-government leader in sub-Saharan Africa, South Africa has a strong online presence. The web site of the Department of Labour http://www.labour.gov.za in particular, is an excellent example of a public agency web site that is well tailored to the needs of its stakeholders. The web site has a very attractive and simple design that allows users to quickly find what they are looking for. The ease of navigation is facilitated by providing users with key phrases, such as “Maternity benefits", "Workmen's compensation”, "Domestic workers", "Employers", and "Bargaining councils". Visitors to the site can access helpful guides and legislative summaries on a range of employment-related topics, (e.g. affirmative action, annual leave, and employment contracts, as well as comprehensive labour market research and statistics). Add to this the various online filings/registrations available (e.g. compensation claims, employer registration) and the posting of online vacancies, and you have a full-featured site that is a one-stop shop for labour issues.

West Africa

The West African region had the lowest regional index in the survey. The region scored a **0.2110** in the 2008 survey as compared with the world average of **0.4514**. **Cape Verde** (0.4158) continues to lead the region, with **Nigeria** (0.3063) and **Ghana** (0.2997) taking the top three spots. **Liberia** and **Guinea-Bissau**, which did not have an online presence in 2005, had a ranking of 163rd and 170th respectively in the 2008 survey. It should be noted that the majority of the countries in this region continue to lag at the bottom

because of low scores on the education, infrastructure and web measurement indices.

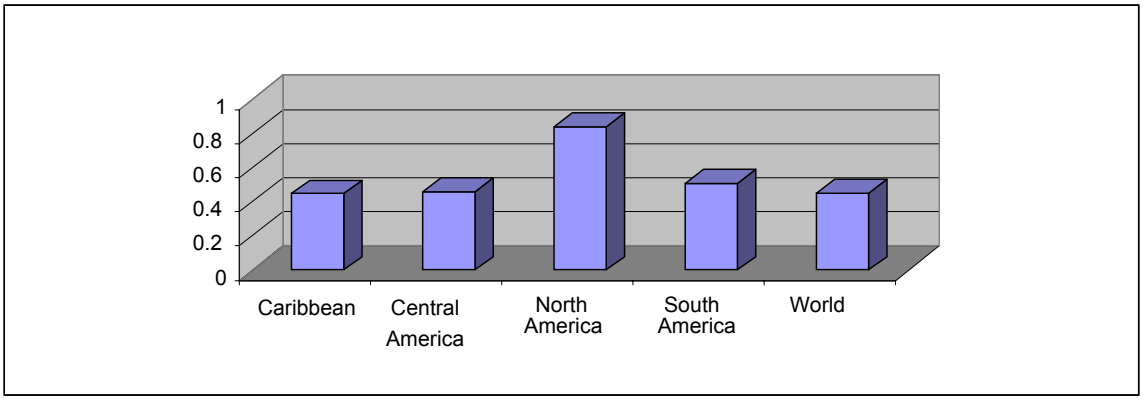
Table 3.8. E-Government Readiness for West Africa

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Cape Verde	0.4158	0.3346	104	116
Nigeria	0.3063	0.2758	136	139
Ghana	0.2997	0.2866	140	133
Senegal	0.2531	0.2238	153	153
Gambia	0.2253	0.1736	159	163
Togo	0.2191	0.2274	160	152
Liberia	0.2170	…	163	…
Mauritania	0.2028	0.1723	167	164
Benin	0.1860	0.2309	171	151
Cote d'Ivoire	0.1853	0.1820	173	160
Mali	0.1591	0.0925	175	173
Burkina Faso	0.1542	0.1329	176	172
Guinea-Bissau	0.1521	…	177	…
Sierra Leone	0.1463	0.1639	178	167
Guinea	0.1402	0.1396	180	170
Niger	0.1142	0.0661	181	174
Region	0.2110	0.1930		
World	0.4514	0.4267		

The national portal of Burkina Faso www.primature.gov.bf is the only African portal which allows for online consultation. The Ministry of Finance of Cape Verde http://www.minfin.cv has created a one-stop shop, with downloadable financial forms and statistics, and access to the ministry's data base and archived information. The Ministry of Health of Senegal www.sante.gouv.sn has enhanced its web site to interact with its citizens. The portal encourages citizen participation and permits health statistics to be downloaded.

The Americas

Figure 3.3. E-Government Readiness of the Americas



The Caribbean

Barbados (0.5667) continues to lead the Caribbean region in the 2008 survey, ranking in the top 25 percent of the e-government readiness index**.** This was mainly due to its strength in the education and infrastructure indices. **Trinidad and Tobago** and the **Dominican Republic** also made positive strides in the 2008 survey. The Dominican Republic had the highest web measure in this group, ranking in the top 1/3 of the web measure index, but its poor infrastructure score placed it third in the group. **Jamaica** had a major drop in the 2008 survey. It went from 59th in the 2005 survey to 85th in the 2008 survey due to its low scores in stages IV and V, with the exception of the Ministry of Finance, which scored average. Jamaica's other four Ministries scored well below average. **Haiti** has joined the group of countries online and was ranked 168th.

Table 3.9. E-Government Readiness for the Caribbean

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Barbados	0.5667	0.4920	46	61
Trinidad and Tobago	0.5307	0.4768	54	66
Dominican Republic	0.4943	0.4076	69	82
Bahamas	0.4911	0.4676	72	67
Saint Kitts and Nevis	0.4814	0.4492	78	72
Saint Lucia	0.4746	0.4467	80	74
Jamaica	0.4679	0.5064	85	59
Grenada	0.4545	0.3879	92	95
Antigua and Barbuda	0.4485	0.4010	96	86
Saint Vincent and the Grenadines	0.4306	0.4001	98	88
Cuba	0.3990	0.3700	111	103
Dominica	0.3746	0.3334	117	119
Haiti	0.2097	…	168	…
Region	0.4480	0.4282		
World	0.4514	0.4267		

The Ministry of Health of Trinidad and Tobago http://www.health.gov.tt/ encourages citizen participation, has video clips available on health related issues, and offers news items. The Ministry of Welfare of the Dominican Republic ww.sespas.gov.do also encourages citizen participation and is a one-stop shop for health related information. The web site contains important health information to keep its citizens abreast of the latest health issues. The Ministry of Labour of Grenada http://www.grenadaedu.com/ allows its citizens to create online accounts, downloads statistics, and keeps its citizens informed with a news section.

Central America

The Central American region was above the world average for the first time. **Mexico** (0.5893) continues to lead the region. But the gap between Costa Rica and El Salvador has decreased due to an improvement in the online transaction applications for El Salvador and in the online stage III for Costa Rica.

Table 3.10. E-Government Readiness for Central America

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Mexico	0.5893	0.6061	37	31
Costa Rica	0.5144	0.4612	59	70
El Salvador	0.4974	0.4225	67	78
Panama	0.4718	0.4822	83	64
Guatemala	0.4283	0.3777	99	100
Belize	0.4102	0.3815	107	97
Honduras	0.4048	0.3348	110	115
Nicaragua	0.3668	0.3383	118	113
Region	0.4604	0.4255		
World	0.4514	0.4267		

The national portal of Mexico http://www.gob.mx has a strong e-participation presence. It provides a separate e-government portal and online consultation between the government and its citizens. The site also provides online bidding for public contracts and payment by credit card through a secure link with electronic signature capabilities. The national portal of El Salvador http://www.elsalvador.gob.sv has started interacting with its citizens, by providing online polls, a separate e-government web site and video and audio clips. The Ministry of Education of Costa Rica http://www.mep.go.cr/ provides a one-stop shop for its citizens, which allows citizens to receive information via email and create online accounts.

North America

The federal government web system of the United States is still a model for e-government, even though the United States dropped slightly in the web measure rankings for 2008. The third place ranking is not at all indicative of any real shortcomings of the US government's web system, but rather is reflective of the fact that the U.S. ministry/department web sites do not have some of the transactional and e-commerce features that the ministry web sites of other e-government leaders have. The USA.gov web portal remains one of the most comprehensive and effective government web sites in existence. Its effectiveness and success is made all the more incredible because of the vast size of the US government and the enormous amount of information and services provided, all online. In 2008, the USA.gov web portal includes new features such as numerous RSS feeds for news and other information (although it has no feed specifically for e-participation), a comprehensive mobile government web page, and enhancements to its leading edge e-rulemaking (the US equivalent to consultation) feature. Many of these same features and more, such as blogs and wikis, were also found at the US Department web sites.

Table 3.11. E-Government Readiness for North America

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
United States	0.8644	0.9062	4	1
Canada	0.8172	0.8425	7	8
Region	0.8408	0.8744		
World	0.4514	0.4267		

Canada's drop in the 2008 web measure rankings should not be taken as anything more than an indication that other countries have finally caught up with one of the true e-government leaders. The Canadian web portal is still a leader, especially given the fact that all information and services provided at the site are equally available in both English and French. The national web portal is packed with information and services, yet remains user friendly. The home page has new interactive communications features including RSS feeds and a new mobile government portal. The National Portal channels users to a trio of integrated gateway sites for citizen services http://www.servicecanada.gc.ca/, business services www.businesscanada.gc.ca, and the international community http://www.canadainternational.gc.ca/. In Canada's tradition of government accountability and transparency, a new feature on the national homepage is "Proactive Disclosure," a comprehensive listing of government-wide disclosure reports of contracts, travel and hospitality expenses, grant awards, and other subjects of disclosure.

South America

Argentina (0.5844) surpassed Chile (0.5819) and Brazil (0.5679) to lead the South American region. This was done primarily with an increase in the infrastructure index, with a major increase in cellular subscribers and an increase in the number of PCs. Bolivia, Ecuador and Paraguay also increased their rankings in the 2008 survey by improving their online service delivery stages II and III.

Table 3.12. E-Government Readiness for South America

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Argentina	0.5844	0.5971	39	34
Chile	0.5819	0.6963	40	22
Brazil	0.5679	0.5981	45	33
Uruguay	0.5645	0.5387	48	49
Colombia	0.5317	0.5221	52	54
Peru	0.5252	0.5089	55	56
Venezuela	0.5095	0.5161	63	55
Bolivia	0.4867	0.4017	73	85
Ecuador	0.4840	0.3966	75	92
Paraguay	0.4654	0.3620	88	107
Guyana	0.4375	0.3985	97	89
Suriname	0.3472	0.3449	125	110
Region	0.5072	0.4901		
World	0.4514	0.4267		

The national portal of Argentina http://www.canadainternational.gc.ca/ has developed a number of tools and features that support e-participation. It has a separate e-government portal and is one of the few countries which has designated someone who is responsible for all e-government policies. In addition, the portal allows the online submission of forms and has a timeframe to respond to citizens' emails and online submissions. The Ministry of Education of Paraguay http://www.mec.gov.py is a one-stop shop that allows citizens to create online accounts and receive information via email. The Ministry of Social Welfare of Venezuela http://www.mps.gob.ve also is a one-stop shop that allows citizens to create online accounts and receives information via email. In addition, this web site has incorporated multimedia with the inclusion of audio and video clips.

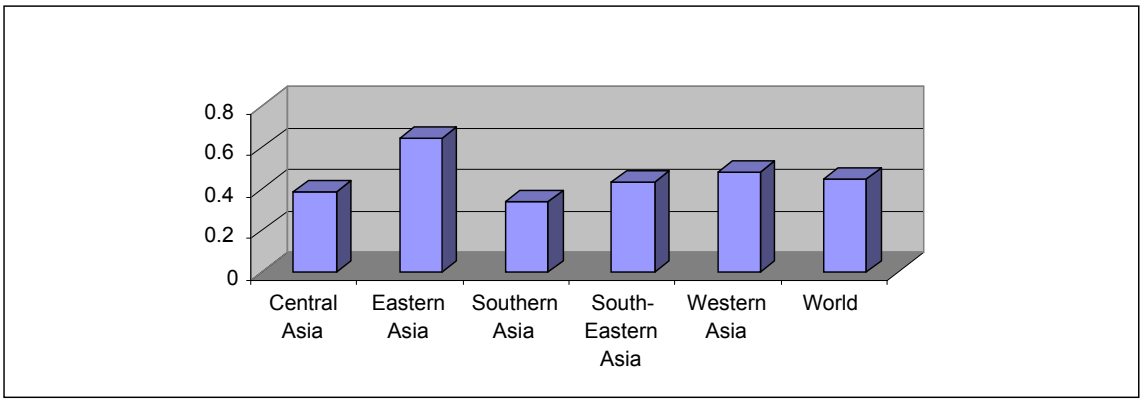
Box 3. Brazil – House of Representatives e-Participation

The Brazilian House of Representatives web site allows citizens to talk to their representatives and to participate in debates directly through the Internet. The government of Brazil also provides an e-participation platform that permits Members of Parliament and citizens to communicate through chat rooms, discussion forums and the service "Fale com Deputado" or "Talk to the MP". This form of e-participation has enhanced the interaction between citizens and Members of Parliament. In a country as vast as Brazil and with a geographically dispersed population, online participation has provided citizens with a greater voice in the creation of policies and laws.

http://www2.camara.gov.br/popular

Asia

Figure 3.4. E-Government Readiness in Asia



Central Asia

The Central Asian region has regressed the most since the 2005 Survey. The region is far behind the world average. All the countries in this region had a lower e-government readiness index than in 2005 because they did not enhance their sites. This year's survey had more questions on the interactive and transactional stages which the countries in the region did not have, and thus the scores were lower. In addition, Turkmenistan was counted this year, having developed a limited national web site which was well below the average, resulting in a reduction for the region as a whole. Kazakhstan (0.4743) continues to lead the region. Turkmenistan's high education index was the main reason for it ranking 130th in the e-government readiness index.

Table 3.13. E-Government Readiness for Central Asia

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Kazakhstan	0.4743	0.4813	81	65
Kyrgyzstan	0.4195	0.4417	102	76
Uzbekistan	0.4057	0.4114	109	79
Turkmenistan	0.3262	…	130	…
Tajikistan	0.3150	0.3346	139	117
Region	0.3881	0.4173		
World	0.4514	0.4267		

Eastern Asia

The Eastern Asian region has the highest regional average in the 2008 Survey. The **Republic of Korea** (0.8317) continues to lead the region followed by Japan (0.7703) and China (0.5017). Mongolia improved in all three indices (Infrastructure, Education and Web Measure) in 2008, placing it in the upper 50 percent of the survey and above the world average for the first time.

Table 3.14. E-Government Readiness for Eastern Asia

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Republic of Korea	0.8317	0.8727	6	5
Japan	0.7703	0.7801	11	14
China	0.5017	0.5078	65	57
Mongolia	0.4735	0.3962	82	93
Democratic People's Rep. of Korea	…	…		…
Region	0.6443	0.6392		
World	0.4514	0.4267		

The Republic of Korea's national portal http://www.korea.go.kr/ has a strong e-participation presence. The portal provides citizens with online consultation and encourages its people to engage in issues affecting them. It allows citizens to create online submissions and payments and lets them track the progress of their submissions. All this is done on a secure network that ensures electronic signatures.

The Ministry of Education of Japan http://www.mext.go.jp/ provides feedback on submissions entered online or from email. It allows citizens to create personal accounts and is one of the few web sites that support electronic signature to ensure confidentiality.

The national portal of China http://www.gov.cn/ supports citizen participation and conducts online polling to obtain a snapshot of the views of its people. The site uses audio and video multimedia tools to disseminate information, policies and guidelines.

Box 4. Chuncheon City Online Services

In the city of Chuncheon, the Republic of Korea, citizens have direct access to the Mayor through the Chuncheon City web site. Through this web site citizens can suggest ideas and proposals and forward comments on the services provided to the Mayor's Office. The suggestions are then reviewed by the Mayor's Office and feedback is provided to the citizen. In addition, citizen groups and local residents participate in the compilation of the city's budget to ensure a transparent process.

Southern Asia

The Southern Asian region remains far below the world average and is the lowest ranking region in Asia. The Maldives (0.4491) continues to lead this region, followed by Sri Lanka (0.4244) and Iran (0.4067). Bangladesh has improved on its web measurement in the enhanced and interactive stages.

Table 3.15. E-Government Readiness for Southern Asia

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Maldives	0.4491	0.4321	95	77
Sri Lanka	0.4244	0.3950	101	94
Iran (Islamic Rep. of)	0.4067	0.3813	108	98
India	0.3814	0.4001	113	87
Pakistan	0.3160	0.2836	133	136
Bhutan	0.3074	0.2941	137	130
Bangladesh	0.2936	0.1762	143	162
Nepal	0.2725	0.3021	150	126
Afghanistan	0.2048	0.1490	166	168
Region	0.3395	0.3126		
World	0.4514	0.4267		

South-Eastern Asia

Singapore (0.7009) continues to lead the South-Eastern Asian region followed by Malaysia (0.6063) and Thailand (0.5031).

Singapore has a number of e-government initiatives tailored to meet the needs of its citizens. The My e-Citizen portal provides its citizens with the opportunity to voice their opinions on a number of local issues of concern. Citizens can post their opinions on issues such as the country's national climate change strategy, the extension of the smoking ban, how to reduce governmental red tape, and how to make the government more efficient. The topics change on a regular basis. The portal also allows citizens to take advantage of m-technology by providing its citizens the option of receiving SMSs from the government on diverse matters including passport renewal, road tax renewal, an e-government newsletter and even notifications of overdue library books.

The Indian government has developed a comprehensive national portal http://india.gov.in/ that promotes and highlights e-governance as an important national policy and strategy, including a visible link to the National e-Governance Plan, which details the government's e-strategy and primary contacts. The Indian government has created a user friendly national site that enables users to quickly access information and e-government services based on their own profile and needs. Information is clearly organized according to the prospective user, including "citizen," "business," and "government." A scrolling news feed links to recent news updates, and other navigation features lead users to tenders, forms and maps. "Help" and "feedback" features are easily accessed on the home page. The site also has a section for the large Indian expatriate community. The site manages to balance a huge amount of information and services with intuitive navigation and access to commonly used information from a single page.

Table 3.16. E-Government Readiness for South-Eastern Asia

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Singapore	0.7009	0.8503	23	7
Malaysia	0.6063	0.5706	34	43
Thailand	0.5031	0.5518	62	46
Philippines	0.5001	0.5721	66	41
Brunei Darussalam	0.4667	0.4475	87	73
Viet Nam	0.4558	0.3640	91	105
Indonesia	0.4107	0.3819	106	96
Cambodia	0.3121	0.2989	115	128
Myanmar	0.2922	0.2959	145	129
Timor-Leste	0.2462	0.2512	155	144
Lao People's Democratic Republic	0.2383	0.2421	156	147
Region	0.4302	0.4388		
World	0.4514	0.4267		

The Indonesia Social Ministry site http://www.depsos.go.id is an example of a "Best Practice" in user preferences and rankings, by allowing users to directly and indirectly shape their web experience. An example of this in the government context is the "Top 10 Article Lists", which provides a ranking of the top ten most often read articles, most highly rated items, most often downloaded files, most active commenters, etc. This reflects the wider web trend of user-shaped news and content, and takes the decision of what is important and how it will be displayed out of the government's hand and into those of the citizen's.

Box 5. Singapore Personal Access (SingPass)

The Government of Singapore implemented SingPass in March 2003 to support Singapore's e-Government Vision (2003-2006) and to transform public service into a Networked Government that delivers accessible, integrated and value-adding e-services to customers; and also helps bring citizens closer together. SingPass is the common password for the public to access the government's e-services. With SingPass, citizens and foreigners working in Singapore only need to remember one unique ID and password assigned to them.

With SingPass, registered users can use their unique ID and password to enjoy citizen-centric government e-services. Today, about 40 government agencies authenticate users with SingPass for access to about 370 e-services requiring secure user identification. Customers who forget their SingPass can reset their password immediately at 52 locations.

To ensure privacy of user information, SingPass data is encrypted which denies unauthorised personnel direct access to it. In addition, agencies using SingPass authentication for their e-services do not have direct access to the database.

Western Asia

Israel (0.7393) continues to lead the Western Asian region followed by the **United Arab Emirates** (0.6301) and **Cyprus** (0.6019). It should also be noted that **Bahrain, Jordan, Qatar, Kuwait** and **Saudi Arabia** improved significantly since the 2005 Survey. On

average these countries improved 14 positions, with Jordan and Kuwait leading the way, each moving up 18 positions.

The Western Asian region has attained a 5 percent growth in e-government services since the 2005 Survey and is above the world average.

Table 3.17. E-Government Readiness for Western Asia

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Israel	0.7393	0.6903	17	24
United Arab Emirates	0.6301	0.5718	32	42
Cyprus	0.6019	0.5872	35	37
Bahrain	0.5723	0.5282	42	53
Jordan	0.5480	0.4639	50	68
Qatar	0.5314	0.4895	53	62
Kuwait	0.5202	0.4431	57	75
Saudi Arabia	0.4935	0.4105	71	80
Lebanon	0.4840	0.4560	74	71
Turkey	0.4834	0.4960	76	60
Oman	0.4691	0.3405	84	112
Azerbaijan	0.4609	0.3773	89	101
Georgia	0.4598	0.4034	90	83
Armenia	0.4182	0.3625	103	106
Syrian Arab Republic	0.3614	0.2871	120	132
Iraq	0.2690	0.3334	151	118
Yemen	0.2142	0.2125	164	154
Region	0.4857	0.4384		
World	0.4514	0.4267		

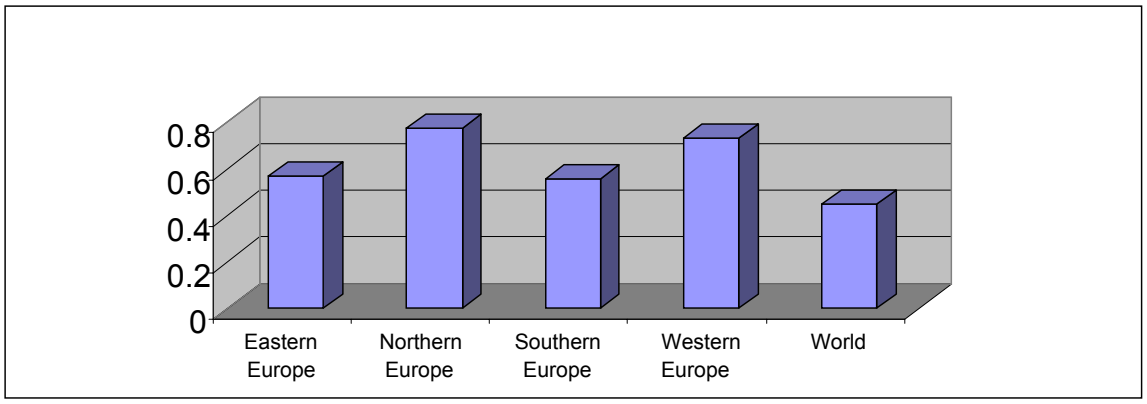
The United Arab Emirates had the highest web measure index in the region. The Ministry of Labour http://www.mol.gov.ae/ is an excellent example of a one-stop shop. The site provides transactional features such as, payment by credit card, the online submission of forms and permits, the creation of personal accounts, has a timeframe by which to respond to emails and online queries, and is one of the few sites that has an electronic signature.

The Ministry of Social Welfare of Kuwait http://www.mosal.gov.kw is another excellent example of a progressive web site. The site offers email notification to citizens' requests, allows online submission of forms and payment, and allows the creation of personal accounts online.

The Ministry of Education of Jordan http://www.moe.gov.jo/ is another excellent web site that offers email notification, and encourages citizen participation. It also allows citizens to create personal accounts and make payments online.

Europe

Figure 3.5. E-Government Readiness in Europe



Eastern Europe

The **Czech Republic** (0.6696) has taken the lead in the Eastern European region, followed by **Hungary** (0.6494) and **Poland** (0.6134). The overall rankings in 2008 do not differ too much from those in 2005. The notable exception is Ukraine, which moved up seven positions to number 41.

Table 3.18. E-Government Readiness for Eastern Europe

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Czech Republic	0.6696	0.6396	25	29
Hungary	0.6494	0.6536	30	27
Poland	0.6134	0.5872	33	38
Slovakia	0.5889	0.5887	38	36
Ukraine	0.5728	0.5456	41	48
Bulgaria	0.5719	0.5605	43	45
Romania	0.5383	0.5704	51	44
Belarus	0.5213	0.5318	56	51
Russian Federation	0.5120	0.5329	60	50
Republic of Moldova	0.4510	0.3459	93	109
Region	0.5689	0.5556		
World	0.4514	0.4267		

The Ministry of Finance of Poland http://www.mf.gov.pl/ provides citizens information on its World Bank Grant in an effort to strengthen its auditing functions and on its public debt. It also has a feature that allows citizens to calculate its treasury bonds accrued interest over time.

The Czech Republic's national web site http://www.vlada.cz/ was rated the highest in this group. This site provides links to all of its advisory bodies and working councils. The site also has Really Simple Syndication, which allows it to be frequently updated to

handle blogs and other feeds.

Northern Europe

The Northern European region was the strongest region in Europe. Sweden (0.9157), Denmark (0.9134), and Norway (0.8921) were the top three countries in the Survey and were standouts on the web measure in 2007-2008, with Denmark and Sweden ranking number one and two, and Norway finishing fourth. Sweden with its newly revamped e-services portal http://www.sverige.se , "your guide to Sweden's public sector", and Norway with its redesigned primary site http://www.regjeringen.no have improved from previous years, but Denmark http://borger.dk/ still leads the way among the Scandinavian countries and globally.

Interestingly, the Scandinavian countries surveyed all employ a similar web strategy. They each have a primary site that is informational, and a tightly integrated, gateway site for e-services. Using this approach, each of the Scandinavian countries scored very high on the availability of services and transactions, the clear area where they excelled compared to most other countries. Compared to previous years, Denmark, Norway and Sweden still have a large amount of content available in other languages, but not nearly as large a percentage as in the past. This is mainly due to the enormous growth of the information and content available on their sites.

Another feature the Scandinavian sites have in common is that they include quite a bit of information about, and references to, e-participation. All established e-participation or e-democracy commissions and they have all sorts of publications and findings.

Table 3.19. E-Government Readiness for Northern Europe

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Sweden	0.9157	0.8983	1	3
Denmark	0.9134	0.9058	2	2
Norway	0.8921	0.8228	3	10
United Kingdom	0.7872	0.8777	10	4
Estonia	0.7600	0.7347	13	19
Finland	0.7488	0.8231	15	9
Ireland	0.7296	0.7251	19	20
Iceland	0.7176	0.7794	21	15
Lithuania	0.6617	0.5786	28	40
Latvia	0.5944	0.6050	36	32
Region	0.7721	0.7751		
World	0.4514	0.4267		

Over the past year, the United Kingdom has revamped its government online system, through an initiative to pare down the numerous (hundreds) of government web sites available to the public. The UK's main government portal, www.directgov.uk, was redesigned in 2008, which appears to have resulted in a drop in the web measure rankings for the UK. Yet, the Directgov.uk web site ("Public service all in one place") does one of the best jobs of joining up information and services from the central

government as well as local authorities. The main site is filled with information, and has a consolidated directory and services listing for the central government with local authorities, along with additional excellent linkages to local government services and resources. Furthermore, the main site has new citizen communications features, such as a mobile government portal, as well as a separate business gateway www.businesslink.gov.uk. While the UK national site may have slipped in the rankings, the site with its comprehensive information and services covering different levels of government still provides good value to the citizen user.

It should be noted that all the countries in Northern Europe are in the top 20 percent of the infrastructure, education and web measurement indices, as well as the global e-government readiness index.

Box 6. Regional Best Practice – Ireland

Ireland has implemented a single portal to centralize government procurement. As a one-stop shop for businesses to work together with the Irish Government, this portal handles tender submissions and vendor registration. The portal provides businesses with a simple two-page set of instructions in its "Suppliers-Getting Started page. Subscribers to this web site receive email alerts as new opportunities are published, access to business opportunities with the public sector, and clear and concise information on working with the government.

http://www.e-tenders.gov.ie/

The Social Security and Labour Ministry of Lithuania http://www.socmin.lt/ provides an online English-Lithuanian dictionary of social terms, employment, and health topics. It also gives advice on how to find work, with the option of consulting with a government official via the Internet.

Southern Europe

Spain (0.7228) has improved tremendously since 2005 and has taken the lead in this region by moving up 19 positions to the number 20 spot. Spain has improved immensely on the web measure index, as well as on the infrastructure index. On the infrastructure side, the deployment of broadband increased the number of PCs per 100 from 19 to 28 and Internet users per 100 went from 24 to 43. On the web measure side, it had a separate e-government portal that strongly encourages e-participation, provides online transactions on a secure link, and communication via mobile phones with citizens, providing alerts. Spain has also enhanced its national sites through better multimedia tools (video and audio clips). Its Ministry of Finance allows email sign-up, and the creation of online personal accounts on secure links and its Ministry of Education a one-stop shop. All these improvements increased Spain's total web measure index.

Table 3.20. E-Government Readiness for Southern Europe

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Spain	0.7228	0.5847	20	39
Slovenia	0.6681	0.6762	26	26
Italy	0.6680	0.6794	27	25
Malta	0.6582	0.7012	29	21
Portugal	0.6479	0.6084	31	30
Greece	0.5718	0.5921	44	35
Croatia	0.5650	0.5480	47	47
Andorra	0.5175	0.1836	58	159
T.F.Y.R. Macedonia	0.4866	0.4633	68	69
Serbia	0.4828	0.1960	77	156
Albania	0.4670	0.3732	86	102
Bosnia and Herzegovina	0.4509	0.4019	94	84
Montenegro	0.4282	0.1960	100	156
San Marino	…	0.3110	…	124
Region	0.5642	0.4654		
World	0.4514	0.4267		

Spain's national web site http://www.la-moncloa.es has a separate portal dedicated to e-government. The web site also has a strong business focus with the "Spain Business" section, with the goal of attracting foreign investment in Spain. The site is also in several languages including: Japanese, Chinese, Russian, German, Portuguese, and English. Spain was followed by **Slovenia** (0.6681) and **Italy** (0.6680). **Malta** (0.6582), the leader in the 2005 Survey in this region, is fourth in the 2008 Survey.

The national web site of Slovenia http://e-uprava.gov.si/e-uprava/en/portal.euprava is to be commended for having a user friendly one-stop shop. It also has a section for visually impaired citizens to navigate through the web site. The government of Slovenia is planning further enhancements to the portal to assist the blind and visually impaired.

An external visitor site http://www.slovenia.si/ also provides a wealth of information and resources for visitors to Slovenia and businesses potentially seeking opportunities in the emerging economy of the nation. The system also includes a separate portal for Slovenia's participation in the European Union, http://evropa.gov.si/, "Slovenia, at Home in Europe".

Box 7. Regional Best Practice - Malta

The Malta Health Ministry is an excellent example of providing customer service online. The portal allows citizens to apply for the European Health Insurance Card online. It has an electronic patient library provided through a partnership with a private firm, which provides citizens with a medical encyclopaedia, information on surgeries and procedures, and has animated lessons. The portal also provides its citizens with a list of local pharmacies.

http://www.ehealth.gov.mt/article.aspx?art=90 .

Western Europe

The **Netherlands** (0.8631) and **France** (0.8038) and **Luxembourg** (0.7512) have made tremendous progress since 2005, moving up the global e-government readiness survey to rank 5th, 9th and 14th respectively. Germany as result of a lower web measure score dropped from 11th to 22nd this year.

Table 3.21. E-Government Readiness for Western Europe

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Netherlands	0.8631	0.8021	5	12
France	0.8038	0.6925	9	23
Switzerland	0.7626	0.7548	12	17
Luxembourg	0.7512	0.6513	14	28
Austria	0.7428	0.7602	16	16
Germany	0.7136	0.8050	22	11
Belgium	0.6779	0.7381	24	18
Liechtenstein	0.5486	0.1789	49	161
Monaco	…	0.2404	…	148
Region	0.7329	0.6248		
World	0.4514	0.4267		

France's national web site www.premier-ministre.gouv.fr scored the highest in the region. The site has a strong e-participation presence and has features for online consultation, has a separate e-government portal and has instituted a timeframe to respond to citizen's queries and emails. The site also contains a number of news feeds and RSS to continuously update citizens with information from the media and blogs. Another interesting feature on this web site is its section on "major projects", which keeps citizens aware of major policy proposals and priorities of the government.

The Netherlands's national web site http://www.overheid.nl provides its citizens with a robust portal that has all of its information available on the front page. One of the interesting features is the history of the Netherlands, which offers an historic background to the country. Another interesting feature which is uncommon in other national sites, is the feature on driver licenses in the country. This section, on the front page of the site, provides citizens and foreigners with a quick and simple way of obtaining information on driver licenses.

Oceania

Australia (0.81080 and **New Zealand** (0.7392) continue to lead this region by a wide margin and should be treated separately from other island countries. For the smaller island countries in the region, **Fiji** (0.4146) leads this group. The smaller island countries as a group did not improve significantly since 2005, with the exception of **Vanuatu** which improved 11 positions to 154th in the survey.

Table 3.22. E-Government Readiness for Oceania

Country	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Australia	0.8108	0.8679	8	6
New Zealand	0.7392	0.7987	18	13
Fiji	0.4156	0.4081	105	81
Tonga	0.3950	0.3680	112	104
Samoa	0.3761	0.3977	116	91
Solomon Islands	0.2748	0.2669	148	140
Vanuatu	0.2510	0.1664	154	165
Papua New Guinea	0.2078	0.2539	165	142
Kiribati	…	…	…	…
Marshall Islands	…	0.0440	…	177
Micronesia (Federated States of)	…	0.0532	…	176
Nauru	…	0.0357	…	179
Palau	…	0.0564	…	175
Tuvalu	…	0.0370	…	178
Region	0.4338	0.2888		
World	0.4514	0.4267		

Australia's national site at www.australia.gov.au is loaded with information, services and links to government resources. The site is comprehensive, while simultaneously serving as a gateway site to three separate but integrated portals for business (www.business.gov.au); citizen information and services via the CentreLink portal (www.centrelink.gov.au); and a state of the art national job search site (www.jobsearch.gov.au) that includes government as well as private sector jobs, and which, at the time prior to the publication of this report had more than 84,000 job opportunities available throughout Australia. The site also has a feedback feature on the national homepage soliciting user input on the development of a future public service locator application.

New Zealand has maintained and enhanced its national government web portal at http://www.govt.nz "Your Front Door to New Zealand Government Online". This site's clean and simple homepage channels users: to a complete listing of online services and government agencies; to opportunities to participate and get involved in government; to a new and robust government search feature; and to information about, and services for, the Maori, New Zealand's indigenous people. The national portal also highlights and promotes a highly integrated government jobs portal at www.jobs.govt.nz, a clear model for employment sites. The national portal also is tightly integrated with a companion government site www.beehive.govt.nz, which provides document archives, extensive links to information, electronic news subscriptions, and loads more information and services for citizens.

In summary, the results of the Public e-Governance Survey indicate that governments are moving forward albeit at a slow pace, which is normal when considering the infrastructure, policies, capacity development, applications and content that need to be in place in order to fully implement e-government services. Only a few governments have made the necessary investment to be placed in the connected stage.

On the infrastructure side, it is evident that having a robust broadband network is critical to the roll out of e-government applications and services. In this year's survey, the governments that invested in broadband infrastructure scored relatively high. A closer look at the infrastructure index reveals that investment in cellular phones has been dramatic over the last three years by both the developed and developing countries. According to the ITU's 2006 figures, 41 inhabitants per 100 have cellular phones and this number will inevitably grow. Governments must now look at ways of providing e-government services via cellular phones and PDAs.

It is also evident that governments must ensure that their back office operations are seamless and integrated into one system that bridges the contents and data available at different sites. This is critical for any administrative and financial transactions over the Internet. This was reflected in the survey, with a number of countries from Northern Europe having revamped their national and ministry web sites to handle financial transactions over a secure network.

Chapter IV
Web Measurement Assessment

The web measurement assessment looks at how governments are providing e-government policies, applications, and tools to meet the growing needs of their citizens for more e-information, e-services, and e-tools. It measures the online presence of national web sites, along with those of the ministries of health, education, welfare, labour and finance of each UN Member State.

Table 4.1 shows the top 35 countries ranked by the web measure index with **Denmark** leading the index. As more countries invest in infrastructure development, citizen-friendly portals, online applications and back office integration, the list of the top countries has changed significantly since 2005. The Scandinavian countries have taken the lead in the web measure index taking three of the top four positions. **Sweden** (0.9833) came in second place, followed by the **United States** (0.9532) and **Norway** (0.9465). The strength of the Scandinavian countries can be found at the ministry level, where they scored very high. When one looks strictly at the data for the national portals, the United States has obtained the highest score followed by Denmark, France and the Republic of Korea.

Table 4.1. Web Measurement Assessment 2008: The Top 35 Countries

	Country	Index	Rank
1	Denmark	1.0000	1
2	Sweden	0.9833	2
3	United States of America	0.9532	3
4	Norway	0.9465	4
5	France	0.8294	5
6	Republic of Korea	0.8227	6
7	Netherlands	0.7893	7
8	Canada	0.7659	8
9	Australia	0.7525	9
10	Japan	0.7425	10
11	Malta	0.7258	11
12	United Arab Emirates	0.7157	12
13	Estonia	0.7124	13
14	Mexico	0.7057	14
15	Spain	0.6990	15
16	United Kingdom	0.6923	16
17	Ireland	0.6756	17
18	Malaysia	0.6756	17
19	Austria	0.6656	19
20	Israel	0.6656	19
21	Czech Republic	0.6455	21
22	New Zealand	0.6421	22
23	Finland	0.6321	23
24	Hungary	0.6171	24

Table 4.1. Web Measurement Assessment 2008: The Top 35 Countries (cont.)

	Country	Index	Rank
25	Singapore	0.6120	25
26	Lithuania	0.6087	26
27	Luxembourg	0.6087	26
28	Egypt	0.6054	28
29	Jordan	0.6054	28
30	Brazil	0.6020	30
31	Portugal	0.5987	31
32	El Salvador	0.5786	32
33	Germany	0.5753	33
34	Peru	0.5652	34
35	Chile	0.5635	35

France (0.8294) has undertaken a major renovation of its national portal since the last survey. France was ranked 32nd in the 2005 web measure index but in 2008 it ranked fifth. France has improved its online service delivery; and strengthened its transactional capabilities, as well as the tools and applications for e-participation. The French national portal allows for online consultation, a set timeframe by which to respond to email and online submissions, has a separate e-government portal and allows for multiple financial transactions.

Although the majority of the countries in the top 35 are from developed countries and of that group, the bulk are from Europe, a number of developing countries have invested in upgrading their national and ministries' portals to compete with the developed countries. For instance, the United Arab Emirates (UAE) and Malaysia jumped into the top 20 countries. The UAE and Malaysia went up mostly due to the strength of three of their ministries' web sites, namely: Social Welfare, Labour, and Finance. For the UAE, these three ministries provide electronic signatures; they have a formal timeframe by which to respond to online queries and emails; they allow for the creation of online accounts; and the submission and payment by credit card as part of their transactional model. Malaysia has enhanced the web sites of its three ministries by using multimedia tools (both audio and video). In addition, these sites encourage citizen e-participation, and provide their citizens with downloadable forms. The Ministry of Labour has a formal timeframe by which to respond to online queries and emails and the Ministry of Social Welfare has the ability to respond to its citizens via email.

Countries must continue to improve their national and ministry portals and web sites to keep up with the demands of their citizens for more e-information, e-services, e-application, the ease of paying fees and bills over the Internet, greater accountability and transparency, and greater citizen engagement and inclusion. In addition, all of this must be provided on a secure, seamless, integrated and confidential network. Countries that do not maintain this constant push to provide more online applications and tools will be left behind.

Chile has taken the highest drop in this year's survey going from sixth place in 2005 to 35th in 2008. One reason for this result is that its national portal and ministry web sites did not enhance their features compared with the countries ranked above them. In the current environment, a country cannot afford to be complacent and must continuously

modernize. A highly regarded portal two years ago is most likely an average portal today.

The United Kingdom and Germany have also taken a significant drop in ranking from the 2005 survey. One of the major reasons for Germany's drop, resulting in its national portal being ranked 66th in this year's survey, was its low score for the transactional stage.

Table 4.2 presents the next 35 countries on the web measure index. In this list the gap between numbers 36 and 70 is fairly small, amounting to approximately a 12 percent difference in the ranking of e-services provided as compared to the top 35 where the difference between the leader Denmark and Chile, which ranked 35th, is approximately 40 percent.

Table 4.2. Web Assessment 2008: The Next 35 Countries (36-70)

	Country	Index	Rank
36	Argentina	0.5585	36
37	Switzerland	0.5585	36
38	Colombia	0.5552	38
39	South Africa	0.5518	39
40	Poland	0.5385	40
41	Belgium	0.5385	40
42	Ukraine	0.5351	42
43	Bolivia	0.5217	43
44	Bahrain	0.5201	44
45	Philippines	0.5117	45
46	Italy	0.5117	45
47	Dominican Republic	0.5084	47
48	Uruguay	0.5084	47
49	China	0.5084	47
50	Thailand	0.5050	50
51	Slovenia	0.5017	51
52	Oman	0.4849	52
53	Bulgaria	0.4849	52
54	India	0.4783	54
55	Cyprus	0.4783	54
56	Guatemala	0.4749	56
57	Slovakia	0.4749	56
58	Mauritius	0.4716	58
59	Venezuela	0.4682	59
60	Saudi Arabia	0.4649	60
61	Iceland	0.4615	61
62	Latvia	0.4482	62
63	Trinidad and Tobago	0.4448	63
64	Ecuador	0.4448	63
65	Viet Nam	0.4448	63
66	Costa Rica	0.4415	66
67	Angola	0.4381	67

Table 4.2. Web Assessment 2008: The Next 35 Countries (36-70)

	Country	Index	Rank
68	Paraguay	0.4381	67
69	Croatia	0.4314	69
70	Pakistan	0.4247	70

Government Provision of e-Services

The 2008 web measure index clearly indicates that more countries are using information and communication technologies to provide information to their citizens, to provide the possibility of online financial transactions and to include citizens in e-consultation and e-decision-making. Of the 192 UN Member States, 189 were online this year. Only three of the 12 countries that did not provide any services online in 2005 are still in the same situation today. In percentage terms, these numbers are presented in Figure 4.1.

Box 8. No Online Presence

Central African Republic, Somalia and Zambia

The 2008 web measure index welcomed nine new additions to online government this year: The Democratic People's Republic of Korea, The Democratic Republic of the Congo, Equatorial Guinea, Guinea-Bissau, Haiti, Kiribati, Liberia, Libyan Arab Jamahiriya and Turkmenistan.

Figure 4.1. Government Web Sites

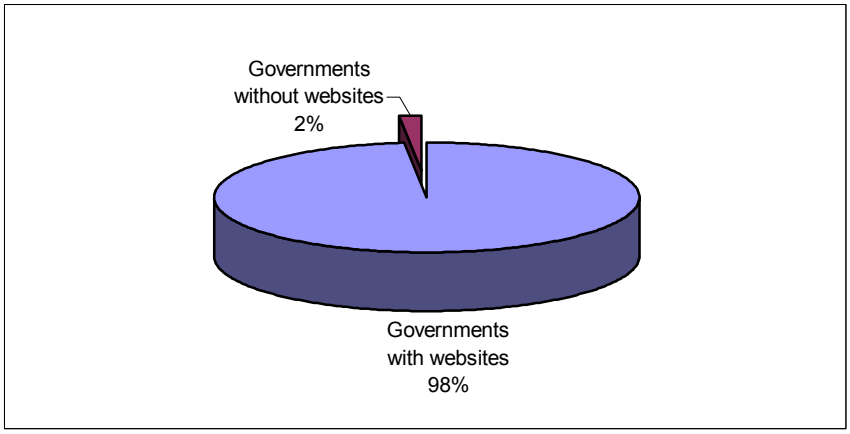


Table 4.3 below indicates some of the characteristics of national portals or web sites. The vast majority of portals/web sites have archived information and the site is searchable. Only 17 percent of these web sites provide information about their use and 35 percent offer newsletters.

Table 4.3. Stage II Characteristics of National Portal/Web Sites

	Number of countries	Percent
Site provides archived information	154	80%
Site offers newsletter	67	35%
Info on citizen web site Internet use	32	17%
Search feature	144	75%

The number of countries with a search feature, as presented in Table 4.3, indicates that more countries are creating greater content on their web sites and thus requiring a search engine to navigate through the information. It also indicates that their web sites are becoming increasingly sophisticated and are using a greater number of web tools to facilitate access to citizens.

Table 4.4 below presents how national, ministry and other web sites are integrated to facilitate access to information. The vast majority of national portals have direct links to ministries and departments, which allow citizens to navigate easily from the national home page (HP) site to ministries, departmental, regional and local government web sites.

Table 4.4. Linkages between Web Sites in Countries

	Number of Countries	Percent
Links from national HP to other national, non-governmental web sites	134	70%
Links from national HP to government ministries / departments	158	82%
Links from national HP to regional / local government web sites	111	58%
Links from national HP to non-executive branches of government	144	75%

As one can note from Table 4.4, from among the various linkages presented above, the smallest number of countries were those that had links from the national home pages to those of local governments. One reason for this is that in some developing countries local government web sites simply do not exist. In addition, some developing countries do not have the financial resources to interconnect local government offices to the country's Internet infrastructure.

Figure 4.2. Head of State Web Sites

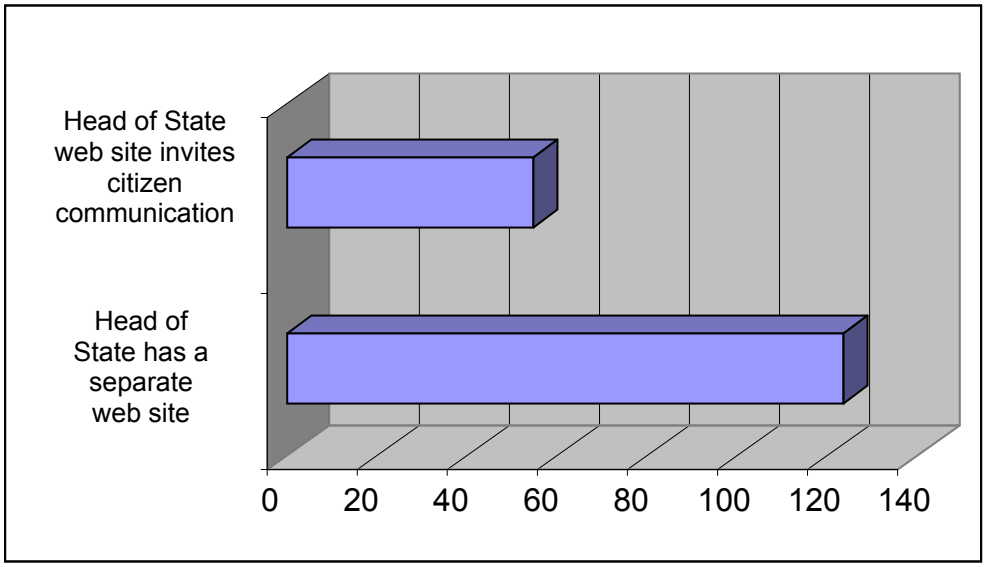


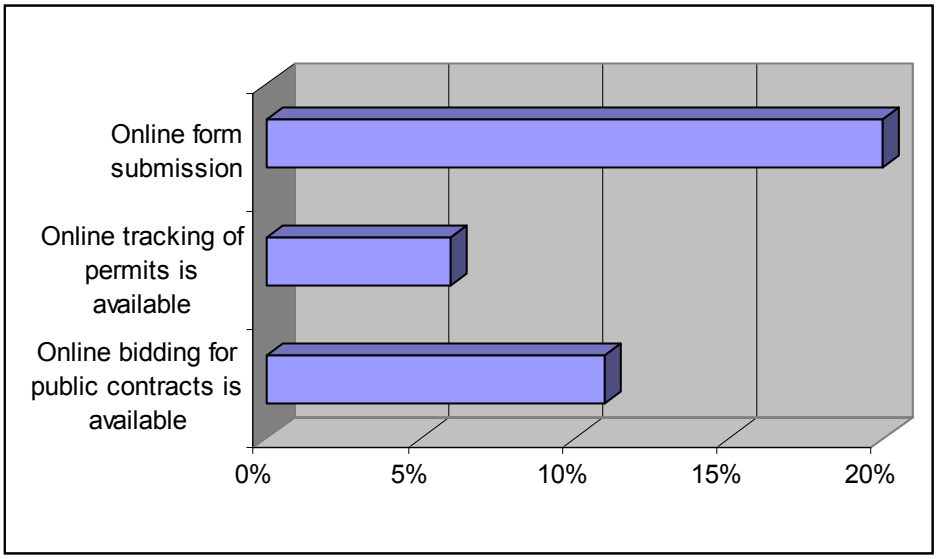
Figure 4.2 looks at whether the leaders of countries have their own web sites and more importantly encourage citizens to provide feedback and/or to communicate with them. A total of 66 percent of the countries surveyed have a separate web site for the Head of State and 30 percent encourage citizen communication. More leaders are using the Internet to communicate their vision and policies to their constituents. As a result, more people have access to and are informed on the views of their leaders. Below are a selected number of developing countries whose leaders encourage citizen engagement.

Box 9. Head of State Web Sites that Encourage Citizen Engagement

Azerbaijan, Bangladesh, Bolivia, Burkina Faso, Cameroon, Congo, Dominican Republic, Egypt, Honduras, Indonesia, Namibia, Niger, Nigeria, Pakistan, Palau, Papua New Guinea, Philippines, Saint Kitts and Nevis, Togo, Uganda, and Viet Nam.

In addition to having the Head of State advocate the importance of developing e-government services, countries should also have an e-government leader responsible for implementing the national e-government policy and ensuring that all the national government web sites and e-government policies are integrated and coherent. Only 15 percent of the countries surveyed have an e-government leader in place. Countries should seriously consider identifying a senior officer to manage the risks involved in implementing e-government applications and services and to ensure that citizens have input in future e-government policies.

Figure 4.3. Some Transactional Presence Services



Most of the countries surveyed are beginning to enter a more advanced phase of e-government and are adding more e-services and e-applications to respond to the needs of their citizens. Figure 4.3 and Table 4.5 present the number of countries that are using their national web sites to implement transactional services. As Table 4.5 indicates, very few countries are in this phase of e-government service provision, with the vast majority of national web sites providing these services belonging to developed countries.

Table 4.5. Online Submission

	Number of Countries	Percent
Online bidding for public contracts is available	21	11%
Online tracking of permits is available	11	6%
Online form submission	39	20%
Online payment by card available	31	16%
Online payment of individual registrations / permits	29	15%
Online payment of business registrations /permits	29	15%

Table 4.6 and Figure 4.4 present how countries are using new technologies to communicate in a secure manner with their citizens. Security is one of the major concerns citizens have in using e-government services. They want to be assured that the information they enter online is safe, secure and remains confidential. In addition, citizens want to receive information and e-government services via email, cellular phones and PDAs.

Table 4.6. Interactive Services

	Number of countries	Percent
Messages sent to mobile phones	14	7%
WAP/PDA access available	19	10%
E-mail sign-up option for updates	58	30%
Secure link indicated	33	17%
Electronic signature indicated	19	10%
Government guarantees online account will be kept confidential	29	15%

As Table 4.6 and Figure 4.4 indicate, very few countries provide information and/or e-government services by cellular phones (7%) and PDAs (10%). However, 58 governments communicate with their citizens via email through their national web sites. It is important for governments to communicate with their citizens in the manner in which the citizen prefers, whether it is by email, cellular phones, PDAs, or mail and to make information and services available on a number of platforms. Implementing the infrastructure required to handle communication over a number of platforms is expensive and thus most of the developed countries are communicating with their citizens through wireless applications.

Figure 4.4. Number of Countries with Interactive Services

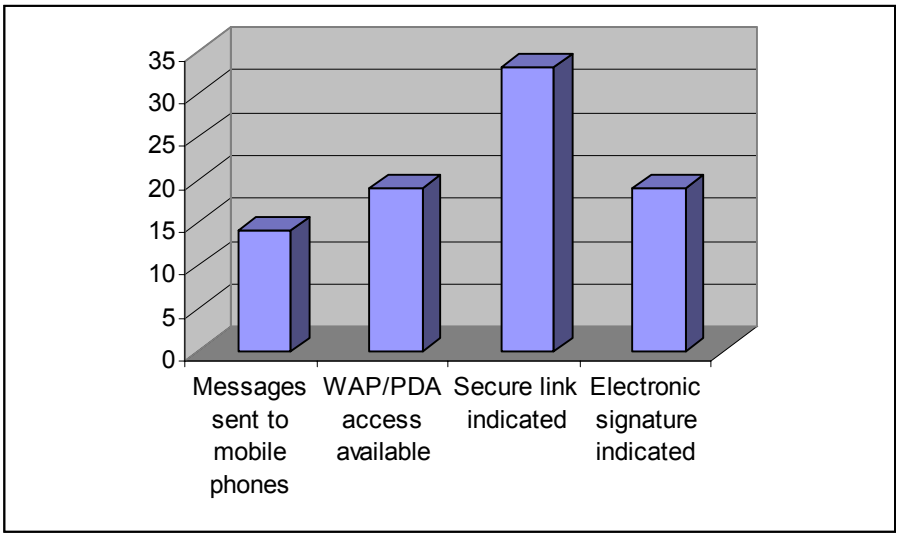


Table 4.7 presents a further sophistication in the provision of e-government services. Few countries have instituted a response timeframe for handling the submission of forms and queries. This feature is important to citizens because they want to be assured that their request will be handled in a timely manner. Only 8 percent of national web sites have implemented this feature. As more governments begin to view their citizens as

customers of the services they provide, more national web sites will develop the necessary tools to meet their citizens' needs.

Table 4.7. Some Connected Presence Services

	Number of countries	Percent	Countries
Response timeframe for submitted forms / e-mails	15	8%	Argentina, Chile, Denmark, Estonia, France, Italy, Malta, Namibia, Norway, South Africa, Sweden, Switzerland, Trinidad and Tobago, United Arab Emirates, United States
Formal online consultation	21	11%	Australia, Belgium, Burkina Faso, Canada, Colombia, Denmark, Estonia, France, Japan, Jordan, Lithuania, Malta, Mexico, New Zealand, Republic of Korea, Saudi Arabia, Singapore, Switzerland, United Kingdom, United States of America, Viet Nam

Formal online consultation allows governments to receive first hand feedback about the policies that they want to implement or that have already been implemented. It also provides citizens with a direct line to the people who govern them. As Table 4.7 indicates, only 11 percent of national web sites surveyed have online consultation as a feature. It should also be noted that the majority of those countries that have online consultation as part of their e-government services also scored high in e-participation.

Table 4.8 presents the availability of e-government services among the five surveyed ministries, namely: Health, Education, Welfare, Labour, and Finance. Most ministries have a strong presence in the enhanced stage. Their web sites have archived information, offer news, and allow citizens to download statistics and access databases.

As the sophistication levels increase across the different stages, the number of ministries that provide these types of e-government services declines. Fewer ministries provide the opportunity for the online submission of forms (22%) to their citizens and less than 10 percent provide for electronic signatures. Most ministries, especially in developing countries, do not have the financial resources to provide the advanced e-government services found in stages 3 – 5.

Table 4.8. Provision of Services by Sector

Percent of countries					
	Health	Education	Welfare	Labour	Finance
Stage II					
Archived information (laws, policy documents, etc)	124	124	107	105	141
Site offers news section	104	118	98	96	118
Databases (web access to / downloadable statistics)	105	104	91	91	123
One-stop shop / single-window	45	61	41	39	34
Stage III					
Downloadable forms	62	62	62	57	71
Submission of online forms	17	19	19	20	34
Audio, video feature	28	31	32	29	25
Electronic signature	7	4	7	6	11
Stage IV					
Personal online account	28	39	31	33	41
Payment by card	5	3	6	6	14
Stage V					
Encouraging citizen participation	32	37	8	24	42
E-mail sign-up option	38	56	38	30	38
Response timeframe indicated for e-mails / forms	6	8	6	9	10

Figures 4.5 and 4.6 present some of the e-government services that the ministries surveyed are providing to their citizens. As indicated in Figure 4.5, few ministries provide a timeframe to respond to queries, but a number of them engage with their citizens and encourage them to participate online.

Figure 4.5. E-Consulting Services

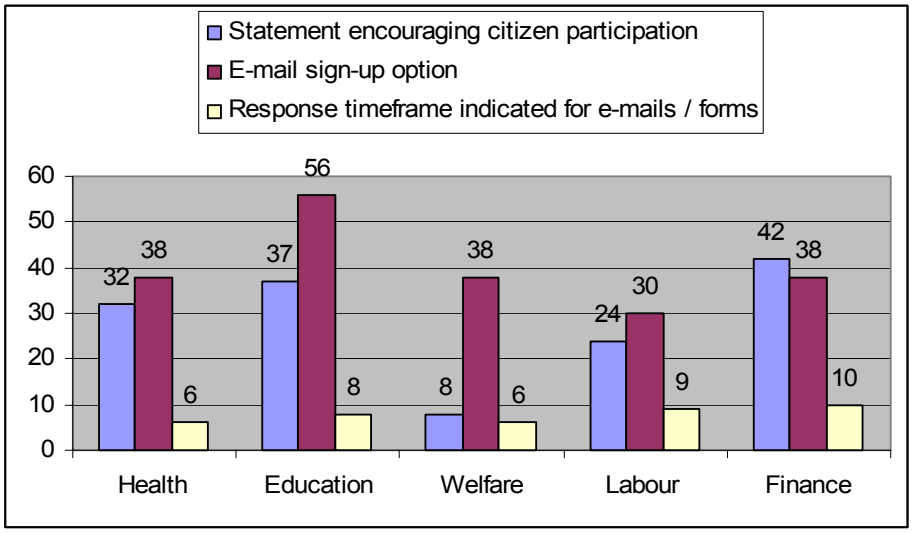
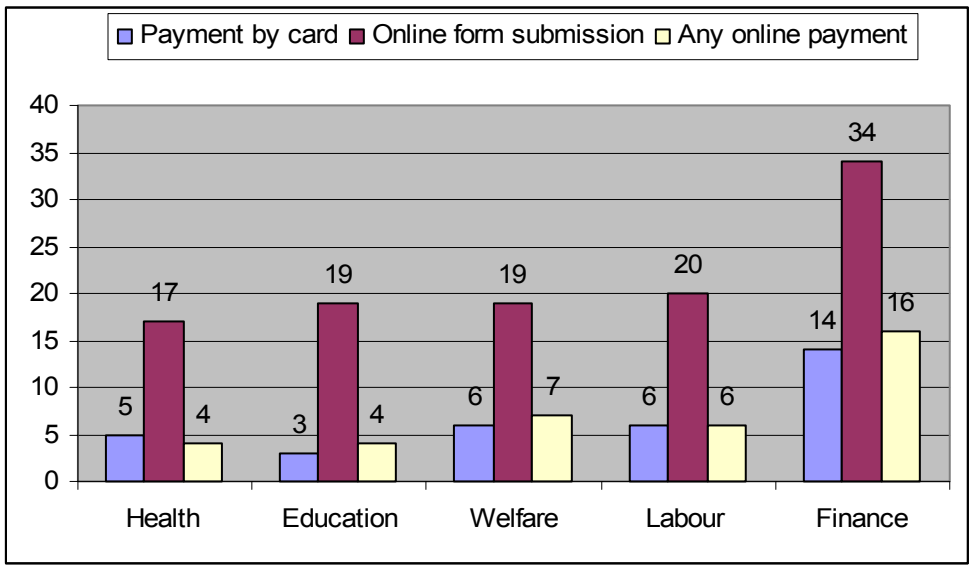


Figure 4.6 presents some of the transactional services provided by ministries. Ministries of finance are ahead of other ministries in providing online transactional services. This is especially the case in developing countries where ministries of finance have more financial resources available for information and communication technologies.

Figure 4.6. Transactional Services



Stages of Service Delivery by Country

Table 4.9 presents a breakdown of the number of top, middle and low scoring countries in the 2008 survey by the five stages of service delivery. Utilization is defined as services provided as a percentage of the maximum services in a category.

Table 4.9. Scores by Stages, Selected Countries 2008

Percent Utilization						
	I	II	III	IV	V	
Country	Emerging	Enhanced	Interactive	Transactional	Connected	Total
67 – 100% utilization						
Denmark	100%	97%	89%	80%	93%	89%
Sweden	100%	95%	89%	81%	78%	88%
United States of America	100%	98%	90%	65%	78%	85%
Norway	100%	92%	90%	70%	70%	84%
France	100%	92%	73%	49%	85%	74%
Republic of Korea	100%	93%	76%	50%	59%	73%
Netherlands	100%	92%	75%	43%	52%	70%
Canada	100%	91%	71%	43%	48%	68%
Australia	88%	92%	61%	45%	70%	67%
34- 66% utilization						
Malta	100%	92%	63%	40%	44%	65%
United Arab Emirates	88%	68%	68%	60%	37%	64%
Mexico	100%	86%	65%	38%	41%	63%
Spain	100%	79%	68%	39%	41%	62%
Malaysia	100%	84%	65%	35%	26%	60%
Austria	100%	85%	60%	38%	22%	59%
Israel	88%	82%	56%	43%	44%	59%
Portugal	100%	84%	53%	32%	4%	53%
El Salvador	100%	75%	56%	21%	33%	52%
Germany	100%	75%	56%	20%	30%	51%
Peru	100%	82%	58%	11%	19%	50%
Bolivia	100%	78%	50%	11%	19%	47%
Bahrain	88%	70%	44%	27%	26%	46%
Italy	100%	79%	48%	2%	37%	46%
Philippines	100%	72%	49%	14%	22%	46%
China	100%	76%	52%	4%	26%	45%
Venezuela	88%	60%	52%	5%	37%	42%
Saudi Arabia	100%	58%	53%	8%	19%	41%
Iceland	75%	74%	46%	8%	0%	41%
Latvia	100%	70%	48%	1%	7%	40%
Mongolia	88%	73%	33%	7%	19%	38%

34- 66% utilization (cont.)						
Turkey	63%	59%	37%	17%	26%	38%
Greece	100%	74%	35%	4%	4%	37%
Kuwait	0%	60%	40%	14%	26%	37%
Panama	88%	65%	36%	7%	22%	37%
Cape Verde	100%	62%	40%	0%	7%	35%
Monaco	100%	57%	44%	0%	0%	34%
10 – 33 % utilization						
Georgia	75%	73%	27%	0%	0%	32%
Bangladesh	88%	42%	42%	6%	7%	31%
Kenya	75%	41%	35%	2%	7%	27%
Fiji	75%	35%	35%	0%	0%	24%
Grenada	63%	40%	31%	2%	0%	24%
Cambodia	63%	23%	21%	7%	4%	18%
Burkina Faso	88%	22%	20%	4%	11%	17%
Liechtenstein	100%	13%	28%	0%	4%	17%
Timor-Leste	75%	23%	17%	0%	0%	14%
Antigua and Barbuda	88%	20%	12%	1%	4%	13%
Solomon Islands	63%	14%	18%	2%	0%	13%
Cameroon	13%	20%	15%	4%	0%	12%

As a result of the additional questions being added to the survey, there were 15 fewer countries with a utilization percentage of 67 percent or higher than in the 2005 survey. Those countries have dropped into the next tier, namely from 34% – 67%. Even with this occurrence, more countries had increased their services delivery by 2008 as compared with 2005. Twelve countries moved up from the tier 1 – 33% to 34 – 66%.

Figure 4.7. E-Government Service Delivery

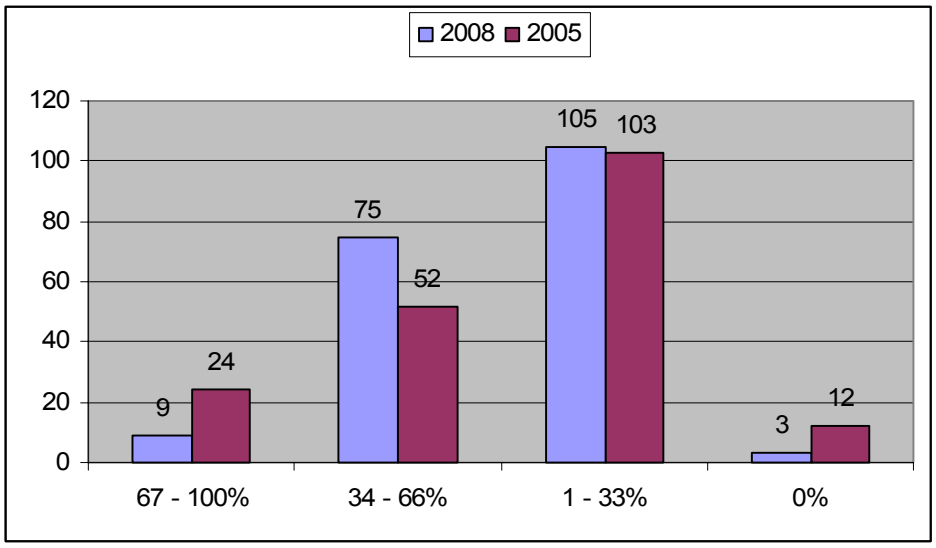


Figure 4.8. Stages of E-Government 2008, Selected Countries

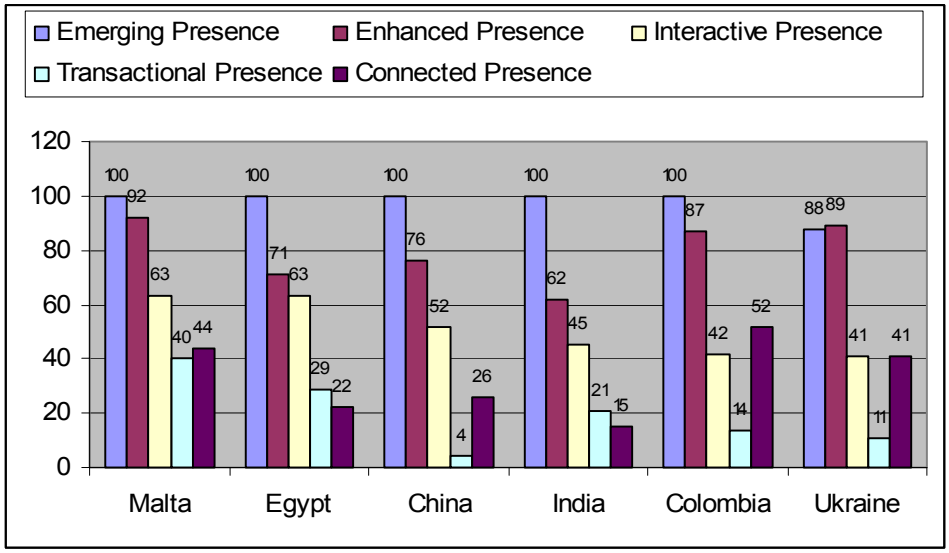


Figure 4.9 shows that three Scandinavian countries have taken the lead in the transactional services phase which is one of the primary reasons why these countries have soared to the top of the e-government readiness survey. In the 2005 survey, the United States of America, the United Kingdom and Singapore scored100 percent in the transactional phase, whereas in this year's survey, the United Kingdom and Singapore dropped out of the top 10.

Figure 4.9. Transactional Services: Top 10 Countries

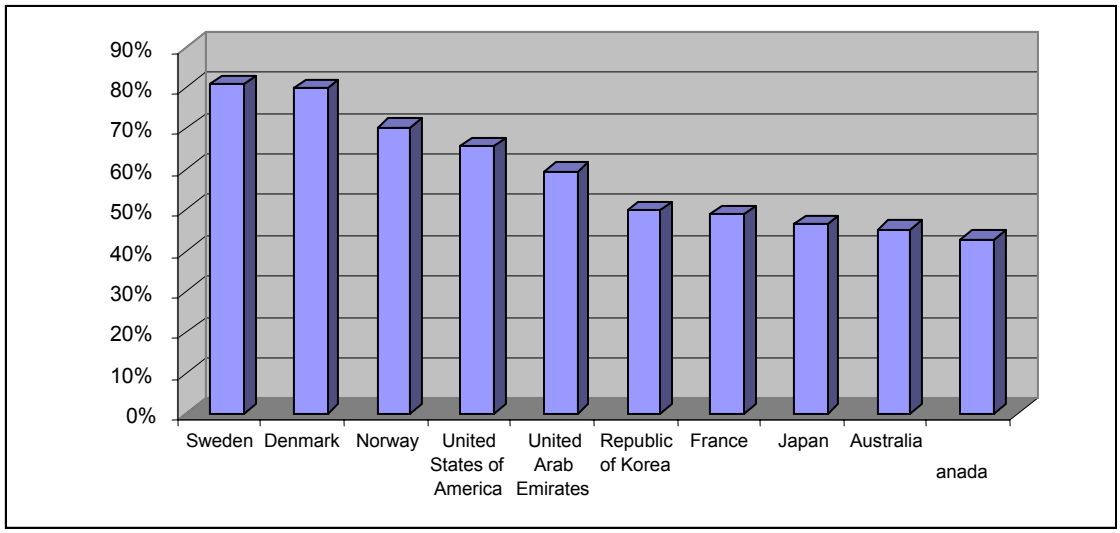


Table 4.10 presents the pattern of e-services in the bottom 38 countries in 2008 with 10 percent or less average utilization across all five stages. The countries at the top of this tier also have limited activities in the interactive stage. But for the most part, the countries in this group have limited e-government activities and are in the emerging stage, with the vast majority of their ministries not being online. They have web sites with

limited information comprised of static documents and general information and also some e-government activities that fall within the enhanced presence, such as having contact information.

Table 4.10. Countries with the Lowest Aggregate Utilization 2008: Range 0 – 10%

Country	Emerging Presence	Enhanced Presence	Interactive Presence	Transactional Presence	Connected Presence	Total
Djibouti	63%	12%	15%	0%	0%	10%
Myanmar	100%	20%	6%	1%	0%	10%
Sao Tome and Principe	88%	15%	10%	0%	0%	10%
Liberia	38%	18%	10%	0%	4%	10%
Iraq	100%	14%	6%	1%	7%	10%
Democratic Republic of the Congo	63%	11%	9%	0%	0%	8%
Papua New Guinea	63%	9%	10%	0%	0%	8%
Togo	75%	12%	4%	0%	15%	8%
Zimbabwe	0%	13%	11%	0%	0%	8%
Libyan Arab Jamahiriya	38%	9%	7%	4%	4%	7%
Micronesia (Federated States of)	75%	8%	9%	0%	0%	7%
Gabon	63%	5%	10%	0%	4%	7%
Niger	100%	10%	3%	0%	4%	7%
Yemen	88%	11%	4%	0%	0%	7%
Congo	88%	7%	2%	4%	7%	6%
Guinea	63%	7%	8%	0%	0%	6%
Marshall Islands	38%	1%	14%	0%	0%	6%
Kiribati	13%	5%	11%	0%	0%	6%
Côte d'Ivoire	88%	7%	5%	0%	0%	6%
Equatorial Guinea	88%	9%	3%	0%	0%	6%
Eritrea	25%	8%	8%	0%	0%	6%
Haiti	25%	11%	6%	0%	0%	6%
Sudan	50%	7%	7%	0%	0%	6%
Mauritania	13%	8%	6%	2%	4%	5%
Sierra Leone	13%	10%	5%	0%	4%	5%
Turkmenistan	25%	8%	4%	0%	0%	4%
Tuvalu	0%	5%	6%	0%	0%	4%
Lao People's Democratic Republic	63%	1%	4%	0%	0%	3%
Suriname	13%	5%	4%	0%	0%	3%
Tajikistan	13%	8%	2%	0%	0%	3%
Vanuatu	25%	2%	4%	0%	0%	3%
Comoros	25%	3%	2%	0%	0%	2%

Table 4.10. Countries with the Lowest Aggregate Utilization 2008: Range 0 – 10% (cont.)

Country	Emerging Presence	Enhanced Presence	Interactive Presence	Transactional Presence	Connected Presence	Total
Guinea-Bissau	0%	5%	2%	0%	0%	2%
Democratic People's Republic of Korea	13%	2%	2%	1%	0%	2%
Burundi	13%	2%	1%	0%	0%	1%
Chad	13%	1%	2%	0%	0%	1%
Nauru	0%	0%	2%	0%	0%	1%
Dominica	13%	0%	1%	0%	0%	1%

In summary, the web measure index confirms that more governments are using information and communication technologies to improve the delivery of e-services both at the national and ministerial levels. It also confirms that the vast majority of countries have a long road ahead to fully implement e-government services, especially at the transactional and connected phases. The web measure index further confirms that governments need to continually invest in improving e-government services and in providing tools to an ever-demanding public. The goal posts will continue to be moved forward as new technologies are deployed.

The growth in the delivery of e-services from 2005 to 2008 has been at a steady pace, but given the human and financial resources required to fully implement these e-services, there will not be an explosion of online services in many countries in the near future.

Chapter V
E-Participation

Information and Communication Technologies have raised citizens' expectations of their government. Citizens now expect to be directly involved in designing government programmes and services. At the various stages of the policy process, from elections to policy planning and implementation, citizens are becoming increasingly involved, through various participatory tools, such as focus groups, design sessions, hands-on testing, and e-participation tools. E-participation is one tool that enables governments to dialogue with their citizens. By enhancing government's ability to request, receive, and incorporate feedback from constituents, policy measures can be better tailored to meet the needs and priorities of citizens.

The e-participation index below for the year 2008 vis-à-vis the 2005 ranking aims to capture the dimensions of government to citizen interaction and inclusion, by assessing the extent to which governments proactively solicit citizen input.

Table 5.1. E-Participation Index 2008: Top 35 Countries

	Country	2008 Index	2008 Ranking	2005 Ranking	Change 2008-2005
1	United States	1.0000	1	3	2
2	Republic of Korea	0.9773	2	4	2
3	Denmark	0.9318	3	7	4
4	France	0.9318	3	24	21
5	Australia	0.8864	5	9	4
6	New Zealand	0.7955	6	6	0
7	Mexico	0.7500	7	7	0
8	Estonia	0.7273	8	11	3
9	Sweden	0.6591	9	14	5
10	Singapore	0.6364	10	2	-8
11	Canada	0.6136	11	4	-7
12	Japan	0.6136	11	21	10
13	Luxembourg	0.6136	11	61	50
14	Ukraine	0.5682	14	28	14
15	Jordan	0.5455	15	90	75
16	Netherlands	0.5227	16	10	-6
17	Norway	0.5227	16	26	10
18	Viet Nam	0.5227	16	63	47
19	Bhutan	0.5000	19	90	71
20	Austria	0.4773	20	24	4
21	China	0.4773	20	50	30
22	Lithuania	0.4773	20	69	49
23	Argentina	0.4545	23	36	13
24	Brazil	0.4545	23	18	-5
25	Colombia	0.4318	25	12	-13
26	Mozambique	0.4318	25	30	5

Table 5.1. E-Participation Index 2008: Top 35 Countries (cont.)

	Country	2008 Index	2008 Ranking	2005 Ranking	Change 2008-2005
27	United Kingdom	0.4318	25	1	-24
28	Belgium	0.4091	28	17	-11
29	Bolivia	0.4091	28	73	45
30	Lebanon	0.4091	28	69	41
31	Switzerland	0.4091	28	22	-6
32	El Salvador	0.3864	32	57	25
33	Malta	0.3864	32	19	-13
34	Costa Rica	0.3636	34	90	56
35	Spain	0.3636	34	73	39

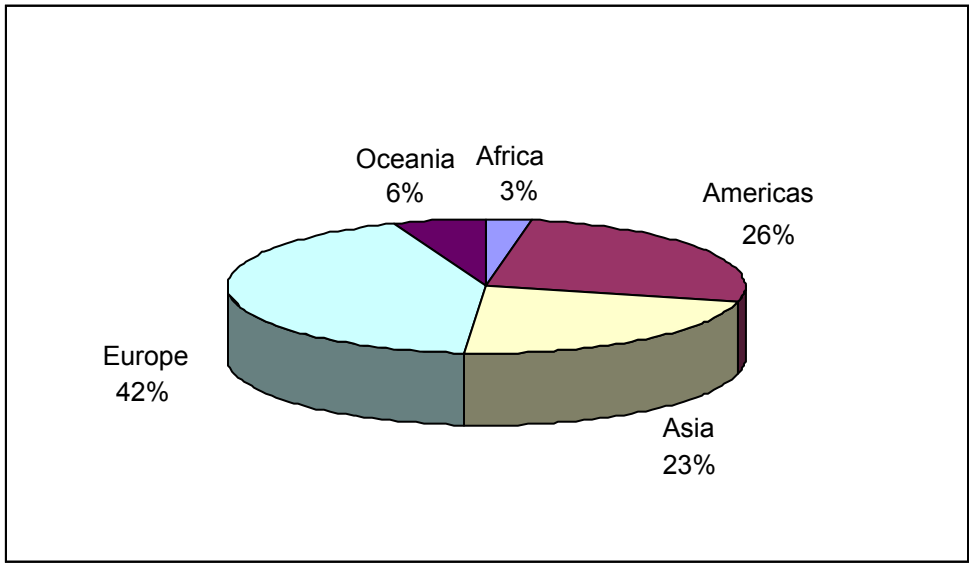
The **United States of America** scored the highest (1.0000) on the e-participation index. This was primarily due to its strength in e-information and e-consultation, which enables citizens to be more interactive with their government. It was closely followed by the **Republic of Korea** (0.9773), which performed extremely well in the e-consultation assessment. **Denmark** (0.9318) and **France** (0.9318) were tied for third place.

The **United Kingdom** experienced the biggest drop in ranking from the previous survey, descending from the leader position in 2005 to 24th in 2008. This was mainly due to the migration of e-participation products and services from its national portal to local government portals. It should be noted that the e-participation survey does not take into account regional and local portals or web sites, but only national portals or web sites and selected ministries.

More than one third of this year's top 35 are newcomers, with many countries making a dramatic leap upwards. **Jordan** had the greatest move upwards from being ranked 90th in 2005 to 15th in this year's survey. **Viet Nam** went from 63rd in 2005 to 16th in 2007. The governments of Jordan and Viet Nam have put in place enhanced national portals which include features that increase citizen engagement. The sites have a formal online consultation section, where the government receives feedback from its citizens on government policies and services. In addition, the Heads of State of both countries have dedicated web sites to which citizens can send their views, suggestions, and post opinions. Viet Nam also has a government official (an e-government champion) in charge of all e-government activities who liaises with other departments and ministries to ensure interoperability and interconnectivity. **Bhutan** which was also ranked 90th in 2005 has leapfrogged to 19th in this year's survey. The UNDP has implemented an access to information and e-governance project to invigorate the Government of Bhutan's web site to provide the public with access to information. The project includes a public awareness campaign aimed at informing the public on the benefits of public access to information and services aimed at enhancing national ownership. As a result of the above assistance from the UNDP, Bhutan has deployed a new and more sophisticated national portal which also supports e-participation with its citizens. Citizens are able to provide their views through online polls on government issues through a secure Internet link. Other countries, namely **Bolivia, China, Costa Rica, El Salvador, Lebanon, Lithuania, Luxembourg,** and **Spain** have also made significant strides in this year's survey.

Mozambique was the only country from Africa on the list. Figure 5.1 represents a regional distribution of the top 35 countries in the e-participation index.

Figure 5.1. E-Participation Index: Top 35 Countries



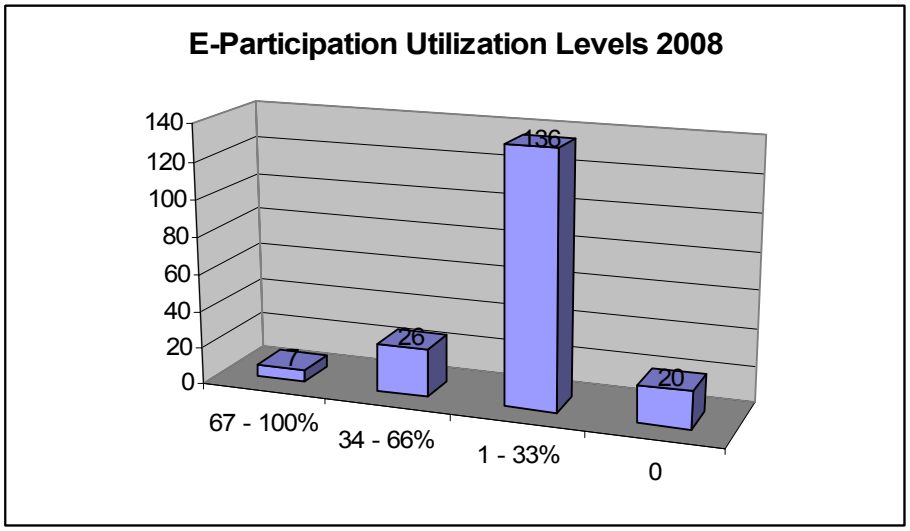
The e-participation index assesses the governmental implementation of products and services concerning e-information, e-consultation, and e-decision-making. Figure 5.1 and Table 5.2 indicate that in the 2008 Survey, there was a modest upward movement in the overall e-participation assessment. A total of 189 countries were online in 2008 as compared with 179 in 2005 and a greater number of countries are in the middle to top one third in e-participation utilization. However, 82 percent of the countries surveyed still remain in the lower one third. Although, this amounts to an improvement over the 2005 assessment, the results indicate that few countries have implemented e-participation policies.

Table 5.2. E-Participation Profile of UN Member States

		67 – 100%	34 – 66%	1 – 33%	No Score
2008	No. of countries	7	26	136	20
	% of countries	4	14	72	10
2005	No. of countries	2	15	133	28
	% of countries	1	8	76	16
No. of countries online in 2008 = 189					

Top 1/3 = 67 – 100%
Middle = 34 – 66%
Bottom 1/3 = 1 – 33%
No Score = Countries scores a zero on e-participation

Figure 5.2. E-Participation Utilization Levels 2008



As Table 5.3 indicates, most countries received higher scores on the e-information assessment than on the e-consultation and e-decision-making assessments. The Survey also indicates that 164 countries have received scores on the e-information assessment, which indicates that most governments have started the process of communicating with their citizens through electronic means.

Table 5.3. Quality and Relevance of e-Participation Initiative, Selected Countries

	Country	E-Information	E-Consultation	E-Decision-making	Total
67 – 100 %	United States of America	93.33	100.00	75.00	89.80
	Republic of Korea	93.33	77.78	93.75	87.76
	Denmark	80.00	83.33	87.50	83.67
	France	86.67	77.78	87.50	83.67
	Australia	100.00	61.11	81.25	79.59
	New Zealand	53.33	100.00	56.25	71.43
	Mexico	60.00	88.89	50.00	67.35
34 – 66 %	Estonia	73.33	66.67	56.25	65.31
	Sweden	60.00	50.00	68.75	59.18
	Singapore	66.67	83.33	18.75	57.14
	Ukraine	53.33	61.11	37.50	51.02
	Jordan	20.00	61.11	62.50	48.98
	Viet Nam	33.33	44.44	62.50	46.94
	Bhutan	20.00	44.44	68.75	44.90
	China	46.67	27.78	56.25	42.86
	Argentina	66.67	44.44	12.50	40.82
	Brazil	40.00	33.33	50.00	40.82
	Colombia	73.33	22.22	25.00	38.78
	Mozambique	46.67	38.89	31.25	38.78

Table 5.3. Quality and Relevance of e-Participation Initiative, Selected Countries (cont.)

	Country	E-Information	E-Consultation	E-Decision-making	Total
1 – 33%	Honduras	20.00	22.22	31.25	24.49
	Mongolia	20.00	22.22	31.25	24.49
	Philippines	33.33	11.11	31.25	24.49
	Burkina Faso	13.33	22.22	18.75	18.37
	Hungary	20.00	16.67	18.75	18.37
	Iraq	13.33	22.22	18.75	18.37
	Libyan Arab Jamahiriya	13.33	16.67	25.00	18.37
	Cape Verde	20.00	11.11	12.50	14.29
	Germany	40.00	5.56	0.00	14.29
	Saint Kitts and Nevis	20.00	11.11	12.50	14.29
	Bangladesh	13.33	11.11	12.50	12.24
	Barbados	20.00	0.00	18.75	12.24
	Croatia	26.67	5.56	6.25	12.24

E-Information

E-information assesses national web sites and portals to determine if governments are providing the basic information that serves as the foundation for citizen participation. This includes elements such as the online publishing of the official e-participation policy, listings of opportunities for online participation, and electronic notification mechanisms to involve citizens. To balance the heavily quantitative scoring, a few qualitative questions were still included to allow researchers to rate the general e-information performance.

Australia scored the highest on the e-information assessment followed by the **Republic of Korea** and the **United States of America**. In the 2005 Survey, 50 percent of the countries surveyed provided some information on e-information. In the 2008 survey, 87 percent of the countries gave a positive response to the same questions.

Finding the right distribution channel to communicate with citizens is difficult. Governments need to plan in order to send e-information through different mediums. Web 2.0 tools allow governments to develop two-way communication with their citizens. As such, these tools hold the potential for enhancing citizen participation in online government offerings. Blogs, wikis, chat rooms, podcasts, Really Simple Syndication (RSS), and other applications are all part of this process and are tentatively being adopted by some e-government sites.

Table 5.4. Countries Providing e-Information

	Number of Countries	Percent
Government provides a clear and explicit written e-participation policy or mission	37	19%
E-mail alerts for e-participation purposes	21	11%
RSS used to update and involve citizens	20	10%
Written calendar listing of upcoming online participation activities	21	11%

A number of developing countries are starting to take advantage of Web 2.0 tools to interact with their citizens. This provides them with a cost-effective way of directly communicating with and involving their citizens. This also sets the foundation for a greater distribution of e-information to the citizenry. As citizens become accustomed to receiving emails, text messages and other forms of e-information, they will adapt more readily to this new method of communicating.

A number of governments are making explicit efforts to tell citizens how they can access government web sites and information using mobile phones/devices. In some cases, this is done by providing slimmed-down, low-graphics (wireless access protocol, or WAP) versions of their web sites that are suitable for viewing on mobile devices. The United States of America and Mexico have developed mobile versions of their government sites http://mobile.usa.gov and (http://www.gob.mx/movil) respectively.

Box 10. Countries that use email to update their citizens

Colombia, Congo, Denmark, Egypt, France, India, Italy, Lebanon, Luxembourg, Netherlands, Oman, Philippines, Republic of Korea, Singapore, Switzerland, Togo, United Arab Emirates, United States of America, Uruguay and Venezuela.

RSS is a set of standards that allow web sites to automatically push data to a user's PCs. RSS is also being used by the web sites of progressive governments to provide users with a convenient way to customize the information they would like to receive. The "Canada News Center" of the Government of Canada, allows users to subscribe to national and regional feeds, to tailored feeds, to user groups and to organizations of interest.

Box 11. Countries that use RSS to update and involve citizens

Australia, Austria, Canada, Colombia, Costa Rica, Dominican Republic, El Salvador, Estonia, France, Germany, Ireland, Italy, Mexico, Republic of Korea, Switzerland, Thailand, Togo, Ukraine, United Arab Emirates and Venezuela.

E-Consultation

E-consultation assesses the interactive methods employed to solicit citizen opinion, feedback and input, such as online channels, including informal polls, bulletin boards, chat rooms/instant messaging, and weblogs (blogs), as well as formal online consultation. **New Zealand** and the **United States of America** scored the highest in the e-consultation section. To balance the heavily quantitative scoring, a few qualitative questions were still included to allow researchers to rate the general e-consultation performance.

A total of 66 percent of the countries surveyed responded positively to some information on the e-consultation assessment. Several countries are starting to implement e-consultation applications and tools. The **Dominican Republic**, **Lebanon** and **Botswana** are among several developing countries that have scored in the top 25 of the e-consultation section.

The survey clearly indicates that few countries are implementing e-consultation applications and tools. Only 7 percent of the countries surveyed received a score of more than 50 percent. One way to improve these results is for governments to implement online applications to engage and include citizens in a dialogue.

Web 2.0 has generated a class of online individuals and groups that want to share their views through blogs and/or online community networks such as MySpace, YouTube, Facebook, and LinkedIn to name a few.

As of October 2007, the blog search engine Technorati was tracking more than 108.6 million blogs.[36] This recent explosion in online blogging and publishing tools underscores a significant interest of web users in creating and consuming user-generated content. A few governments are beginning to acknowledge this phenomenon.

GovGab (http://blog.usa.gov) is a blog written by the Federal Citizen Information Center of the United States of America to give citizens a more informal channel for information and communication. The Government of Singapore has also shown a willingness to open itself to the public by hosting or linking to a number of blogs on its official portal (http://www.livelife.ecitizen.gov.sg/).

[36] Welcome to Technorati Retrieved on 11 October 2007

Table 5.5. Quality and Relevance of e-Consultation

	Number of Countries	Percent
Use of polls to solicit citizen opinion	32	17%
Use of chat/instant messaging to solicit citizen opinion	10	5%
Use of weblogs (blogs) to solicit citizen opinion	8	4%
An open web forum for discussing any topic	26	14%
An open online discussion forum specifically for policy issues	23	12%
The content of past discussions in an online forum is posted	22	11%
Formal online consultation process offering a structured way for citizens to comment on government laws or policy	21	11%
Non-formal online consultation mechanism asking for citizen feedback on policies and activities	18	9%

The Iceland Ministry of Social Affairs (http://www.felagsmalaraduneyti.is/radherra) allows users to chat online with, and submit paperwork to, a Ministry representative during office hours. This provides much of the interactivity and person-to-person contact available from an in-person office visit but with the advantage of not having to leave home.

Box 12. Countries that use an open web forum for discussing topics

Bhutan, Botswana, Brazil, Cameroon, Congo, Denmark, El Salvador, Estonia, France, Ghana, Hungary, Japan, Lebanon, Mauritania, Mexico, Mongolia, Mozambique, New Zealand, Norway, Qatar, Republic of Korea, Russian Federation, Singapore, Sweden, Ukraine, and United States of America.

E-Decision-Making

E-decision-making evaluates the extent of a government's commitment to e-participation, as evidenced by the definitive acknowledgement of an individual citizen's input and by a stated commitment to take it into account when making decisions. The **Republic of Korea** is the leader in this assessment, followed by **Denmark** and **France**. With a number similar to e-consultation, approximately 66 percent of the countries surveyed received a score in this section. To balance the heavily quantitative scoring, a few qualitative questions were still included to allow researchers to rate the general e-decision-making performance.

Only 11 percent of countries surveyed committed themselves to incorporating the results of e-participation into the decision-making process. This figure clearly indicates that the majority of governments are not in position to directly involve citizens into the decision-making process.

The Republic of Korea is a notable exception. It provides an interesting feature on its "e-people" online participation web site (http://www.**epeople**.go.kr) that publicizes the responses and suggestions on government policy proposals from individual users. The suggestions that are interesting and have the possibility of being implemented are highlighted on the web site in a small pop-up screen that appears when users visit the site. The pop-up screen presents the idea and the name of the contributor.

As indicated in Table 5.6, few countries are implementing e-decision-making applications or tools.

Table 5.6. E-Decision-Making

	Number of Countries	Percent
Government commits itself, formally or informally, to incorporating the results of e-participation into e-decision-making	22	11%
Explicit acknowledgement of received e-opinions, e-deliberations and e-interactions	18	9%
Government sends a 'sent receipt' to citizens after receiving input, including a copy of what was received, by whom, time/date received and estimated response time	12	6%
Officials moderate e-deliberations online	6	3%
Government publishes findings/results of citizen opinions, including e-opinions, on web site	23	12%

Approximately 20 percent of the countries surveyed received a score of greater than 30 percent. **Bhutan** and **Sweden** were tied for sixth place in e-decision-making. **China, Viet Nam** and **Jordan** also had high scores in this section.

Box 13. Governments that publish findings/results of citizen opinions, including e-opinions, on web site

Australia, Bhutan, Canada, Cape Verde, China, Denmark, Estonia, France, Israel, Japan, Latvia, Malaysia, Malta, Mexico, Mozambique, Netherlands, New Zealand, Republic of Korea, Thailand, Ukraine, United Kingdom, United States of America and Viet Nam.

France allows its citizens to participate in the e-decision-making process through the French National Commission of Public Debate (CNDP). The CNDP uses e-decision-making tools to provide its citizens with several proposals on a specific project and the data necessary for them to make an informed judgment.

Box 14. The French National Commission of Public Debate

The French National Commission of Public Debate (CNDP) has an innovative site that allows citizens to debate on infrastructure projects in France. This site provides French citizens with a number of well-documented proposals to tackle the issues that are currently being debated. As a result, citizens are better informed to voice their opinions. The site also has a calendar of events that is several months in advance. The actual debates take place in various cities in France, and citizens have the choice of participating in person or posting their views online.

The CNDP is currently using a wide range of technologies in order to widen its audience and to enhance participation. A blog offers citizens a way to react on minutes of meetings and allows them to post videos and photos if they do not feel comfortable with writing. A Q&A system automatically sends all questions posted to a project manager who has a maximum of two weeks to respond. In addition, there are forums and chat rooms. Every contribution (written, e-mailed, photos etc.) is scanned and made available online, along with all types of documents relevant to the debate.

http://www.debatpublic-seineaval.org/

E-government is about changing the way citizens interact with the government through the use of new information and communication technologies. For e-government to be successful, governments should engage their citizens and incorporate their views, expectations and concerns into policies. This knowledge will build greater trust and confidence between citizens and their governments.

Therefore, governments should create an enabling environment that allows their citizens to voice their views on political and social issues, and have their views taken into account with regard to the implementation of policies. An enabling environment should include a robust high-speed infrastructure that can accommodate the millions of potential users; a searchable archive of past debates and dialogues; a simple and effective front-end portal that allows for ease of use and privacy, and safeguards the confidentiality of a citizen's personal information; an integrated back-office operation that makes government a seamless entity; and a feedback mechanism that invites citizens to express their views.

Once this foundation is in place, citizens will have greater opportunity to interact with their government. Greater interaction is likely to lead to better informed citizens who are empowered to play an active role in discussing issues that affect their day-to-day lives.

If governments continue to use a top-down approach to implement e-government services and solutions, there is a real danger that these services and solutions will not be fully utilized by the citizens they were intended to serve.

The Netherlands e-Citizen Charter is an example of creating an enabling environment for citizens. This e-Citizen Charter establishes a set of standards that guides the dialogue between citizens and their government and through which citizens also have the right to hold their government accountable for the quality of services provided.

Box 15. The Netherlands E-Citizen Charter

1. **Choice of Channel**
   As a citizen I can choose myself in which way to deal with the government. Governments ensure multi channel service delivery, i.e. the availability of all communication channels: visit, letter, phone, e-mail, and Internet.
2. **Transparent Public Sector**
   As a citizen I know where to apply for official information and public services. Government guaranties one-stop-shop service delivery and acts as one seamless entity with no wrong doors.
3. **Overview of Rights and Duties**
   As a citizen I know which services I am entitled to under which conditions. Government ensures that my rights and duties are at all times transparent.
4. **Personalized Information**
   As a citizen I am entitled to information that is complete, up to date and consistent. Government supplies appropriate information tailored to my needs.
5. **Convenient Services**
   As a citizen I can choose to provide personal data once and expect to be served in a proactive way. Government makes clear what records it keeps about me and does not use data without my consent.
6. **Comprehensive Procedures**
   As a citizen I can easily get to know how government works and monitors progress. Government keeps me informed of procedures I am involved in by way of tracking and tracing.
7. **Trust and Reliability**
   As a citizen I presume government to be electronically competent. Government guarantees secure identity management and reliable storage of electronic documents.
8. **Considerate Administration**
   As a citizen I can file ideas for improvement and lodge complaints. Government compensates mistakes and uses feedback information to improve its products and procedures.
9. **Accountability and Benchmarking**
   As a citizen I am able to compare, check and measure government outcome. Government actively supplies benchmark information about its performance
10. **Engagement and Empowerment**
    As a citizen, I am invited to participate in decision-making and to promote my interest. Government supports empowerment and ensures that the necessary information and instruments are available.

Source: http://www.govtech.com/gt/articles/104894

PART II

From E-government to Connected Governance

Chapter VI
Origins and Emergence of E-Government

The impetus for thinking about online and more online dimensions to public sector operations came during the 1990s when the mainstream advent of the Internet began to translate into dramatic declines in the cost of both communicating and processing information. Consistent in large manner with the re-engineering movement of the preceding decade, public sector organizations sought new ways to control costs and improve organizational efficiencies. New and better approaches to managing information technology and the emergence of online channels of service-delivery promised significant financial savings.[37]

Yet, at the same time, the networking and more transformational potential of the Internet also promised something more – in terms of more fundamentally rethinking both how and why governments function. While e-government has resulted in efficiency gains in some instances, much of the research reports that cost savings have been sporadic, uneven, and often over-shadowed by both upfront and escalating investments often required in order to create and maintain new electronic capacities.

This escalation is tied to a widening of the strategic scope and purpose of e-government, extending much beyond the realm of financial savings. Three different images of e-government thus emerged during this timeframe, as put forth by Remmen: i) efficiency - cost reductions; ii) public service - better quality, easier access (i.e. 24/7) and new services; and iii) democracy - participation and interactive dialogue.[38] These images are helpful in underscoring the manner by which e-government can be viewed as either internal or external drivers of change, or more accurately as a set of both reshaping both decision-making and service delivery on the one hand, and participation and accountability on the other hand.

Reflecting this widened scope, one helpful definition of e-government initially formulated by the Mexican Government is the following: the continuous innovation in the delivery of services, citizen participation, and governance through the transformation of external and internal relationships by the use of information technology, especially the Internet.[39] It is important to note that this definition encompasses innovation in service delivery processes and citizen participation processes – both predicated on shifting roles and relationships amongst stakeholders both within and outside of the public sector.

Indeed, since its mainstream emergence in the 1990s the rapid emergence of the Internet in all sectors has altered the mindset and strategies of organizations in a more digitally and socially networked environment. With respect to e-commerce, growth and expansion in the private sector are linked to an online population that is projected to reach some 1.8 billion by 2010.[40] The widening scope of digital technologies means that

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[37] Nelson, M.R. (1998) Government and Governance in the Networked World. In D. Tapscott with A. Lowy and D. Ticoll, (Eds.) *Blueprint to the Digital Economy: Creating Wealth in the Era of E-Business.* New York*:* McGraw-Hill 274-298.] Heeks, R. (1999) Reinventing Government in the Information Age – International Practice in IT-enabled Public Sector Reform, Routledge, London.

[38] Remmen. A. (2004) *Images of e-Government – Experiences from the Digital North Denmark* (Aaolborg: Department of Development and Planning, Aalborg University).

[39] Roy, J., (2006a) *E-Government in Canada: Transformation for the Digital Age*, Ottawa: University of Ottawa Press.

[40] ClickZ. *Stats-Web Worldwide: Trends & Statistics: The Web's Richest Sources*. (http://www.clickz.com/stats/web_worldwide)

few, if any, industries are exempt from some degree of transformation and electronic commerce levels; though a modest proportion of overall economic activity continues to grow in a manner that would have been unthinkable only a decade ago.[41]

In the United States alone, retail sales online are expected to reach nearly $120 Billion by 2008 according to Jupiter Research. In lesser developed countries similar trends are apparent: Argentina, for example, recorded a more than 100 per cent increase in e-commerce levels from 2005 to 2006, with more than $3.3 US Billion in online transactions (fuelled in part by a 76.8% increase in broadband users at home during this same year).[42]

For governments, such Internet-induced trends are relevant for their own operations, especially those tied to service delivery. Much of e-government reflects private sector activity that has both encouraged and pressured public sector organizations to act in a similar manner. Fiscal constraints imposed by a quasi-competitive system of global investors and domestic politics, as well as a strategic desire to generate cost savings and reallocate spending to new and politically attractive priorities, make the nexus between technology management and efficiency a central concern in government.[43]

As such, corporations and governments share many common challenges in both deploying new technologies and adapting to online realities.[44]

At the same time, a careful examination of government, however, reveals important differences across private industry and the public sector. Efficiency, for example, is a much more politically contested principle in government: important stakeholders such as unions and political parties may oppose more flexible working patterns that are generally applauded in the market sector. Equally important, whereas private corporations may aggressively cater to select client groups, governments carry broader public interest responsibilities involving all citizens that, in turn, shape both the feasibility and the perceived appropriateness of e-government as a service strategy.

The modest and often uneven usage levels of online service delivery by governments, even in those countries leading in Internet use, is indicative of both the organizational complexities and diverse clienteles shaping e-government.[45] As such, the emergence of more digital and online mechanisms for service delivery must be situated within a broader movement of citizen-centric governance within which online channels are more likely to co-exist with – rather than replace, other forms of communicating and transacting.[46]

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[41] Andal-Ancion, A., Cartwright, P., and Yip, G.S. (2003) The Digital Transformation of Traditional Business. *MIT Sloan Management Review*. Summer.

[42] Cassia, Fernando. (2006) Argentina ends 2006 with record-breaking e-figures. *The Inquirer*. From http://www.theinquirer.net/gb/inquirer/news/2006/12/31/argentina-ends-2006-with-record-breaking-e-figures

[43] McIver, W.J. and Elmagarmid, A.K. Eds. (2002) *Advances in Digital Government – Technology, Human Factors and Policy*. Boston: Kluwer Academic Publishers.
Pavlichev, A. and Garson, G. D. (2004). Eds., *Digital Government: Principles and Best Practises*. Hershey: Idea Group Publishing.

[44] Cairncross, F. (2002) *The Company of the Future*. Cambridge: Harvard Business School Press.

[45] Hart-Teeter (2003). *The New e-Government Equation: Ease, Engagement, Privacy and Protection*. Washington, DC: Council for Excellence in Government.
Eggers, W. (2005) Government 2.0: Using Technology to Improve Education, Cut Red Tape, Reduce Gridlock and Enhance Democracy, New York: Rowman and Littlefield Publishers.

[46] Roy, J. (2006) Differentiating and Linking E-Government in Developed and Developing Nations: A Search for National Reforms and Transnational Alignment. Al-Hakim, L. and Soliman, K. Eds., Global E-Government: Theory, Applications and Benchmarking (Ideas Group Publishing: forthcoming).

This movement is central to understanding e-government's evolution from a primarily cost-savings technique toward a broader vehicle for both organizational and democratic renewal.

From Static Web Sites to Integrative Portals

The initial face of e-government was the web site, initially static in form but soon enriched to become a portal' with online functionality and multiple purposes. During the 1990s as countries and other jurisdictions began to develop a web presence, it became intuitive that an online reiteration of government departments and agencies would not be the most effective way of developing more transactional and interactive capacities in an efficient and effective manner.

The notion of life events and integrative service streams based on client group segmentation have since evolved to reflect an online perspective of government operations based less on organizational charts and more on citizen usage and outcomes, with Singapore credited by some observers as the first nation to reorganize itself in such a manner.[47] Integrated service offerings that hide, simplify, or transcend the traditional machinery of government have thus become a centrepiece of the e-government project through one or more of the following four variations of what it means to integrate services:

- *All relevant agencies offering the same service in a common manner, sharing data definitions and at best sharing data, but no technological integration between the services being offered;*

- *Services are collected together under a common theme or event. The services are not inherently integrated, or even with a common look-and-feel, but are grouped in ways that aid discovery and promote the comprehensive completion of necessary services;*

- *Services are delivered by a single provider as an agent of other government agencies. Singular services are offered by the agent and the integration is hidden from the 'customer';*

- *Services are technologically integrated into a pseudo-supply-chain application. This requires the most sophisticated integration work and is not often implemented.*[48]

Whereas the first two levels represent the realm of e-government as a service delivery strategy as it took shape in the late 1990s, many governments today (especially in developed countries with the Internet widely available) are grappling with the latter two challenges. New organizational and technological models for delivering services both online and via complementing, more traditional channels are taking hold.

[47] McIver, W.J. and Elmagarmid, A.K. Eds. (2002) *Advances in Digital Government – Technology, Human Factors and Policy*. Boston: Kluwer Academic Publishers.
[48] Turner, T. (2004) Accountability in Cross-tier E-government Integration. Halligan, J. and Moore, T. (2004) eds. *Future Challenges for e-Government* (Canberra: Government of Australia). 130.

Yet, after more than a decade of e-government developments under way the general performance of electronic service delivery has been uneven and sporadic, due to a range of other demand and supply considerations. What is clear in countries with widespread Internet availability is that there has been a huge uptake in government-sponsored web-sites for various forms of information.[49] Beyond these one way information flows, the expansion of transactions fully executable online has been highly uneven across jurisdictions due to variances in broadband Internet access for countries as a whole on the hand, and a variety of technological and organizational factors within government authorities, even in many countries with widespread Internet availability.

Paradoxically, in those jurisdictions where Internet use is the highest (predominantly in North America and Europe and increasingly in pockets of the Asia-Pacific region), a relatively sophisticated and well performing public sector (even without an online dimension) means that many people may be rather content with their public sector service channels, or at the very least disinclined to experiment with new channels for transactions of necessity that are often far less frequent and routine than those in the marketplace.

Such a notion of 'necessity' is important since unlike the marketplace when more often than not there is an element of choice involved in conducting a purchase or transaction, many users of government services do so only rarely and under an obligation of one sort or another. Often the most sophisticated users of online channels generally, including the most affluent and educated, are least likely to themselves interact often and directly with public sector authorities (a notable distinction between the banking and government sectors in most countries).

Consequently, demand levels for electronic services are therefore segmented in a complex fashion and intertwined with the notion of a digital divide – namely, the segmentation of those citizens with online access (and the cognitive ability and general inclination to use it), and those without. What is thus required is the existence of a multi-channel endeavour by which government attempts to shift from a traditional set of quasi-autonomous organizational units (each delivering their own set of programs) toward a more integrated method of organizing axed on the needs of different segments of service recipients, each with varying preferences and needs in terms of their transactional activities with government.

In this regard, the user of government services is often referred to in the service delivery literature as the 'customer' in reference to the philosophy of customer relationship management (CRM) that has reshaped organizational activity in the private sector. The invocation of CRM once again underscores the close ties and comparisons between industry and government in realizing new service models, even as the term 'customer' is often controversial and contested in many jurisdictions for the aforementioned distinctions between both sectors.

As citizens as well as customers of the state, the public's expectations and roles are often multi-faceted, extending beyond the business of government to matters of accountability and involvement in democratic or other political regimes.

[49] Fletcher, P. (2004) Portals and Policy: Implications of Electronic Access to U.S. Federal Government Information and Services. Pavlichev, A. and Garson, G.D., (Eds.) *Digital Government: Principles and Best Practises*. Hershey: Idea Group Publishing.

Centralized versus Decentralized Governance

While e-government represents a vehicle for improved service delivery that can be seen as the most recent step in a more evolutionary process of public sector reforms and (ideally) improvements designed to improve service delivery capacities and ultimately, overall performance, the pressures for government-wide action and responses are also partially a reversal from the flavour of previous reforms in the public sector dating back to the 1980s, particularly those associated with the movement known as new public management (NPM). Indeed, today's focus on customer and citizen-centric service and governance is partly owed to NPM.

Through business-inspired management flexibility and wherever possible market and competitive forces, NPM placed customer service at the core of the public sector mission. The corresponding emphasis on measuring service and focusing on bottom-line performance improvements underpinned public sector experimentation with new 'agency' models – more organizationally autonomous units empowered to improve service and performance in a particular niche area.

If NPM has been predominantly competitive and decentralizing in approaching service improvement, e-government and electronic services have brought about a more collaborative and at least partially centralizing mindset in recent years. Collaboration stems from the tremendous opportunities for sharing information and aligning (if not integrating) service offerings across different providers. The resulting networked architecture of service delivery, predicated on more seamless governance, is reflected in what the UK and other jurisdictions at times refer to as 'joined up' government.[50]

To what extent this seamless approach should be nurtured through collaborative opportunities between units (i.e. departments and agencies) or more aggressively pursued through a single service provider is a core challenge for e-government's enterprise architecture.[51] From a technology perspective, the pursuit of greater interoperability across enterprise-wide architectures (important elements of a platform for service delivery) for the public sector as a whole has often become a centralizing force. Yet a significant novelty in this digital environment is the manner by which centralization and collaboration are viewed as complementary.

As one leading review of national government usage of information and communications technologies (ICT) reports:

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[50] Batini, C., Cappadozzi, E., Mecella, M. and Talamo, M. (2002). "Cooperative Architectures," McIver, W.J. and Elmagarmid, A. K. (Eds.) *Advances in Digital Government – Technology, Human Factors and Policy*. Boston: Kluwer Academic Publishers.
Astron (2006). *Transforming Public Services : The Next Phase of Reform*. Edinburgh, Scotland (www.socialworkscotland.org.uk/resources/cpsd/TransformingPublicServicesthenextphaseofreform.pdf).
Cross, M. (2007) Joined-up government is not inevitable or desirable. *The Guardian* (Technology, 01/18/07).
[51] Curtin, G., Sommer, M.H., Vis-Sommer, V. eds. (2003) The World of E-Government. New York: Haworth Press.
Allen, B.A., Paquet, G., Juillet, L. Roy, J. (2005) 'E-Government and Private-Public Partnerships: Relational Challenges and Strategic Directions', in Khosrow-Pour, M., Ed. *Practising E-Government: A Global Perspective,* Ideas Group Publishing, p. 364-382.
Culbertson S. (2005) "E-Government and Organizational Change", Khosrow-Pour, M., Ed. *Practising E-Government: A Global Perspective,* Ideas Group Publishing.

Governance of ICT continues to evolve toward greater centralization of ICT management and functions. Collaboration continues to be encouraged, with an even stronger emphasis on collaboration across sectors to create networked government.[52]

Along with the need for an enterprise-wide perspective on information and infrastructure, public sector leaders also understand that in order to achieve better outcomes (i.e. the citizen-centric portion of the puzzle), front line flexibility and specialization are of paramount importance. Achieving this balance is at the heart of the service transformation agenda in many jurisdictions today.[53]

Achieving such a balance also requires a more sophisticated relational governance lexicon than the stark options of centralized control on the one hand and empowerment and autonomy on the other hand. A much greater degree of flexibility involving both formal and informal mechanisms is called for, many of which are often more horizontal than vertical in orientation. For this reason, government has been viewed by many as collaborative government.[54]

Presently, collaboration is viewed more as a cost than a virtue – even by many managers and elected officials who routinely espouse the benefits of collaborative activity. Horizontal governance within the public sector must be collaborative to take hold: in the present system, running counter to tradition, creating such mechanisms and a corresponding culture takes time and energies that can paradoxically be seen as vices on the quick action and strong decision-making required to respond to new realities. Similarly, a more participative and consultative form of politics often contradicts how we most regularly frame leadership – as decisive and unwavering.

While leadership is a key lens through which the conduct and interpretation of leadership must be understood, it is also a symptom of the larger organizational and managerial paradigm in good currency not only in government but in all sectors. Yet, it is government more than elsewhere that has continued to rely on the foundational pillars of Weberian bureaucracy that include hierarchy, clarity, and specialized (or stove pipe) organization. In this largely vertical world, the interface between formal structures and informal culture creates a reflexive preference for top-down management and process control.

The notion of control is fundamental here to understanding the reframing that must occur. All organizations and institutions require some form of control, but the widening interest in new governance systems is testament to the need to view control as less a means to shape every aspect of behaviour (i.e. process control) and more a basis for coordinated and shared actions orchestrated on the basis of outcomes and objectives.

From the perspective of more horizontal but in reality networked governance solutions that are the essence of service transformation and effective security strategies, the two fundamental questions that remain stubbornly unanswered include:

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[52] International Council for IT in Government Administration (ICA) (2006). *Executive Summary, Country Reports 2006* (http://www.ica-it.org/conf40/docs/Conf40_country_report_Canada.pdf). 1.

[53] Allen et al., 2005

[54] Allen, B.A., Paquet, G., Juillet, L. Roy, J., (2005a). E-Government as Collaborative Governance: Structural, Accountability and Cultural Reform. Khosrow-Pour, M., Ed. *Practising E-Government: A Global Perspective.* Hershey: Ideas Group Publishing. 1-15.

- *How to motivate public managers to share data and, more generally, to work jointly for the public good; and*

- *How to understand and influence the range of barriers, from psychological and social to structural, political and technical, that mitigate across cross-agency initiatives (p. 33, Fountain 2001).55*

In order to better illustrate such tensions, the Swedish experience of public management and their recent quest for interoperability (and shared service-like coordination across government) provides a useful case study. Although one of the most prosperous and technologically sophisticated countries in the world, the Swedish government has faced critics both internally and externally pointing out that the traditional culture of decentralized agency autonomy does not lend itself easily to achieving government-wide capacities.

Indeed, the Swedish Government, having studied several other European country experiences, concluded that many such models being developed elsewhere would not be workable in their context. The main reason is what they term as the contractual model of public sector management underpinned by a networked administration:

> *Owing to the increased need for cooperation between different administrative units, networked administration represents an appropriate organizational paradigm for modern administration. The term refers to administration composed of independently managed units that rely on functions and resources provided by other such units or private companies, and form part of permanent and temporary cooperative structures.*
>
> *Forms of collabouration among administrative units vary according to country and administrative tradition. The Swedish model of cooperation may be summarized as a contractual model. Accordingly, an administrative unit decides for itself whether external services and functions are sufficiently attractive for the unit to use them or pay for this use.*[56]

It is extremely important to highlight the meaning, usage and implications of the term, contracting, here and why it is so out of step with many traditional public management frameworks. In order to have contracting, one must have two parties with the freedom and skills to enter into such agreements, and these agreements are as much about collabouration and relationship-building as they are about control and technical specification.

Culbertson summarizes the resulting scenarios for the emergence of a Chief Information Officer (CIO) function required in the public sector due to the advent of e-government as a spectrum of options ranging from 'cheerleader' and 'collabourator' on one end to

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[55] Fountain, J. E. (2001). Building the Virtual State: Information Technology and Institutional Change. Washington, D.C.: Brookings Institution Press.

[56] Swedish Agency for Public Management (2004) *Public Administration in the E-Society, short version*. Stockholm: Government of Sweden.

Sweden has wrestled with whether such an approach can co-exist while also pursuing government-wide architectures and interoperability. They undertook an independent study of the Spanish state of Catalonia's e-government approach (viewed as highly centralist) and concluded that it could not be imported into Sweden. As such, while various mechanisms have been introduced to facilitate better cooperative linkages and knowledge-sharing across the Swedish public sector, the networked, contractual model is viewed as the foundation on which future reforms will be based.

'controller' and 'commander' on the other.[57] The former end of this spectrum implies a weak central authority in terms of formalized powers, but one engaged in the pursuit of negotiated means with departments and agencies to achieve collective aims. Conversely, the latter options reflect a more centralized model of controlling resources and decision-making aimed at achieving interoperability and government-wide readiness and capacities.

The resulting need for a 'federated architecture' is often invoked as a compromising balance along such a continuum, with the precise location of any government reflective of its organizational history, its current political and managerial objectives (particularly within an identified set of e-government commitments, as well as the geographic and demographic environments shaping the size and complexity of the overall government architecture. While there is no definitive recipe for an optimal model, early e-government experiences underscore a broad shift toward stronger CIO models in almost all public sector jurisdictions due to the rising strategic importance of digital technologies for management and governance.[58]

Achieving balance between decentralized innovation and flexibility on the one hand, and centralized leadership and coordination on the other, has become the hallmark of the Chief Information Officer's (CIO) position within large organizations, and governments are no exception. Often positioned within a central agency of government (with some form of management and expenditure oversight authority for government as a whole), the CIO has become the *de facto* Head of e-government strategy in many jurisdictions.

The scope of the CIO's work has expanded in importance due to the widening need for alignment between technology, information and strategy. Many observers believe that along with the rise of the Internet in the late 1990s, the IT systems threat known as 'Y2K' also galvanized many governments into raising the profile and stature of the CIO-type position, organizationally and politically.

Electronic Capacities and Y2K

A final dimension to e-government's emergence over the past two decades has been the reframing of electronic and digital systems from being viewed primarily as back-office, support functions to a strategic and enabling architecture for most aspects of organizational performance. This shift is partly tied to the aforementioned rise in clout of the CIO-type position in government, but it further reflects an underlying logic that the OECD termed the e-government imperative.[59] By imperative, the implication is that the public sector cannot afford to not have leading-edge technologies – and the capacities to deploy and manage them, in an increasingly digital and networked environment.

During the late 1990s, beyond the emergence of e-commerce and Internet usage in the marketplace, an important parallel force that galvanized this technology expansion within government proved to be the prospects for IT-disaster due to the inability of computers to recognize the year '2000' in their software and operating systems. Irrespective of the

[57] Culbertson, S. (2004) Building E-Government: Organizational and Cultural Change in Public Administrations. In Oliver, L. and Sanders, L., Eds. (2004) *E-Government Reconsidered: Renewal of Governance for the Knowledge Age*. Regina: Canadian Plains Research Centre.
[58] Ibid.
[59] OECD (2001) The Hidden Threat to E-Government, Avoiding Large Government IT Failures. *PUMA Policy Brief.* 8 (March).

true scope of the threat (that was for some averted only through corrective action while for others greatly exaggerated to begin with), senior managers and politicians became much more aware about the prominence of electronic systems and the perils of ignoring critical infrastructure.

Consequently, techno-enthusiasts across government and industry were able to leverage Y2K as an opportunity for not only upgrading antiquated systems but also putting forth a much more strategic vision of technology as architecture for organizational innovation and performance.

This architectural and more enabling perspective of digital infrastructure has underpinned the parallel and interwoven agendas of service and security throughout this current decade, the latter of course itself propelled to centre stage due to the 9-11 terrorist attacks. Interoperability and information security would thus become as crucial to public safety as to integrated service delivery, altering in many countries the public's views on the relative importance of privacy and to some extent shifting the budgetary priorities of many public sector authorities. Yet, along with this urgent focus on security, the customer and citizen service imperative has not lessened, leading to an enjoined and more encompassing set of pressures for creating, maintaining and effectively deploying government-wide capacities for electronic interoperability, information sharing and coordinated action.[60]

Conclusion

E-government's origins are intimately interwoven with the mainstream advent of the Internet as a platform for new ways of organizing on the one hand, and new models and channels of service delivery on the other hand. The heightened profile more generally of information and communications technologies has also served to mobilize political interest and bureaucratic leadership in building new digital capacities and deploying them in order to improve public sector performance.

Despite this heightened awareness, mobilizing resources, collabourating across internal silos, and achieving positive and integrative outcomes continue to represent both complex and difficult challenges for all countries. The next sub-section of this report, therefore, undertakes a retrospective review of both chronological and strategic evolution and examines why some countries have succeeded where others have stagnated, and how the most successful countries today are rapidly preparing for more widespread preparation tomorrow.

Progress and Performance

Since its inception during the 1990s e-government has emerged as a globally recognized rubric for public sector reforms tied in some manner to new ICT's and the Internet. Countries have been both cooperating and competing in efforts to create new technological and organizational capacities on the one hand, and achieve positive outcomes on the other hand.

Yet, despite this common agenda applying to most countries, the pursuit of e-government has not been homogenous by any stretch. E-government as a strategy must

[60] OECD (2004) *The Security Economy.* Paris: Organization for Economic Cooperation and Development.

reflect the separate national and regional environments with political, social and economic and attributes that shape the sorts of reforms needed, the outcomes sought, and ultimately the results.

Comparative examinations of country performances must therefore begin from the premise that no two countries are alike, and that national trajectories will be shaped by variables both within the public sector (including multiple levels of government) and across society at large. As a result, there is some invariable tension between mapping out global e-government trends and specific national trajectories and how they relate to such trends.

The purpose of this sub-section of the report is to focus primarily on key patterns and trends in order to better understand how and why some countries have seemingly fared better than others in realizing benefits from e-government. Indeed, in many international ranking schemes it is commonplace to find a similar set of high performers and the purpose here is to dissect some of the main reasons for their continued success (as well as reasons explaining how other countries have accelerated progress or alternatively faced stagnation and ongoing challenges).

Specific national examples and experiences will be used to highlight the relevance of key performance determinants that emerge from a retrospective review of e-government studies over the past ten to fifteen years.

In order to help frame this broad assessment three main phases of e-government strategy and activity are put forth as ways of encapsulating the main focus of e-government on the one hand, and the major challenges facing public sector leaders and all stakeholders in pursuing e-government on the other hand.

The three (inter-related and often overlapping) phases are as follows:

- *Infrastructure:* Creating an information infrastructure both within the public sector and across society at large, one based upon reliable and affordable Internet connectivity for citizens, businesses and all stakeholders in a given jurisdiction;

- *Integration*: Leveraging this new infrastructure within the public sector in order to better share information (internally and externally) and bundle, integrate, and deliver services through more efficient and citizen-centric governance models encompassing multiple delivery channels; and

- *Transformation:* Pursuing service innovation and e-government across a broader prism of community and democratic development through more networked governance patterns within government, across various government levels, and amongst all sectors in a particular jurisdiction.

In many respects, these three phases are an alternative and somewhat simplified version of many preceding e-government frameworks such as the five-staged approach adopted in the 2005 UN Global E-Government Report.[61] As presented here,

[61] United Nations Department of Economic and Social Affairs and Division for Public Administration and Development Management (2005) *UN Global E-Government Readiness Report 2005: From E-Government to E-Inclusion.* New York: UN. (http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021888.pdf)

infrastructure encompasses the 'emerging' and 'enhanced' e-government stages, *integration* includes the 'interactive' and 'transactional' stages, whereas *transformation* is closely intertwined with the fifth and most advanced stage of 'networked presence.'

This simplified framework allows for a more macro-level focus on the main variables of e-government success (or the absence of success), especially as more and more countries cluster in the space between integration and transformation. Moreover, there is growing interest in recent years in dissecting the 'transformation' phase and it is here where many of the leading e-government countries are presently focused.

Indeed, with respect to transformation, the 2007 Accenture report portrays this evolution as less a choice than necessity in a networked era:

> *As governments look to the future they realize they cannot deliver on the full promise of leadership in customer service on their own. Their linear, process-oriented business models are evolving into complex ecosystems of citizens, communities, business partners, non-governmental organizations, and other stakeholders, all of which take on a share of responsibility for developing and providing value-led services.*
>
> *In this new ecosystem model, leading governments also delegate service accountability to the relevant community for a new ability to drive outcomes. Local and municipal governments in turn take the chance to tailor what they do for the particular citizens that live there, leading to new thinking about delivering services not just to individuals, but also to families and communities.*[62]

This passage aptly describes a broadened canvas of more networked service delivery models: it also links public service delivery and community capacities for learning and development. These capacities are multi-sector and encompass multiple government levels, and they give rise to important questions about the municipal dimension in any holistic modelling of the public sector.

As such, the fostering of collaborative governance capacities both within and beyond the public sector is a central feature of transformational e-government. Equally important, however, is the reality that in order to achieve transformation any country must first learn from and adopt from basic prerequisites associated with the preceding e-government phases, infrastructure and integration.

Infrastructure

With respect to the first phase, infrastructure, the OECD's E-Government Imperative published in 2003 marked one of the first manifestos for holistic thinking about e-government across the public sector while also taking into account country experiences in years prior. The first of ten principles[63] included 'leadership and commitment' at both political and administrative levels. From the mid-1990s we saw that countries becoming early leaders in e-government benefited from this high-level commitment, particularly the

[62] Accenture Consulting (2007) Leadership in Customer Service – Delivering on the Promise (www.accenture.com).
[63] The full ten principles include: i) leadership and commitment; ii) integration; iii) inter-agency collaboration; iv) financing; v) access; vi) choice; vii) citizen engagement; viii) privacy; ix) accountability; and x) monitoring and evaluation.

recognition politically that e-government denoted an important and worthwhile venture (and one disruptive from past practices).

Central to these early leaders was the articulation of a vision of e-government that may have begun with modest ambitions of developing a presence online but that also recognized the potential for longer term and more systemic change (i.e. with an eye on the integration and transformation phases). Importantly, the OECD's The E-Government Imperative also made use of previous work undertaken by this organization, completed in the 1990s, that focused on the emergence of an information society - underscoring that e-government must itself be situated into a broader vision for personal and societal development.

As the 2003 United Nations Global E-Government Index states:

> *The potential of e-government, as a tool for development, hinges upon three pre- requisites - a minimum threshold level of technological infrastructure, human capital, and e-connectivity for all. E-government readiness strategies and programmes will be able to be effective and 'include all' people only if, at the very minimum, all have functional literacy and education, which includes knowledge of computer and Internet use; all are connected to a computer; and all have access to the Internet. The primary challenge of e government for development therefore, is: how to accomplish this.*[64]

Accordingly, many early e-government leaders focused as much attention and resources outside of the public sector as within it. In Canada, for example, the flagship Government Online initiative was spawned from a broader policy agenda known as Connecting Canadians, a set of programs designed to spread Internet access to individuals, communities and schools. Similarly, in South Africa early e-government leaders at the provincial level (Western Cape and Gauteng) in that country reflected those areas already endowed with the most advanced digital infrastructures and hubs of economic industrialization that together provided a suitable platform for government authorities to foster an online presence.[65]

Perhaps nowhere has there been a more concentrated effort to afford both broadband and wireless Internet access to the citizenries as a whole than in the Northern European region of Scandinavia where Finland, Sweden, Norway and Denmark proved to be early adopters of a digitally inclusive lens of societal development from the inter-related perspectives of both socio-economic competitiveness and social cohesion. Their accelerating success, for example, in The Economist's global e-readiness rankings has created a powerful platform for generating public demand for e-government and corresponding incentives for public sector authorities to respond in-kind by developing new models and capacities of supply.

As The Economist reported in 2004 with four of the top five positions going to Nordic countries:

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[64] United Nations Division for Public Administration and Development Management (2003) *Benchmarking E-Government: A Global Perspective,* New York: UN.
[65] State Information Technology Agency (2002) *e-Government Experience in South Africa*. (http://unpan1.un.org/intradoc/groups/public/documents/CAFRAD/UNPAN006470.pdf).

Scandinavia is remarkable for the way in which citizens have incorporated Internet technology into their daily lives, completely altering how they work, shop, and communicate with officials … The most remarkable gains (overall) have been registered by Denmark and South Korea.[66]

This inclusion of the Republic of Korea as a digital comparator to Scandinavian countries is testament to the similarly orchestrated manner of this Asian country to focus holistically on digital infrastructure both outside and within the public sector.[67] The country became the world's most densely populated broadband market by 2004 with 27 percent of its population online (a level that has increased dramatically in more recent years).

This emergence of internal and external perspectives to ICT usage by governments would prove extremely important downstream in meeting the more complex challenges of integration and transformation. A more connected and Internet-enabled citizenry drives demand for online service, while also providing an important source of learning for governments in continually fostering new service delivery channels and more integrated offerings.

Similarly, the greater the level of societal recognition afforded to e-development within a country, the higher the likelihood of sustained political leadership for the project of e-government. Perhaps no country has shown how inter-related these two dimensions are better than Estonia, which embraced such notions as a means of reinventing itself from the confines of the previous Soviet era into a Baltic catalyst for digital adoption and innovation. According to Ernsdorff and Berbec, 'the progress of ICT in a small country with less than 1.4 million inhabitants proved successful and that is why the Harvard University Global Information Report ranked the development of ICT in Estonia in 22nd place in the world among the 75 countries surveyed, surpassing countries such as France, Italy and Spain.'[68]

An important factor in Estonia's accelerated emergence as a digital leader was the commitment by politicians to focus holistically on a program of e-government within public operations and democratic institutions on the one hand, and across the marketplace and civil society on the other hand. Early investments by government generated both results and recognition: by 2004 Estonians completed 76 percent of all tax declarations online, and the country was the first to experiment on electronic voting on a nation-wide basis.[69]

While Estonia's early success is attributable to a determined national effort, European countries across this continent benefit from the wider emergence of a European Union dimension to this project, including both cooperative and competitive ties between member states through the fostering of a transnational vision and policy framework on the one hand, and benchmarking initiatives to showcase leadership and laggardness on the other hand.

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[66] Economist Intelligence Unit (2004) The 2004 e-Readiness Rankings. (http://graphics.eiu.com/files/ad_pdfs/ERR2004.pdf)
[67] Ibid.
[68] Ernsdorff, M. and Berbec, A. (2007) Estonia: The Short Road to E-government and E-democracy. In Nixon, P.G. and Koutrakou, V.N., Eds. (2007) *E-government in Europe: Re-booting the State*. New York: Routledge. 171-183.
[69] Ibid.

In the early days of e-government, the adoption of e-Europe – An Information Society for All, by the European Council in March of 2000 provided the political vision for the emergence of e-government including the pursuit of three key objectives:

- *Bringing every citizen, home and school, every business and administration, into the digital age and online;*

- *Creating a digitally literature Europe, supported by an entrepreneurial culture ready to finance and develop new ideas; and*

- *Ensuring the whole process is socially inclusive, builds customer trust and strengthens social cohesion.*[70]

In many other parts of the world as well, developing, lesser developed and newly industrialized countries made great strides in this first phase of e-government through high level political leadership – especially in recognizing the importance of the Internet as a foundation for twenty-first century development.

The Kingdom of Saudi Arabia is a case in point, where political trepidation in the late 1990s has given way to a concerted effort by leaders there to invest in online infrastructure. By 2005 about 10 per cent of Saudis routinely used the Internet from home or work and IT applications have spread rapidly to cover many sectors to enhance productivity and advance performance in the fields of finance, industry, commerce, education, e-government and health care.'[71]

The Saudi Government views transformation of government as a long term objective, understanding that in keeping with the importance of infrastructure, a broader focus across the country as a whole must first be expanded into areas such as e-readiness, e-society and IT training both inside and outside of government.[72]

Similarly, the rapid expansion of online infrastructure in China during this decade is well illustrated by the following chart:[73]

[70] EEurope. (2000) An Information Society for All: Communication on a Commission Initiative for the Special European Council of Lisbon. (http://ec.europa.eu/information_society/eeurope/2002/news_library/pdf_files/initiative_en.pdf)
[71] AL-Shehry, A., Rogerson, S., Fairweather, N.B., Prior, M. (2006) The Motivations For Change Towards E-Government Adoption: Case Studies From Saudi Arabia. (eGovernment Workshop '06, Brunel University).
[72] Ibid.
[73] Internet World Stats: Usage and Population Statistics (2007). China Internet Usage Stats and Telecommunications Market Report. (http://www.Internetworldstats.com/asia/cn.htm)

Table 6.1. Internet Usage and Population Statistics

Year	Users	Population	Percentage	Usage Source
2000	22,500,000	1,288,307,100	1.7 %	ITU
2001	33,700,000	1,288,307,100	2.6 %	ITU
2002	59,100,000	1,288,307,100	4.6 %	ITU
2003	69,000,000	1,288,307,100	5.4 %	CNNIC
2004	94,000,000	1,288,307,100	7.3 %	CNNIC
2005	103,000,000	1,289,664,808	7.9 %	CNNIC
2006	137,000,000	1,317,431,495	10.4 %	CNNIC
2007	162,000,000	1,317,431,495	12.3 %	CNNIC

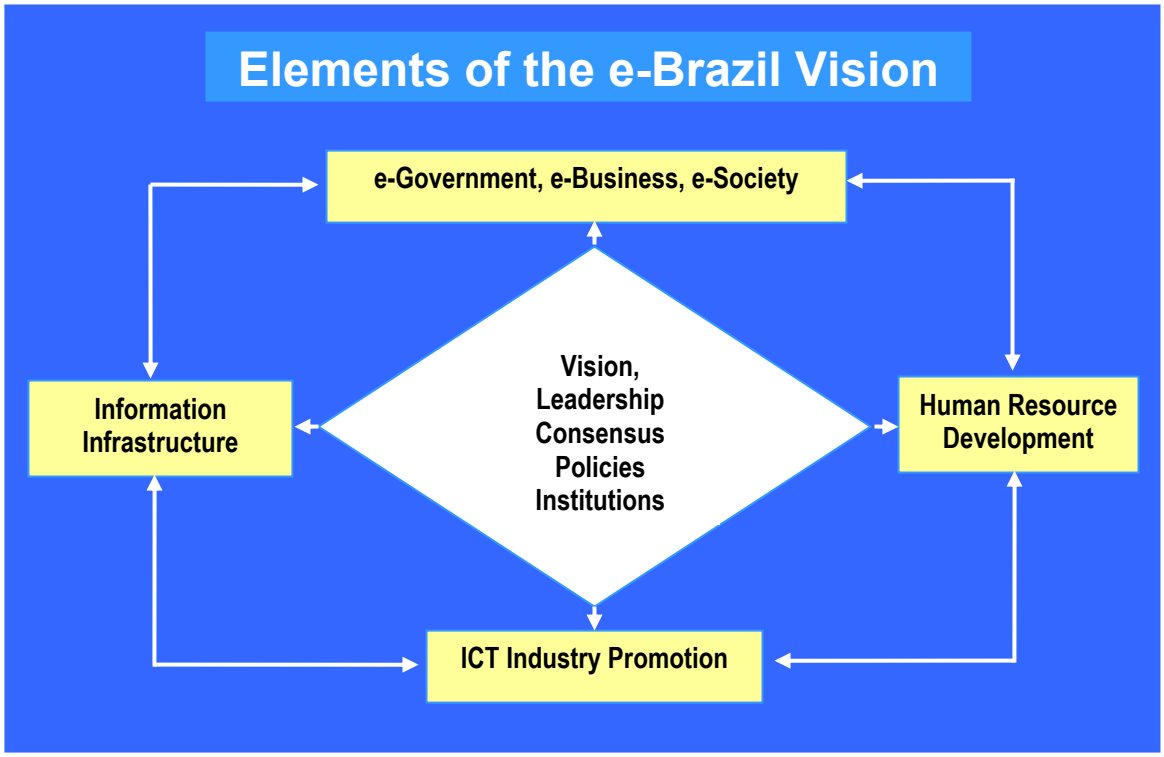
Such growth rates imply that before the end of this decade China will have more Internet users within its borders than the United States.[74] This type of foundation of infrastructure and active users creates tremendous potential for the expansion of e-government models in the realms of online service delivery and more transformative dimensions of the Chinese public sector.

Conversely, the absence of an over-arching e-government and e-development vision has been highlighted by endogenous experts in countries such as Brazil as a major inhibitor of faster economic growth and social progress during the past two decades (Knight 2006).[75]

The following vision is thus presented by champions of reform in Brazil as an essential encompassing approach to fostering an e-Brazil strategy that is viewed as an essential prism of twenty-first century development:

[74] Ramesh, Randeep. (2007) China soon to be world's biggest Internet user. Guardian Unlimited, from http://www.guardian.co.uk/frontpage/story/0,,1998128,00.html.
[75] Knight, Peter. (2006) e-Brasil: e-Development for Brasil and Its States. (presentation at Global Conference on e-Government, University of Maryland) (http://www.umiacs.umd.edu/research/CDIG/presentations/thu-knight-egov.ppt#256,1,e-Brasil e-Development for Brazil and its States)

Figure 6.1. Elements of the e-Brasil Vision



As with the Nordic countries, it is this economically and socially inclusive approach to fostering a digital infrastructure that has been essential to spurring e-government development within the public sector – and in terms of interactivity between government organizations and citizens. In most countries, the reality of this first phase of e-government has been one of mixed results precisely due to the sort of unevenness exhibited by Brazil and so many other countries.

More broadly, by the early part of this century it had become clear that while a significant proportion of countries had created a presence online in some manner, capacities for leveraging this presence into opportunities for tangible value creation remained sporadic. Accordingly, three main conclusions of the UN Global E-government Survey in 2003 were:

1) *No country or group of countries in the world owns the monopoly on imagination, wisdom and commitment or political will for use of e-government for the delivery of the public value of human development. Original, advanced content of e-government applications finds a home in the geographic and developmental South, as it does in the North.*

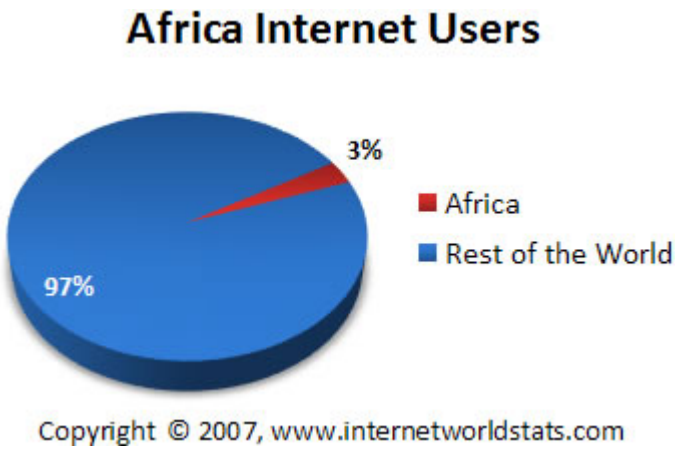
2) *Only very few governments have opted to use e-government applications for transactional services or for networking.*

3) *Even fewer governments use it to support the genuine participation of citizens in politics. Those who do, in most cases, apply it at a very rudimentary level.*[76]

These second and third conclusions, reflecting much more limited concrete changes and results, are also more in keeping with the second and third phases of e-government development reviewed above – integration and transformation. The 2003 survey results revealed that while an upper tier of countries had begun experimenting with integration and transactional services (and to a lesser extent direct public participation), most countries continued to struggle with basic issues of connectivity and information availability.

For many countries this struggle continues, notably in Africa where that continent's representation of 14.3 per cent of the global population translates into approximately 3 per cent of the world Internet users:

Figure 6.2. Africa Internet Users



In Ethiopia, for example, the public sector comprises some 350,000 workers, of whom 14 per cent have PCs at their disposal and less than 1 per cent access to electronic email.[77] Recent research in Uganda conducted by Microsoft found that only one in every 200 citizens there are regular users of email.[78] Such conditions severely limit the extent to which countries can look to more ambitious e-government efforts.

At the same time, however, no less than 8 African nations now have more than 10 per cent of their populations online. Based on both the encouraging experiences of African leaders such as South Africa and Morocco (the former leading the world in ICT spending between 1992 and 1999[79]) and broader continental awareness and interest in ICT-driven transformation, there is also room for optimism that Internet and ICT-driven reforms can

[76] United Nations, United Nations Department of Economic and Social Affairs, Division for Public Administration and Development Management (2003) *UN Global E-Government Survey 2003.* New York: UN. (http://unpan1.un.org/intradoc/groups/public/documents/un/unpan016066.pdf)
[77] Coleman, Stephen. (2003). African e-Governance-Opportunities and Challenges. Oxford University:Oxford Internet Institute.
[78] Economist Intelligence Unit (2007), 64.
[79] Onyeiwu (2002). *Inter-Country Variations in Digital Technology in Africa: Evidence, Determinants and Policy Implications.* United Nations University, World Institute for Development Economics Research (Discussion paper #2002/72).

yield strengthened democracies, improved public sector capacities and more adaptive governance.[80]

The other significant challenge across many developed and developing countries is the persistent and indeed in many cases widening set of digital divides that exist. Geography is one important factor here. While many leading e-government countries are relatively small territorial entities (such as the Nordic countries, Estonia, Singapore etc.), larger countries often face more diverse socio-economic conditions especially across urban and rural communities. In Canada, for instance, despite considerable progress early on under the rubric of Connecting Canadians, there are significant variations in Internet availability, usage, affordability and reliability between cities and rural communities.

Such difficulties are often compounded in large developing countries, such as China and India, that are witnessing phenomenal growth in concentrated urban centres where the conditions for e-government thus become more favourable, Indeed there is a paradox of e-government here – viewed initially as a means to overcome distance and assist those in remote locations, and while there have been some successes in this regard, in many other cases the additional infrastructure challenges of rural life have been under-estimated.

A case in point is the Indian experience in this regard:

> *…the inadequate connectivity infrastructure, particularly in the rural and topographically difficult areas, presents a difficult choice for the Government. Should it invest in infrastructure and accept the consequence of a longer gestation period for delivery of projects, or should it implement e-Government initiatives in areas comparatively better equipped in terms of connectivity infrastructure? This would demonstrate the efficacy of e-governance; however it would also largely address the needs of only the more affluent sections, thereby creating another divide in society.*[81]

The bottom line, then, for this first phase of e-government is twofold: first, a vision of digital connectivity for government championed by political leaders as well as key public servants; and secondly, a holistic framing of this vision to include not only an infrastructure for online presence for the public sector but resources and policies that enable the country as a whole (including private industry and civil society) to become more connected and technologically literate.

With respect to the five-stage framework adopted in previous UN reports, this first phase of infrastructure encompassing the emerging and enhanced dimensions of e-government represents a foundation. This foundation must exist both within the public sector (in order to mobilize the resources and skills necessary to create electronic systems and online portals) and across society at large (in order to create the widest and most inclusive set of conditions for digital connectivity across the jurisdiction as a whole).

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[80] Cunningham, P. (2004). The Digital Divide and Sustainable Development in Africa. International Journal of Technology, Policy and Management. 4 (1) 18-27.

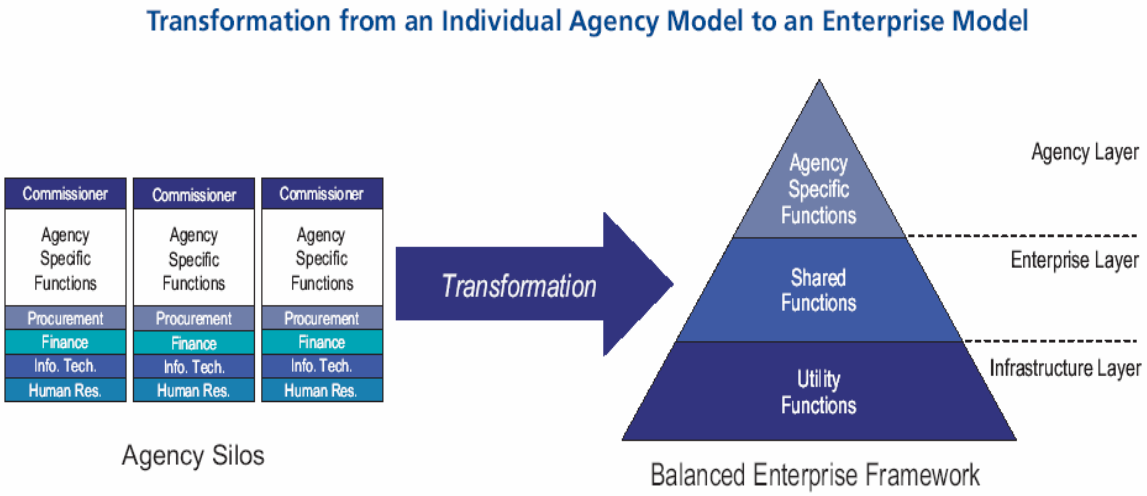
[81] United Nations Economic and Social Commission for Asia and the Pacific and Asian Development Bank Institute. (2004) *Implementing e-Government Report of the Regional Workshop*. Bangkok. (http://www.adbi.org/files/2004.11.book.implementing.egovernment.pdf)

Integration

As discussed in the preceding section on the origins of e-government, the context for more collaborative and integrative service delivery (ISD) stems from two inter-related streams of thought and reform that have converged over the past two decades: first, a philosophy of citizen-centric governance and service that emphasizes better outcomes and performance over process; and secondly, the emergence of the Internet and new digital technologies that underpin electronic government (e-government) and widen opportunities for electronic service delivery.

What has thus resulted is a shift beyond information toward integration and transformation. The following chart is a depiction of a government-wide 'enterprise' model of the latter stages that are closely inter-related in realizing new planning and the decision-making capacities for the pursuit of citizen-centric outcomes:

Figure 6.3. Transformation from an Individual Agency Model to an Enterprise Model



Source: State of Minnesota (2005)

Although numerous definitions for 'citizen-centric' delivery exist, the central aim is to organize government information sources and services processing in ways that better respond to the user (i.e. citizens, businesses, or other organizations). The goal of Service Canada, for example, 'is to provide Canadians with one-stop, personalized service they can access however they choose – by telephone, Internet, or in person.'[82]

Many service providers elsewhere emphasize the importance of meeting people where they live, with the programs and services they need, when they need them - thereby segmenting and re-organizing government according to user experiences rather than departmental or agency silos (i.e. the need for the sort of enterprise model depicted by the diagram above).

[82] Service Canada (2007) *Government Online*. Ottawa: Government of Canada (http://www.hrmanagement.gc.ca/gol/hrmanagement/site.nsf/en/hr11573.html)

Conceptually, a number of organizing models present themselves including:

- *A single service provider*: a lead entity responsible for managing the entire network of delivery channels and service offerings for a government as a whole;

- *One or more service integrators*: multiple service entities with functional or portfolio-based service delivery responsibilities cutting across multiple departments and agencies; or

- *A single window for service navigation*: a lead entity responsible solely for managing the initial interface or point of contact between a citizen and the government (thereby providing information or redirecting the citizen to the appropriate transactional venue).

Viewed along a continuum, the trend across the developed world is shifting beyond the single window model toward some level of integrated and aligned service offerings that reconfigure business models across the front-end interface and back-end processing systems.[83]

As the latest Accenture (2007) global review states:

> *After years of focusing primarily on the front end (highly visible, citizen-facing aspects of service delivery), governments are now trying to take a more holistic approach. While they are still trying to bring things together for citizens at the front office, they have come to the point where they also need concrete plans for making a superior front end customer experience operational on the back end. In short, this means a renewed emphasis on the infrastructures and workforce that will be able to take the promise of citizen-centred service through to practice.*[84]

In other words the message here is that the pursuit of more integrative service capacities will stall unless accompanied by more transformational changes (once again see the diagram above) in both the structures and culture of government. Countries that have consistently been leading in e-government have thus proven to be more open to systemic reforms that emphasize holistic redesign in terms of both people and processes.

Such reforms entail both governance frameworks and technological architectures and the optimal alignment of human, financial and social forms of capital in manners that can achieve better outcomes for service recipients. Although there are numerous determinants of success and failure, three major dimensions of more holistic e-government capacities for citizen-centric outcomes have emerged in recent years as the most essential set of challenges being addressed by e-government leaders.

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[83] Millard, J., Svava, I., Kubicek, H., Westholm, H. and Cimander, R. (2004). *Reorganisation of government back-offices for better electronic public services – European good practices (back-office reorganisation)*. (Final report to European Commission). Volume1: main report. Danish Technological Institute (http://www.cio.gv.at/news/files/Back_office.pdf)
Coe, A., Belanger, B., Roy, J. (2007) Why Business Models Matter. *CIO Government Review.* Toronto: IT World Canada.
[84] Accenture Consulting, 2007.

They include: i) information and identity architectures; ii) supplier relations, external procurement and internal partnering; and iii) performance management and public participation. Each one will be examined in turn.

i) Information & identity architectures:

The emergence of e-government as a catalyst for service integration is predicated on the ability to rethink both the back end and front end of public sector operations from the perspective of the citizen. The result is pressure for government-wide strategies (called joined-up government in some countries) that enable information to be gathered and shared across internal organizational boundaries, and at the time service offerings to be reorganized and bundled together in integrative manners (according to an appropriate user segmentation).

At the back end, this emphasis on information sharing drives the need for interoperable infrastructures, the potentially centralizing aspect of e-government in orchestrating government-wide approaches to managing information that underpin the ability to transcend bureaucratic divisions and better serve the public through a more integrated interface. Accordingly, at this front end one finds the decentralizing tendencies of e-government in terms of empowering individual agencies and front line staff with the information and tools to provide a single point of contact with the external user, either an individual or organization.

The effective alignment of people, technology and business processes, undertaken from the customer/citizen perspective, is most commonly referred to today as the Service Oriented Architecture (SOA).[85] An effective SOA, one of the recent variants of the wider enterprise architecture spectrum, is one that enables different elements of the public sector as a whole to benefit from alignment and interoperability within a system that nonetheless facilitates multiple layers of individual and organizational innovation (i.e. the balance between centralized and decentralized coordinating mechanisms).

Importantly, such an architecture is neither static nor fully attainable at present, even amongst the most advanced e-government countries. Denmark, for example, envisions a considerable amount of investment and activity over 2008 and 2009 in order to facilitate this sort of system-wide approach in a public sector known for its decentralist principles and structures:

> *An action plan will be forged in 2008 for the development of the overall Enterprise Architecture of the public sector. The action plan is based on a mapping of the potential for efficiency gains, joint solutions and standards among other features.*
>
> *In 2007-2008 business case analyses will be conducted on a number of joint initiatives. Examples of this are joint solutions or standards, such as a paying-in solution, a 'pre-printed' form solution and other service-oriented infrastructure solutions.*
>
> *In 2008 a new joint tender will be conducted on the public sector electronic file and document management systems in order to ensure the secure*

[85] Schultz, J. (2006) "SOA What?", *Public CIO* (February).

dissemination of electronic file and document management and improve the public sector's purchasing potential in respect of price, quality and functionality.

In January 2009 at the latest, a set of common public IT architecture requirements will be drawn up for all public authorities. Joint frameworks will include the use of architectural methods, standards and security policy.[86]

Similarly, as part justification for ranking Singapore as its 2007 leader in e-government and customer service, Accenture reports that in terms of back end infrastructure, 'the Singaporean government has made an enterprise architecture called SGEA a strategic thrust … SGEA offers a blueprint for identifying potential business areas for interagency collaboration as well as technology, data and application standards to facilitate the sharing of information and systems across agencies'.[87] The key lesson here is that enterprise architecture underpins interoperability and collaboration within government for better external service capacities to the citizenry.

Critical to the success of any such enterprise architecture is security. There may well be sound reasoning for governments taking a more cautious and gradual approach than their private sector counterparts, much of it security-related. The political risks of security breaches in government are often perceived to be far more serious than proportionally similar risks in the private sector context - a comparison most often attributed to the significantly greater holdings of personal and sensitive information.[88]

Perhaps more than fears about malicious acts, concerns about privacy and personal information weigh even more heavily on government efforts to deliver services online. This characterization reflects the interaction of technical, organizational and socio-political variables shaping debates about information management and security. Moreover, government services often differ qualitatively from those of the commercial sphere, with more obligatory relationships resulting in the collection of highly sensitive information across a wide range of entities and functions that collectively comprise 'the public sector.'

This relationship between information security, individual privacy and service delivery is complex and dependent to a significant degree on the level of trust accorded to the public sector by the citizenry. In jurisdictions where trust is high, technical solutions are more readily supported and the organizational changes required for more innovative and integrated forms of service are more feasible.

The converse is true as well – where lower levels of confidence and trust translate into stronger vices for both organizational resistance and technical cautiousness. It is for such reasons that it is impossible to separate out service-delivery capacities of e-government with broader institutional reforms shaping the setting of democratic governance within which such processes occur.

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[86] The Danish government, Local Government Denmark (LGDK) and Danish Regions. (2007) The Danish E-Government Strategy 2007-2010. Towards Better Digital Service, Increased Efficiency and Stronger Collaboration. Copenhagen.

[87] P.113, Accenture Consulting (2007) Leadership in Customer Service – Delivering on the Promise (www.accenture.com).

[88] Joshi, J. B. D., Ghafoor, A. and Aref, W. G. (2002). Security and Privacy Challenges of A Digital Government. In McIver, W. J. and Elmagarmid, A. K. (Eds.) *Advances in Digital Government – Technology, Human Factors and Policy*. Boston: Kluwer Academic Publishers.
Holden, S. (2004) *Understanding Electronic Signatures: The Keys to e-Government*. Washington, DC: IBM Center for the Business of Government.

Nonetheless, even within a standardized set of social and political conditions all governments must address both the perceptions and realities of privacy within a broader spectrum of information and identity management that is at the core of both better client-centric responsiveness externally and the corresponding need for new forms of coordination internally. There are two inter-related components in doing so: putting in place an infrastructure of reliable interoperability and ensuring mechanisms for accurate identity authentication.[89]

In terms of a reliable and interoperable infrastructure internally, a fundamental requirement for more citizen-centric governance is the ability – facilitated by a secure architecture, to both store and share personal information in a virtual manner across previously separate organizational units. In theory, it becomes possible for an individual or a company to expect (or endorse) that information provided through one public sector gateway (i.e. a service renewal or transaction completion) should be readily available across the public sector for any other usages that may arise, be they related or unrelated to the initial encounter.[90]

As information management and privacy issues continue to grow in their reliance on a digital infrastructure, three dimensions of computer security can be underscored as central: *confidentiality* - requires that information be disclosed only to authorized parties at the authorized time and in the appropriate manner*; integrity* – includes both the trustworthiness of the content, as well as the origin of the information; and *availability* refers to the ability to access and use information or resources as desired.[91]

The issues of identity and authentication are central to this model. Although once again not entirely novel, they are far-reaching in their potential to reshape both the expectations of the citizenry and the performance of government in a digital era.

Governments also maintain multiple points of contact and interactive dealings with single individuals or organizations – and as such, must foster a similarly integrated approach on a holistic or even partial scale of service and transaction types. While the potential for 'value' creation is real[92] so too are the risks associated with an 'identity' tied to more and more information flows that, in turn, must be stored and shared.[93]

In a networked world, each mechanism for identify verification leads to another possible opening for breaches that can then be used to penetrate a variety of gateways into interconnected systems:

> *As more identifiers are linked to one identity, the threat to privacy and data integrity increases, and the security of the data decreases. Absent substantial controls on how this information can be used, shared and stored, there are wildly varying management practices for the same data…Any party looking to*

[89] Lips, Miriam. (2007) E-government Under Construction: Challenging Traditional Conceptions of Citizenship. In Nixon, P.G. and Koutrakou, V.N., Eds. (2007) *E-government in Europe: Re-booting the State*. New York: Routledge. 33-47.
[90] Kearns, I. (2004) Public Value and Electronic Service Delivery: The UK Experience. Oliver, L. and Sanders, L., Eds. (2004) *E-Government Reconsidered: Renewal of Governance for the Knowledge Age*. Regina: Canadian Plains Research Center.
Bellamy, C., Perri, 6, and Raab, C. (2005) Joined Up Government and Privacy in the United Kingdom: Managing Tensions Between Data Protection and Social Policy. Part II. *Public Administration* 83 (2) 395-415.
[91] Radl, A. and Chen, Y. (2005) Computer Security in Electronic Government: A State-Local Education Information System. *International Journal of E-Government Research* 1(1).
[92] Kearns, I., 2004.
[93] Joshi, et al., 2002.

subvert data will seek data or systems at the lowest level of protection and then use the data for authorization to subvert the security surrounding high value users.[94]

Within such openness and connectedness, identify theft is a problem that appears to be growing in some proportion to the growth of Internet usage generally[95], making it a particularly serious issue for the evolution of online and integrated services in the public sector. Research in Malaysia, for instance, conducted in 2003 showed that only one third of residents there considered online interaction with government authorities as safe, with nearly one half of the country's population regarding it as unsafe (a level that had risen since the previous year).[96]

The correlation between identity theft and more unintended mishaps of information mismanagement on the one hand, and expanding Internet use (and usages) on the other hand, underscores why such issues are rising in prominence, particularly at a time when many countries are pursuing determined efforts for national identification and authentication systems either for the public sector as a whole or large sub-portions such as health care.[97]

While such issues are hardly new - as concerns about privacy have permeated discussions about electronic information systems for the past many decades[98], the stakes are rising, not only to the individuals involved in sharing the personal information electronically but also to the economy as a whole in so far as online channels for consuming and transacting are viewed as safe and reliable.[99]

In short, fostering trust is both a private imperative and a matter of public interest in the virtual world.

Striking a balance between new forms of legal protection and self-governance involves a mix of extending and enforcing new legal rules on the one hand, and a more collective effort to foster a culture of risk management through personal and corporate responsibility. Such a mix will vary across cultures and jurisdictions: for example, whereas Europeans are said to be more distrusting of the private sector with respect to managing and sharing personal information, Americans have traditionally directed their distrust toward government.

At the same time however, this dichotomy has become more fluid since September 2001 as reflected by US debates about wiretapping, information sharing between industry and government, and the widening experimentation with data-mining by governmental authorities.[100]

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[94] p.6, Nugent, J. H. and Raisinghani, M. S. (2002). The Information Technology and Telecommunications Security Imperative: Important Issues and Drivers, *Journal of Electronic Commerce Research* 3(1) 1-14.

[95] Identity theft is reported to be the fastest growing crime in North America, having already harmed nearly 60 million Americans. The Better Business Bureau of Canada estimates an annual cost of $2.5 billion to Canadian consumers and the total annual cost to the Canadian economy has been estimated at $5 billion.

[96] Ross, P., Hutton N., and Peng, J.L. (2004) Revolutionary E-Government Strategies Across Asia-Pacific. Alcatel Telecommunications Review. 3rd Quarter, 3.

[97] In Spain for example, by late 2007 the Spanish Government had distributed more than 1.2 million chip-based national ID cards across the country. It was expected that this number would reach 2 million by the end of this same year, with plans calling for a significant expansion of this roll-out in the coming years.

[98] Bennett, C.J. and Raab, C. (2003). *The Governance of Privacy*. Burlington: Ashgate.

[99] OECD, 2004.

[100] Roberts, A. (2006) *Blacked Out – Government Secrecy in the Information Age*. New York: Cambridge University Press.

Evidence to date suggests that in the realm of electronic service delivery – in both industry and government, a reliance on both sets of measures is necessary due, in large, part to a segmentation of any population into three distinct camps: those highly suspicious about an erosion of personal privacy in a more digital world, those who are indifferent, and in between the largest proportion of more pragmatic individuals whose views are likely to shift according to experience and circumstance.[101]

It is precisely because of the fluidity of this middle group that perceptions of risk have become so central to discussions about information management and privacy in an expanded realm of security measures since September 2001 - aimed at preventing terrorism and ensuring public safety. The parameters of ICT deployment have thus shifted politically toward matters of public safety and security with a particular focus on anti-terrorism.[102]

Many governments are now pursuing bolstered forms of identity management through more technologically sophisticated devices for authentication such as national identification cards and biometrically enabled passports.[103] The former approach, for example, has been adopted by the UK government which plans to introduce such a card by 2008[104]. Australia and Hong Kong are currently implementing new national 'smart cards' that would serve as an identity link to all public and private transactions conducted electronically. Italy and Spain have adopted similar paths, to name but a few.[105]

Further, many jurisdictions are presently exploring modified passports that would make use of biometric devices to improve authentication and identity management capacities.[106] Radio frequency identification devices (RFID) are viewed as an area of particular interest for developing a more secure infrastructure for commercial transactions, transportation and human mobility and verification schemes.[107]

Defenders of such measures point out that terrorist and criminal elements are making effective use of new technologies to conduct their own plans and it is therefore both normal and desirable that governments counter in kind. Moreover, for the vast majority of citizens who are law-abiding, there may be a presumed comfort level in having nothing to hide.

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[101] Bellamy et al., 2005.

[102] Strickland, L.S. and Hunt, L. (2005) Technology, Privacy and Homeland Security: New Tools, New Threats, New Public Perception. *Journal of American Society for Information Science and Technology* (Special Issue on Intelligence and Security Informatics) 56 (3) 220-235.

[103] International Biometric Group. (2007) (http://www.biometricgroup.com). Because biometrics can be used in such a variety of applications, it is very difficult to establish an all-encompassing definition. The most suitable definition of biometrics is: "The automated use of physiology or behavioural characteristics to determine or verify identity" (source – www.biometricgroup.com).

[104] The UK Government has introduced legislation to establish a new agency by 2008 that would issue both passports and a national identification card, with the cards being compulsory for all citizens by 2013. The card would feature a biometric chip with an identifier unique for each individual, and its purpose is to facilitate better a more integrated access to government services for citizens, while also enabling authorities to counter identity theft, fraud and domestic security threats. Many European countries already use similar cards and there is general interest and a growing commitment to biometrically enabled forms of identification for both passports and domestic mechanisms in many countries around the world.

[105] Torrisi, A. and Mezzanotte, L. (2004) Security Products: Inside the Italian Electronic Identity Card. In OECD (2004) The Security Economy. Paris: Organization for Economic Cooperation and Development.

[106] Meyers, D.W. (2003) Does 'Smarter' Lead to Safer? An Assessment of the US Border Accords with Mexico and Canada. *International Migration* 41 (1) 5-44.

[107] Hodges, S. and McFarlane, D. (2004) RFID: The Concept and the Impact. The Security Economy. Paris: Organization for Economic Cooperation and Development.

Yet, such sentiment – coupled with fears of terrorism, may also yield a supportive environment for widened surveillance activity on the part of public sector authorities.[108]. Such developments have thus sparked vigorous political debate over proposed new identification schemes in both Australia and the United Kingdom. Despite the absence of consensus, then, leading e-government countries are addressing information and identity management in an increasingly multi-faceted and political manner in order to strike the appropriate balance between service and security considerations (a balance that is inherently and continually contested both within and across jurisdictions).

Questions about identity authentication and information security enjoin the public and private sectors both nationally and globally. In terms of the latter, Liberty Alliance is a good example of a consortium of both sectors collaborating on the development of standards and policies to facilitate interoperability across safe and share architectures (enjoined increasingly by the Internet).

Within countries too, leading e-government countries have had to come to terms with the increasingly central place of procurement and partnerships in enabling governments to create, deploy and maintain leading edge infrastructure.

ii) Supplier relations, procurement and partnering:

The necessity of significantly reforming IT procurement and project management systems (inter-linked dimensions of the process of acquiring, deploying and maintaining new technological systems) is widely viewed across OECD countries as a key issue for e-government, the "hidden threat" that must be overcome in order to realize any potential and tangible benefits from e-government reforms.[109]

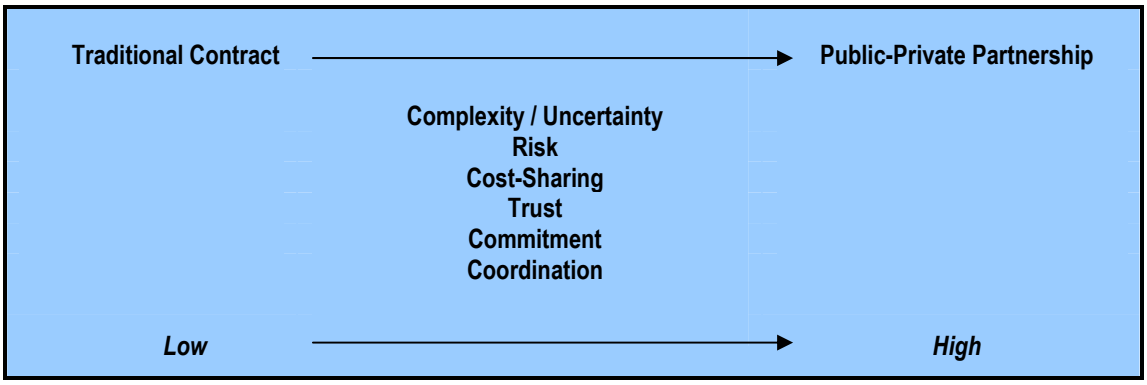
Accordingly, governments have been experimenting with alternative procurement models less based on process controls – notably upfront costs, and more sensitive to outcomes, innovative solutions for achieving them, and shared results between the public and private sectors engaged in the service transformation effort.[110]

Central to this more collaborative approach is the ability to foster trust between both sectors[111], as well as an increasingly sophisticated set of capacities within government in order to formulate and execute a widening assortment of partnership arrangements with industry.

The following continuum is a useful portrait of the resulting trend away from static forms of contracting toward more partnering:[112]

[108] OECD (2004) *The Security Economy.* Paris: Organization for Economic Cooperation and Development.
[109] OECD (2001) The Hidden Threat to E-Government, Avoiding Large Government IT Failures. *PUMA Policy Brief.* 8 (March).
[110] Langford, J. and Roy, J. (2005) E-Government and Public-Private Partnerships in Canada: When Failure is No Longer An Option. *International Journal of Electronic Business (forthcoming).*
[111] Ibid.
[112] Adopted from: Lawther, Wendell. (2002) Contracting for the 21st Century: A Partnership Model. *IBM Endowment for The Business of Government* . (www.businessofgovernment.org).

Figure 6.4. The Partnering Continuum



Partnering has fuelled a movement away from a traditional focus on contracting toward arrangements that are both more complex and collaborative. This shift is not an easy one, since the traditional focus of government procurement is to ensure fairness and transparency in both determining the public interest and providing accessibility for all potential private sector suppliers. Accordingly, procurement tends not to be about searching out and forming partnerships, but rather about buying goods and services in the most efficient manner possible.

There is also and often confusion about the differences and similarities between partnering and outsourcing. Outsourcing implies a transfer of assets from one organization to an external provider – a specialist, often through largely contractual measures. Yet, to outsource implies that a function is not at the core of the organizational mission – as a bank, for instance, transfers the management of its payroll services to a specialized company with stronger abilities in this service area. The problem with respect to e-government is that digital technology becomes a strategic rather than support lever in the broader transformation of organizations to improve performance.[113]

As a result, both industry and government have altered their perspectives on outsourcing in manners that intensify the need for partnering (and also perhaps render the boundary between these two approaches a bit more fluid than in the past). For governments - now engaged in efforts to become more client-centric through service transformation strategies that revolve around the usage of multiple channels of communication and delivery (i.e. the Internet, telephone, in person etc.), a holistic outsourcing approach of technology becomes unrealistic.

With the role of technology central to the organization's ability to perform, it becomes imperative to retain at least a minimal set of competencies and some degree of in-house control. Still, it remains unrealistic for governments to be able to claim sufficient expertise and resources to completely internalize all capacities – and as such, an important role for the private sector remains. For many governments the resulting balance thus appears elusive and indeed, a review of the most current research on inter-organizational arrangements reveals a degree of schizophrenia toward the concept of outsourcing.

[113] Corbett, M.A. and Roy, J. (2003) 'E-Government & Strategic Outsourcing: Opportunities and Challenges for Public Sector Leaders', *CIO Government's Review*, July, IT World Canada, Toronto.

For instance, one major global study of outsourcing trends conducted in 2004 by DiamondCluster International concludes that 'outsourcing is here to stay:'

> *IT outsourcing has all the characteristics of a maturing business. Executives have become more realistic in their expectations…with a focus on sourcing as a business-enabler. And while reducing costs is still the number one reason companies look to outsource, freeing up internal resources to focus on other more critical initiatives has emerged as a key factor that is fuelling the outsourcing trend.*

By contrast, an April 2005 report by Deloitte Consulting paints a very different picture, calling for 'a change' in the outsourcing market that will see large organizations pulling away from such arrangements:

> *Organizations have now begun to recognize the real costs and inherent risks of outsourcing. Instead of simplifying operations, outsourcing often introduces complexity, increased cost, and friction into the value chain, requiring more senior management attention and deeper management skills than anticipated…*[114]
>
> *Outsourcing is an extraordinarily complex process, and the anticipated benefits often fail to materialize.*

Such concerns, especially when expressed by a leading global consultancy such as Deloitte, will be used by detractors of outsourcing arrangements in order to accentuate the risks involved in undertaking external partnerships. Such risks help explain why some governments have explicitly chosen to forgo outsourcing in favour of different insourcing variants that typically still rely on private sector involvement, albeit on a more modest scale.[115]

Yet, the countervailing danger lies in the risk of performance stagnation and the rising costs of maintaining the status quo.[116] Like all large and sophisticated organizations, governments can benefit from the collaborative logic of synergies, provided the relationship dimension of partnering is taken seriously. Accordingly, the key shift from outsourcing to more enlightened, transformational partnering lies in the strategic alignment of internal and external contributions into a seamless, leading-edge, and well performing service oriented architecture.

The widening integration of technology and organizational governance more generally thus creates more pressures for collaboration – where both sectors contribute to the co-management of the changes and transformations that are required.[117] In British Columbia, for example, the provincial government began an innovative procurement

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[114] Deloitte Consulting (2005) Calling a Change in the Outsourcing Market: The Realities of the World's Largest Markets, New York: Deloitte Touche Tohmatsu.
[115] P. A. Knowledge (2005) *In Sourcing Research*, London: ISiS Programme.
[116] Reed, B. (2004) "Accountability in a Shared Services World", in Halligan, J. and Moore, T., Eds. (2004) *Future Challenges for e-Government,* Canberra: Government of Australia.
[117] Ibid. The evolution of the private sector is revealing in this regard. IBM views itself increasingly as a consulting company and a provider of solutions (disengaging itself from many of its previous production functions), EDS speaks of Co-sourcing, and Accenture consulting points to Business Process Outsourcing – an approach that embeds some level of functional outsourcing within the confines of a more ambitious and jointly managed set of organizational mechanisms to achieve a common set of objectives in a collaborative manner.

process in 2004 that led to an agreement in June 2005 with a private sector consortium led by IBM Canada based upon the pursuit of the following objectives:

- *Integrate the telephone, online and in-person service channels to provide consistent information and services to its citizens;*
- *Develop an approach to service channel management in which touch-points, technology platforms, data access and business processes are developed around the needs of the citizen; and*
- *More effectively meet the needs of its clients and customers within a new integrated, cost-effective and efficient service delivery environment.*

The private consortium is thus called upon to provide a range of contact centre, portal and other service transformational services in order to foster this integrated multi-channel delivery framework. As with the BC example, many of the emerging partnership models have tended to be at the subnational level – where smaller jurisdictions equate to somewhat more manageable conditions for pursuing collaborative approaches to service transformation. In the UK, for example the City of Birmingham's 'transformation agreement' with Capita covers most aspects of the City's IT infrastructure and support services.

The initiative features a joint venture entity 65 percent owned by the private company, staffed with approximately 500 individuals seconded from the local government to the new agency. The multi-year agreement, valued at 475 million pounds, seeks to generate an estimated 500 million pounds in efficiency savings while improving service performance and ensuring net employment creation. Structuring the relationship in this manner enables the private partner to supply services to the City through leasing-type arrangements as opposed to more traditional fee or deliverable-based contracting.[118]

Alternatively, this trend toward partnering has also been expanding to specific government-owned agencies with some autonomy from the broader national apparatus to pursue a more focused transformative agenda. A partnership between the British Broadcasting Corporation (BBC) and Siemens Business Services is a case in point. The provision of technology services features a transfer of ownership of a formerly wholly-owned subsidiary of the BBC to Siemens (the company purchased the entity as part of the agreement).

A mechanism for 'gain-sharing' allows success to benefit both parties – the determination of which is underpinned by a balance scorecard of performance metrics covering technology upgrades and service level improvements. Both parties have established a Technology Partnerships Board to provide joint oversight of the partnership. The Board is co-chaired by the BBC's CTO and his Siemen's counterpart. It meets twice a year (and additionally as required) in order to review progress and agree to strategic priorities as implementation proceeds.

Within government, an equally prevalent methodology for upgrading digital systems involves the formation of a 'shared services' entity to provide overall functionality for separate departments and agencies. Such an approach is, in essence, a variant of outsourcing perhaps better defined as insourcing, as the specialized entity remains a

[118] Langford, J. and Roy, J. (2006c) *Service Canada's Partnership Framework: Building Collaborative Relationships with the Private Sector for Service Transformation Success.* Ottawa: Government of Canada.

public sector body, one with a set of responsibilities transferred from previously separate units. In return, this new entity works with individual departments as 'clients', defining service level agreements in much the same manner as a public-private partnership.

The difference driving the shared services movement today in many large organizations (public and private) is the emphasis on both specialized solutions and shared benefits that can be developed through an entity with horizontal coverage for all operational units. Moreover, some organizations distinguish between most administrative services (such as payroll, travel, human resources and the purchasing of static goods) and information technology, placing the latter realm in a separate body.

The arguments against shared services may be politically neutralized from more contentious outsourcing transfers to the private sector, but they are organizationally similar: separate departments and agencies lose operational freedom and managerial autonomy to focus on their own mission and achieve results in the matter most appropriate to their mandate.

From the perspective of the shared services provider, there is a risk that such an organization may evolve into a larger, more centralized – and perhaps even monopolistic entity unresponsive or at least less effective than a set of smaller, devolved units within individual departments. It is for this reason that some advocates of shared services models suggest that the newly created entity be required to compete for business with other providers – notably those in the private sector.

A variant of this latter approach involves the shared services provider itself turning to outsourcing arrangements to provide adequate capacities to the rest of government. In fact, whether through a shared services entity or a CIO-type body, such an approach is becoming more common in the pursuit of e-government, as an internal set of mechanisms and resources are established to foster stronger government-wide capacities – and in order to do so, this internal unit turns to partnering arrangements with the private sector in order to fulfil its mission, thereby adding to the layers of collaboration.

In short, governance patterns are becoming more complex within the public sector through a widening set of horizontal pressures that must co-exist with the more traditional vertical structures of traditional government entities. These horizontal pressures can, in turn, involve relationships between different units of government internally, much as they can also comprise a complementing set of relationships with private industry. In such a world, the procurement and partnering functions are becoming both more strategic and more diffused across the organizational infrastructure, creating new complexities in terms of ensuring accountability mechanisms that balance performance outcomes and traditional controls.

iii) Performance management and public participation:

As Lips points about, the online service dimensions of e-government have been primarily supply-driven with relatively less information about public perception and demand.[119] Indeed, a paradox of sorts exists in many developed countries with significant service

[119] Lips, Miriam. (2007) E-government under construction: Challenging traditional conceptions of citizenship. In Nixon, P.G. and Koutrakou, V.N., Eds. (2007) *E-government in Europe: Re-booting the state*. New York: Routledge. 33-47.

delivery networks of telephone, mail and in-person facility channels already in existence – and thus potentially providing less reason to move online. As a response to this dilemma, some countries such as Denmark are beginning to make obligatory the transacting of certain types of public services in electronic form.[120]

There is an important link between the availability and sophistication of online services, a point underscored by the 2007 Capgemini survey of the supply of online public services in Europe. In highlighting the tremendous progress in the past two years of countries such as Portugal, Malta, Slovenia and Estonia, the report offers this assessment: '*Modest size and centralized structure enable rapid advancement*'.[121]

This same report also reveals how governments – consistent with a supply-side mentality, have been more focused on moving those services online that generate income for governments, calling into question whether or not delivering more service value to the public is the central aim:

> *Four service baskets are assessed – income generating (for government); registration (e.g., births, company, moving); service returns (e.g., health, social, libraries); and permits and licenses (e.g., building, education, passport). Whereas the EU average for fully online availability for income generating services all sit well above 80%, the other three clusters although showing advancement year-on-year are still at very low performance levels. If governments seek to engage customers they must enable not only the services that deliver funds into government, but also those that deliver value to customer*[122]

Taking up this dearth of demand-side focus and public involvement in the provision of online service delivery, the most recent global review of e-government by Accenture Consulting is notable for attempting to gauge this side of the equation more fully. The results are revealing in so far as some countries that view themselves as e-government leaders (i.e. those within the public sector responsible for planning and execution) also suffer from a perception gap in terms of how they are perceived by the citizenry.[123]

Despite such a gap for some countries many other governments are doing much more to listen to the public and to make use of the results of such consultation. In Belgium, for example, where political complexity is a reality and administrative simplification is an important government priority, an aptly named 'Kafka Plan' was created by the Belgian Government in 2003[124] to solicit both problems and ideas from inside and outside of the public sector.

The result has been over 7,000 suggestions, over 130 pieces of legislation abandoned, significant cost savings, several awards, and the exporting of this initiative to other European jurisdictions.[125] Accenture has similarly underlined public engagement

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[120] For example, electronic invoicing to government authorities became mandatory on February 01st, 2005.
[121] Capgemini (2007) *The User Challenge Benchmarking the Supply of Online Public Services*, Denmark: Capgemini.
[122] Capgemini (2007), 6.
[123] Accenture Consulting (2007) Leadership in Customer Service – Delivering on the Promise (www.accenture.com).
[124] Federal Belgium Government. (2003) (www.kafka.be)
[125] eGovernment Observatory. (2006) *European eGovernment News Roundup May 2006*. (http://ec.europa.eu/idabc/servlets/Doc?id=24776), 5.

mechanisms as a service improvement tool as an important reason for that country's significantly improved status in recent years as a customer service leader.
In terms of measuring customer satisfaction of its service users, a leader in this regard has been the Government of Canada which developed the 'Citizens First' methodology for surveying and benchmarking public attitudes toward government service delivery.[126] More than a static measure, this tool is also one concept in a broader 'public sector value chain' that has sought to demonstrate and gauge the link between service performance and trust in government.

This approach has been exported beyond Canada's borders: for example, upon an evaluation of its own Customer Charters for measuring service performance, the Irish Government recommended adopting a model predicated on Citizens First, and the New Zealand government has similarly developed a new initiative in 2007 to more explicitly gauge service performance on the one hand, and attempt to measure its impacts on public trust on the other hand.

Despite Canada's considerable progress and recognition as an e-government and service delivery leader, there is also some evidence to suggest that tools such as Citizens First may not be sufficient to continually improve performance in terms of both domestic perception and international comparison. In justifying Canada's fall from number one to number two for the first time in its own annual surveys, Accenture explains that:

> *Citizens are clearly perceiving a gap between the government's promise and its practice. In fact, in terms of the citizen survey component for our rankings ("citizen voice") alone, Canada ranked 9th out of 22 countries, behind the Nordics, the Netherlands, and Australia, Japan and Singapore. In addition, according to our citizen survey, less than half of the respondents believe service has improved compared to three years ago.*[127]

Accenture concludes that the pace of implementation has not kept up with the vision of service transformation in Canada, a finding that underscores the perpetual pressure on all governments to continually improve. A particular concern pertaining to ongoing political ambivalence about the mission, mandate and formal governance structures of the lead service entity (Service Canada) reinforces a point made earlier on this report – namely the importance of political leadership (a key driver of Canada's early success and emergence as an e-government leader). Accenture's findings are echoed to some degree by Canada's slipping performance in The Economist Intelligence Unit's e-Readiness rankings where Canada dropped from 9th to 13th place in 2007.[128]

What has in fact become clear is that the one-time novel efforts of the Canadian Government to gauge public satisfaction through tools such as Citizens First are quickly becoming mainstream – and even surpassed by new approaches. One important aspect of this debate is the extent to which 'customer satisfaction' is an appropriate or the most

[126] Much more information on this methodology can be found at the Canadian–based research organization responsible for developing this methodology, the Institute for Citizen-Centred Service (http://iccs-isac.org).
[127] Accenture Consulting, 2007.
[128] Economist Intelligence Unit (2007) The 2007 E-Readiness Rankings—Raising the Bar. (http://www-03.ibm.com/industries/government/doc/content/bin/e-Readiness_2007.pdf)

important set of indicators for a multi-faceted relationship between the public and governments where individuals are citizens as well as customers.[129]

In terms of impacts on politics and democracy, one viewpoint is that good service facilitates public trust in government and efforts have been made to quantitatively demonstrate such a relationship.[130] Yet the more difficult question is to ask what sort of trust? A public viewing the government as an efficient and responsive provider of public services – one to be benchmarked with the private sector, may be less inclined to value and pursue democratic participation and active citizenship.[131]

One response to these tensions is the recent presentation of 'public value management' as a 'new narrative for networked governance'.[132] Explicitly contrasted with hierarchical and control-minded public sector traditions, as well as the competitive and customer-focused business mentality of new public management, public value management (PVM) is premised on partnership, nuance and dialogue:

> *The key point in understanding public value management…starts with the understanding that preferences are not formed in a vacuum and should not be taken as given. Part of the challenge of public managers is to engage in a dialogue with the public about their preferences but in a way that allows for deliberation about choices and alternatives…Discovering preferences involves a complex dialogue so that efficiency and accountability are trading partners, not the objects of a trade-off..*[133]

It may therefore be possible for the public to act as either customer or citizen, depending on the circumstance and need (and more importantly, the legitimacy of both roles must be built into governance). Stoker argues that PVM is the only sort of governance paradigm that can adequately address the complexity and interdependencies of today's governance and managerial systems that demand a renewed reconciliation of the often conflicting demands of efficiency, accountability and equity. Unlike the underlying logics of NPM and CRM, PVM embraces a much more multi-faceted set of relationships both within the public sector and between governments and other stakeholders including the public.

This view is notably consistent with a recent and thoughtful consideration of the impacts of online connectivity and digital technology and democracy – and the importance of reconfiguring government-public engagements, enhancing the communicative power of citizens, and refurbishing legislative bodies and processes accordingly.[134] It is here where the participative rubric of e-government must be broadened beyond the service delivery realm to include notions such as democratic accountability, participation, and transparency and legitimacy. If is here where e-government entails more institutional

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[129] Dutil, P., Howard, C., Langford, J., Roy, J. (2007) Re-imagining the service recipient: customers, clients and citizens in the emerging world of e-government. *Journal of Information Technology and Politics* (1 (1) (forthcoming).
Lips, Miriam. 2007.
[130] Heintzman, R. and Marson, R. (2005) People service and trust: is there a public sector value chain? *International Review of Administrative Studies* 7 (4) 549-575.
[131] Cherny, A. (2000) *The Next Deal - The Future of Public Life in the Information Age* (New York: Basic Books).
Dutil, P., et al., 2007.
[132] Stoker, G. (2005) Public Value Management – A New Narrative for Networked Governance? *American Review of Public Administration* 36 (1) 41-57.
[133] Ibid, 51.
[134] Borins, S., Kernaghan, K., Brown, D., Bontis, N., 6, P. and Thompson, F. (2007) *Digital State at the Leading Edge*. Toronto: University of Toronto Press.

innovation – often derived through more direct forms of public engagement and stakeholder partnerships.

With respect to the five-stage framework adopted in previous UN reports, this second phase of integration encompassing the interactive and transactional dimensions of e-government represents the deployment and operationalizing of the foundation provided for in the first phase. It is also where the interface between the front-end or front-office external face of e-government (namely portals and more integrative points of contact) and the back-office becomes an essential set of technological and managerial agendas. These agendas are ever more collaborative in nature – both in terms of intra-governmental dynamics across departmental and agency structures and externally with other stakeholders such as private sector suppliers (increasingly viewed as partners) and with the public (as both customers and citizens).

As these collabourative pressures intensify, the case for multi-stakeholder deliberation and public engagement intensifies. In short, it is where e-government enters its third and most ambitious, transformational phase encompassing not only information and service architectures but also the resilience of democratic institutions in contributing to political and socio-economic development.

Transformation

Despite promises of dramatic change and continuous innovation early on, in many jurisdictions it is possible to argue that the public sector today looks much as it did when the Internet began its ascendancy into the mainstream of social and market activity. Any such argument would also be partly misleading however, since it underplays the significant changes and investments that have occurred, as governments – like all organizations, struggle to keep pace with accelerating rates of technological change. Online public service delivery is an emerging reality worldwide, and more participative, networked and transformational governance models are appearing as well.

Striking a new balance between hierarchy and flexibility, between vertical and horizontal dimensions of accountability is the nexus of technological and organizational interoperability and innovative leadership. Accordingly, both public servants and politicians must learn to embrace a more collaborative mindset predicated on power-sharing and adaptation. In such respects the OECD defines transformation as:

> *'the set of processes leading to a change of the features of the public sector from a static organization-driven model to a dynamic user-driven model. It is about creating the environment and the basic conditions for continuous adaptation to changing demands and contexts'.*[135]

A basic condition for such adaptation is collaboration. One of the largest challenges to working collaboratively in a public sector environment is the lack of clarity that can be perceived by stakeholders both internally and externally in terms of how decisions are made, how authority and responsibilities are parcelled out and shared – and thus how effectively accountability can be ensured.

[135] OECD (2006). *E-Government as a Tool for Transformation.* Governance for Development Initiative (GfD) in Arab Countries. Paris: Organization for Economic Cooperation and Development. (http://www.oecd.org/dataoecd/11/36/38013687.ppt)

The points are also equally relevant for central agencies. Indeed, on the issue more broadly of horizontal management, one of the most illuminating studies of the Canadian environment underscores the need for better central agency expertise and new mechanisms to reconcile vertical and horizontal accountabilities in today's public sector environment. Bavkis and Juillet underscore that such mechanisms must deviate from a control mindset in order to foster the cultural transformation necessary:

> *… a management culture that relies less on command and control and more on financial incentives, continual monitoring, and ongoing consultation and engagement. Performance reviews and agreements that more explicitly capture the need to work horizontally could also go some way toward initiating a cultural shift.*[136]

As the formation of these sorts of partnerships and networks evolve across multiple organizations and jurisdictions, the governance dynamics become more complex and more collaboratively intense. Conceptually, the essential elements of successful collaborative networks have been well identified:

- *Members must see themselves as only one piece of the total picture. This requires seeing the points of convergence, not just those of contention. It also means that power must be shared or lost.*
- *Recognition that building relationships, not accomplishing tasks, is the primary goal in a network, since the task cannot be accomplished without the relationships, and the relationships will outlive any one task that the network might be called upon to address.*
- *Building relationships requires building trust and breaking down communications barriers that might exist between the members.*
- *Being able to listen to others rather than merely telling them what to do. This is linked to the ability to build on the different types of expertise available in the network rather than assuming that only you have the expertise needed to make a difference.*
- *Allow enough time and flexibility to give everyone the opportunity to make a difference. Traditional timelines and roles of authority will not allow for the risks that must be taken in order to develop relationships which will be the basis for establishing innovative solutions.*
- *Be able to make mutual adjustments, build coalitions and mobilize support in order to make things happen. Working in a network means that each member recognizes their interdependence and learns how to capitalize on their interdependencies.*[137]

Practically, of course, realizing these conditions and translating them into results is a much harder undertaking to achieve – although a growing body of examples is becoming available for study due to the widening usage of networked strategies in today's environment.[138] As one senior Australian public servant frames it, organizational

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[136] Bavkis, H. and Juillet, L. (2004) *The Horizontal Challenge: Line Departments, Central Agencies, and Leadership*. Ottawa: Canada School of Public Service.

[137] Mandell, M. (2005) "The Impact of Changing Expectations in Complex Networks" (http://www.csus.edu/ccp/newsletter/2005/Summer/#challengingissue). This article is based in part on an article by: Robyn Keast, Myna P. Mandell, Kerry Brown & Geoffrey Woolcock entitled: "Network Structures: Working Differently and Changing Expectations", Public Administration Review, May/June, 2004, Vol. 64, No.3.

[138] Agranoff, R. (2003). *Leveraging Networks: A Guide for Public Managers Working across Organizations*. IBM Center for the Business of Government: Washington, D.C.

capabilities must be modular, scalable and shared, accompanied by efforts for: '*the removal of barriers and the creation of the behavioural systems, symbols, skills and structures in our organizations that will enable successful collaboration, strong networks and stronger communities*'.[139]

As the scope of networking expands so too does demand for workers who can function in an increasingly fluid and complex organizational context. A global survey conducted by The Economist Intelligence Unit, in association with KPMG, is one of many such efforts to articulate the prototype of the future public servant as someone able to navigate complexity both internally and externally. In terms of roles perceived by public sector executives as destined to be most essential in 2020, two areas garnered the most support (62% and 32% respectively) by a wide margin:

- *Complex knowledge based roles that are primarily outward-facing and require developed communication and judgment skills; and*
- *Complex knowledge based roles that are primarily inward-looking and require developed communication and inward looking skills.*[140]

For transformation to take hold, this more outward-facing dimension of public service becomes an essential dimension of e-government. Such processes require high level support frameworks, but the essence of such an approach is more bottom-up and transversal, requiring both individual and organizational competencies that support experimentation and learning.

This widening network and collaborative imperative is a notable departure from the traditional model of public administration predicated on vertical hierarchy and control. In this sense, federal and provincial models are breaking new ground, which can often mean resistance internally. Yet recent findings of a national consultation undertaken in Canada by the Public Policy Forum demonstrate a widening consensus around the need for change.

Key challenges identified in this report include recognition that:

- *A heavily centralized, controlling decision-making structure is antithetical to an emerging environment that is decentralized and horizontal and in which power, resources, and information are widely distributed;*
- *Rigid hierarchical and prescriptive accountability mechanisms do not provide the flexibility required to develop policy and to adjust service delivery to meet changing circumstances or local realities;*
- *More collaboration and connecting with (citizens) will put public servants in the public eye and make them less anonymous; and*
- *Managers and executives must pay greater attention to career development, succession planning, value-added labour relations and other basic human*

Reed, B., 2004
Milward, H.B. and Provan, K.G. (2006). *A Manager's Guide to Choosing and Using Collaborative Networks*. IBM Endowment for The Business of Government.
(http://www.businessofgovernment.org/pdfs/ProvanReport.pdf)

[139] Treadwell, J. (2007). *Shared Governance and Collaboration. Prepared for EDUCAUSE Australasia 2007 - Advancing Knowledge Pushing Boundaries*. Melbourne, Australia.
(http://www.caudit.edu.au/educauseaustralasia07/authors_papers/jane-treadwell.pdf).

[140] Economist Intelligence Unit (2006) Foresight 2020 – Economic, industry and corporate trends (chapter two: public sector). 64.

resource management practices to ensure people are treated as a strategic resource.[141]

More collaboration thus requires significant and shared investments in the new individual skill sets and organizational competencies required to design and deploy network mechanisms. A central challenge here is linking accountability to performance (and less on process) through hybrid mechanisms capable of transcending jurisdictional boundaries.

Inter-jurisdictional Partnering

With some exceptions, it is often smaller jurisdictions such as the Nordic countries and Singapore that lead most rankings of e-government success. Indeed, even in larger, federated countries it is not unimportant in such matters that much of public sector innovation and reform continues to be an emergent process – with national reforms shaped by innovations benefiting from the flexibility and nimbleness of smaller, subnational governments.[142]

In the realm of transformation, why is there even a need to address cross-jurisdictional issues – most commonly for a country as a whole? The answer lies in the aforementioned evolution from a pre-Internet world of competition and customer to an online world also emphasizing collabouration and integration. There is no obvious reason why this latter push for more seamless governance would stop at any jurisdictional boundary defined politically by geographic territory. The rhetoric routinely espoused by government leaders suggests a public less tolerant not only of government silos within a jurisdiction but also boundaries and separate processes across multiple jurisdictions.

Whether the public is demanding a fully seamless public sector, for any given country, or even significant movement in this direction, is a more complex and contested notion.[143] Yet there is evidence to suggest that the public is demanding that governments work together more effectively, across both policy and service delivery realms.[144]

There is also a form of technological determinism strengthened by the continual expansion of online portals that are by their nature more conducive to integrative opportunities - as is the case with many online commercial activities such as online banking and shopping.[145] As a result, some countries, such as Denmark, are creating online homepages for each individual citizen to underpin all program and service interactions:

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[141] Public Policy Forum (2007) Canada's Public Service in the 21st Century (Discussion paper). Ottawa. 3.
[142] Goldsmith, S. and Eggers, W.D. (2004) *Governing by Networks – the New Shape of the Public Sector.* Washington: Brookings Institution Press.
Stoker, G., 2005.
Roy, J., (2006b) *E-Government in Canada: Transformation for the Digital Age*. Ottawa: University of Ottawa Press.
[143] Turner, T., 2004.
[144] Heintzman, R., et al., 2005.
Kernaghan, K. (2005) Moving toward the virtual state: Integrating services and service channels for citizen-centred service. International Review of Administrative Sciences (71) 119-131.
Borins, S., Kernaghan, K., Brown, D., Bontis, N., 6, P. and Thompson, F. (2007) *Digital State at the Leading Edge*. Toronto: University of Toronto Press.
[145] Microsoft UK (2006). *Transformational Government: The Microsoft Response*. Microsoft. (http://download.microsoft.com/documents/uk/government/Transformational_Government-Microsoft_Response_Final.pdf)
Accenture Consulting, 2007

In order to improve the public online service the Danish government has decided that all relevant communication between the citizen and the public sector have to be digital in 2012. A central driver reaching this goal is the recent initiative to build a citizen portal, borger.dk (borger means citizen in Danish), where the citizen can handle most questions and transactions in an easy and quick way.

> *Borger.dk will, however, also integrate a so called "My page". The purpose of the "My Page"-functionality is to provide the citizen with a clear view of all the citizens relations and transactions. The "My Page" will make it possible for the citizen to find and put all its personal data in relation to the public sector in one personal "online drawer". "My Page" will be launched in its first edition in 2008 and is an intensified cross-sector cooperation. A fully fledged "My Page" must be ready in 2012. The Ministry of Finance coordinates the development of "My Page".*[146]

Importantly, Denmark is not a federation but rather a unitary state. Multiple levels of government thus co-exist in an environment viewed by both the public and governments themselves as interrelated components of a single system. This sort of starting point is therefore more conducive to charting a collaborative, integrative course based upon a more seamless governance architecture. Indeed, the Danish e-government and related service strategies have been based since day one on formal inter-governmental planning and coordinating mechanisms to proceed in this manner (other Nordic countries are similar in this regard as is the Dutch model).

On a much more modest scale, Germany has recently begun piloting a new integrated call centre initiative underpinned by the number '115' as a direct access line for inquiries re public service across any level of government (most similar 311 initiatives across North America focus exclusively on the municipal level). With pilots expanding throughout 2008, the intent is that at some point in the future, 115 can serve as a telephone-based gateway for the German public sector as a whole.

One irony of the digital age is, in fact, that countries that are not federations politically may have an easier time embracing the logic of federated and seamless service models across multiple government levels (here the term 'federated' is used in a technological and organizational sense rather than in a traditional political connotation). The key design question in going forward thus becomes – how to retain the benefits of federated models (either in a formally political sense or more administratively) while creating additional value for the citizen through more collaborative service delivery mechanisms where appropriate?

The deceptively simple answer is to respect political jurisdictions while fostering integrative delivery mechanisms, via either a single window (online or others), a set of service integrators, or ultimately a single service provider. In order to frame a path toward such a vision, a recent Crossing Boundaries report on citizen-centric federalism provides a four-stage 'integrative continuum' meant to shift from the least to most complex of tasks; i) co-location of services; ii) streamlining services; iii) service policy alignment; and iv) collaborative governance arrangements for integrated services.[147]

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[146] Project eGovernment, (2007). *Borger.dk – an improvement of the public service*. Kobenhavn, Denmark: (http://e.gov.dk/english/egov_projects/citizen_portal/index.html).

[147] Ambrose, R. Lenihan, D., Milloy, J., eds. (2006) Managing the Federation: A Citizen-Centred Approach. The Crossing Boundaries Papers (7). Ottawa: Crossing Boundaries National Council.

It is important to stress that the heightened complexity of each stage cannot be viewed purely through the lens of administrative innovation. The third and fourth stages in particular are dependent on political innovation in putting in place new structures and new cultures suitable for an environment of interdependence and more networked governance patterns.

Belgium, for example, is no stranger to inter-jurisdictional complexity. Prior to this year's federal elections (leading to an extended episode of political paralysis), one national newspaper published a series of articles over several days in a valiant effort to explain to readers the intricacies of electoral processes across federal, regional and linguistic community-based legislatures. A strong effort has been made over the past two decades to improve administrative alignment and coordination across various levels of government. A turning point in this regard came in 2001 when a formal cooperation agreement was signed between the federal government, the regions, and the communities to forge a common platform for electronic service delivery.

Building on this common platform, in 2003 Belgium became the first country to launch a national electronic ID card, an exercise that began with a federally-sponsored pilot in several municipalities before proceeding to national rollout. The card includes a unique identifier for each citizen that is now enabling electronic data exchanges and service provisions across widening segments of the county's social security and health care systems.

A critical aspect of this identity management system is the Crossroads Bank for Social Security (CBSS), an autonomous public sector body whose origins date back to 1990 when it was established to form an initial repository for information holdings for citizens and employers contributing to or benefiting from social security programs. Accountable to a management board with representatives of the public, companies, and government service providers, today the CBSS works as a 'service integrator' for all federal social security benefits and the integration of these benefits with services provided by other government levels.

CBSS views itself as an integrative back-office for social service delivery across the country, but one that also enables a more integrative network of front office agencies and portals across public sector authorities. With these common platforms, CBSS has been the lead operational stakeholder in devising Belgium's new national identification and authentication framework that continues with an anticipated roll out of electronic ID cards to all citizens by the end of 2009.

Employer information is also managed by CBSS which has enabled the development of a single identifier for all public sector interfacing with companies operating in Belgium. Streamlined (and increasingly paperless) processes are viewed as a critical enabler of economic development – alleviating what would otherwise be a crushing regulatory and compliance burden from administrative fragmentation and overlap.

For both individual citizens and companies, therefore, CBSS is the primary instrument toward integrative information management and the realization of the objective of seeking information from a service user only once. What is revealing about the Belgian model is the approach taken to better integrating the back office infrastructure (CBSS)

and a network of front office providers across a multi-tiered federation that will make use of this infrastructure in a variety of ways through varied arrangements stemming from both needs and opportunities.

The Belgian federated approach is seemingly intent on not allowing political separateness (and corresponding democratic accountabilities) to stymie a more networked and integrative approach to the organization and management of service delivery. The ability to do so is owed in no small measure to two central elements: first, the willingness of all governments in the Belgian context to formalize a collaborative framework early on; and secondly, the common infrastructure provided by CBSS to the country's public sector as a whole.

In sum, transformative e-government implies an extension of the collaborative logic of federated architectures, integrated service delivery, and more participative governance mechanisms beyond the boundaries of any single government. A particular challenge in this regard is that while enterprise architecture and service innovation are often perceived to be primarily the purview of national governments, democratic experimentation with new technologies is being primarily driven by subnational governments.

Electronic voting (e-voting), for example, was first adopted by the Swiss canton of Geneva and although a few countries have adopted e-voting in a comprehensive manner, usage continues to expand at the local level in many parts of the world. Local and regional governments have also generally led the adoption of new tools such as web-casting.[148] Whereas many national governments, larger and more bureaucratically entrenched, face wider barriers to systemic innovation and change, more nimble governments at subnational levels are often better able to embrace collaboration and change.

There is little reason, then, as to why the collaborative logic of transformative e-government would not transcend jurisdictional boundaries, not only across government levels but between multiple government units at a particular territorial level. One such example of shared capacities is the vision of 'integrated Buckinghamshire where county and district councils see themselves as part of a coherent public service provision whilst retaining their local democratic strength and decision-making on policies and priorities'.

A Joint Improvement Board encompasses representatives of the area's five councils in order to foster an integrative approach to citizen service and community engagement for the area's nearly half a million residents that includes:

- *An integrated office of house approach to simplify contact for customers;*
- *Integrated frontline service provision where this can deliver improvements and cost savings;*
- *Use of joint procurement to drive down costs;*
- *Joining of back office services where this can produce savings and a better service;*
- *Integrated community engagement within an agreed framework at the local level; and*

[148] Wyld, D. (2007). *The Blogging Revolution: Government in the Age of Web 2.0*. IBM Endowment for The Business of Government (www.businessofgovernment.org/pdfs/WyldReportBlog.pdf).

- *A rationalization of consultation to avoid duplication, confusion and cost.*[149]

The initiative is thus notable for extending beyond what is becoming an increasingly common approach to shared services in back office functions and embracing a more integrated architecture to the front as well. Furthermore, the last point underscores the necessity of viewing service architecture and provision within the broader context of community engagement and two-way relationships between the public and their governments.[150]

Wikinomics, Web. 2.0 & E-Democracy

The transformative potential of new technologies has recently been showcased and championed by a book entitled, *Wikinomics – How Mass Collaboration Changes Everything*.[151]The authors provide thorough accounts of companies and industries fundamentally reinventing themselves in order to adapt to a new era of openness and networking in terms of ideas, information and people. The resulting organizational forms and strategies on display bear little resemblance to the traditional corporate model that dominated much of the preceding century.

At the same time, however, the traditional corporation remains a predominant feature of the business landscape, much as hierarchy remains an important organizational reality in any large private sector organization. Other business commentators thus underscore the importance of sustainability and long term success in an era where all too often new ventures fail to live up to the hype and promise initially surrounding them. For such reasons, the tremendously successful Internet giant, Google, is the subject of increasing debate as to whether it personifies a new type of company predicated on dispersed innovation and limited control internally or instead whether more traditional forms of order and planning are required in order to ensure a sustainable and profitable expansion over the long term.[152]

The Internet itself is often a key part of the transformation puzzle, as technology enthusiasts champion online connectivity as a foundation for a fundamentally new society.[153] Other observers have been more cautious, pointing out that digital technologies more generally are incremental in reinforcing existing power structures in most societal, economic and political realms.[154]

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[149] Aylesbury Vale District Council, Buckinghamshire County Council, Chiltern District Council, South Bucks District Council and Wycombe District Council (2007). *Effective, strong and integrated Local Government in Buckinghamshire: A pioneering, pathfinder model for enhanced two tier working.* Buckinghamshire, UK. (http://www.aylesburyvaledc.gov.uk/avdc/get/assets/docs/Final%20complete%20pathfinder%20proposal%2025%20January%202007.pdf).

[150] With respect to municipal service innovation, the UK Government has been aggressively promoting interoperable networks and standards across a common infrastructure for local authorities in both Scotland and England (and Wales). The UK Department for Communities and Local Government has funded the Government Connects initiative, providing a common platform for shared services and customer services initiatives.

[151] Tapscott, D. and Williams, A.D. (2007) *WIKINOMICS – How Mass Collaboration Changes Everything.* New York: Portfolio.

[152] See for example, Inside the Googleplex (Economist Magazine, 30/08/2007).

[153] Eggers, W. (2005) *Government 2.0: Using Technology to Improve Education, Cut Red Tape, Reduce Gridlock and Enhance Democracy*, New York: Rowman and Littlefield Publishers.
Tapscott, D., et al., 2007.

[154] Kraemer, K. and King, J.L. (2003) *Information Technology and Administrative Reform: Will the Time After E-Government Be Different?* Irvine: Center for Research on Information Technology and Organizations.

A related viewpoint is that e-government has actually accentuated secrecy in many countries as governments have sought to leverage new electronic and digital systems not to share information more widely but rather to resist scrutiny and attempt to more closely contain information and 'spin' messages between governing authorities and the public (Roberts 2006; Gup 2007).

These tensions between tradition and transformation are particularly prevalent in the public sector where larger organizations and wider accountabilities to all citizens often create greater aversion to risk, especially on a systemic scale. Despite the tremendous changes ushered in during the past fifteen years, changes to political structures and democratic institutions have been on the whole more evolutionary than revolutionary, especially in most developed countries regarded as e-government leaders.

The United States 2008 Presidential Campaign is a case in point: online channels are more prevalent for fundraising and debating, but the fundamentals of financing television advertising and campaign operations to compete in state primaries remain by and large unaltered (some might even argue that the Presidential races are becoming more centralized and less grassroots due to the technological sophistication of campaigns that are increasingly controlled and directed by operatives at the national level).

Yet, if Presidential politics is slow to alter in conduct and form, many other dimensions of government are adapting to new technologies such as social networking and even new online realities such as Second Life. The US Centers for Disease Control, for example, are routinely making use of electronic tools for disseminating information including podcasts and a presence on MySpace, going as far as investing in a Second Life presence of virtual galleries and health workshops.[155]

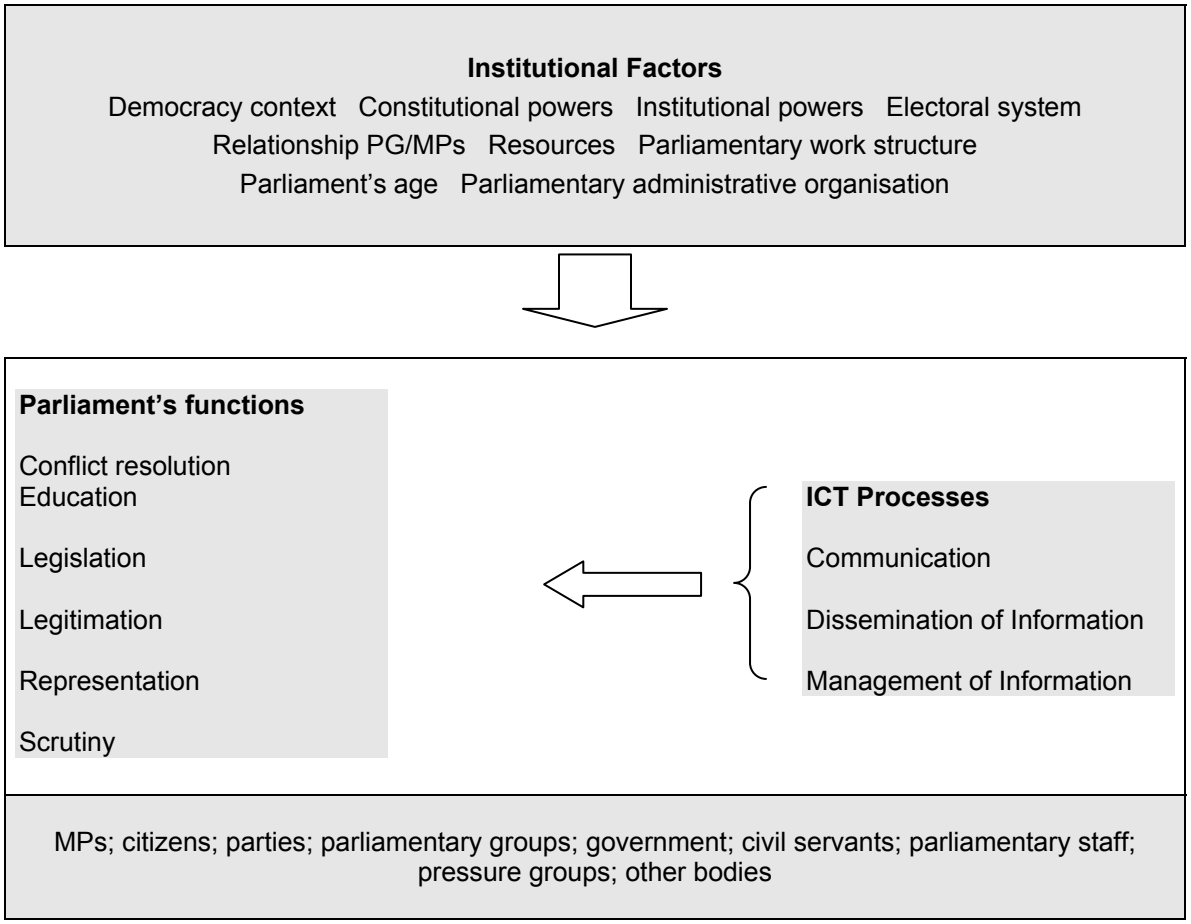
This dichotomy between democratic politics and government operations is one that is common in many parts of the world – namely that the executive branch far outpaces the legislative branch of the public sector in terms of investments in new technologies and corresponding openness to digital innovation.[156] Much of the efforts of governments in the initial phases of e-government (information and integration) have largely been orchestrated by executive branch officials both elected and appointed.

As complex as these efforts have been, more so are considerations as to how the broader set of political institutions involving elected representatives and the public is likely to be altered by a digitally transformed society in which the patterns of interaction between the citizenry and their elected officials and governing bodies cannot – at the very least, remain static.

Leston-Bandeira, for example, has devised the following framework to depict the complexities at play:[157]

[155] Wyld, D. (2007). *The Blogging Revolution: Government in the Age of Web 2.0*. IBM Endowment for The Business of Government (www.businessofgovernment.org/pdfs/WyldReportBlog.pdf).
[156] Roy, J., (2006b) E-Government in Canada: Transformation for the Digital Age, Ottawa: University of Ottawa Press.
[157] Leston-Bandeira, C. (2007) The Impact of the Internet on Parliaments: a Legislative Studies Framework. *Parliamentary Affairs.*

Figure 6.5. The Impact of the Internet and Other ICT on Parliament



In shifting from integration to transformation through ICT-based governance philosophies driven more by learning and performance than by hierarchy and control, a more participative form of politics is essential. With the advent of the Internet as an enabler of a more informed and engaged society, a more participative polity is likely to require a virtual dimension. Such a dimension need not and should not replace traditional dialogue in face to face forums; instead an online public space must be forged in order to broaden deliberations to the widest possible spectrum of citizens and stakeholders and to embed these deliberations into a renewed and strengthened democratic architecture.

As a starting point, legislatures must be refurbished with an expanded digital presence and infrastructure in order to retain their relevance in a media-centric and interconnected world. Nonetheless, how a renewed and more digitally enhanced legislature functions must be far different than how it has done so in previous eras. Coleman draws on the Schumpeterian trilogy of 'invention-innovation-diffusion' suggesting that organizations first automate existing processes, then identity opportunities for innovation especially in terms of efficiency, before finally transforming themselves anew.[158]

[158] Coleman, S. (2004) Connecting Parliament to the Public via the Internet: Two Case Studies of Online Consultations. *Information, Communication and Society* (March).

Coleman views the UK's Westminster Parliament as evolving between the first and second stages, and the necessity of wider technological and institutional reform in order to make the leap to the third phase in a positive manner:

> *If the third stage is conceived in technocratic terms, it is unlikely to be seen as desirable, but if it is integrated into a broader programme of cultural parliamentary modernisation, one could envision a radical role for ICT in the re-engineering of parliamentary communication. Central to this transformational potential is the capacity of online consultations to transcend barriers of distance; to promote a synchronistic discussion which can be stored, retrieved and archived; and to build linkages between public experience and expertise and legislative deliberation and scrutiny (p.15, ibid.)*

It is these linkages between public experience and expertise of which Coleman speaks that provide the crucial linchpin between the more collective and collaborative governance mindsets of Stoker's public value management and Paquet's social learning on the one hand, and contemporary determinations of trust built less upon deference to authority and office than direct engagement and dialogue.[159] More recent research in the Flemish region of Belgium demonstrates widening consensus by citizens and politicians alike around the need for more participative democracy and a new middle ground between representational and direct democracy.[160] A key challenge at present, however, remains the absence of a robust framework for assessing and integrating the Internet's role in traditional Parliamentary models due largely to a narrow exploration of technological usage by elected officials without an overriding institutional perspective on new patterns of information flows and engagement.

Political parties in their present configuration are proving to be far too constraining and narrowly competitive in a world where growing segments of young people routinely fashion multiple identities online while learning from ideas and conversations with individuals from around the world, especially so in the case of young people.[161] In a thoughtful analysis of 'the future of political parties as democratic organizations' Rogers concludes that 'the era of the mass parties is almost certainly over'.[162] Although Rogers himself is far less bleak, he points to a recent Norwegian study of power and democracy that representative democracy faces nothing less than the prospect of extinction given that absence of an alternative to traditional parties to emerge: the resulting and widening void between the public and their representatives is the threat.

While parties themselves may be excused for objecting to their presumed demise, jurisdictions elsewhere are beginning to recognize the need for conduits between the public and stakeholders and the legislature. Scotland, for example, established a 'Futures Forum, in the Parliament but not of the Parliament' in order to generate fresh thinking on long term societal challenges in dialogues involving elected officials, external

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[159] Edelman (2005) *Edelman Annual Trust Barometer*. Edelman Corporation (www.edelman.com).
[160] Gompel, R., Steyaert, J., Kerschot, H. (2007) *e-Democracy in Flanders*. Indigov BVBA.
[161] Sloam, J. (2007) Rebooting Democracy: Youth Participation in Politics in the UK. *Parliamentary Affairs.*
[162] p.609, Rogers, B. (2005) From Membership to Management? The Future of Political Parties as Democratic Organizations. *Parliamentary Affairs* 58 (3) 600-610.
[162] Edelman (2005) *Edelman Annual Trust Barometer*. Edelman Corporation (www.edelman.com).
[162] Gompel, R., Steyaert, J., Kerschot, H. (2007) *e-Democracy in Flanders*. Indigov BVBA.
[162] Sloam, J. (2007) Rebooting Democracy: Youth Participation in Politics in the UK. *Parliamentary Affairs.*
[162] p.609, Rogers, B. (2005) From Membership to Management? The Future of Political Parties as Democratic Organizations. *Parliamentary Affairs* 58 (3) 600-610.

experts, advocates and less affiliated citizens.[163] Evidence elsewhere suggests that the expansion of online democratic mechanisms linking the public and elected officials in new ways is a movement that seeks greater dialogue and inclusiveness than can reasonably be expected from the polarized debates of partisan politics.[164]

Conclusion

In short, a transformative ethos for e-government demands a new set of relational interfaces across all levels of the public sector. It also implies a collective process of both organizational institutional adaptation that is in keeping with the 'networked presence' of the fifth and most advanced phase of e-government (as depicted in previous UN global surveys).

This emphasis on institutional change is particularly central and not without risk as governments face new pressures to re-examine not only their operations but also their purpose and form in light of shifting socio-economic and technological realities. The impacts of today's more open and networked societies cannot be expected to bypass the polity: it will become increasingly necessary to devise legislative processes driven far less by traditional partisan bodies and more by new mixes of citizen and legislators prepared to operate in a world of shared and collective accountability. As underscored by the philosophy of Public Value Management (PVM), it is central that the public and indeed all stakeholders partake actively in a discursive process of decision-making in order to overcome the limitations of silo-based organization and adversarial democracy. Transformation therefore demands collaboration and more openness to information sharing and learning is a key precursor in this regard.

In an increasingly digital and interconnected environment, a legislature predicated on openness brings tremendous potential for electronic democracy to raise the overall level of political literacy across the public at large.[165] The impacts here in creating better informed voters, monitors and judges of government actions and choices matter greatly:

> *For the aim, in a democratic society, of the cultivation of judgement in governance should not be the empowering of a political elite, but the strengthening of the competence, maturity and self-governing capabilities of the citizenry (Elkin and Sotan 1999). Indeed, every democrat must hold that in the medium to long run, only the robustness of the judgement capabilities of citizens can guarantee that those of policy makers will be similarly stout.*[166]

Within this broadest architectural plane for collective judgment and social learning, there is also an important link to be made between more participatory democratic mechanisms (that formally share power), the workability of new integrated service delivery models in government, and levels of trust accorded to governing institutions and service providers

[163] Reid, G. (2006) The Fourth Principle. Stevenson lecture on Citizenship, Presiding Officer of Scottish Parliament. Edinburgh: University of Glasgow.
[164] Coleman, S. and Norris, D. (2005) A New Agenda for E-Democracy. *International Journal of Electronic Government Research*, 1(3) 69-82.
Wyld, D. (2007). *The Blogging Revolution: Government in the Age of Web 2.0*. IBM Endowment for The Business of Government (www.businessofgovernment.org/pdfs/WyldReportBlog.pdf).
[165] MacIntosh, A. (2003) Using Information and Communication Technologies to Enhance Citizen Engagement in the Policy Process. OECD, *Promise and Problems of E-Democracy: Challenges on Online Citizen Engagement*. Paris: E-Government Project.
[166] p.21, 6, P. (2004) E-governance – *Styles of Political Judgment in the Information Age Polity*. New York: Palgrave MacMillan.

by the public. What is required to better understand this link and contribute to its positive reformation is a broader dialogue on the transformative potential of e-government both within the public sector and across societies as a whole.

Nonetheless, within even many of the richest and most developed countries persistent digital divides (based on such factors as education, race, gender, and geography) remain. Those disengaged from civic life offline are the least likely to be mobilized by online opportunities. Much like e-government's service architecture is multi-channel, accounting for those shunning or unable to embrace online mechanisms, democracy must be equally accommodating.

Perhaps more than anywhere else, the Nordic countries offer a setting of diminished digital divides to the point where digital transformation is becoming a genuinely holistic and inclusive affair. This potential is indicative of the progress of these countries through the three main evolutionary phases of e-government, although it is more accurate to situate them within the space between integration and transformation. The lesson of the Nordic countries is that those attaining the highest results in e-readiness rankings are most likely to achieve progress in integrated service delivery and the linking of service transformation with more participative governance mechanisms and stronger democracy.

Other newly developed countries and economies in transition such as the Republic of Korea and Estonia are not far behind in their ability to demonstrate similarly robust trajectories across the infrastructure and integration phases of e-government, with the potential for wider transformative changes across social, economic and political spheres. By contrast the experiences of developing countries have been more mixed and not without potential and their prospects and the inter-relationship between the developed and developing worlds serve as the focus of the next section.

Developed and Developing Countries – Convergence or Divergence?

In the previous century, the categorization of nations stemmed mainly from political ideology and industrialization. Fukuyama and others now underscore that today distinctions between countries have more to do with good governance as a more holistic capacity to both facilitate and shape development within national borders in a manner that manages the challenges and opportunities of a globalizing world.[167] There is also broad agreement that the invocation of governance as a national system reflects the existence and relative 'co-evolution' of three distinct spheres of personal, organizational and institutional activities: government, private industry and civil society.[168]

Across such fluid terminology the usage of the terms e-government and e-governance can be distinguished – with the former in reference to state mechanisms and the latter denoting the fuller set of sectoral processes and institutional arrangements encompassing the three sectors within a jurisdiction as a whole (even as governance will have other meanings and applications within each sector as well). Much of the preceding discussion has focused on e-government and four dimensions of change that carry at least the potential for a state transformation, but this potential is very much intertwined

[167] Fukuyama, F. (2004) State-*building: Governance and World Order in the 21st Century*. Ithaca: Cornell University Press.
[168] Paquet, G. (1997) States, Communities and Markets: The Distributed Governance Scenario. T. J. Courchene (Ed.). *The Nation-State in a Global Information Era: Policy Challenges The Bell Canada Papers in Economics and Public Policy*. Kingston: John Deutsch Institute for the Study of Economic Policy 25-46.

with how a jurisdiction (most often a country) both views and pursues e-governance as a national strategy and the manner by which the three sectors interact and exert influence on one another.

In the developed world, when speaking of e-government's transformative potential from within the public sector, the agenda is most often less about changing the nature of democracy and more about improving the business of government via better customer relations.[169] This customer centric focus has chronologically shaped e-government's first decade in many parts of the world – at the national level in particular, where governments have raced (often with one another) to develop online platforms for service delivery.[170]

The following quote is illustrative of the manner by which such changes are often viewed as outside of the purview of the typical citizen:

> *To make e-Government happen requires a complete re-design of the internal operations of the government and the operating systems of the broader public sector. Our I&IT Strategy guides these efforts. However, much of this re-design work is, and will remain, invisible to the general public.*[171]

The notion of 'invisibility' is consistent with the service mentality of more efficient, convenient and integrated service offerings – a mentality based on a characterization of the public as uninterested and intolerant of jurisdictional boundaries (either within or between governments) and more concerned about outcomes. Invariably, public sector organizations are compared and benchmarked with the practices of private sector reforms operating in the electronic marketplace.[172]

It is largely because of this service orientation and chronological evolution that electronic democratic reforms have not fit easily into the e-government plans of developed nations.[173] Not only is there no obvious organizational apparatus to address such issues from within the government of the day but in many countries, politicians are often uncertain and resistant of e-democratic reforms as a result.[174]

In contrast, much of the focus on developing countries has been on leveraging e-government as a lever to overcome traditional governance weaknesses, notably an absence of openness, excessive corruption and weak accountability to citizenries as a result. The following quote is indicative of such an emphasis:

> *To the extent that increased transparency, accountability and predictability (of rules and procedures) are made priorities, e-government can be a weapon against corruption".*[175]

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[169] Roy, J. (2005a). Services, Security, Transparency and Trust: Government Online or Governance Renewal in Canada? *International Journal of E-Government Research*, 1(1) 48-58.
Norris, D. (2005) Electronic Democracy at the American Grassroots. *International Journal of Electronic Government Research*, 1(3) 1-14.
[170] Langford, J., et al., 2005
[171] Government of Ontario (2005) *E-Government* (Office of the Corporate Chief Information Officer: www.cio.giv.on.ca).
[172] Curtin, G., et al. 2003.
[173] Mahrer, J. (2005) Politicians as Patrons for E-Democracy? Closing the Gap Between Ideals and Realities *International Journal of Electronic Government Research*, 1(3) 1-14.
[174] Ibid.
[175] Pacific Council on International Policy (2002) *Road-Map for E-Government in the Developing World* (Los Angeles: www.pacificcouncil.org). 10. As an illustration, "Mexico's federal government established Compranet for government procurement as part of its efforts to curb corruption by automating procurement processes. By facilitating a process of

Such an approach has been the hallmark of e-government efforts in countries such as India, where the 'impact of transparency, corruption and poverty must be the underlying concern' according to many observers there.[176]The resulting schism is that while many developing countries are themselves beginning to take serious the prospects for domestic reforms linking e-governance, e-government and stronger democracy,[177] the primarily service orientation of developed countries with respect to their own e-government agendas may, in turn, influence their international assistance efforts aimed to recipient countries in the developing world.

Such a danger is compounded by findings stemming from a wider set of e-government initiatives involving project sponsors and knowledge transfers from developed to developing countries. An absence of sufficient cultural sensitivity in crafting e-government within the contours of a localized setting is a common source of failure.[178]

Moreover, the global parameters of information management, democratic freedom and technological deployment have shifted considerably due to 9-11. This expanded focus on security shifts the bilateral relationships between developed and developing nations forged through traditional efforts at international assistance in numerous ways. For many western countries, the exporting of democracy must now compete with the implications of an expanded and more technologically sophisticated security apparatus and agenda, with both domestic and international dimensions.[179]

This shifting focus also reshapes global governance realities. Sensing a need to adjust, security has recently been positioned at the heart of the United Nation's encompassing framework for global development. As a basis for both reforming and strengthening existing global institutions, former UN Secretary General Annan framed the issues in this manner:

> *… we cannot have security without development; we cannot have development without security; and we cannot have either without respect for human rights. The challenges we face are truly interconnected. Action on each of these fronts reinforces progress on the others. Inaction on any one of them threatens progress on the others (United Nations 2005).*[180]

However, to act effectively on a transnational plane through a shared system of governance requires both levels of political legitimacy and a degree of technological interoperability that are neither in place nor agreed upon by all countries and cultures as

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bidding and reverse bidding online, it seeks to make government purchasing more efficient and transparent. The system allows the public to see what services and products the government is spending its resource on and what companies are providing them with these services. There are more than 6,000 public sector tenders logged daily, and more than 20,000 service-providing firms are regular users. Other countries in the region are looking to imitate Mexico's successful Compranet" (ibid.).

[176] Bhatnagar, Subhash. Building Trust Through E-Government: Leadership and Managerial Issues. Ahmedabad: Indian Institute of Management. www.iimahd.ernet.in/~subhash/pdfs/CHRIDraftPaper2003.pdf

[177] Kossick, R. (2004) The Role of Information and Communication Technology in Strengthening Citizen Participation & Shaping Democracy: An Analysis of Mexico's Initial Experience and Pending Challenges. New York: United Nations Telecommunications Research Program.

[178] Heeks, R. (1999) Reinventing Government in the Information Age – International practice in IT-enabled public sector reform, Routledge, London.

[179] Nugent, J. H. and Raisinghani, M. S. (2002). The Information Technology and Telecommunications Security Imperative: Important Issues and Drivers, *Journal of Electronic Commerce Research* 3(1) 1-14.

[180] United Nations Information Service (2005). Effective UN Important for All – But Perhaps Most Important for Developing World, Says Secretary-General in Jakarta Remarks. United Nations. (http://www.unis.unvienna.org/unis/pressrels/2005/sgsm9833.html) .

warranted. Such issues are likely to determine the emerging set of linkages between developed and developing nations and the degree to which e-government evolves primarily as a project for more open and democratic government and governance beyond national borders.

The prospects for e-governance transnationally – and the implications for e-government, thus merit closer attention.

E-Government as a Global Project?

After nearly two decades of growing Internet connectivity and e-government there can be little doubt of a persistent digital divide. As one researcher points out:

- *the total Internet bandwidth in Africa is equal to that of the Brazilian city of Sao Paulo;*
- *the total Internet bandwidth in all of Latin America is equal to that in Seoul, Republic of Korea;*
- *As a proportion of monthly income, Internet access in the United States is 250 times cheaper than in Nepal and 50 times cheaper than in Sri Lanka; and*
- *In the United States, 54.3 per cent of citizens use the Internet, compared to a global average of 6.7 per cent. In the Indian subcontinent, the proportion is 0.4 per cent.*[181]

From one vantage point the emergence of e-government alone may provide limited reason for optimism in terms of closing the digital divide and accelerating the developmental prospects for the poorest regions of the world. There are two reasons for caution: first, the overarching domestic focus of e-government agendas in developed countries that emphasize service and performance primarily within their own borders reduces prospects for meaningful political innovation and institutional reforms involving digital technologies and extending beyond national borders; and secondly, the absence of any form of direct global polity means that national governments essentially possess a veto over any meaningful project a reform.

Despite such challenges, however, reasons are put forth to justify a more hopeful, countervailing movement toward strengthened forms of governance transnationally. First and foremost, the existence and expansion of a global communications infrastructure creates visibility and coverage that provides at least one foundational element of transnational community formation.[182]
More than mere awareness, the activism and associational capacities of globally-minded citizens represent an important new dimension of globalization in this new century.[183] Viewed as more credible than either government or industry – and often acting as an interface between the developed and the developing world, NGOs and other associational and non-profit movements are a key stakeholder in this new environment.[184]

[181] Rahman, Anisur. (2006) Access to Global Information—A Case of Digital Divide in Bangladesh. Northern University Bangladesh: Library and Information Division.
[182] Ougaard, M. and Higgott, R. (2002). Eds., *Towards a Global Polity*. London: Routledge.
[183] Hayden, P. (2005). *Cosmopolitan Global Politics*. Burlington: Ashgate.
[184] Selian, A. (2004) The World summit on the Information Society and Civil Society Participation. *The Information Society,* 20 (3) 201-215.

There may also be a basis for an important alliance between civil society and the private sector in this regard, as the sustainability and stakeholder movements of corporate action have grown in prominence. Much as natural resource companies and industries have adapted their practices to new sustainability frameworks, technology companies have been an important force in addressing the global digital divide (with an eye on potentially expanding markets to the vast majority of the world's population). The values of global openness, responsiveness and democratization that drive many (but not all) segments of civil society may also serve as the basis of a partnership with multinational corporations prepared to embrace wider stakeholder commitments to global development.

The rise of e-commerce has brought about a major step forward toward broader global interconnectedness, at least in terms of market structure, organization and behaviour.[185] Given that the scope of online commerce is inherently transnational (open to all with Internet access at least), there is a corresponding need to ensure that common structural rules and cultural standards are in place to facilitate the effective working of this expanded market place.

This expansion of online activity underpinned the emergence of a decidedly unpublicized set of governance mechanisms in order to facilitate the growth and reliability of the Internet. Here Drake defines ICT global governance as "the collective rules, procedures and related programs intended to shape social actors' expectations, practices and interactions concerning ICT infrastructure and transactions and content."[186]

One important body that has emerged to facilitate ICT governance globally, primarily from a technical perspective, is the Internet Corporation for Assigned Names and Numbers (ICANN), responsible for managing the domain name system that underpins Internet addresses and the ability of users to locate information via such addresses. Furthermore, the emergence of the World Summit on the Information Society also represents an important new segment of global governance in this regard, one with the potential to better align private interest pursuits and public interest goals from a global vantage point.

A broadened global governance approach is required, a point articulated by a 2004 UN ICT Task Force:

> *Internet Governance is considerably larger than ICANN. ICANN's purpose in life is very detailed and narrow, and only includes a small subset of broader and emerging issues. ICANN's work is only about the management and global governance of domain names and numbers, which is not a critical priority for most developing countries. Thus, ICANN should not be the locus for the ongoing debates on Internet governance. This must be clear to all governments and stakeholders (p.27).*

Aart Scholte, J. (2002) Civil Society and Governance. In Ougaard, M. and Higgott, R. eds. *Towards a Global Polity*. London: Routledge. 145-165.
Edelman, 2005.
[185] Ronchi, S. (2003). The Internet and the Customer-Supplier Relationship. Aldershot: Ashgate.
[186] Drake, W.J. (2004) ICT Global Governance and the Public Interest: Infrastructure Issues (Memo#3 for the Social Science Research Council's Research Network on IT and Governance). 1.

Spurred by such rising global awareness and attention, a case for optimism for many developing countries also rests in part on the growing presence of e-government and e-governance as key elements of reform agendas. Underpinning this movement is the expansion of a telecommunications infrastructure at impressive, albeit uneven, speeds – most notably the penetration rates of mobile phones to growing segments of the African population.

What is also encouraging for many is the growing awareness and activism of all sectors in recognizing the need for more aggressive global action aimed at the least developed parts of the world. Public sector leaders from G8 countries have begun to champion various African-centric initiatives such as debt relief, the dot-com task force aimed at bridging the digital divide, and trade policy reforms. The expansion of digital media coverage both online and through other electronic channels increase opportunities for citizens of the developed world to be exposed to the plight of poorer countries (while also creating pressure from within developing countries for more openness and better governance).

Rising levels of commerce and human mobility mean that this exposure is more than mere imagery, as immigration, security, environmental and global health systems become more closely intertwined. E-government from a global perspective can accordingly be seen as a central dimension of the world's capacity to respond to the challenge of climate change – in terms of information sharing and learning, and creating the conditions for global dialogue and concrete measures that are required.

In an era of environmental, economic and technological interdependence, a much greater degree of political interdependence is also required, and such a challenge is closely intertwined with the persistence of a global digital divide (and what it denotes not only in terms of telephony access and online connectivity but also the resources and abilities of developing nations to leverage new technologies into meaningful opportunities for social and economic development).

In order to leverage e-government as a political project globally two systemic blockages must be both recognized and overcome. The first blockage is the aforementioned predominance of national interests over transnational governance building. Secondly, developmental assistance initiatives continue to be formulated and delivered largely through a set of mechanisms that remain country-centric in terms of their functioning and influence. In other words, the persistence of political sovereignty – despite economic and technological interdependence, continues to dominate transnational political processes generally and international assistance efforts most specifically.

Continental capacities also matter. The existence of an e-government project at the level of the European Union, for example, translates into important policy and learning transfers to lesser developed member states as well as economies in transition by fostering a transferring of resources and competencies from the richest and most advanced jurisdictions. More holistically, an EU dimension to e-government can encourage openness and interoperability across member states, thereby facilitating the

emergence of a federated architecture across the pan-regional, national and subnational levels.[187]

Although digital divides certainly persist in Europe, the existence of a European polity at the very least has created recognition of the dangers of member countries falling behind on the one hand and more cooperative efforts to assist such countries in their efforts.[188]

This experience is notably different from a country such as Mexico that resides within the NAFTA framework, but without any formal continental mechanism to close the developmental and technological gap between Mexican governments and their counterparts in the US and Canada.[189] Indeed, Mexico personifies the challenges facing most developing countries that confront digital and socio-economic divides both within their jurisdictions and globally between the developed and developing worlds.

In North America, prominent observers have thus underscored that without sustained and specific commitments by Canada and the United States involving both financial investments and deeper governance ties, Mexico has little hope of narrowing the development gap between itself and its North American partners.[190] Likewise in Africa, a stronger set of pan-African regional governance capacities can continually facilitate greater transparency both within and across countries, aided by a global or a pan-regional e-government strategy predicated on such openness.[191]

Nonetheless, significant movement is required in terms of governance building involving two inter-related elements transnationally and domestically: first, ensuring greater interoperability between national, regional and global institutions in order to improve transparency, legitimacy and trust; and secondly, significantly reforming the traditional model of international assistance within western countries formulated on a bilateral basis in favour of larger, more ambitious and better orchestrated mechanisms to both design and deliver aid solutions through such an interoperable governance framework.

A federated global architecture across all countries and regions is required if e-government is to become a project of convergence between the developed and developing worlds. As a starting point, what is crucial – and now more feasible than ever with the advent of a global telecommunications infrastructure (including online connectivity in limited parts of the world), is to foster a stronger basis for a globalizing polity based on openness and interdependence. In this respect it is important that an analysis of the multiple digital divides within developing countries suggests that stronger governance systems yield improved capacities to narrow them.[192]

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[187] For instance, a 2006 European Commission initiative called for interoperability at three different levels: organizational, semantic and technical. The existence of an EU polity, moreover, provides a political dimension to this multi-faceted challenge (much as political leadership is often required within jurisdictions in order to overcome jurisdictional silos).
[188] Nixon, Paul G. (2007) Ctrl, Alt, Delete: re-booting the European Union. In Nixon, P.G. and Koutrakou, V.N., Eds. (2007) *E-government in Europe: Re-booting the state*. New York: Routledge. 19-32.
[189] The partial exception here is the Security and Prosperity Partnership of North America (www.spp.gov), a strictly inter-governmental forum that has focused mainly on commercial and security issues (border security in particular since 2001).
[190] Pastor, R. (2001). *Toward A North American Community*. Washington, DC: Institute for International Economics.
[191] Roy, J. (2006a) Differentiating and Linking E-Government in Developed and Developing Nations: A Search for National Reforms and Transnational Alignment. Al-Hakim, L. and Soliman, K. Eds., Global E-Government: Theory, Applications and Benchmarking (Ideas Group Publishing).
[192] Ibid.

Indeed, in the poorest regions of the world an ongoing blockage remains the separation of ICTs as a largely infrastructure-driven project and governance-building as a largely institutional-building project on the other hand. Both dimensions are quite inter-related, as underpinned by the efforts of a country such as Brazil to foster an inclusive strategy of e-government and e-development that transcends such boundaries.

In a thoughtful analysis of Africa's prospects, for example, Coleman suggests that an effective strategy for African e-governance should avoid three key pitfalls:

i) *The adoption of technologies without developing human skills and capacities to manage, integrate and sustain them;*
ii) *The centralized use of technologies by national government departments, without developing the benefit of technology to intermediary institutions, such as local government, parliament, parties, civil society organization and independent media; and*
iii) *A failure to link better governance to broader and more inclusive democracy which gives voice to those who cannot afford technologies, but have needs and ideas to express.*[193]

Such pitfalls exist in almost all parts of the world of course, including many developed countries that continue to view e-government as more a technological architecture project than a template for governance transformation. The result is that many developed countries are poorly positioned to provide holistic advice to developing countries in terms of adopting ICTs for broader institutional building and democratic reform.

Nonetheless, as many examples above imply there is growing experimentation in this regard, as synergies grow between service integration and governance transformation. What can also play a positive role are collaborative initiatives involving non-state actors in developed and developing countries. One such promising example is the notion of a 'global classroom' to link together young people from developed and developing nations in a common setting, thereby creating the basis for shared identities and awareness.[194]

One such pilot initiative between students in South Africa and the United States has shown that an initial videoconference setting can be effective in facilitating ongoing email exchange as well as opportunities for student and professional interchange.[195] On a more sobering note, however, researchers also found that a widening digital divide also escalates the costs and technical barriers in launching and sustaining this sort of initiative.[196]

As a way forward, then, Coleman thus proposes three key principles for devising a progressive e-governance strategy for Africa – although in fact they can be applied to any lesser developed region. Any such strategy should be:

[193] Coleman, Stephen. (2003). African e-Governance-Opportunities and Challenges. Oxford Internet Institute, University of Oxford. 4.
[194] Bradshaw, Y.W., Britz, J., Bothma, T., Bester, C. (2007) Using Information Technology to Create Global Classrooms: Benefits and Ethical Dilemmas. *International Review of Information Ethics* (7) 1-9.
[195] Ibid.
[196] Ibid.

i) *African-owned, combing traditional methods of accountability with modern techniques of e-governance;*
ii) *Developed in partnership with the private sector, which should be involved in providing skill training and community-level capacity building, as well as hardware and software; and*
iii) *Evaluated regularly in terms of its contribution to more transparent, accountable, inclusive and efficient governance.*[197]

Such principles are critically important as new technological innovations come forth, such as mobile government (m-government) and open source software. The danger is that such initiatives may be viewed as technological accelerators for developing countries to close the gap between themselves and the richest countries, in much the way that the Republic of Korea has been able to achieve with its adoption of broadband. The fact remains, however, that the Republic of Korea's success reflects the main principles put forth by Coleman: an endogenous infrastructure project tied to social and education reforms, private industry development and significant investments in public administration capacities in order to adapt accordingly.

In the poorest regions of the world such a strategy cannot be easily replicated unless there is local ownership and political support and a transferring of resources and competencies that extends beyond hard technologies to include human skills and training and institutional capacity building.

Federalism as a Key Design Principle

In confronting digital and developmental divides from a global plane, one of the most important lessons to be derived from the experiences of developed countries is the importance of collaboration between governments. Even in unitary government systems, where central governments can more easily impose decisions on other, 'subordinate' public sector levels, leading e-government countries such as Denmark have demonstrated that collaboration provides a better path. In more formal federalist structures, collaboration is essential in overcoming constitutional and jurisdictional boundaries that are not so different than borders between countries.

The lesson here is that in a federated architecture model – where power and decision-making authority must be shared across different governance layers, the willingness and the ability to collaborate are essential for positive transformation to occur. Often times central authorities benefit from greater resources pools and can thus provide resourced incentives for such collaborative action to occur (i.e. the carrot versus the stick approach of a national government CIO attempting to facilitate interoperability across otherwise separate public sector units).

Just as inter-jurisdictional collaboration is becoming an important dimension of domestic transformation in many leading e-government countries, partnerships also hold the key to better relationships between countries, both regionally and globally. If the world is to make e-government a project of convergence between the developed and developing worlds, global governance bodies will need to devise ways to provide incentives for more systemic collaboration across national boundaries.

[197] Ibid.

Such bodies should themselves be partnerships comprising contributing actors such as inter-governmental organizations, private corporations and their spin-off foundations, and other non-governmental organizations. One such model within the developed world has been the series of country studies undertaken by the OECD, initiatives nonetheless funded by recipient countries themselves.

An important new role for the United Nations might there be akin to such an approach, where the UN and its affiliate organizations leverage resources provided by a variety of sources in order to undertake in-depth evaluations of e-government strategies within developing countries that agree to sign on to such a program. While the results of any such studies should be made publicly available online, the willingness to act upon them must come from within the participating country. A formalized reporting mechanism between the country's government and international actors could ideally encourage monitoring and dialogue, precursors to some form of shared accountability for results.

Conclusion

The historical review undertaken in this chapter provides little evidence of a systemic convergence of e-government's scope and success across the developed and developing worlds. At the same time, however, more and more developing countries are learning from the experiences, both positive and negative, of wealthier countries and seeking to devise more endogenously nurtured models and approaches to e-government within their own jurisdictional boundaries.

A key lesson for developing countries in this regard is the necessity of following through the trajectory sketched out above (as either three phases of e-government or the closely related five-stage framework adopted in previous UN global e-government surveys) with a sustained focus on both internal change within the public sector and external connectivity for the jurisdiction as a whole.

With respect to infrastructure, the first phase of e-government, mobilizing resources and interest is the essential point of departure. It also represents a foundational phase where e-government will either be framed and pursued as either an inclusive project for the populous as a whole or rather one catered to those segments of the population most educated and thus most likely to take advantage of online opportunities. In other words, framing e-government in a broad and inclusive manner from the outset is critical to minimizing and reducing the potential for digital divides that continue to persist (and this point applies as much to many developed countries as to those of the developing world).

In terms of integration, as any recent review of e-government trends makes clear, no country is without challenges in the pursuit of more interoperable, citizen-centric governance in a manner that balances central coordination (and in some cases an element of centralized authority) with flexibility and autonomy across the various organizational units that comprise the public sector.

A key lesson for developing countries is the importance of a realistic and incremental approach to both upgrading and aligning the frontline interface with the public as service recipients and back-office capacities for processing information and conducting transactions. Any notion of an available e-government solution for holistic integration is now widely viewed as unrealistic, and governments in the developing world are increasingly cognizant of the need for a genuine partnership with industry (where

partnership implies the existence of sufficient knowledge and skills in order to avoid the pitfalls of unrealistic expectations, supplier dependence and escalating costs).

Another important and related lesson in terms of integration – applicable across both developed and developing countries, is the embracement of a more collaborative and participative mindset. In addition to working effectively with external partners such as industry, the ability to transcend internal government boundaries in order to foster interoperability and integrated outcomes remains the nucleus of positive and sustained innovation in this realm of e-government.

With regard to transformation, the central lesson for all countries is the fluidity of this term and the absence of any specific model or approach applicable to all. Instead, transformation must be both defined and pursued according to local and national circumstance, in order to tailor the objectives as well as the pursuit of these objectives in an appropriate manner. Most importantly, transformation cannot be imposed in a top-down manner – it must rather be derived through a participative process that government must orchestrate but not dominate. While many elements of transformation can be identified early on (as part of the vision put forth in the infrastructure phase), how such elements are aligned and pursued cannot be charted out in advance in a linear fashion. Instead, transformation must be understood as an inclusive and adaptive process.

For developing countries the specification of transformational objectives by external observers has tended to focus on transparency, the combating of corruption, and the pursuit of greater democracy. The danger here lies not in the legitimacy of such an aspiration but rather in the implication that digital technologies alone can fully or even largely facilitate a degree of systemic reform capable of achieving such an end. Similar misconceptions have emerged in developed countries piloting electronic democracy, viewed at times as a panacea for waning political involvement and declining levels of public trust.

E-government as a transformational project should be framed first and foremost as a conversation, one that should ideally resonate across the widest possible set of individuals and organizational actors within any given jurisdiction. The likeminded global challenge for the world as a whole is to extend this conversation to a transnational plain in a manner that enables a greater exchange of knowledge and resources globally, and a more informed and well-devised set of e-government strategies nationally and locally.

Additional Notes

E-ready for what? E-readiness in developing countries: Current status and prospects toward the Millennium Development Goals[198]

Background

During the last decade, many leaders in government, business, and social organizations around the globe have considered how best to harness the power of information and communication technology (ICT) for development. E-readiness assessments are meant to guide development efforts by providing benchmarks for comparison and gauging progress. Several e-readiness initiatives have been launched to help developing countries in this area, and numerous e-readiness assessment tools have been created and used by different groups, each looking at various aspects of ICT, society, and the economy.

However, the use and usefulness of e-readiness assessments is increasingly questioned, as many in the field consider whether these initiatives really help decision-makers or they are just a waste of time and money. Perhaps most important is the criticism from those working at ground level who find the focus on e-readiness to be a distraction from more critical development issues like health, education and environment: these detractors ask, "e-ready for what?" The Millennium Development Goals (MDGs) may offer one answer. The MDGs, set out in 2000 as part of the Millennium Declaration, set clear targets for reducing poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women by 2015. The MDGs, and the strong political will that backs them, have effectively placed development at the heart of the global agenda through the next decade.

There are a few initiatives underway that look at measuring the impact of ICT on the MDGs. Although there appears to be some degree of collaboration among the various actors in this area, so far there is a lack of consensus on indicators and measurement. And, while a few have started to talk about the need for connecting ICT-based e-strategies with more concrete development goals, none have offered guidelines for how to do this. Adapting the concept of "e-readiness" and using it to frame strategies to tackle specific social and economic targets may offer a mechanism to help developing countries put ICT to work toward the MDGs.

The InfoDev e-readiness initiative

To explore this idea further, the World Bank Information for Development Program (infoDev) put its e-readiness assessment initiative under examination. Building on the Y2K initiative, infoDev became a major funder in the area of e-readiness assessment during 2001-2003. InfoDev awarded grants averaging US$50,000 to developing countries to support them in conducting ICT infrastructure and e-readiness assessments and developing action plans. The funding was directed toward: (i) putting together multi-sector country e-readiness teams, (ii) customizing methodologies tailored to address country's own needs, (iii) implementing the first assessments, and (iv) putting in place a firm foundation for long term e-development action plans. Grantees were expected to produce the e-readiness assessment report, an ICT-based strategy, and an ICT national

[198] Bridges.org (2005) E-ready for what? E-readiness in Developing Countries: Current Status and Prospects Toward the MDG - Executive Summary. (http://www.bridges.org/publications/18)

action plan. Since the inception of the program, infoDev has awarded a total of 21 grants, including 9 grants to some of the poorest countries of the world. To foster best practice in the e-readiness field, infoDev also supported the production and dissemination of key e-readiness assessment resources. A grant was awarded in 2002 to GeoSINC International to establish an e-readiness Facilitation Center that would provide organizational and technical assistance to country grantees.

Linking e-readiness strategies and the MDGs: opportunities and obstacles

The infoDev-supported e-readiness assessments in and of themselves were insufficient to target the use of ICT toward broader development goals, much less the MDGs specifically. However, that was not a stated objective of the e-readiness initiative for either infoDev or the assessment teams. Nonetheless, this case study analysis has formed a useful basis for exploring whether -– and if so, how -– e-readiness can be harnessed for reaching the MDGs. It is obvious that ICT needs to be integrated into efforts working towards the MDGs. Are the MDGs the best goals for e-readiness? It depends on the country and the context.

The following opportunities for expanding the relevance of e-readiness assessments and action plans to the MDGs were identified:

- Begin with the Goals.
- Link e-readiness indicators with development goals.
- Be context specific and think local.
- Incorporate ICT approaches into sector-specific national policies (like health and education).
- Focus at the level of microeconomics, as well as the macro.
- Emphasize regional cooperation and integration needs.
- Address negative effects ICT integration may have.
- Be realistic.

Conclusions

The link between ICT and the MDGs translates meaningfully into the e-readiness arena. While being e-ready is certainly desirable, the question "e-ready for what?" hangs in the air. The MDGs provide much-needed compass points for e-readiness assessment efforts. Can assessments be used to help countries get e-ready to tackle the MDGs? Yes. But the focus needs to move on from "how much bandwidth?" to "how much bandwidth is needed for remote diagnosis to reduce child mortality?"

InfoDev is in a good position to build upon the lessons learned through its e-readiness flagship initiative. But the work involving e-readiness assessments and e-strategies needs to incorporate elements that will help enable developing countries to use ICT as part of concrete steps to tackle the MDGs.

There is a lot to be done, a lot of change and learning to be assimilated, and many opportunities to be explored and embraced. It is important that we build upon previous work and draw together current efforts in the field of e-readiness. And then we can begin to work towards becoming e-ready for reaching the MDGs.

Chapter VII
Back Office Issues in e-Government Operations

Introductory Remarks

E-government can be defined as the use of information and communication technologies (ICT) to improve the activities of public sector organizations and their agents[199]. Such efforts may be directed at 'front office' delivery of services to citizens or at modernising working practices and delivering improvements in operational efficiency within the 'back office'. This chapter considers e-government initiatives which are directed at improving operational efficiency through integration of back-office functions. Whilst such initiatives, if successful, will deliver benefits to citizens, the primary purpose is to improve the business of government and governmental agencies.

The focus of this chapter is on the transformational strategies necessary to deliver back office integration. Based on successful integration projects, it draws on lessons learned and current best practice. It provides practical guidance to maximise the probability of successful delivery and highlight some of the common reasons for failure.

The discussion centres on the scope of back office integration and the differences between vertical and horizontal integration, together with the impacts on complexity and delivery. There is also discussion of the key drivers leading governments to follow the path of back office integration and the key areas to manage in the delivery process. Practical issues in managing the people element through the transition will be considered together with strategies for managing the change in organizational culture which is a key part of successful integration. Other issues discussed are leadership and managerial issues, the importance of effective governance and the practical issues around delivering technological connectivity and appropriate control mechanisms, particularly in the area of document control. At the end of this chapter a checklist is given to serve as a guide and 'aide-memoir' for successful delivery of a back office integration project.

Back Office Defined

Back office functions are defined as those areas that support front line delivery of services. Gershon's[200] back office definition includes finance, human resources, information technology, administrative support, legal services, facilities management, travel services, marketing and communication. A typical e-government back office integration project is the 'VITAL.org-Centre' for shared services established in Singapore in 2006[201] designed to deliver selected human resources and finance processing services across government.

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[199] Heeks, R. http:http://www.egov4dev.org/egovdefn.htm
[200] Gershon, P. (2004) *Releasing Resources to the Front Line: Independent Review of Public Sector Efficiency,* HM Treasury: London. www.hm-treasury.gov.uk
[201] Vital.Org is a shared service centre introduced by the government of Singapore http://www.mof.gov.sg/vital/

The VITAL project was based on the use of modern technology to integrate information and working practices. However, back office integration, in the form of 'rationalisation', has been a common feature of government reorganizations for a number of years. It has the benefit of being seen to drive down costs and improve efficiencies without impacting on public and front line services. An example of back office integration as a rationalisation is seen in France with the creation of the Direction Generale de la Modernisation de Etat[202] - formed by merging together four central administration agencies, DUSA (administration), DMGPSE (public management and state structures), ADAE (electronic administration) and DRB (budget reform). The merging together of departments in this fashion leads, in theory, to integration of support services such as HR, finance and payroll and the introduction of standardised ways of working. However, traditional rationalisations do not always result in the level of integration intended and it is not uncommon for separate support structures and processes to survive post rationalisation. This in turn results in a failure to deliver the anticipated improvements in operational efficiency and cost savings.

Technology enabled back office integration differs from these traditional approaches to rationalisation in that the focus on implementation of connected systems forces an integration of support structures and processes.

As part of the wider e-government agenda, developments in technology provide both the means and the imperative for change. This is recognised at the governmental and the pan-governmental level. The European Commission has identified, as priority areas[203]:

- Making efficiency and effectiveness a reality which is achieved through high user satisfaction with public services through using ICT appropriately to reduce the administrative burdens of citizens and businesses
- Implementing high impact key services for citizens and businesses. This includes establishing Pan-European electronic procurement processes using common platforms to achieve efficiency gains.
- Putting key enablers in place which includes promoting interoperability between e-Government systems so that as an example e-signatures can be used along with other aspects of electronic identification management.

Delivering these priority areas will require back office integration at both the national and the European level.

[202] Direction Generale de la Modernisation de Etat -- formed by merging together four central administration agencies, DUSA (administration), DMGPSE (public management and state structures), ADAE (electronic administration) and DRB (budget reform). http://www.modernisation.gouv.fr/

[203] European Commission (2006) EC i2010 eGovernment Action Plan: 'Accelerating eGovernment in Europe for the Benefit of All'

Vertical and Horizontal Integration

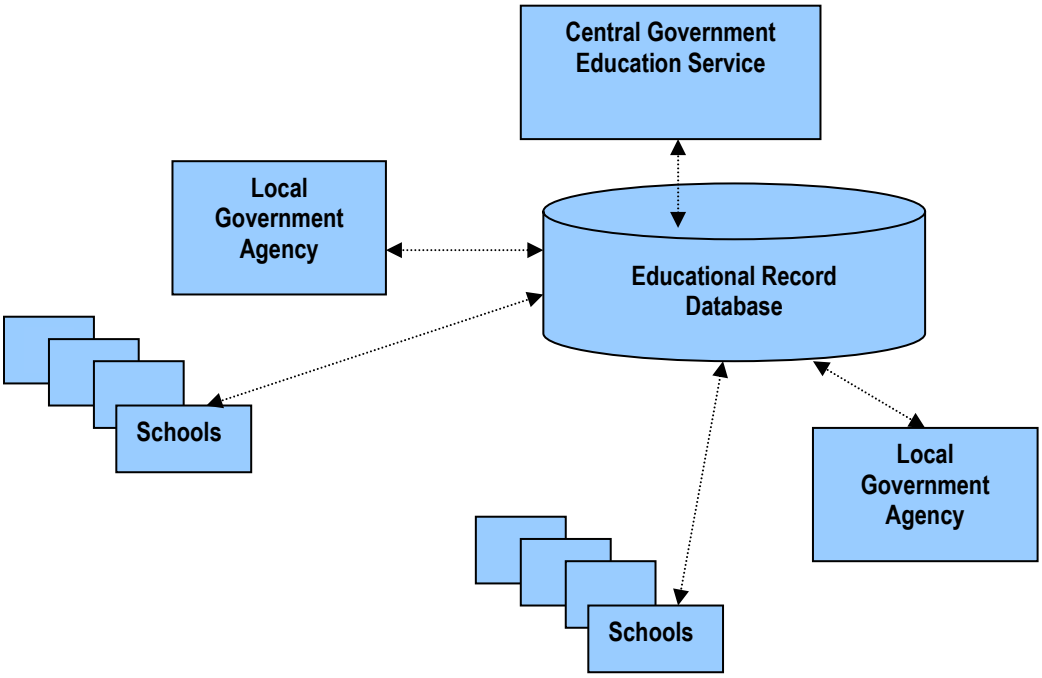
The EC priority areas require back office integration that is both vertical and horizontal.

Vertical integration involves connectivity between tiers of public administration either for a single function or for a number of functions. Horizontal integration is across an organization, linking several functions, or across a number of agencies and public sector bodies engaged in delivery of a specific function or group of functions or across national boundaries between governments. Implicit in the idea of integration is the notion of working across boundaries whether functional, organizational or national.

A simple example of 'vertical' integration would be a single electronic financial planning system used jointly by local and central government. A typical example of horizontal integration would be a database populated and used by central and local government as well as private sector partners, community groups and non-governmental organizations such as a development control database dealing with applications for permission to build new offices, houses and similar.

The distinction between vertical and horizontal integration can be useful for defining the scope of a project, however it is not always rigid. In the example, of vertical integration of educational records between tiers of government (Figure 7.1), horizontal integration would occur if other agencies, such as universities, were given access to the database for planning their own services.

Figure 7.1. Example of 'Vertical' Integration of Educational Records



As would be expected, the complexities in delivering back office integration increase with the more functions and the more organizations involved. A project involving both vertical integration (linking tiers of government) and horizontal integration (linking a number of functions across an organization, a number of organizations or across national boundaries) is not only ambitious, but it is difficult to deliver and runs a very high risk of failure. The technology may promise the functionality to deliver combined vertical and horizontal integration but the non-technological variables involved, particularly the people element, make it unlikely to succeed. For this reason, many of the more successful back office integration projects are smaller in scope, involving vertical integration of one function or horizontal integration within one organization[204].

Where success has been demonstrated in smaller scale projects, experience is gained and lessons are learnt, the probability of success in larger scale projects will no doubt improve. However, to engage on an ambitious project as a first attempt at back office integration is unwise. The issue is not whether the system supplier has or claims to have the expertise to deliver. The issue is whether the purchaser has, in depth, the knowledge, skills and understanding to deliver the changes to people, processes and technology necessary for delivery of the project and the operation of the new ways of working post delivery. It is a question of managing change rather than managing technology. This lesson is clear from major projects globally, including technologically advanced countries, where successful implementation of ambitious vertically and horizontally integrated back office functions is the exception rather than the rule [205].

Operational and Strategic Integration

The drivers for integration may arise at the operational and strategic levels. In the HR strategies for a number of governmental organizations a common objective related to recruitment may be identified. This can serve as a common driver for an integrated approach to recruitment through an e-government solution. An example of this, in the UK, is the use of a common portal for recruitment to local government jobs[206] – a joint initiative between the UK government '*Improvement and Development Agency'* (I&DeA)[207], local government bodies and a private sector partner.

At the operational level, the portal provides easy access for potential recruits, together with regular e-mail updates of job vacancies ('passive job hunting'). For local government bodies it provides an economical recruitment medium, reduces the cost of advertising and of distributing job application packs (the latter cost being borne by the job applicant who will download materials and forms) and enables job applications to be received and processed electronically.

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[204] Various 'growth' models of e-government see horizontal integration as a final or late stage e.g. Layne, K., Lee, J. (2001), "Developing fully functional e-government: a four-stage model", Government Information Quarterly, Vol. 18 pp.122-36 where it is the last stage and Moon, M.J. (2002), "The evolution of e-government among municipalities: rhetoric or reality?", Public Administration Review, Vol. 62 No.4, pp.424-34 where it is the stage before 'political participation'.

[205] The results of a poll in September 2002 indicated that 80% of e-government projects were partial or total failures. Source: *Most e-Government-for-Development Projects Fail. How Can Risks be Reduced?* Heeks, R. (on-line reference http://unpan1.un.org /intradoc/groups/public/documents/ cafrad/unpan011226.pdfhttp://)

[206] *www.lgjobs.com*

[207] www.idea.gov.uk

In this recruitment example, the driver for integration of a back office function comes from the identification of a common strategic objective. However, the driver can equally come from operational requirements, such as the need to process large volumes of benefit/welfare claimants' forms, which is an operational issue common to government agencies. Through implementing digital image processing, this task is made easier. In this solution, hand-completed forms are scanned and processed in electronic format. Such operational solutions lend themselves to further development as part of e-government into on-line submission. This direction of travel, from a digital solution for a paper based problem to a web-based solution is an interesting facet of smaller scale operationally driven and often successful e-government back office projects.

Where success is more difficult both to achieve and to evaluate is in larger scale projects designed to realise the strategic benefits of back office integration through connecting the various arms of government and government agencies to strengthen the government's capacity to investigate, develop and implement the strategy and policy that guides government processes[208].

Drivers for Back Office Integration

Having clear drivers for change and clearly articulated anticipated benefits increases the likelihood of successful delivery of a back office integration project. This provides a clear answer to the questions "why are we doing this" and "what do we expect to achieve". A noticeable feature of early projects is the lack of attention given to 'benefits realisation', making their success difficult to determine and the costs difficult to justify.

Typical drivers for back office integration include:

Cost

The use of new technologies is seen as driving down operational costs associated with transactional services. The primary savings are seen in the move away from paper based systems, savings on storage requirements and savings in time (and therefore staffing levels). Reducing transaction, organizational and staffing costs are identified by the OECD[209] as key drivers for ICT – enabled public sector transformation. Where national legislation and cultural norms prevent the achievement of savings through direct staff reductions, the staffing saving may be described in terms of reductions in projected future spend, that is, when the functionality of the new systems reduce the need for future recruitment as transaction levels increase.

In part, the cost saving from integration will also arise from transferring costs between the host agency (whether department or government body) to the service user – whether that is a citizen, employee, department or corporate body. This is seen in the 'self-

[208] For a benefits assessment model for e-government see *E-government Benefits Study* (2003), National Office of the Information Economy, Commonwealth of Australia.
[209] OECD questionnaire: *E-Government as a Tool for Transformation* (2007). web publication http://www.olis.oecd.org/olis/2007doc.nsf

service' format of many e-government back office projects. For example, an HR back office integration project may involve a 'self service' module which enables managers to enter sickness data directly. This reduces the transactional costs of the HR function in processing sickness information but increases the time cost for the manager.

There is little research into the impacts of cost-transfer, particularly time costs, as opposed to cost eradication, in e-government solutions. In the example cited of HR sickness data, the 'time cost' of data entry is transferred from the HR department to the manager and the manager's department. This will have an impact on the manager and, through them, on service delivery. This impact is difficult to evaluate in both qualitative and quantitative terms. Whilst this transfer of costs may be seen as less significant when within an organization, transferring costs outside of the organization to, for example, citizens or voluntary bodies and NGO's, is a seldom discussed but more substantive issue.

The second area of perceived cost savings from back office integration occurs from the economies of scale that can be achieved where several government agencies or departments are linked together. For illustration, the integration of payroll systems across a number of public sector bodies can lead to significant unit cost savings. These types of savings are associated with the implementation of 'shared service' models for back office service delivery. These combine functional areas into one service under one management structure and can be across organizations or within one organization.

Given the technological investment involved, the costs associated with shared service models of back office integration – buying or designing and implementing a new system – are high. These costs increase significantly where the desired outcome involves connectivity to other systems. However the benefits can be considerable. Kable[210] 'estimates that if the European public sector was to adopt shared services aggressively across mainstream functions such as finance, HR, procurement and ICT back-office services, then the associated savings to European taxpayers would be worth €30bn'.

Service Improvement/Efficiency

Efficiency gains are made when costs are reduced (for example the costs of labour or materials) and the same outputs maintained or if inputs are reduced (money, people, assets etc) and the same outputs maintained. With back office integration, improvements in procurement can lead to reduced materials costs and de-skilling of work can lead to reduced labour costs. Alternatively, improved processes can lead to reduced inputs (for example, when less staff time is required to produce the same outputs).

Generally cost justifications for back office integration are based on these two types of efficiency gains. However efficiency gains can also result when the level of inputs and the costs remain the same but outputs improve. This can be in terms of volume and unit

[210] Kable Report (2007) *Shared services in the European Public Sector*. KableDIRECT http://www.kablenet.com

cost, for example, increasing the number of benefits claims that can be processed or the speed of processing. The reforms of the federal government in Switzerland[211] between 2005-2007 could be seen as falling into this category as they were based on administrative simplification and optimising staff management. Efficiency gains can also be in qualitative terms, for example improvements in decision making through improved information, although this type of efficiency gain is less easy to quantify.

The OECD[212] identified service improvement and efficiency as key drivers in back office integration. The improved transaction processing from integrated back office systems can release resources for service improvement or, alternatively, lead to staffing cost reductions and improvements in productivity. In Australia[213], one of the key priorities in its e-government strategy is to show value for money. It states that internal efficiency will be gained through improved processes within and between agencies leading to lower costs and improved services. In the UK, the government's efficiency agenda[214] aims to reduce duplication and reduce costs through integration of back office functions and the development of 'shared service' models for delivery of services such as HR and Finance. This is intended to create additional resources for front line delivery and is seen as an easy way to persuade both the public and politicians to 'buy into' e-government.

Service Innovation

Back office integration can be seen as leading to the development of new back office services to improve support for front office operations. A typical example would be the ability to effectively process and analyze more or different data, enabling improved management information for front office managers and improvements in information for policy development.

Increased Control

Whilst many e-government solutions focus on distributing control (empowerment) more widely through providing access to services, back office integration also facilitates centralised control. This can be a key driver for investment in back office integration where improved regulation or, for example, combating localised corruption are given a priority. In a resource constrained environment it can also allow centralised resource allocation and centralised prioritisation. Linked to this ability to exercise greater centralised control are improvements in monitoring and evaluation based on the improved accuracy and availability of management information.

The development of integrated back office solutions providing centralised access to real-time data across sub-units linked to a central hub can overcome the traditional barriers

[211] OECD *E-Government as a Tool for Transformation* (2007) p.53
[212] OECD questionnaire: *E-Government as a Tool for Transformation* (2007). Responses to Question 7 p.23 reproduced in appendix 2 below.
[213] In Australia, one of the key priorities in its e-government strategy is to show value for money.
[214] *In the UK, the government's efficiency agenda aims to reduce duplication and reduce costs through integration of back office functions and the development of 'shared service' models for delivery of services such as HR and Finance. Transformational Government Implementation Plan* http://www.cio.gov.uk/documents/pdf/transgov/transgovt.pdf

to effective centralised control, primarily the time-lag in information being available centrally, the slowness of communications from the centre to geographically distant sub-units and the limitation of remote monitoring and evaluation.

Modernisation

The modernising agenda can be generally characterised as the move to customer centric models of service delivery for public sector bodies. This is linked to the cost efficient delivery of services through embracing new technologies and new ways of working. Integrating back office functions to drive down costs, improve efficiency and improve service delivery are common features in the modernising agenda[215].

For example, the UK's strategy to transform the business of government envisaged that by encouraging an integrated 'shared service' approach in human resource and financial management, efficiencies would be achieved through a reduction in headcount and financial spend of at least £1.4 bn per year (20%) of the £7 billion annual spend across HR and finance[216].

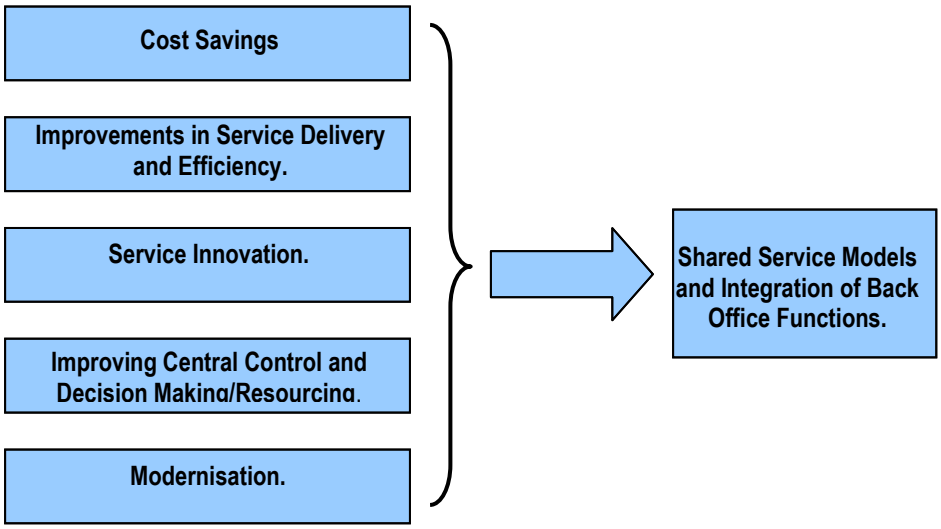
The modernisation agenda also introduces a personal and political dimension, with the credibility of individual politicians, both at local and national level, being linked to the launch and, ultimately, delivery of high profile and large scale back office integration projects. Experience from the UK suggests that, whilst being seen as a 'modernising' politician may be desirable, the uncertain delivery prospects of large scale back office integration projects make it a high risk strategy. Typical examples from the UK include the national computerised on-line junior doctor training placement system (MTAS) developed as part of the 'Modernising Medical Careers' programme[217]. Perceived failures with the implementation were both widely reported in the media and caused considerable political debate and criticism at the national level. The resulting enquiry concluded that the technology had worked and that the supplier had delivered to the requirement. The failures were attributed to the people dimension.

[215] The modernisation agenda is often linked to new public management (NPM) models. However the advent of digital era governance (DEG) is moderating the influence of NPM and moving towards holistic, customer centric solutions with less focus on rigid orthodoxies and the translation of perceived private sector approaches to public sector institutions. Cf Dunleavy et al. New Public Management Is Dead--Long Live Digital-Era Governance (2005) Journal of Public Administration Research and Theory. Oxford University Press.

[216] Shared Services Team UK CIO Council http://www.cio.gov.uk/shared_services/introduction/objectives.asp

[217] The UK national computerised on-line junior doctor training placement system (MTAS) developed as part of the '*Modernising Medical Careers*' programme. Douglas, N. et al (2007) *Review of the Medical Training Applications Service and Selection Process 2007*, DoH: London,

Figure 7.2. Key Drivers for Back Office Integration and Shared Service Models



In addition to cost savings, back office integration, either vertically or horizontally should show results in the following areas:

- Greater potential to share workloads, access to the same data, reduce duplication of effort and cost associated.
- Real time information and efficient retrieval of data when dealing with information requests
- Fast redirect of common enquiries and information requests to relevant answers e.g. through intranet based calculators and lists of frequently asked questions
- Alignment of processes and technology enabling training to be shared and economies of scale to be achieved.
- Data storage access and retrieval of information assists compliance with legislation and improves audit trail/reduces corruption
- Improved system providing more balanced workflow and better information retrieval improving staff satisfaction and retention.

Delivery Methodologies

The methodology for delivering back office integration is usually based on one of three approaches:

- In-house delivery
- Strategic Partnerships
- Outsourcing

In-house Delivery

In-house delivery is based on projects being developed and implemented by an in-house team, often supported by a combination of external and temporary (consultancy) support for specialist areas. Under this model, the leadership and overall management of the project rests with the host organization.

The rationale for this approach is not necessarily based on cost – although that may be stated as a reason. The actual cost advantages over other modes are limited given the need to backfill for staff involved in the project and the need to acquire temporary and consultancy support for specialist areas – or to recruit additional staff and train up existing staff. More often the rationale is political and cultural, to retain control on the project and to be seen to lead the change from within. The in-house approach may also be a pragmatic response to the absence of available or willing strategic partners or the absence of a mature outsourcing market.

Strengths

- Retains full control of project
- Allows for flexibility in implementation
- Ability to link to other priorities
- Maintains 'ownership'
- Develops skills and knowledge in-house
- Can be cost effective
- Can be motivating for in-house staff

Weaknesses

- Lack of appropriate knowledge and skills leading to:
  - Poor project design, control and delivery
  - Expense interim and temporary arrangements e.g. consultants
- Allocation of in-house staff to the project leading to:
  - Negative impact on existing services
  - Costs of temporary staff to 'back-fill' for staff allocated to the project

Strategic Partnerships

The strategic partnership model differs from outsourcing in that the function is retained in house. However, unlike in-house delivery, a relationship is formed with an external supplier to deliver the project. This relationship is based on a contract and generally involves an external partner able to bring specialist expertise as well as investment in technology. The contractual relationship is usually long-term (10 years or more) and involves a mutual commitment to develop innovative service delivery. The partnership element is seen as bringing a different quality to the relationship that lies outside of a normal commercial 'purchaser/supplier' relationship. This is often characterised as the alignment of goals and interests between the two parties. Despite the use of the term

'partnership' it is important to note that at the heart of successful strategic partnerships is a sound contractual relationship that provides the security, in terms of commercial return, for the private sector partner as well as the transparency to ensure that public funds are being appropriately spent.

Strengths

- Brings in external expertise, knowledge and skills
- Can provide capital investment in technology
- Knowledge transfer between in-house and external staff
- Clarity of objectives and deliverables
- Retains control of the project/function
- Reduces scope for internal politics to affect deliverables

Weaknesses

- Requires long term commitment and associated costs
- Potential mismatch in culture and expectations between partners
- Unresponsive to changing priorities/politics as contractually based
- Dependency on partner
- Delivery affected by internal politics/other activities of partner for example, changes in a parent company can adversely affect the partners commitment and involvement

Out-Sourcing

Out-sourcing involves the transfer of a function or entity to another organization – usually, although not exclusively, to a private sector organization. Under this model the public body no longer retains the responsibility for implementing changes but rather relies on an output based contractual arrangement to ensure the desired benefits are delivered. The decision to outsource a particular function is generally made on the basis that the outsourcing supplier will deliver a service that is better than the organization currently operates or is able to develop in-house, for example by maintaining outputs e.g. volumes, whilst reducing costs or by introducing new skills and higher levels of expertise.

As an alternative to implementing back office integration in-house or working with a strategic partner, out-sourcing is a less certain route given that control is passed to another body which may opt for a different solution or not deliver the same quality levels – it is often difficult to specify the quality of the service required in terms of performance against key measures where those measures are 'soft' measures – for example the quality of care delivered to the elderly. Measuring volumes and cost reductions is easier than gauging the quality required. Early on in the outsourcing process the base line service quality needs to be determined. This can be a cultural challenge as many organizations are not used to measuring the kind of output-based performance which

forms the basis of the contractual arrangements necessary in outsourcing. Quantifying cost reduction, volumes and quality means that all parties are clear on the deliverables.

Like any transaction, successfully outsourcing a back office service such as IT or HR or finance requires well thought through contractual documentation that clearly sets out each party's rights and obligations and protections. The work involved in successful outsourcing starts before the stage of contract negotiation. It starts with:

- Developing a methodology for determining when outsourcing will be appropriate and successful and for identifying potential outsourcing activities
- Establishing a framework for measuring the rewards of outsourcing against the risks/costs
- Creating a workable strategy for proceeding with an outsourcing decision
- Preparing the organization for the potential future use of this strategic alternative, particularly staff and staff representatives/Trade Unions
- Developing guidelines for initial implementation and long-term management

Strengths

- Passes the problems to a third party to resolve
- Brings external resources and expertise
- Brings additional investment
- Reduces demand organizational/management capacity

Weaknesses

- Less control on methodology of delivery – control is on outputs
- Potentially high cost
- Efficiency savings accrue to third party
- Contractual relationship may be inflexible
- Requires expertise and time to outsource
- Costs of contract management
- New skills required in contract management

Managing Delivery

Current models of back office integration, whether delivered through in-house teams, strategic partnerships or outsourcing, fall into three broad categories.

- Single function integration
- Cross functional integration
- Back office to front office integration

These models can be applied either within a single organization or across organizations (vertically and horizontally). Typical examples of each are:

- Single function integration – an integrated HR information system
- Cross functional integration – an integrated HR and financial management system
- Back office to front office integration – a customer relationship management (CRM) system.

The complexity level, and the probability of success, is driven by the number of functions and the number of organizations involved in the project. Where those organizations lie outside of a hierarchical chain of command, for example partners' organizations in horizontal integration, the probability of success appears to be further diminished given the intervention of political issues, the requirement for consensus and the lack of direct control.

The following sections consider the issues to address in the delivery of back office integration models.

Organizational Culture

Increasingly the success of back office integration is being seen as dependent on the people element of the equation. Strategies for managing this element encompass the more obvious areas of developing the necessary skills and technical competence as well as the softer areas of developing new models of management and changing organizational culture.

Criticism of unsuccessful projects frequently focuses on the lack of public sector skills in areas such as project management, risk assessment and contingency planning. However, even when these skills are bought-in, confusions in terminology and lack of integration into existing working methods can result in sub-optimal application. Early in a project the use of a different 'language' for project management, particularly if working with an external strategic partner, needs to be identified as it can present a barrier to successful implementation. This is often addressed through developing a common terminology. This will involve creating a 'glossary' of terms, linking the public sector language to the technical project management language more common in the private sector.

Cultural differences between sections within an organization and between different organizations present a major challenge for back office integration when more than one function or more than one organization is involved. The difference in culture may be expressed in language, but this is often symptomatic of differing values, assumptions and ways of working.

The implementation of a successful back office integration project requires a proactive approach to acknowledging and addressing differences in culture. The existence of cultural differences may not be immediately apparent, particularly where the project is cross-functional within the same organization. However, where there are operating sub-units (such as different departments) then differences in culture are as likely to occur as

when working with different organizations or when managing a mixture of in-house and consultancy staff. Even within a single department or function, there are likely to be different sub-cultures between different staff groups and different professions. In any back office integration, one sub-culture that impacts on all other groups is that of IT specialists, as they deliver the technology that enables integration to occur.

In other cases the divergence in culture may be more than just a divergence between public and private sector approaches and the divergence between different professional groups. For example, where consultancy support is provided by foreign nationals then there may be a wide divergence in values and beliefs between the consultants and the host organization. Similarly, wide divergences in culture and values may arise where there are pronounced ethnic and social differences within the workforce or between operating units, or where operating units function over regional and national boundaries.

Differences in culture can be most clearly seen reflected in the values and beliefs that influence behaviour, whether consciously or unconsciously. It is reflected in the idea of 'how we do things around here', whether that refers to an organization, departments or sub-section. Because differences in culture express themselves through differences in values and beliefs, managing organizational culture requires identifying and working with those beliefs and values.

These values and beliefs will be a combination of the wider values and beliefs of the external culture the organization is operating within – those values and beliefs that employees bring with them into work each day – as well as the values and beliefs dominant in operating units and sub-units of an organization and in the organization's corporate 'core'.

One effective way to identify the values and beliefs held within an organization is to investigate the written and unwritten rules governing behaviour. The written rules will normally be found in formal documentation such as codes of conduct, disciplinary and grievance procedures, staff handbook. The unwritten rules are best identified by working with groups of staff to identify what rules they feel are operating in practice. This can be done by focussing on behaviour they feel is considered unacceptable or detrimental to progression (although not explicitly outlawed), and behaviour they feel will be rewarded or lead to recognition. This can quickly identify cultural impediments to successful integration of services, such as a cultural norm that discourages feedback from junior to senior staff, or that hides rather than learns from mistakes[218].

Typical strategies for managing and changing culture include directly challenging the existing culture, aligning the integration project with elements of the existing culture that are compatible and working around the existing culture, often through establishing a separate organizational unit, with staff drawn from other departments and organizations, to deliver the integration project.

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[218] Harman C. and Brelade S. (2000) *Knowledge Management and the Role of HR*, Financial Times Prentice Hall: London p.7-16

Directly challenging the existing culture involves imposing changes in a ‘top down’ fashion, often expressed as a task based directive, for example that ‘we will integrate all back office HR and finance functions’ with the assumption that, based on this directive, all HR and Finance staff will begin working together, sharing information freely and supporting the delivery of the change. This approach has the highest risk of failure as a means of changing culture but, if successful, can achieve the desired results most quickly as it does not need the same level of understanding of the existing culture or consensus building about the need for change. The danger to successful delivery lies in the level of conflict created and the potential for misunderstandings between staff working to a different set of values and assumptions. This approach is also likely to lead to a level of discomfort for staff which is likely to manifest itself in higher absenteeism and higher turnover.

Aligning the integration project with values within the existing culture, working with elements of that culture, is perhaps the most sophisticated approach and consequently probably the most difficult to achieve. It involves identifying and working with those elements of the existing culture that are conducive to the required changes whilst simultaneously discouraging those other elements of the existing culture that are not. This approach requires an understanding of the existing culture and an understanding of how to encourage and discourage particular aspects of an organizational culture. There is the possibility with this approach, however, that the momentum of change will be lost and that the old culture will remain largely intact and reassert itself over time.

Working around the existing culture is, in essence, an attempt to avoid the issue. In the public sector, creating 'executive agencies' from government departments would be seen as an example of attempting to create a new culture by 'working around' the existing culture. Problems with this approach can arise at the interface between the new organization and the 'parent' (particularly if a different culture in the new organization has been achieved). In the creation of a new organization of operating sub-divisions there is also a danger of simply exporting the existing culture in the transfer of staff and managers. Despite these potential pitfalls, this can achieve success and can create a 'feedback loop' which generates cultural change for the parent as well - particularly if the parent is significantly reduced in size following large parts being placed into separate operating units/organizations.

A typical example of this approach in a large scale back office integration project is to establish a separate organizational unit charged with delivering the change. This may be staff drawn from one organization or, in horizontal and vertical integration, from several organizations. In this approach considerable effort is usually spent on team building to create a distinct identity to the new unit and a distinct sense of purpose and a unified culture based around delivery of the task. However there is a significant danger of the delivery unit becoming divorced and alienated from one or more organizations from which its participants are drawn. This in turn can lead to conflict, which in organizational terms is often expressed in a lack of priority being given by staff in the ‘parent organization’ to requirements for the integration project, a failure to cooperate – for example in the provision of necessary information or documentation of business

processes – problems in freeing up staff time and in the worst cases, actively undermining the delivery of the project.

In the definition of e-government given i.e. ‘the use of information and communication technologies to improve the activities of public sector organizations and by doing so improve the services offered to the public’, the word ‘use’ is critical with its emphasis on the human interaction with information.

In identifying what makes individuals good at ‘using ‘information and applying their knowledge, typical responses include the ability to:

- Identify and exploit sources of information and knowledge
- Generate new and creative ideas from information
- Create trusting relationships with colleagues
- Share ideas and information with others
- Separating the relevant from the irrelevant
- Perceive connections between disparate pieces of information
- Organise information and ideas
- Continuously learn and develop

This helps to identify the type of organizational culture that enables and supports individuals in developing and using these abilities. This would typically be a culture that encourages and values:

- Networking and broad contacts externally and internally
- Respect for individuals
- Creativity and innovation
- Trust
- Sharing of ideas and information
- Sound underlying systems and procedures
- Continuous learning and development

An organization with such a culture is likely to be characterised by:

- High levels of autonomy for individuals
- Respect for skills, knowledge, talents
- Low level office politics and avoidance of 'hidden agendas'
- Encouraging a shared stake in the outcomes/ownership
- An emphasis on sharing of ideas
- Giving recognition and making employees feel valued
- Offering high levels of involvement in decisions
- Building variety into jobs
- Efforts to make work stimulating and meaningful
- Minimal but effective bureaucracy
- Co-operation rather than competition

The presence or otherwise of these characteristics can be measured through the use of diagnostic tools such as staff attitude surveys. Using staff attitude surveys on an annual

basis can serve to baseline current organizational culture and monitor change over time. It can also provide a quantifiable basis for measuring the effectiveness of the organization's people management strategy and identify areas to target for intervention and action.

In managing organizational culture, whichever approach is adopted, it is necessary to ensure that those factors of an organization that reinforce culture are aligned with the desired outcome and the successful delivery of the integration project. For example, a cultural 'reinforcer' is the reward system – by the payments of rewards and their non-payment, the organization explicitly indicates what behaviours it values and, conversely, what behaviours it does not value. If the desire is to create a culture that supports the delivery of back office integration, then rewards should reflect those characteristics and behaviours that support back office integration. An example would be rewarding those staff who share information, offer new solutions and are flexible in their approach. Rewards in this context can be both financial and non-financial, an example of the latter being recognition schemes. If the reward system recognises 'old culture' values, for example 'empire' building, retaining knowledge and information, protecting hierarchies and work boundaries, or reflects membership of a particular social, ethnic, religious or gender grouping, then the behaviours necessary for back office integration are unlikely to flourish.

Similarly recruitment will both reflect and reinforce cultural values. If setting up a project team to deliver an integration project, then it is important to ensure the use of objective criteria based on the ability and attitudes to contribute to the task. Project teams that are established on the basis of representing the different interest groups, irrespective of the ability of members to contribute to the task or their sympathy with the objective, immediately create tensions and increase the risk of failure to deliver.

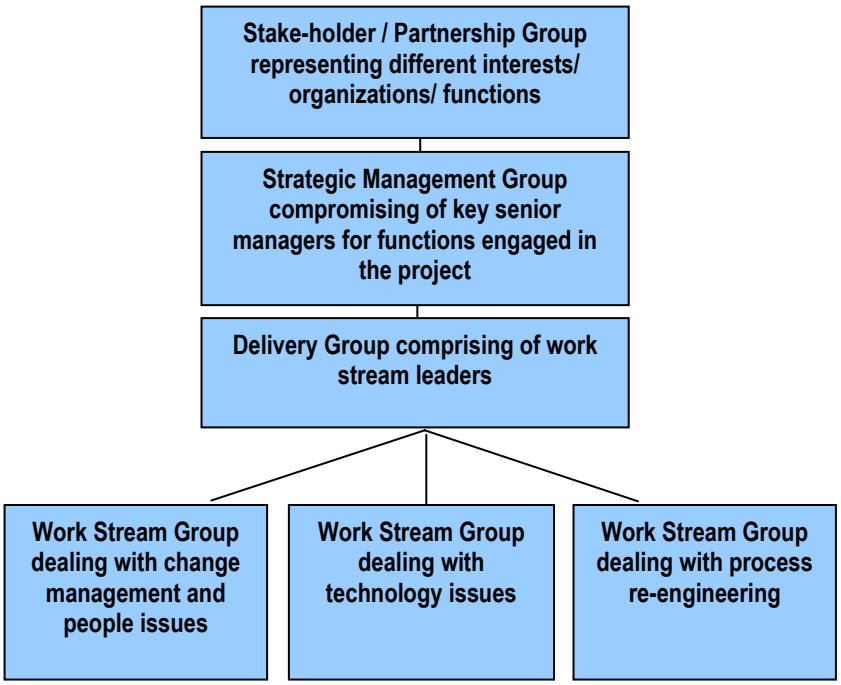
Governance

Whilst in most projects there is a degree of compromise in the solutions adopted, back office integration has less scope than many other areas for compromise if full benefits are to be realised. The governance framework for successful back office integration is generally characterised by clearly defined roles and clear ownership of the different aspects of the project. This, in turn, is supported by a management framework that provides realistic, consistent and independent methods of measuring and managing the progress, and feeding that information back into the governance structure. This presents a particular challenge where the internal politics of an organization or the values of a culture are based on finding compromise solutions between different interest groups and factions or avoiding feedback of negative information.

To address the problem this creates for many organizations, particularly where there is the need to engage different stakeholders without compromising the project, a typical delivery structure adopted creates multi-tiered governance arrangements. Generally these governance arrangements involve a separation between strategic and operational roles and create a stakeholder or partnership group to allow engagement of different

interests, whilst ensuring that operational decisions are based on the needs of the project rather than the vested interests of stakeholders.

Figure 7.3. Simplified Governance Model for Delivery of Back Office Integration
(Source: Harman & Brelade 2007)

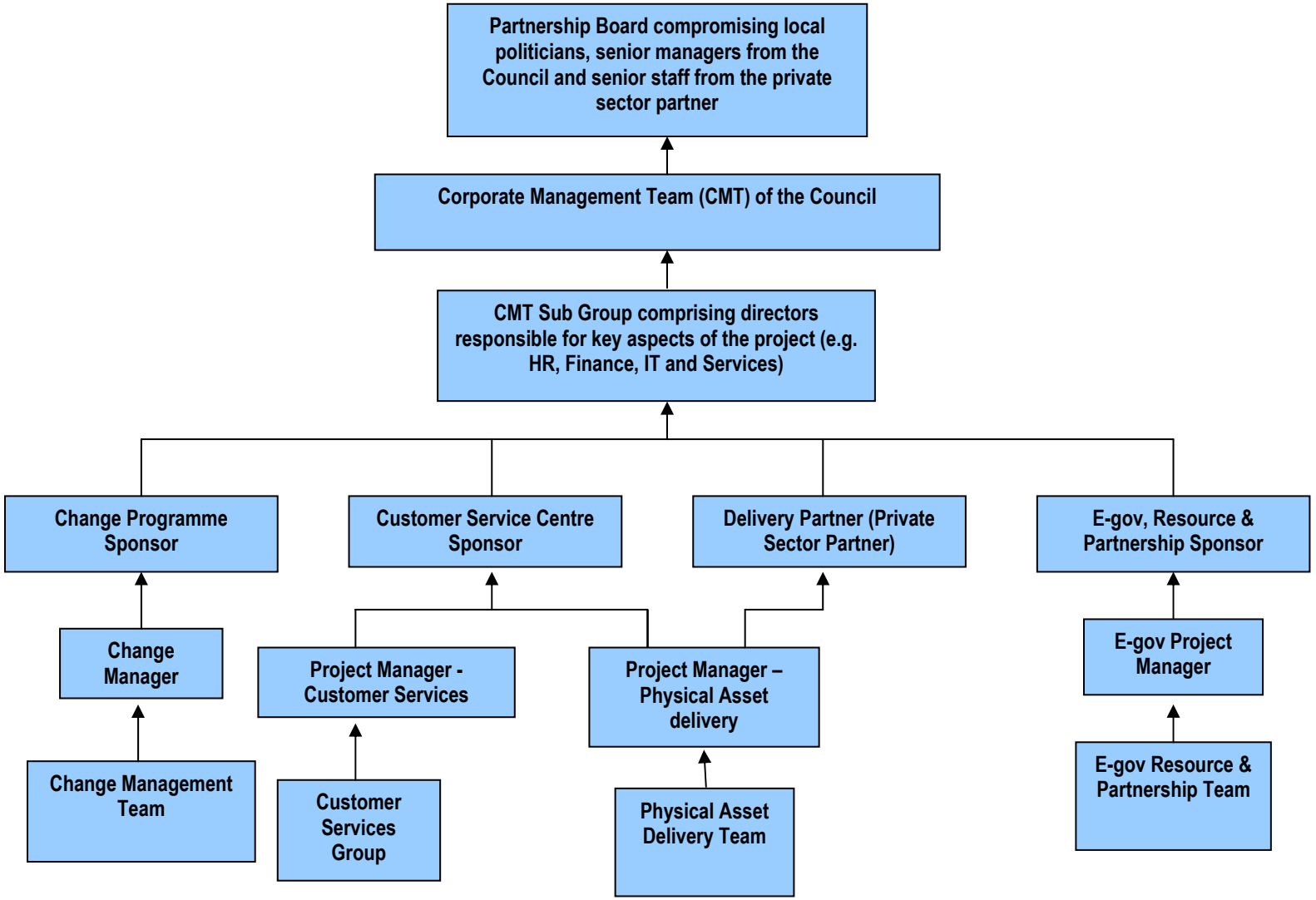


Given the potential for back office integration projects to fail to deliver because of vested interests both within and between organizations, in addition to the practical complexities of integrating work across several work streams, effective governance arrangements are essential. The absence of robust governance arrangements is a commonly cited feature where projects fail to be implemented or fail to fully realise anticipated benefits. In the simplified model presented, operational decisions are made within work streams with conflicts or cross-work stream decisions being made in the delivery group. This in turn reports into a strategic management group for key decisions affecting the overall project as well as resolution of problems that cannot be dealt with in the delivery group. The strategic management group will also ensure resources are available and deal with the interface with the organization's management. The stakeholder group provides oversight to the project, sets overall policy and receives reports on progress but will not be engaged in operational delivery decisions.

This separation between operational delivery, strategy and oversight is designed to prevent the distortion of the project delivery by vested stakeholder interests as well as ensure effective governance in terms of transparency and accountability. In reality, governance arrangements based on this approach will be more complex and an example is provided below. This example is for the delivery of a customer service centre integrating a number of back office functions behind the front-line delivery and the

creation of a new ‘physical’ asset (a customer contact and call centre). The delivery methodology adopted was a strategic partnership between the local government unit and a private sector supplier.

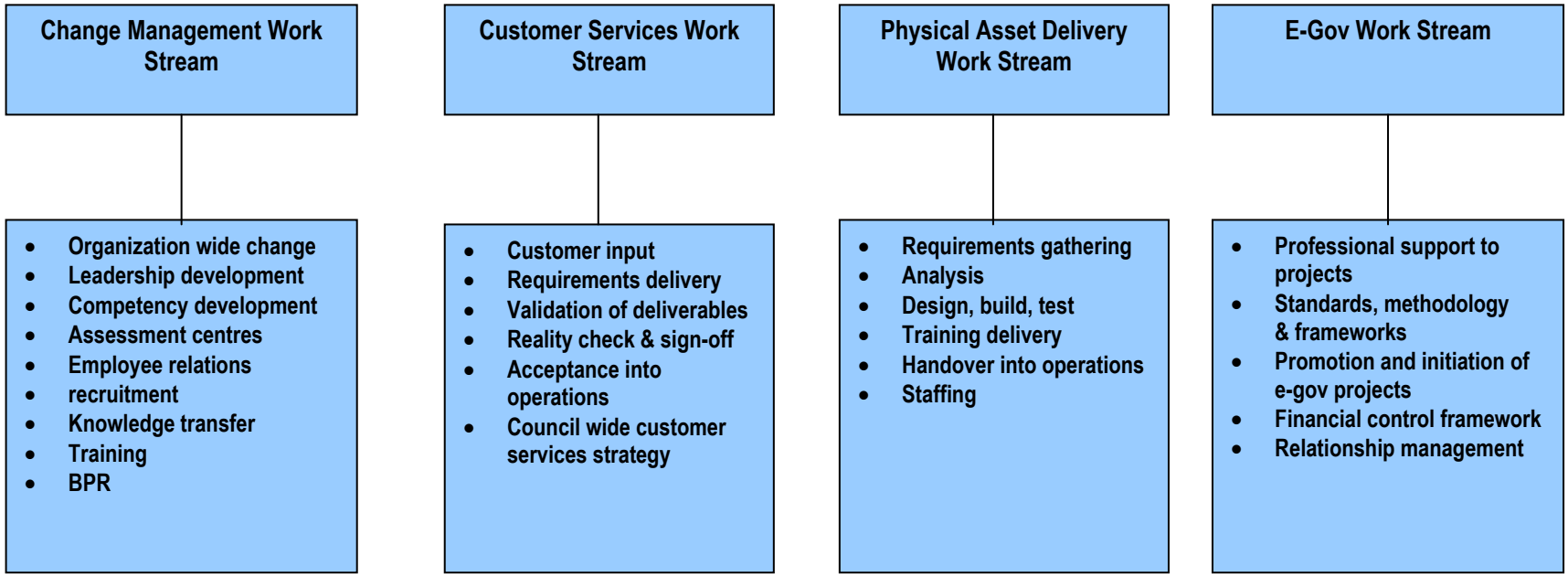
Figure 7.4. Governance Model for Delivery of a Customer Contact Centre (Source: Slough Borough Council)



In this example of governance arrangements, the partnership board pulls together the various stakeholders within the organization and the private sector partner at high level. The Corporate Management Team (CMT) is linked into the process so that reporting to the partnership board goes through the CMT ensuring that all senior managers are engaged in the change process, maintain awareness and have the opportunity to comment and contribute. The CMT also ensures that recommendations and decisions going to the partnership board are in accordance with the requirements and wider strategy of the Council and its service delivery. The CMT sub-group acts as a filter mechanism for what goes to CMT and makes decisions on behalf of the CMT. The CMT sub-group includes all the project sponsors (who are directors) and includes the private sector partner through its delivery sponsor. It is important to note that this element of the governance arrangements is dependent on trust within the senior management group and is a potential source of conflict where trust does not exist.

The use of project sponsors at director level provides significant authority to overcome obstacles to delivery as well as accountability and access to resources. A specific work stream was created covering e-government, resources and partnership. This was to ensure that the project linked into other e-government initiatives, to manage the resourcing side and to manage the relationship with the private sector partner. This element of the governance arrangement prevented issues in partnership working from escalating and interfering with delivery. It also provided a mechanism for managing the commercial aspects of the relationship. Reporting to the project sponsors were the project managers for each of the identified work streams. The work stream teams comprised expertise both from service users, the private sector partner and the Council as well as functional expertise in areas such as ICT and change management. The change management work stream team also included trade union representatives. The contents of the various work streams, in outline only, are detailed below.

Figure 7.5. Functional Responsibilities in Governance Structure – Customer Service Centre Project
(Source: Slough Borough Council)



The key elements of the governance arrangements for this successful project can be summarised as:

- Clear accountability and transparency
- Separation between strategic and operational decision making
- Integration of project into wider organizational agenda
- Engagement of all parties including service users, staff representatives, private sector expertise and in-house expertise
- Reduction of the overall project into more manageable work streams
- Creation of project sponsors at senior level for each work stream

Staffing Transition

In any back office integration there are significant impacts on staff. This will range form re-allocating staff to new areas of work, relocating staff to a different location within an organization or geographically, requiring staff to work with new technology and new processes.

In practical terms staff will generally be divided between those whose work is totally in-scope of the integration project and those whose work is partly affected. At this point a decision has to be made as to the level of involvement in related processes which will lead to any particular member of staff being classified as in-scope. This is not as straightforward a process at it seems, given that being classified as 'in-scope' may mean that the staff member's job is put at risk. At the very least, it means the individual is likely to be subject to considerable change. It is not uncommon for considerable manoeuvring to occur to keep particular staff, for a variety of reasons, out of scope and to put other staff in-scope for non-objective factors ranging from nepotism (to keep them out of scope) to poor performance (to put the individual in-scope). This is part of the reality of organizations.

An effective way to address this is to first define the functions and activities that are 'in-scope'. This provides clear and objective criteria for determining which staff are potentially 'in-scope' for the project based on an analysis of what they do. Where they are fully engaged on 'in-scope' activities, they should be classified as 'in scope' (irrespective of job titles which may mislead). Where they are partly engaged in 'in-scope' activities, then an agreed 'cut-off' formula should be applied, for example 50% or more of their time spent on in-scope activities will mean they are classified as 'in scope'. In some countries legislation will determine the 'cut-off' point used. Where Trade Unions/staff representatives exist, it is useful to agree this cut-off point with them and put in place a review mechanism in case of challenges.

To ensure delivery of anticipated savings in staffing costs arising from the back office integration projects – where such savings are a desired outcome – it is necessary to amalgamate the percentages of individuals' jobs that are in scope to ascertain both the total staffing resource 'in-scope' and the expected staffing reduction in the areas 'losing' staff to the project. This is one of the reasons why a back office integration project will often lead to a restructuring in areas that are not directly part of the project. This is best illustrated through a practical example. If a section has the equivalent of 6 full time staff and 1 person works full time on activities 'in-scope' of the project and another person works 50% of their time on in-scope activities, then both of those staff will transfer to the project. The section now has only 4 staff but requires to cover the residual 50% of the

activities of one of the transferring staff. The project has gained 2 staff but only requires 1.5 staff. This would mean a staffing reduction is likely to be needed within the in scope area at some point. An alternative scenario may arise where everyone in the section employing 6 staff spends 25% of their time on in-scope activities. Extracting this from the section would mean transferring the equivalent in staffing terms of 1.5 people to the project. If no people are moved to the project, but the activities transferred, the section should reduce by 1.5 staff. If the decision is to transfer staff, then a selection process needs to take place – which may well be affected by local employment legislation and HR policies. These impacts are multiplied across an organization in a large scale integration project.

If these issues are not addressed then, quite apart from the staffing implication, the integration project is likely to result in an overall increase in staff costs based on the residual costs within the business not being addressed or an excess of transferred resource not being dealt with. It is highly unlikely in any integration project that the resource to be classified in scope, based on an activity analysis, will correspond to actual numbers of real people, which is why such projects usually have a requirement for staff reductions built into the process even before the anticipated efficiency savings are delivered.

Taking a practical project involving back office integration, the organization took the following steps:

- Step 1 – identification of the initial pool of staff nominated or proposed as 'in scope' based on an assessment by their departmental managers against the project criteria
- Step 2 – detailed job analysis on the pool of staff involving a 'challenge' process (i.e. challenging the assessment of departmental managers and identifying other staff who may not have been included). The output resulting in a 'pool' of staff accepted as in-scope.
- Step 3 – Carrying out an assessment centre on this group of staff to determine suitability for working in the new environment. The output of the assessment centre to be a ranked list of those deemed 'ready' and 'not yet ready' for transfer into the new environment and personal development programmes to achieve readiness for transfer.
- Step 4 – using a phased approach linked to new systems going live, transfer the requisite number of staff from the ranked list into the new environment. Those transferred in each phase to be above the 'ready for transfer' cut-off point with as many as possible coming from the area whose activities are being transferred in the particular phase.

This particular project involved the implementation of a new 'front-office customer contact centre supported by integrated back-end processes. However the approach is equally applicable where new systems and procedures are coming on-line in phases as part of a back office integration project.

The practical implication of the approach was that:

- Those transferred at each phase were drawn from a combination of areas not just the area whose activities were being transferred as part of that phase. The criterion was readiness for transfer and not work location.

This created a back-fill requirement in some areas in advance of the transfer of work functions to the new working environment, as staff were being transferred on the basis of readiness rather than as their substantive duties were being transferred. The backfill requirement was met from within the pool using those staff still undertaking development to achieve a state of readiness for transfer.

The reason for this approach, rather than transferring staff and their functional areas at the same time, was to ensure the success of the project. It meant that the most ready and able staff transferred first. The strategic decision had been taken that the 'risk' (of service failure) should fall on the departments from which the staff were drawn and not the project. This decision was based on the pragmatic reasoning that the project involved considerable expenditure, was politically high profile and was essential for the organization's transformation.

- The main assessment centre activity was run at one point in time, limiting the disruptive impacts and giving staff sufficient opportunity to work through personalised development plans to equip themselves for their new roles.
- A 'test/re-test' process was used as staff become ready for transfer as they worked through their personal development plans

By adopting the approach of using an assessment centre 'up-front' on all staff in the refined pool:

- job losses through redundancy were minimised through allowing time for development of skills and competency,
- those job losses that did occur were based on objective assessment and happened prior to transfer and the affected staff had the maximum amount of time for securing alternative roles
- all expenditure on training was clearly focused and the wasted cost element of generalised training avoided
- staff had an equal opportunity to achieve roles in the new structure irrespective of the phase of the programme in which their work area fell.
- the emphasis on development would help retain staff through the process

This latter point addressed a key staffing issue in a phased implementation. That is, if staff are transferred with functions, there will generally be fewer opportunities for those staff transferred in the last phases or, alternatively, if all staff transfer, then staffing levels will have to be reduced following transfer which can be both complex and de-motivating for a newly integrated service.

Training and Development

Common in large scale back office integration is to run training in change management and new ways of working for all participants. These programmes, designed to influence attitudes and behaviours as well as communicate the direction of travel, are both expensive and time consuming. There is a danger in such programmes that the time-lag to the implementation of the changes renders the training ineffective. In part this is because the training remains theoretical until the changes are implemented, limiting the opportunity to embed the learning. In addition if there is high staff turnover– a common occurrence during major organizational change – many of those trained will no longer be working for the organization when the changes are implemented.

More effective investment in training and development focuses on key players in the transition process, equipping them with the skills to lead change and creating 'change champions' with a practical leadership role. It also focuses on facilitating the process by working with groups of staff directly affected to engage them in the process and in generating practical solutions to real issues. This targeted approach to training and development expenditure avoids generalised 'change' training and ensures training is delivered close to when it is required and close to when it can be practically applied. It uses the training methodology as part of the change process, through workshop based solutions to practical issues in areas such as process design and knowledge capture, rather than as a vehicle for communicating abstract cultural messages. It is also significantly less costly.

The training requirements can be divided between:

- Systems Training – how to operate the new systems and processes
- Competency training – to develop the skills to operate in the new environment.
- Management development – to develop the skills to deliver the project and the skills to manage in the new environment once delivered
- Leadership development – to develop appropriate leadership that engages and motivates staff and facilitates the desired organizational culture.

It is important to clearly specify the levels of competency required to operate the new systems and to accurately gauge the levels of competency within the existing workforce and the recruitment market. It is quite possible for an integration project to fail to deliver anticipated benefits because the skills required, for example in the area of literacy, do not exist to a sufficient standard within the immediate labour pool. Strategies to mitigate this risk include redesigning process and systems requirements to proactively engaging in skills development training, both within the organization and within the local recruitment market, prior to implementation.

However, development activity should not be limited to formal training programmes or courses. Whilst hard skills, such as systems training, may best be approached through formal methods of training delivery, equipping staff to both deliver and work in the new environment requires a more sophisticated approach to staff development.

Areas to consider include:

Training in One-to-One Coaching and Group Facilitation – these skills are often seen as crucial for the leadership, formal or informal, needed to deliver a successful integration project. They support a strategy of empowering and encouraging ownership of development throughout the workforce. Training in this area will equip managers and others involved in the change process to support each other and colleagues on a one-to-one basis and to co-facilitate team events or workshops. In this way the organization creates a network of staff who can facilitate the transformation of the organization.

Encouraging the formation of support groups/internal networks – The encouragement of cross team/departmental support groups and networking with people from other organizations can be an important way of encouraging new ways of working and facilitating problem solving.

Encouraging and embedding a range of learning approaches – This includes encouraging the use of tools such as critical incident analysis, peer reviews and similar to enable individual and organizational learning to take place. This is closely tied to creating a culture in which individuals are equipped to share the responsibility for managing their own learning and development, rather than seeing it as solely a 'top down' process.

Developing a statement of core competencies – The development of generic management competencies and specific competencies for new ways of working will:

- Assist in the recruitment and selection of people with the appropriate attributes and behaviours
- Match employees to tasks and roles
- Promote performance
- Assist in planning for future needs
- Enable planning of appropriate training
- Support succession planning
- Assist in the development of appropriate reward strategies
- Promote diversity and talent management practices
- Assist in the identification, development and retention of high performers

It is important that these are owned and recognised as being relevant within the organization or between organizations in larger scale projects. This will be more likely to occur if the development of the core competencies is done in conjunction with staff and managers and they are adapted/tested through staff and manager focus groups.

Developing feedback mechanisms – where effective feedback mechanisms exist, the danger of a project failing will be reduced. However, in some organizations cultural factors can prevent effective feedback. Critical feedback from individuals may be viewed as confrontational, inappropriate or indicative of disloyalty. For organizations to adapt and evolve, and for complex projects to be delivered, effective and rapid feedback is essential. Within the sphere of training and development, a culture of effective feedback can be encouraged through mechanisms for feedback as part of performance assessment. In moving forward, an open, supportive, participative culture feedback will

area. This can then be supported through on job mentoring and coaching for those involved in their new place of work.

Technology

In introducing a new system it is critical that a specification is produced which defines the technical requirements of the new system including non functional requirements. Whilst national level strategies will generally provide a guide for local procurement, this is likely to be more aspirational than what the market will, at different stages and times, deliver. Typically, national strategies will require a vendor neutral infrastructure which is robust, flexible and expandable, able to cope with varying demands and able to support the integration of legacy and other systems[219]. However, at the local level, the difficultly is for those involved to understand what they actually want the system to do both currently and in the re-engineered in-house function or organization and then to find an appropriate product.

The time and the money involved in clarifying the specification are most often underestimated. Likewise, when a final specification is produced it is often so technical that stakeholders find it difficult and sometimes impossible to comprehend. Reliance is therefore on internal technical and functional experts and the external consultancy delivering the system. This can lead to managers finding out at a system test stage what the system can and cannot do for the particular function at different levels in the hierarchy. This then often leads to a modification of the system requirements which result in time delays and cost implications.

In back office integration the specification stage is further complicated by the involvement of several different functional areas and potentially several organizations. In this situation agreement would need to be reached regarding the specification requirements and project outcomes. If there is to be a time delay in the automation of different stages of the project affecting different functions, a decision would need to be reached as to whether the existing system could accommodate present and future needs of both functions. If however, both functions used different systems, then an agreement would need to be reached on whether a new system was bought in and data migrated, or one system was used and the other was patched into it so that both functions had access to a common database. Issues also arise associated with connectivity between systems and information sharing.

Creating heterogeneous networks by standards-conforming hardware and software interfaces is critical to ensuring connectivity and information sharing in back office integration. This is easier to achieve where there is not an existing ICT infrastructure or where the introduction of a new database or core system involves the migration of existing data and processes to that new system. In both these situations, the issue of dealing with older ‘legacy’ systems does not arise. However in the case of data migration, significant issues are usually experienced in relation to data cleansing (ensuring common standards and removing duplicate records) and data verification (checking accuracy and removing obsolete or out-of-date information). It is necessary to allow sufficient resources to complete this process, which can be significant.

[219] An example of a national strategy embodying these principles is the e-government technical architecture framework of Malta. However practical application generally requires compromise on one or more desired outcomes http://www.gov.mt/egovernment.asp?p=111&l=1

In a typical example for migrating personnel data for 4000 staff from an existing HR information system to an integrated HR and payroll system, the resource requirement for data cleansing and data verification was the full time equivalent to 2 people for one year. This is not unusual and was the case in a developed country with rigorous staff appointment procedures, cashless pay and a considerable history of operating computerised HR information systems. In a less developed environment, characterised by less robust staff appointment procedures and cash based payment systems, the resource requirement for data migration is likely to be considerably higher.

Typical issues in data cleansing include situations where names have been inputted using different variations on different systems. For example, the same person may be recorded as 'J Smith', 'Jonathan Smith' or 'Smith J'. When the data is integrated, multiple records may be created for the same person unless the data is cleansed.

Typical issues in data verification include inaccuracy or out of date records, for example in HR payroll integration, individuals' personal details may be inaccurate, or individuals may no longer be employed but still have a record.

In a mature technological environment, integration is likely to involve a range of legacy systems, often performing vital processes for government. Whilst a replacement strategy may well exist, together with plans to migrate these systems and processes to the new system, the time delay involved will often necessitate the development of a temporary or interim solution. This is generally in the form of a manual 'work-around' or software bridges/patches linking the old and the new systems.

This is a particularly complex and difficult task which is a common cause of failure to achieve full functionality and, therefore, realise the full benefits of an e-government project. Strategies to mitigate the potential risks in this area of an integration project include:

- Dual running of old and new systems
- Phased implementation onto a new system
- Standardisation of systems procurement requirements

Key elements for the technological delivery include:

- Producing a system specification. This could be designed to fit in with current operational requirements or to fit in with future requirements. There is a difference between the system having the capacity to incorporate future changes and those changes being introduced when the system becomes live. The later would have a greater implication for people issues.
- Designing, building and user testing the new system both with a sample group of staff and managers
- If the new system is replacing an old one, then data would need to be migrated from the old system to the new one before the new system went live.
- Co-ordinating the implementation of the new system with the training of those who will use the system, preferably just before implementation.
- Ensuring that there is a back up plan for staff and managers if there are difficulties when the new system 'goes live'.

Document Control

A less obvious, but fundamentally important area, in the delivery of back office integration is the area of document control. For project management purposes, robust, standardised and understood document management processes are required. However effective document control needs to extend to the services being integrated. Inevitably back office government functions deal with large volumes of information in document format. The integration of these services will require the development of an integrated document management system and the utilisation of skills most commonly found amongst information specialists (more traditionally, librarians). The establishment of effective document control is not only fundamental to the process of government and maintenance of civil society and the rule of law, but at the pragmatic level it will also facilitate the transfer of knowledge through the change process and support continuity of service.

A key objective in document control is the standardisation of data recording, storage and management. This includes looking at the following:

- Version and status of the document
- Document history
- Dates
- Intended audience
- Any references
- Purpose

Before setting up an integrated document management system, existing documentation across the different areas is captured and then evaluated. This initially involves finding out who can access it, who within the organization owns it, where the information is available, what form it is in, where it is currently stored, whether it is used and maintained or just maintained. The example of the chart below illustrates how this is captured.

Figure 7. 6. Sample Document Control Audit Template

Information access	Ownership	Type of Information	Location of information e.g.				Used and/ or maintained
			Paper doc	Web site	Electronic doc	Data	
Public domain		Brochure	√				U
Internal		Operational plans			√		M
Internal		Policies	√	√	√		U and M
External		Business cards	√				M
Internal		System 'X'				√	U

The frequency of a document's current use also needs to be determined along with its validity – how correct it is. The focus needs to be on making information that is used frequently, more easily available and ensure this information is valid. Little benefit would be derived in focusing on information that is little used and only needs minor corrections.

As far as determining qualitative assessments of the different documents, a chart like the one below can be used.

Figure 7. 7. Document Categorisation and Prioritisation

	High	Medium	Low
Frequency of use	Every day. High awareness of existence.	Could be used more but alternatives exist.	Low awareness. Less than monthly Information not required.
Availability	Quick to access or search Well structured and presented. Available on every desktop	Difficult to use. Historic information not available. Technical or admin. issues. Too much irrelevant detail. Supplies run out.	Not normally available at the front end. Not easy to find.
Validity	Clear ownership. Quality processes exist. Up-to-date. Formally approved changes. Information complete.	No process to log errors. Some out of date versions. Obsolete information.	Clearly incorrect information.

Explicit information sources are found in leaflets, brochures, on the intranet and Internet, in computer applications that provide access to embedded databases or those that represent information through their functionality. However, tacit knowledge, in its explicit form should have been captured and integrated into the document control system enabling the organization to benefit.

Issues that need to be resolved in ensuring the development of a sound documentation system include:

- Lack of quality control
- Too much irrelevant/obsolete information
- Information out of date
- Restricted access to information
- Information sources not well integrated
- Information not detailed enough
- Old information needed no longer available
- No alerts to notify changes
- Insufficient change control
- New information published too late
- Ease of use/access
- Ineffective training/help
- Inadequate search functionality
- Insufficient knowledge management staff
- Missing information
- Information should be better structured

- Wrong channel used.

Other areas to consider in ensuring that a sound documentation system is in operation are:

- Continuous improvement/opportunities, ability for the documentation system to improve or be modified
- Information architecture that supports what is required
- Relevant information /knowledge based processes – clear documented agreed processes and are effective and can be improved
- Sound technology – an integrated technology platform which is robust, supports both back and front office government functions and its interface with the public allows for future development
- Organizational roles – clearly defined roles to ensure the documentation system operates effectively and evolves as needs/requirements change
- Training – to emphasise the importance of document management and to support standardisation of approaches.

Managing Consultants

In back office integration, consultants are often used in three main areas:

- as catalysts for change where their skills in management processes and organizational development are used to stimulate internal change
- to provide specialist project management capability
- to support delivery of the technology

Effective use of consultants can supplement existing in-house resources and contribute to a successful project. However, it is not uncommon to find ineffective use of consultants, which leads to cost escalation and can, through role confusion and lack of project control, directly contribute to project failure.

The use of consultants is best planned at the outset as part of scoping a project and assessing skill and resource requirements. This enables a planned and controlled use of consultants. The introduction of consultants on an unplanned basis part way through a project is usually a good indicator of a failing project and will, accordingly, be more expensive.

Selecting and managing consultants effectively requires:

- A clear brief detailing of what is required from the consultancy support
- Defined deliverables that can be measured
- A timetable for the deliverables linked into the overall project timetable
- Clear governance arrangements, how they will be managed, who they will report to, who they will take instructions from and who will agree to any variations to the work requirement
- Defined payment methods, ideally linked to the delivery of specific outcomes and involving as a minimum, a separation between the person confirming that outcomes have been met and the person authorising the payment

To avoid nepotism and corruption in the selection of consultants, which is a factor that has been identified with e-government project failure, recruitment of consultants should be based on a specification for the work, opened to competition and involve an assessment of their previous work both through references and, ideally, site-visits to previous clients. For large scale consultancy support, the selection process should follow a normal procurement process involving competitive bids and ideally involving a number of people in the selection process – both those who will manage the consultants and those they will work with.

Whilst the procurement of major consultancy support from large consultancy companies is often handled well, the procurement of individual consultants may be far less robust, is open to abuse and requires particular attention even in countries and organizations with well developed procurement processes.

Consultancy staff will have the same requirements as in-house staff for an effective induction into the organization. This provides an opportunity not only to inform the consultants of policies and procedures but also to explore and identify cultural differences in ways of working and ways of communicating that may prove problematic if not addressed at the outset.

Whilst the project is in progress it is good practice and cost effective for the future, to require consultants to transfer essential knowledge in the form of capabilities, know-how and best practices to the in-house team. This should be a requirement in the original specification.

Underpinning any consultancy arrangement will be a contract which will be written in accordance with the legislative requirements and general practices of particular countries. Some common pitfalls of early e-government projects can be avoided if national legislation allows the contractual arrangements to cover mutual obligations and expectations in areas such as intellectual property rights for work developed as part of the project, confidentiality arrangements, procedures for dispute resolution, rights and limitations to sub-contracting and limitations on recruiting the clients' staff.

Redesigning Processes

Successful back office integration will result in new processes supported by new technology. This is an area where considerable time and expense is generally incurred. Traditional approaches will involve mapping current processes, the 'what is' analysis, and mapping new processes, the 'to be' analysis. This gap analysis is then used to develop and implement new processes and train staff in their application.

It is however, not uncommon for much of the work mapping existing processes to be largely redundant. This occurs when the level of change results in significant alteration to processes and ways of working and the 'what is' offers no guide to the 'to be' processes. In these situations considerable saving in effort (and expense) can be achieved through focusing on the outputs from the current processes (as opposed to process maps) through a hierarchical task analysis methodology such as is used in knowledge transfer. This will ensure that desired outputs are not lost in the transition to new ways of working. Combining this with an analysis of desired outputs post integration will enable the investment in process mapping to focus on the 'to be' processes, ensuring these are fit to deliver the required outputs.

Process design work can also benefit, in terms of the development and staff training costs as well as ease of use, through clear protocols, standardised routines and generic business rules, particularly in common and repetitive elements such as exception reporting, service failure and error handling requirements.

Common steps in managing the development and implementation of new processes include:

- Identifying the desired outputs from the system post implementation
- Categorising the desired outputs into essential and desirable
- Prioritising the desired outputs and by time frame (immediate, medium term and long term)
- Obtaining 'sign-off' on outputs from key stakeholders
- Designing new processes to deliver required outputs (focusing on immediate and essential)
- Engaging operational staff in designing /reviewing process maps
- Producing and testing individual processes with the relevant staff and with system capacity
- Obtaining business 'sign-off' on new processes
- Designing or modifying the existing quality assurance and control processes to fit in with the new requirements and system
- Ensuring there are appropriate security protocols/regulatory integrity
- Implementing new processes
- Reviewing and amending processes post implementation in consultation with staff and users

The complexity and level of revisions that 'to be' processes undergo, make proper documentation and document control essential disciplines. This ranges from clear accountability for 'sign-off' to established consultation and communication protocols between those engaged in process design and those likely to utilise them.

The process design will encompass the control aspects around system access and data security. Determining and recording who is allowed to access data and services and at what level will need to be documented and should include role definitions, security classifications and access rights. Key to this will be a task based approach which assigns 'rights' on work requirements rather than seniority or position. This avoids future problems with data integrity and maintains transparency and accountability.

With government services, process design will also need to encompass statutory requirements which may not be applicable to, or understood by, private sector suppliers and partners. For example, within the UK, the 'Government Connect'[220] service linking central and local government and other agencies required both a technological platform and a legislative platform.

There is a balance in process design and implementation between specifying what reality will be, based on desired outcomes, and then ensuring it conforms, and adjusting processes to what reality actually is. This requires a clear understanding of the limitations acting upon the processes, whether in terms of what is acceptable to users,

[220] The Welfare Reform Act provides the legislative platform for the 'Government Connect' Secure Intranet. The GSI includes Her Majesty's Revenue and Customs, the Home Office, DVLA, amongst others.

legally required or a fundamental point of system architecture. Effectively managing the design process will involve establishing as many of these limitations as possible at the outset as part of understanding the design context. In practice, a number of the limitations will only become apparent as systems go live, which makes it advisable to maintain flexibility, facilitate feedback from operational staff and retain the capacity to respond rapidly to process re-design requirements.

Concluding Remarks

In the area of back office integration, there is often a significant gap between what is promised and what is delivered. In part this is due to a gap between design requirements and reality in a range of areas from the functionality of technology to the management skills necessary for delivery[221]. Once identified, this can be addressed through making reality conform to the design or making the design conform to the reality. Often making the design conform to the reality is the only realistic alternative and involves scaling down ambitions and limiting project scope to what is achievable.

Increasingly where projects fail to deliver anticipated benefits, it is not the lack of system functionality but a combination of factors including:

- The organizational culture and the values and beliefs of participants as opposed to the values and beliefs conducive to successful delivery of e-government
- Actual objectives of individuals, governments and government agencies as opposed to the shared objectives necessary to work together for the integration of back office functions across organizational boundaries
- The level of skills, knowledge and understanding within the existing workforce and within the local recruitment market and the robustness of HR practices and procedures to identify and deliver on training and development requirements
- The management capability to deliver complex change, manage consultants and strategic partners, engage with stakeholders and manage the transition process,
- The systems and structures in place for effectively managing projects
- The objectivity and ability to realistically assess the resources (primarily time and money) required for successful implementation and the determination to meet benefit realisation targets

Addressing these risks to successful implementation will involve:

- Identifying clear and agreed drivers for change and common objectives between stakeholders
- Determining the benefits to be realised in quantifiable terms and establishing the mechanisms to ensure achievement is monitored.
- Determining a delivery methodology which meets the requirements for bringing together the relevant expertise and resources and being clear on the implications legally and practically of managing the chosen delivery vehicle
- Building governance arrangements which are transparent, accountable and allow for full engagement of all stakeholders, creating clear accountability for delivery and empowering operational managers

[221] Heeks R. *'Design reality gap' Case Studies:* www.egov4dev.org

- Investing in analysis of existing culture, defining the desired culture and managing the cultural transition necessary
- Identifying and developing a competency framework to target investment in training and development and broadening investment in this area to include embedding learning skills within the organization and engaging with the development needs of the external local recruitment market
- Creating a framework of HR policies and practices that retrains staff through the transition, recognises and rewards desired behaviours and maintains effective and proactive communication and consultation mechanisms
- Developing systems and processes based around desired outputs and in consultation with staff and users
- Ensuring a disciplined approach to delivery including effective document control, knowledge management and management of project scope.
- Building capacity by gaining experience in the delivery of limited scope projects prior to large scale vertical and horizontal integration.

Additional Notes

Checklist for Back Office Integration

Table 1 Back Office Integration Checklist

Topic	Key Issues	Yes/No
Governance	Have governance arrangements been put in place? Are they transparent? Do they separate out strategic and operational delivery? Do they provide for stakeholder engagement? Do they ensure the project is integrated into the wider organizational/e-government agenda? Is there transparency over decision making and clear accountability for outputs? Is delegation of decision making clear and recorded so that all involved know at what level different decisions can be made and what needs to be reported upwards for approval/agreement? Are there mechanisms for resolving conflicts, determining priorities and reallocating resources?	
Scope	Is the scope clearly defined? Do you know what activities and areas are covered by the project and which are not? Are there mechanisms for controlling changes in scope? Has the scope for the project been agreed and 'signed-off' by relevant stakeholders/senior managers. Has it been communicated to all engaged in the project? Is it realistic?	
Benefits Realisation	Are expected benefits identified? Are mechanisms in place for measuring the delivery of expected benefits? Have these mechanisms been put in place at the outset of the project? Has a baseline been established from which to measure changes delivered? Is there a timescale for delivery of expected benefits?	
Work Stream Management	Have the delivery work streams been identified? Are there project sponsors for each work stream of sufficient seniority to address obstacles? Is there a mechanism for ensuring integration across work streams? Do work stream delivery teams have the right combinations of skills and experience? Do work stream leaders have sufficient authority to determine operational issues affecting delivery?	

Topic	Key Issues	Yes/No
Planning	Has a project plan been produced for each work stream? Does it specify timescales for delivery of each element? Does it show key dependencies? Is it realistic? Has it been agreed to by the project board? Is it regularly monitored and updated? Does it identify accountability for the delivery of each element?	
Risk Management	Have key risks to delivery been identified? Have they been quantified in terms of probability and impact? Have steps to mitigate risks been identified? Is a risk log maintained and regularly reported to projected board meetings? Is the risk log regularly updated?	
Culture Change	Has the scope of the culture change required been identified? Is there a strategy in place to address cultural issues? Is cultural awareness training being provided for key participants, particularly external providers/consultants? Is there an agreed 'language' and terminology for the project? Will the HR systems (recruitment, reward, recognition) reinforce the desired culture?	
Reporting and Decision Making	Are adequate reporting arrangements in place? Will there be standardised progress reports at regular intervals? Will progress reports be presented to each level in the governance structure without amendment? Will the progress report deal with failures/problems as well as successes? Will there be exception reporting for major issues? Is there a log of key decisions made? Does the decision log summarise the main reasons for each key decision and project variation? Does the decision log provide a clear audit trail of who decided what, when and why? Is the decision log reported through the governance arrangements and regularly monitored and updated?	
Project Staffing	Have staff been selected based on their skills, experience and attitudes? Is there training and support for staff engaged in the delivery of the project? Are there 'backfill' arrangements in place to cover their normal jobs (if internal staff)? Will there be incentives for sharing information and knowledge, working cooperatively, being flexible etc.	

Topic	Key Issues	Yes/No
Communications	Is there a communications plan in place to keep all affected staff and stakeholders informed? Are key decisions regularly communicated outside of the project team? Are there regular updates for staff representatives/trade unions? Is there a regular staff bulletin on progress?	
Project Management	Is there an agreed and standardised approach to project management covering all work streams? Is it clearly understood? Has training been provided in the project management system for work stream leaders and senior staff? Is there clarity over roles and responsibilities under the project management system?	
Skills Development	Have the skills and competencies required for delivering the changes and working in the new environment been identified? Are there costed training plans for developing the skills and competencies required to deliver the changes and to work in the new environment? Are these plans linked to the delivery timetable? Will the training include assessment of the capability of staff to work in the new environment? Are there contingency plans in place to deal with staff lacking the capability or willingness to work in the new environment?	
Knowledge Transfer	Have the key outputs from the areas to be integrated been identified? Have the outputs been reviewed to ensure continuing relevance? Have the skills and knowledge required for the outputs been captured? Does this include tacit as well as explicit knowledge? Will the new processes be able to deliver the outputs required?	
Process Re-engineering	Have model new processes been mapped? Have existing desired outputs to be supported by the new processes been captured and recorded? Have new outputs required from the new processes been identified? Is there a plan to move from existing to new processes? Has the dependency at each stage on new technology been identified? Has the training requirement been identified, costed and included in the plan?	
Financial Management	Is there a robust system for financial management of the project in place? Is there an agreed budget for the project with clear accountability for spending decisions? Is the budget realistic? Are the assumptions made for	

Topic	Key Issues	Yes/No
	building the budget clear and transparent? Is there a process for regular budget review? Is there a process for recording, explaining and approving changes to the budget?	
Leadership	Is there a clear leader accountable for overall delivery of the project at senior management level? Does the project leader have delegated authority for decision making? Are the parameters to the leaders' decision making clearly identified? Have leaders been appointed on a similar basis for each element of the project and each work stream? Is there a common understanding of the leadership role? Has this been explored and reinforced through training and development? Have leaders been appointed on the basis of objective criteria related to skills and competency?	

(Source: Harman and Brelade 2007)

Table 2 Drivers for Information and Data Sharing

Drivers for information and data sharing	OECD countries
Public sector business processes can be made more efficient and streamlined.	Australia, Austria, Belgium, Denmark, Finland, France, Hungary, Japan, Luxemburg, Mexico, New Zealand, Spain, Switzerland, Turkey, USA.
Public sector service delivery can be made more effective.	Australia, Austria, Belgium, Denmark, Finland, Hungary, Japan, Luxemburg, Mexico, New Zealand, Spain, Switzerland, Turkey, USA.
Public sector service delivery can be made more user-focused.	Australia, Austria, Belgium, Denmark, Finland, France, Hungary, Japan, Luxemburg, Mexico, New Zealand, Spain, Turkey, USA.
Public sector can develop and implement better decisions and policies.	Australia, Austria, Belgium, Denmark, Japan, Luxemburg, Mexico, New Zealand, Spain, Turkey, USA.
Public sector can reduce administrative burden on citizens and businesses.	Australia, Austria, Belgium, Denmark, Finland, France, Hungary, Japan, Luxemburg, Mexico, New Zealand, Spain, Switzerland, Turkey, USA.
The quality of information and data in the public sector can be increased.	Australia, Austria, Belgium, Denmark, Finland, Japan, Luxemburg, Mexico, New Zealand, Spain, USA.
Citizens and businesses should only need to deliver information and data once to the public sector.	Australia, Austria, Belgium, Denmark, Finland, France, Japan, Luxemburg, Mexico, New Zealand, Spain, USA.
Citizens and businesses demand seamless services without regard to how the public sector has divided its tasks and responsibilities.	Australia, Austria, Belgium, Denmark, France, Hungary, Japan, Luxemburg, Mexico, New Zealand, Spain, Turkey, USA.
Other drivers:	Australia: A more connected approach to service delivery and information technology means greater use of more cost-effective service delivery channels. USA: The homeland can be better protected. The global war on terror can be assisted by improved information sharing within the public sector.

(Source: OECD questionnaire: E-Government as a Tool for Transformation, 2007. Question 7.)

Chapter VIII
Conclusions and Policy Issues

The findings of this survey underscore the manner by which e-government has emerged as a multi-faceted concept linked to the vertical and horizontal integration of government both locally, nationally and transnationally. For some, especially those focused on improving access and delivery of services, this is primarily about the front end interface with customers and citizens. It is about providing better organized, aligned and often integrated information flows, new transactional capacities, as well as new mechanisms for feedback, consultation and more participative forms of democracy. For others, especially those engaged in the management and delivery of public administration, it is about driving down costs and improving the effectiveness and efficiency of 'back-office' functions and the basic machinery of government. For those working at the transnational level it is about removing the barriers to international cooperation and development and creating an agenda of connected governance globally. For different stakeholders, different facets will provide the driver for change and the motivation to engage with e-government and the modernisation agenda.

For public sector managers e-government symbolizes the immensely complicated set of challenges in creating more interoperable architectures in order to facilitate front end outcomes – either by the release of resources which would otherwise be deployed in back office processing or through improvements in business processes and information management that enable front end delivery and social policy development. From this perspective, the practicalities of implementing and maximising the functionality of often complex and expensive technological solutions is central. Linked to this is the need to transform traditional ways of working within public service and develop organizational cultures that recognise and reward those who embrace change and respond positively to the requirements of the new environment. This is an agenda of organizational transformation that sits alongside the transformation of government implicit in the concept of a connected world.

E-government's parameters do not stop at the boundaries of the public sector. The increasing scope of outsourcing activity and public-private partnerships is but one example, another being the widening engagement of online communities of interest that exert influence on government. E-government has also come to represent a wider prism of e-governance and e-readiness for a jurisdiction as a whole (typically a country, but also continents and more tentatively the world as an interconnected entity), as many parts of the world continue to struggle with the policies and investments associated with not only technological infrastructure such as broadband and wireless Internet access and interactive digital broadcasting, but also the widespread adoption and usage of such technologies by citizens, companies and communities as a whole.

These concentric dimensions highlight the fundamental challenge of adapting governmental, industrial and societal institutions to an increasingly digital and interdependent world. E-government thus becomes a more encompassing framework of connected governance both locally, nationally and transnationally.

This is not to say however that e-government cannot and should not be parcelled out and pursued in more precise segments. It is likely that successful implementation of e-

government initiatives will depend on this ability to segment and build 'bottom-up' given the practical complexities of implementation. Rather it is to say that any such segmentation should be situated within a broader and more holistic perspective of connected governance. That local and national solutions should be framed within this wider perspective enables better recognition of the inter-related dimensions of change both inside and outside of the public sector.

This recognition is important, for instance, with respect to the linkages between frontline service delivery capacities and backroom infrastructure. A recent report by PricewaterhouseCooopers puts forth the following ten questions that public sector organizations should ask themselves in order to adequately pursue customer-centricity:

1. *Do you have clarity on your customers' needs and preferences?*

2. *Is access to your organization and information straightforward?*

3. *Is the customer dealing with numerous hand-offs and with too many agencies to solve the enquiry?*

4. *Is the customer getting effective support from your organization?*

5. *Are those customers with specialist needs getting the right support?*

6. *What are the first-time resolution rates?*

7. *Is your organization leveraging efficiency to redeploy to front-line services?*

8. *Are the employees motivated and equipped with the right tools for delivering an excellent service?*

9. *Is your customer service function fit for the future challenge?*

10. *Do you have the capability to track the benefits of change?*[222]

As important as these questions are, the logic of connected governance goes beyond viewing the public as a 'customer' and as a service recipient, as e-government must also facilitate strengthened democratic accountability and more socially inclusive governance, a key theme of the United Nations Global E-Government Readiness Report 2005, as well as improved social policy decision making based on improvements in the availability, timeliness and accuracy of information. Here is where connected governance demands that e-government is a driver of not only more sophisticated service channels for the most sophisticated technological users (a critically important group often spurring innovation and service improvement), but also a platform for expanded participative capacities for the citizenry as a whole, improvements in the relevance and transparency of public policy decisions and a vehicle for building trust in government.

[222] "The Road Ahead for Public Service Delivery -- Delivering on the Customer Promise." PricewaterhouseCoopers (2007).

As with the Nordic countries that have typically been the leaders in both e-readiness and more narrowly defined service conceptions of e-government, it is this economically and socially inclusive approach to fostering a digital infrastructure that has been an important conceptual spur to e-government development within parts of the public sector, and in terms of prioritising interactivity between government organizations and citizens. Despite growing recognition of this broader lens, e-government in many countries is often defined as a set of specific initiatives on the outer quadrants of this framework.

Whilst this pragmaticism is important for launching e-government initiatives – as it is often the case that it is the experience and capacity developed in the delivery of small scale e-government projects that enables the successful delivery of large scale vertical and horizontal integration – it is the wider vision, the holistic viewpoint, that places e-government at the centre in terms of leadership, consensus, policies and institutions, and that leads to the maximisation of the benefits locally, nationally and transnationally and the creation of connected governance in a connected world.

With respect to vision and leadership, these central ingredients perhaps more than any other explain the sustained progress of many developed countries in recent years. This vision and leadership is not just at the national level or confined to central government. Progress in these developed countries is equally dependent on that leadership and vision permeating the entire infrastructure of government as it is an essential requirement to successful delivery of e-government projects and back-office integration on the ground. A faltering of leadership and vision, whether at the national level or in the delivery of an e-government solution, is a recipe for stagnation nationally and of failure locally. This has created increased focus not just on the creation of a national vision and on national leadership, but on the means and methodology of instilling leadership into the public service ethos and to a transformation away from the traditional administrative models of management within that sector.

For the delivery of e-government and back office integration, this emphasis on leadership, on new models of management and new ways of working, has been one of the most significant challenges and a key determinant of success. It has led to, on the one hand, to significant investment in training and development of public sector staff and, on the other, to significant disruption to traditional public sector career structures and to the perceived safety and security of public sector jobs. This un-intended consequence of e-government and back office integration has created unrest at the heart of the machinery of government that requires clear and visible leadership to address.

At the national level, vision and leadership have also been crucial to unleashing the emergence and progress of countries such as the Republic of Korea and the Baltic republics as e-government champions on a broader societal plane. A similar trend is apparent in Africa, where progress is entirely dependent on the pursuit of e-government as both a technological infrastructure and a driver for economic and social and political development – although perhaps hampered by the financial and human resources requirements for successful delivery of e-government solutions and a high dependency on external and sometimes culturally insensitive and external support.

With respect to consensus, both in its delivery and its wider framing as connected governance, e-government highlights the centrality of collective intelligence across boundaries and the importance of a discursive process of stakeholder engagement.

These boundaries may be the boundaries within and between agencies involved in the delivery of government services, or they may be the jurisdictional boundaries between governments and governmental bodies. Here the transformational potential of connected governance as well as the delivery of e-government solutions, is dependent not on the action of one agency or one national authority acting alone but on wider agreement between different stakeholders working to a common aim, with common objectives and a common understanding. At the national level this may be between industry, government and the non-profit sector, working together to address the opportunities and threats. At the delivery level this will be between those affected both by implementation and anticipated outcomes, whether citizens or service users, staff and managers, politicians or trade unions.

At the national and international level, the increasing mobility of commerce and people mean that the challenges and risks of the connected world are more than mere imaginary. The provision of goods and services, global banking, taxation, immigration, security, environmental impacts and global health systems are all becoming more closely intertwined. E-government, from a global perspective, can accordingly be seen as a central dimension of the world's capacity to respond to the challenges this creates – whether these challenges are to the revenue raising capacities of national governments arising from the free movement of capital and the advent of on-line purchasing or the challenges presented to national security by terrorism or the challenge of global environmental issues such as climate change.

E-government and back-office integration can provide both the inherent control available through centralised and integrated real-time information management as well as the facility to collate information, share and learn. Viewed positively, it can create the conditions for global dialogue and cooperation, and facilitate the concrete measures that are required to address global problems. Viewed negatively however, e-government and back office integration can easily be seen as one more manifestation of a globalized and impersonalised economy and a tool for repression and dominance rather than enablement and empowerment. For this reason, there is a particular responsibility for international organizations, such as the United Nations, to take a lead in promoting the positive benefits of e-government and building consensus on the people and citizen centric nature of the direction of travel for a connected world.

Only from this consensus can there be a realistic chance for the emergence of policy and institutional reforms that are truly transformational for the jurisdiction as a whole. This point applies not only to the framing and pursuit of e-government as connected governance within countries as a whole, but also transnationally where such challenges as collective security and climate change reinforce the interdependence of commercial, societal and ecological action, as well as the need for strengthened global governance.

There may indeed exist an important alliance between civil society and the private sector in this regard, as the sustainability and stakeholder movements of corporate action have grown in prominence. The values of global openness, responsiveness and democratization that drive many (but not all) segments of civil society may also serve as the basis of a partnership with transnational corporations prepared to embrace wider stakeholder commitments to global development and support the implementation of connected governance as a practical and commercially meaningful response.

Spurred by such rising global awareness and attention, a case for optimism for many developing countries also rests in part on the growing presence of e-government and e-governance as key elements of reform agendas. Including these elements as part of a reform agenda entails developing the capacity, both human and technological, to deliver. This in turn entails an investment in training and development, the benefits of which will not be confined to the implementation of e-government and back office integration alone. Any driver that leads to improvements in education and skills can only be seen as a positive contributor to wider social and economic regeneration.

Underpinning this movement is also the expansion of a telecommunications infrastructure at impressive, albeit uneven, speeds – most notably the penetration rates of mobile phones to growing segments of the African population. This in turn will impact on the dissemination of information, facilitate learning, and create a 'virtuous circle', thereby reinforcing the modernisation agenda.

The great leap that is required in terms of governance building involves several inter-related elements transnationally, nationally and locally. At the transnational level it requires ensuring greater interoperability between national, regional and global institutions in order to improve transparency, legitimacy and trust. It also suggests the need for significantly reforming the traditional model of international assistance within developed countries, currently formulated on a bilateral basis, in favour of larger, more ambitious and better orchestrated mechanisms to both design and deliver aid solutions through such an interoperable governance framework. At the national level it involves creating a common framework and common standards of interoperability for e-government solutions and promoting stakeholder engagement in local delivery. At the local level, in the delivery of e-government solutions and back office integration, it requires clear and transparent governance arrangements that maintain accountability, reduce potential corruption and engage stakeholders whilst maintaining appropriate separation between operational delivery, strategy and political oversight. Only where good governance is embraced will the development and delivery of e-government avoid distortion by the vested stakeholder interests that, understandably, exist at the individual, national and transnational levels.

In confronting digital and developmental divides, whether locally or from a global plane, one of the most important lessons to be derived from the experiences of developed countries is the importance of collaboration between actors. Even in unitary government systems, where central governments can more easily impose decisions on other, 'subordinate' public sector levels, leading e-government countries such as Denmark have demonstrated that collaboration provides a better path. In more formal federalist structures, collaboration is essential in overcoming constitutional and jurisdictional boundaries that are not so different than borders between countries.

The lesson here is that where power and decision-making authority must be shared, whether between or within governments, at the level of governmental agencies and organizational units or between individuals (whether politician, public servant, religious or military leader or ordinary citizen), the willingness and the ability to collaborate are essential for positive transformation to occur. This may occur through the recognition and acceptance of a common objective but more often has to be encouraged through incentives that operate at the individual as well as collective level. Just as organizations can provide incentives for collaboration through their people management systems, so central governments can provide incentives to public sector organizations and citizens

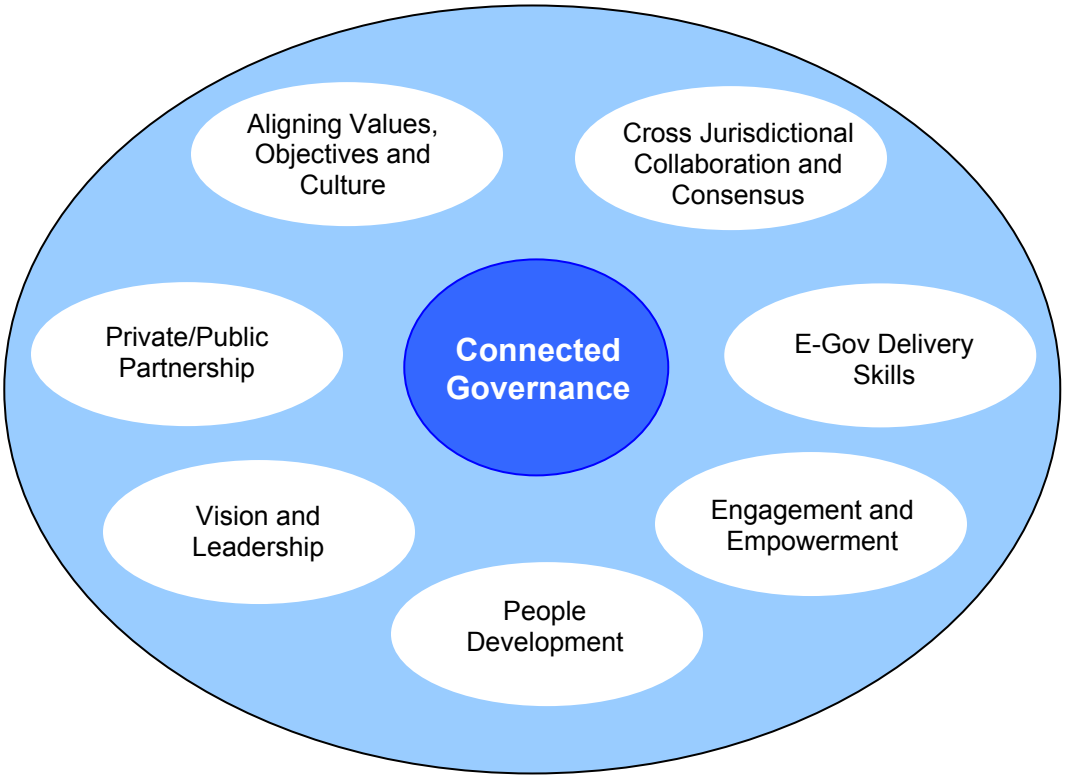
through resource allocation and budgetary management systems. Similarly transnational bodies can provide incentives to national governments through programmes of support (whether financial or technical) and recognition.

Inter-jurisdictional collaboration, both within and between governmental agencies and across the public/private sector divide, is becoming an important dimension of domestic transformation in many leading e-government countries. This collaboration is manifested in the delivery of e-government projects which bridge these divides, requiring an alignment of culture and values as well as the application of practical disciplines such as project management, business process re-engineering and document control – a fundamental aspect of good governance and the basis for the rule of law. It is also seen in the methodology for implementing e-government solutions, through strategic partnerships between the public and private sectors, outsourcing and the use of external consultants to support in-house resources. It is the connected and transformational nature of e-government, together with its complexity and, often, its resource intensity, that drives such partnerships.

Partnerships to deliver inter-jurisdictional collaboration also hold the key to better relationships between countries, both regionally and globally. If the world is to make e-government a project of convergence between the developed and developing worlds, global governance bodies will need to devise ways to provide the necessary incentives and recognition for more systemic collaboration across national boundaries.

Such bodies should themselves be partnerships comprising contributing actors such as inter-governmental organizations, private corporations and their spin-off foundations, and other non-governmental organizations. One such model within the developed world has been the series of country studies undertaken by the OECD, initiatives nonetheless funded by recipient countries themselves.

Figure 8.1. Transformation Agenda for Connected Governance (Harman & Roy 2007)



An important new role for UNDESA might be akin to such an approach, where UNDESA leverages resources provided by a variety of sources in order to undertake in-depth evaluations of e-government strategies within developing countries that agree to sign on to such a program. While the results of any such studies should be made publicly available online, the willingness to act upon them must come from within the participating country. A formalized reporting mechanism between the country's government and international actors could ideally encourage monitoring and dialogue, precursors to some form of shared accountability for results.

Within such a framework, UNDESA is also well placed to play a key role in access to, and transfer of, the knowledge and skills necessary for the successful delivery of e-government solutions at the practical level of systems implementation and delivery, leveraging the knowledge resources available to it.

In connected governance and back office integration, there is a continuing gap between what is promised and what is delivered – both to governments and to citizens. UNSESA is ideally placed to help close this gap.

ANNEX ONE

TABLES

Table 1
E-Government Readiness Index 2008

	Country	Index
1	Sweden	0.9157
2	Denmark	0.9134
3	Norway	0.8921
4	United States	0.8644
5	Netherlands	0.8631
6	Republic of Korea	0.8317
7	Canada	0.8172
8	Australia	0.8108
9	France	0.8038
10	United Kingdom	0.7872
11	Japan	0.7703
12	Switzerland	0.7626
13	Estonia	0.7600
14	Luxembourg	0.7512
15	Finland	0.7488
16	Austria	0.7428
17	Israel	0.7393
18	New Zealand	0.7392
19	Ireland	0.7296
20	Spain	0.7228
21	Iceland	0.7176
22	Germany	0.7136
23	Singapore	0.7009
24	Belgium	0.6779
25	Czech Republic	0.6696
26	Slovenia	0.6681
27	Italy	0.6680
28	Lithuania	0.6617
29	Malta	0.6582
30	Hungary	0.6494
31	Portugal	0.6479
32	United Arab Emirates	0.6301
33	Poland	0.6134
34	Malaysia	0.6063
35	Cyprus	0.6019
36	Latvia	0.5944
37	Mexico	0.5893
38	Slovakia	0.5889
39	Argentina	0.5844
40	Chile	0.5819
41	Ukraine	0.5728
42	Bahrain	0.5723
43	Bulgaria	0.5719
44	Greece	0.5718
45	Brazil	0.5679

	Country	Index
46	Barbados	0.5667
47	Croatia	0.5650
48	Uruguay	0.5645
49	Liechtenstein	0.5486
50	Jordan	0.5480
51	Romania	0.5383
52	Colombia	0.5317
53	Qatar	0.5314
54	Trinidad and Tobago	0.5307
55	Peru	0.5252
56	Belarus	0.5213
57	Kuwait	0.5202
58	Andorra	0.5175
59	Costa Rica	0.5144
60	Russian Federation	0.5120
61	South Africa	0.5115
62	Venezuela	0.5095
63	Mauritius	0.5086
64	Thailand	0.5031
65	China	0.5017
66	Philippines	0.5001
67	El Salvador	0.4974
68	Dominican Republic	0.4943
69	Seychelles	0.4942
70	Saudi Arabia	0.4935
71	Bahamas	0.4911
72	Bolivia	0.4867
73	T.F.Y.R. Macedonia	0.4866
74	Lebanon	0.4840
75	Ecuador	0.4840
76	Turkey	0.4834
77	Serbia	0.4828
78	Saint Kitts and Nevis	0.4814
79	Egypt	0.4767
80	Saint Lucia	0.4746
81	Kazakhstan	0.4743
82	Mongolia	0.4735
83	Panama	0.4718
84	Oman	0.4691
85	Jamaica	0.4679
86	Albania	0.4670
87	Brunei Darussalam	0.4667
88	Paraguay	0.4654
89	Azerbaijan	0.4609
90	Georgia	0.4598
91	Viet Nam	0.4558
92	Grenada	0.4545
93	Republic of Moldova	0.4510

	Country	Index
94	Bosnia and Herzegovina	0.4509
95	Maldives	0.4491
96	Antigua and Barbuda	0.4485
97	Guyana	0.4375
98	Saint Vincent and the Grenadines	0.4306
99	Guatemala	0.4283
100	Montenegro	0.4282
101	Sri Lanka	0.4244
102	Kyrgyzstan	0.4195
103	Armenia	0.4182
104	Cape Verde	0.4158
105	Fiji	0.4156
106	Indonesia	0.4107
107	Belize	0.4102
108	Iran (Islamic Rep. of)	0.4067
109	Uzbekistan	0.4057
110	Honduras	0.4048
111	Cuba	0.3990
112	Tonga	0.3950
113	India	0.3814
114	Lesotho	0.3805
115	Samoa	0.3761
116	Dominica	0.3746
117	Nicaragua	0.3668
118	Botswana	0.3647
119	Syrian Arab Republic	0.3614
120	Libyan Arab Jamahiriya	0.3546
121	Algeria	0.3515
122	Kenya	0.3474
123	Suriname	0.3472
124	Tunisia	0.3458
125	Swaziland	0.3454
126	Namibia	0.3445
127	Angola	0.3328
128	Turkmenistan	0.3262
129	Gabon	0.3228
130	Sao Tome and Principe	0.3215
131	Pakistan	0.3160
132	Tajikistan	0.3150
133	Uganda	0.3133
134	Bhutan	0.3074
135	Madagascar	0.3065
136	Nigeria	0.3063
137	Cambodia	0.3017
138	Zimbabwe	0.3000
139	Ghana	0.2997
140	Morocco	0.2944
141	Rwanda	0.2941

	Country	Index
142	Bangladesh	0.2936
143	United Republic of Tanzania	0.2929
144	Myanmar	0.2922
145	Equatorial Guinea	0.2890
146	Malawi	0.2878
147	Cameroon	0.2855
148	Solomon Islands	0.2748
149	Congo	0.2737
150	Nepal	0.2725
151	Iraq	0.2690
152	Mozambique	0.2559
153	Senegal	0.2531
154	Vanuatu	0.2510
155	Timor-Leste	0.2462
156	Lao People's Democratic Republic	0.2383
157	Djibouti	0.2279
158	Zambia	0.2266
159	Gambia	0.2253
160	Togo	0.2191
161	Sudan	0.2186
162	Democratic Republic of the Congo	0.2177
163	Liberia	0.2170
164	Yemen	0.2142
165	Haiti	0.2097
166	Papua New Guinea	0.2078
167	Afghanistan	0.2048
168	Mauritania	0.2028
169	Eritrea	0.1965
170	Comoros	0.1896
171	Benin	0.1860
172	Ethiopia	0.1857
173	Cote d'Ivoire	0.1853
174	Burundi	0.1788
175	Mali	0.1591
176	Burkina Faso	0.1542
177	Guinea-Bissau	0.1521
178	Sierra Leone	0.1463
179	Central African Rep.	0.1412
180	Guinea	0.1402
181	Niger	0.1142
182	Chad	0.1047

Table 2
E-Government Readiness Data 2008

	Country	Web Measure Index	Infrastructure Index	Human Capital Index	E-Government Readiness Index
1	Afghanistan	0.2676	0.016	0.329	0.2048
2	Albania	0.3913	0.125	0.887	0.4670
3	Algeria	0.2241	0.123	0.711	0.3515
4	Andorra	0.2843	0.407	0.869	0.5175
5	Angola	0.4381	0.022	0.535	0.3328
6	Antigua and Barbuda	0.1405	0.389	0.825	0.4485
7	Argentina	0.5585	0.248	0.947	0.5844
8	Armenia	0.2709	0.089	0.899	0.4182
9	Australia	0.7525	0.688	0.993	0.8108
10	Austria	0.6656	0.599	0.966	0.7428
11	Azerbaijan	0.3946	0.108	0.882	0.4609
12	Bahamas	0.3010	0.303	0.875	0.4911
13	Bahrain	0.5201	0.335	0.864	0.5723
14	Bangladesh	0.3512	0.025	0.503	0.2936
15	Barbados	0.3010	0.446	0.961	0.5667
16	Belarus	0.3278	0.282	0.960	0.5213
17	Belgium	0.5385	0.522	0.977	0.6779
18	Belize	0.3043	0.156	0.773	0.4102
19	Benin	0.1237	0.036	0.400	0.1860
20	Bhutan	0.4080	0.024	0.487	0.3074
21	Bolivia	0.5217	0.072	0.865	0.4867
22	Bosnia and Herzegovina	0.2943	0.189	0.874	0.4509
23	Botswana	0.2174	0.108	0.773	0.3647
24	Brazil	0.6020	0.218	0.883	0.5679
25	Brunei Darussalam	0.2642	0.265	0.877	0.4667
26	Bulgaria	0.4849	0.307	0.926	0.5719
27	Burkina Faso	0.1940	0.013	0.255	0.1542
28	Burundi	0.0134	0.006	0.522	0.1788
29	Cambodia	0.1973	0.020	0.691	0.3017
30	Cameroon	0.1371	0.064	0.660	0.2855
31	Canada	0.7659	0.697	0.991	0.8172
32	Cape Verde	0.3880	0.097	0.763	0.4158
33	Central African Rep.	0.0000	0.005	0.423	0.1412
34	Chad	0.0134	0.007	0.296	0.1047
35	Chile	0.5635	0.268	0.914	0.5819
36	China	0.5084	0.160	0.837	0.5017
37	Colombia	0.5552	0.170	0.869	0.5317
38	Comoros	0.0268	0.014	0.533	0.1896
39	Congo	0.0702	0.021	0.736	0.2737
40	Costa Rica	0.4415	0.228	0.876	0.5144
41	Cote d'Ivoire	0.0635	0.039	0.457	0.1853

	Country	Web Measure Index	Infrastructure Index	Human Capital Index	E-Government Readiness Index
42	Croatia	0.4314	0.368	0.899	0.5650
43	Cuba	0.2140	0.031	0.957	0.3990
44	Cyprus	0.4783	0.427	0.904	0.6019
45	Czech Republic	0.6455	0.428	0.936	0.6696
46	Democratic People's Rep. of Korea	0.0201	0.009	…	0.0000
47	Democratic Republic of the Congo	0.0870	0.010	0.560	0.2177
48	Denmark	1.0000	0.744	0.993	0.9134
49	Djibouti	0.1137	0.020	0.553	0.2279
50	Dominica	0.0067	0.272	0.857	0.3746
51	Dominican Republic	0.5084	0.147	0.827	0.4943
52	Ecuador	0.4448	0.152	0.857	0.4840
53	Egypt	0.6054	0.089	0.732	0.4767
54	El Salvador	0.5786	0.139	0.772	0.4974
55	Equatorial Guinea	0.0635	0.037	0.773	0.2890
56	Eritrea	0.0635	0.009	0.521	0.1965
57	Estonia	0.7124	0.596	0.973	0.7600
58	Ethiopia	0.1739	0.004	0.380	0.1857
59	Fiji	0.2742	0.098	0.879	0.4156
60	Finland	0.6321	0.625	0.993	0.7488
61	France	0.8294	0.599	0.982	0.8038
62	Gabon	0.0769	0.097	0.801	0.3228
63	Gambia	0.1739	0.053	0.450	0.2253
64	Georgia	0.3545	0.107	0.921	0.4598
65	Germany	0.5753	0.616	0.953	0.7136
66	Ghana	0.2943	0.041	0.564	0.2997
67	Greece	0.4147	0.336	0.970	0.5718
68	Grenada	0.2742	0.211	0.884	0.4545
69	Guatemala	0.4749	0.124	0.685	0.4283
70	Guinea	0.0702	0.006	0.347	0.1402
71	Guinea-Bissau	0.0234	0.016	0.421	0.1521
72	Guyana	0.2375	0.138	0.943	0.4375
73	Haiti	0.0635	0.028	0.542	0.2097
74	Honduras	0.3712	0.074	0.771	0.4048
75	Hungary	0.6171	0.372	0.960	0.6494
76	Iceland	0.4615	0.721	0.978	0.7176
77	India	0.4783	0.044	0.620	0.3814
78	Indonesia	0.3344	0.070	0.830	0.4107
79	Iran (Islamic Rep. of)	0.2575	0.175	0.792	0.4067
80	Iraq	0.1070	0.013	0.692	0.2690
81	Ireland	0.6756	0.522	0.993	0.7296
82	Israel	0.6656	0.609	0.946	0.7393
83	Italy	0.5117	0.539	0.958	0.6680
84	Jamaica	0.3211	0.295	0.792	0.4679

	Country	Web Measure Index	Infrastructure Index	Human Capital Index	E-Government Readiness Index
85	Japan	0.7425	0.623	0.946	0.7703
86	Jordan	0.6054	0.169	0.868	0.5480
87	Kazakhstan	0.3211	0.131	0.976	0.4743
88	Kenya	0.3043	0.046	0.693	0.3474
89	Kiribati	0.0669	0.018	…	0.0000
90	Kuwait	0.4147	0.278	0.871	0.5202
91	Kyrgyzstan	0.2977	0.047	0.917	0.4195
92	Lao People's Democratic Republic	0.0368	0.021	0.663	0.2383
93	Latvia	0.4482	0.374	0.965	0.5944
94	Lebanon	0.3913	0.193	0.871	0.4840
95	Lesotho	0.3445	0.030	0.768	0.3805
96	Liberia	0.1104	0.006	0.538	0.2170
97	Libyan Arab Jamahiriya	0.0803	0.117	0.875	0.3546
98	Liechtenstein	0.1873	0.522	0.948	0.5486
99	Lithuania	0.6087	0.409	0.969	0.6617
100	Luxembourg	0.6087	0.734	0.916	0.7512
101	Madagascar	0.2408	0.011	0.670	0.3065
102	Malawi	0.2207	0.007	0.638	0.2878
103	Malaysia	0.6756	0.302	0.839	0.6063
104	Maldives	0.2943	0.196	0.862	0.4491
105	Mali	0.1773	0.017	0.282	0.1591
106	Malta	0.7258	0.391	0.856	0.6582
107	Marshall Islands	0.0702	0.045	…	0.0000
108	Mauritania	0.0602	0.059	0.493	0.2028
109	Mauritius	0.4716	0.242	0.813	0.5086
110	Mexico	0.7057	0.196	0.863	0.5893
111	Micronesia (Federated States of)	0.0803	0.084	…	0.0000
112	Monaco	0.3813	0.609	…	0.0000
113	Mongolia	0.4214	0.091	0.910	0.4735
114	Montenegro	0.3712	0.024	0.891	0.4282
115	Morocco	0.2074	0.135	0.544	0.2944
116	Mozambique	0.3110	0.021	0.435	0.2559
117	Myanmar	0.1137	0.004	0.764	0.2922
118	Namibia	0.1739	0.082	0.783	0.3445
119	Nauru	0.0100	0.056	…	0.0000
120	Nepal	0.2876	0.012	0.518	0.2725
121	Netherlands	0.7893	0.814	0.988	0.8631
122	New Zealand	0.6421	0.585	0.993	0.7392
123	Nicaragua	0.2876	0.069	0.747	0.3668
124	Niger	0.0736	0.004	0.267	0.1142
125	Nigeria	0.2241	0.049	0.648	0.3063
126	Norway	0.9465	0.737	0.991	0.8921
127	Oman	0.4849	0.156	0.766	0.4691

	Country	Web Measure Index	Infrastructure Index	Human Capital Index	E-Government Readiness Index
128	Pakistan	0.4247	0.054	0.466	0.3160
129	Palau	0.1773	…	…	0.0000
130	Panama	0.4147	0.125	0.878	0.4718
131	Papua New Guinea	0.0870	0.022	0.518	0.2078
132	Paraguay	0.4381	0.106	0.853	0.4654
133	Peru	0.5652	0.137	0.872	0.5252
134	Philippines	0.5117	0.101	0.888	0.5001
135	Poland	0.5385	0.348	0.956	0.6134
136	Portugal	0.5987	0.422	0.925	0.6479
137	Qatar	0.3913	0.355	0.852	0.5314
138	Republic of Korea	0.8227	0.689	0.984	0.8317
139	Republic of Moldova	0.3110	0.153	0.893	0.4510
140	Romania	0.4147	0.299	0.905	0.5383
141	Russian Federation	0.3344	0.248	0.959	0.5120
142	Rwanda	0.2742	0.006	0.602	0.2941
143	Saint Kitts and Nevis	0.2809	0.274	0.896	0.4814
144	Saint Lucia	0.2809	0.268	0.881	0.4746
145	Saint Vincent and the Grenadines	0.2642	0.216	0.817	0.4306
146	Samoa	0.1773	0.054	0.903	0.3761
147	San Marino	0.2007	0.599	….	0.0000
148	Sao Tome and Principe	0.1137	0.074	0.783	0.3215
149	Saudi Arabia	0.4649	0.211	0.806	0.4935
150	Senegal	0.3077	0.056	0.394	0.2531
151	Serbia	0.3512	0.210	0.891	0.4828
152	Seychelles	0.3010	0.301	0.886	0.4942
153	Sierra Leone	0.0569	0.004	0.381	0.1463
154	Singapore	0.6120	0.585	0.908	0.7009
155	Slovakia	0.4749	0.374	0.921	0.5889
156	Slovenia	0.5017	0.529	0.979	0.6681
157	Solomon Islands	0.1405	0.019	0.669	0.2748
158	Somalia	0.0000	0.014	…	0.0000
159	South Africa	0.5518	0.175	0.806	0.5115
160	Spain	0.6990	0.483	0.987	0.7228
161	Sri Lanka	0.3946	0.066	0.814	0.4244
162	Sudan	0.0635	0.066	0.531	0.2186
163	Suriname	0.0368	0.160	0.854	0.3472
164	Swaziland	0.2508	0.058	0.730	0.3454
165	Sweden	0.9833	0.784	0.978	0.9157
166	Switzerland	0.5585	0.790	0.946	0.7626
167	Syrian Arab Republic	0.2408	0.092	0.755	0.3614
168	T.F.Y.R. Macedonia	0.3579	0.231	0.874	0.4866
169	Tajikistan	0.0368	0.017	0.899	0.3150
170	Thailand	0.5050	0.151	0.853	0.5031
171	Timor-Leste	0.1605	0.007	0.574	0.2462

	Country	Web Measure Index	Infrastructure Index	Human Capital Index	E-Government Readiness Index
172	Togo	0.0870	0.036	0.538	0.2191
173	Tonga	0.1739	0.091	0.926	0.3950
174	Trinidad and Tobago	0.4448	0.278	0.872	0.5307
175	Tunisia	0.1304	0.164	0.750	0.3458
176	Turkey	0.4214	0.219	0.812	0.4834
177	Turkmenistan	0.0468	0.038	0.902	0.3262
178	Tuvalu	0.0401	0.089	…	0.0000
179	Uganda	0.2676	0.018	0.655	0.3133
180	Ukraine	0.5351	0.234	0.951	0.5728
181	United Arab Emirates	0.7157	0.381	0.791	0.6301
182	United Kingdom	0.6923	0.702	0.970	0.7872
183	United Republic of Tanzania	0.2258	0.024	0.631	0.2929
184	United States	0.9532	0.666	0.971	0.8644
185	Uruguay	0.5084	0.245	0.942	0.5645
186	Uzbekistan	0.2742	0.038	0.909	0.4057
187	Vanuatu	0.0301	0.025	0.705	0.2510
188	Venezuela	0.4682	0.190	0.872	0.5095
189	Viet Nam	0.4448	0.108	0.815	0.4558
190	Yemen	0.0736	0.029	0.545	0.2142
191	Zambia	0.0000	0.032	0.655	0.2266
192	Zimbabwe	0.0870	0.049	0.770	0.3000

Table 3
Web Measurement Assessment 2008

	Country	Web Measure
1	Afghanistan	0.2676
2	Albania	0.3913
3	Algeria	0.2241
4	Andorra	0.2843
5	Angola	0.4381
6	Antigua and Barbuda	0.1405
7	Argentina	0.5585
8	Armenia	0.2709
9	Australia	0.7525
10	Austria	0.6656
11	Azerbaijan	0.3946
12	Bahamas	0.3010
13	Bahrain	0.5201
14	Bangladesh	0.3512
15	Barbados	0.3010
16	Belarus	0.3278
17	Belgium	0.5385
18	Belize	0.3043
19	Benin	0.1237
20	Bhutan	0.4080
21	Bolivia	0.5217
22	Bosnia and Herzegovina	0.2943
23	Botswana	0.2174
24	Brazil	0.6020
25	Brunei Darussalam	0.2642
26	Bulgaria	0.4849
27	Burkina Faso	0.1940
28	Burundi	0.0134
29	Cambodia	0.1973
30	Cameroon	0.1371
31	Canada	0.7659
32	Cape Verde	0.3880
33	Central African Rep.	0.0000
34	Chad	0.0134
35	Chile	0.5635
36	China	0.5084
37	Colombia	0.5552
38	Comoros	0.0268
39	Congo	0.0702
40	Costa Rica	0.4415
41	Cote d'Ivoire	0.0635
42	Croatia	0.4314
43	Cuba	0.2140
44	Cyprus	0.4783
45	Czech Republic	0.6455

	Country	Web Measure
46	Democratic People's Rep. of Korea	0.0201
47	Democratic Republic of the Congo	0.0870
48	Denmark	1.0000
49	Djibouti	0.1137
50	Dominica	0.0067
51	Dominican Republic	0.5084
52	Ecuador	0.4448
53	Egypt	0.6054
54	El Salvador	0.5786
55	Equatorial Guinea	0.0635
56	Eritrea	0.0635
57	Estonia	0.7124
58	Ethiopia	0.1739
59	Fiji	0.2742
60	Finland	0.6321
61	France	0.8294
62	Gabon	0.0769
63	Gambia	0.1739
64	Georgia	0.3545
65	Germany	0.5753
66	Ghana	0.2943
67	Greece	0.4147
68	Grenada	0.2742
69	Guatemala	0.4749
70	Guinea	0.0702
71	Guinea-Bissau	0.0234
72	Guyana	0.2375
73	Haiti	0.0635
74	Honduras	0.3712
75	Hungary	0.6171
76	Iceland	0.4615
77	India	0.4783
78	Indonesia	0.3344
79	Iran (Islamic Rep. of)	0.2575
80	Iraq	0.1070
81	Ireland	0.6756
82	Israel	0.6656
83	Italy	0.5117
84	Jamaica	0.3211
85	Japan	0.7425
86	Jordan	0.6054
87	Kazakhstan	0.3211
88	Kenya	0.3043
89	Kiribati	0.0669
90	Kuwait	0.4147
91	Kyrgyzstan	0.2977
92	Lao People's Democratic Republic	0.0368
93	Latvia	0.4482

	Country	Web Measure
94	Lebanon	0.3913
95	Lesotho	0.3445
96	Liberia	0.1104
97	Libyan Arab Jamahiriya	0.0803
98	Liechtenstein	0.1873
99	Lithuania	0.6087
100	Luxembourg	0.6087
101	Madagascar	0.2408
102	Malawi	0.2207
103	Malaysia	0.6756
104	Maldives	0.2943
105	Mali	0.1773
106	Malta	0.7258
107	Marshall Islands	0.0702
108	Mauritania	0.0602
109	Mauritius	0.4716
110	Mexico	0.7057
111	Micronesia (Federated States of)	0.0803
112	Monaco	0.3813
113	Mongolia	0.4214
114	Montenegro	0.3712
115	Morocco	0.2074
116	Mozambique	0.3110
117	Myanmar	0.1137
118	Namibia	0.1739
119	Nauru	0.0100
120	Nepal	0.2876
121	Netherlands	0.7893
122	New Zealand	0.6421
123	Nicaragua	0.2876
124	Niger	0.0736
125	Nigeria	0.2241
126	Norway	0.9465
127	Oman	0.4849
128	Pakistan	0.4247
129	Palau	0.1773
130	Panama	0.4147
131	Papua New Guinea	0.0870
132	Paraguay	0.4381
133	Peru	0.5652
134	Philippines	0.5117
135	Poland	0.5385
136	Portugal	0.5987
137	Qatar	0.3913
138	Republic of Korea	0.8227
139	Republic of Moldova	0.3110
140	Romania	0.4147
141	Russian Federation	0.3344

	Country	Web Measure
142	Rwanda	0.2742
143	Saint Kitts and Nevis	0.2809
144	Saint Lucia	0.2809
145	Saint Vincent and the Grenadines	0.2642
146	Samoa	0.1773
147	San Marino	0.2007
148	Sao Tome and Principe	0.1137
149	Saudi Arabia	0.4649
150	Senegal	0.3077
151	Serbia	0.3512
152	Seychelles	0.3010
153	Sierra Leone	0.0569
154	Singapore	0.6120
155	Slovakia	0.4749
156	Slovenia	0.5017
157	Solomon Islands	0.1405
158	Somalia	0.0000
159	South Africa	0.5518
160	Spain	0.6990
161	Sri Lanka	0.3946
162	Sudan	0.0635
163	Suriname	0.0368
164	Swaziland	0.2508
165	Sweden	0.9833
166	Switzerland	0.5585
167	Syrian Arab Republic	0.2408
168	T.F.Y.R. Macedonia	0.3579
169	Tajikistan	0.0368
170	Thailand	0.5050
171	Timor-Leste	0.1605
172	Togo	0.0870
173	Tonga	0.1739
174	Trinidad and Tobago	0.4448
175	Tunisia	0.1304
176	Turkey	0.4214
177	Turkmenistan	0.0468
178	Tuvalu	0.0401
179	Uganda	0.2676
180	Ukraine	0.5351
181	United Arab Emirates	0.7157
182	United Kingdom	0.6923
183	United Republic of Tanzania	0.2258
184	United States	0.9532
185	Uruguay	0.5084
186	Uzbekistan	0.2742
187	Vanuatu	0.0301
188	Venezuela	0.4682
189	Viet Nam	0.4448

	Country	Web Measure
190	Yemen	0.0736
191	Zambia	0.0000
192	Zimbabwe	0.0870

Table 4
Infrastructure Index 2008

	Country	Internet Index	PC Index	Cellular Index	Main Telephone Lines Index	Broadband Index	Infrastructure Index
1	Afghanistan	0.019	0.003	0.051	0.005	0.000	0.016
2	Albania	0.169	0.019	0.321	0.117	0.000	0.125
3	Algeria	0.083	0.012	0.414	0.088	0.019	0.123
4	Andorra	0.367	…	0.633	0.547	0.485	0.407
5	Angola	0.006	0.008	0.092	0.006	0.000	0.022
6	Antigua and Barbuda	0.400	0.164	0.695	0.464	0.221	0.389
7	Argentina	0.235	0.100	0.530	0.251	0.126	0.248
8	Armenia	0.065	0.109	0.067	0.204	0.002	0.089
9	Australia	0.845	0.848	0.639	0.506	0.604	0.688
10	Austria	0.576	0.677	0.743	0.450	0.548	0.599
11	Azerbaijan	0.110	0.025	0.257	0.145	0.001	0.108
12	Bahamas	0.359	0.137	0.464	0.427	0.130	0.303
13	Bahrain	0.240	0.195	0.802	0.271	0.165	0.335
14	Bangladesh	0.003	0.027	0.085	0.008	0.000	0.025
15	Barbados	0.669	0.164	0.504	0.520	0.374	0.446
16	Belarus	0.635	0.009	0.404	0.360	0.004	0.282
17	Belgium	0.514	0.416	0.609	0.469	0.603	0.522
18	Belize	0.139	0.168	0.282	0.128	0.064	0.156
19	Benin	0.090	0.005	0.077	0.009	0.000	0.036
20	Bhutan	0.035	0.017	0.028	0.042	…	0.024
21	Bolivia	0.070	0.026	0.188	0.074	0.004	0.072
22	Bosnia and Herzegovina	0.273	0.060	0.316	0.262	0.032	0.189
23	Botswana	0.038	0.054	0.366	0.081	0.003	0.108
24	Brazil	0.254	0.178	0.347	0.213	0.099	0.218

	Country	Internet Index	PC Index	Cellular Index	Main Telephone Lines Index	Broadband Index	Infrastructure Index
25	Brunei Darussalam	0.488	0.097	0.437	0.218	0.086	0.265
26	Bulgaria	0.274	0.070	0.709	0.324	0.158	0.307
27	Burkina Faso	0.007	0.002	0.047	0.007	0.000	0.013
28	Burundi	0.009	0.008	0.011	0.004	0.000	0.006
29	Cambodia	0.003	0.003	0.088	0.006	0.000	0.020
30	Cameroon	0.025	0.013	0.136	0.143	0.000	0.064
31	Canada	0.764	0.967	0.345	0.665	0.743	0.697
32	Cape Verde	0.069	0.128	0.136	0.143	0.011	0.097
33	Central African Rep.	0.004	0.003	0.014	0.002	0.000	0.005
34	Chad	0.007	0.002	0.028	0.001	0.000	0.007
35	Chile	0.284	0.163	0.497	0.209	0.187	0.268
36	China	0.116	0.047	0.228	0.288	0.121	0.160
37	Colombia	0.163	0.046	0.423	0.176	0.043	0.170
38	Comoros	0.029	0.007	0.011	0.022	0.000	0.014
39	Congo	0.019	0.005	0.078	0.004	0.000	0.021
40	Costa Rica	0.311	0.256	0.214	0.318	0.042	0.228
41	Cote d'Ivoire	0.018	0.019	0.143	0.014	0.000	0.039
42	Croatia	0.389	0.215	0.646	0.417	0.174	0.368
43	Cuba	0.024	0.037	0.006	0.089	…	0.031
44	Cyprus	0.475	0.370	0.606	0.501	0.185	0.427
45	Czech Republic	0.390	0.303	0.784	0.326	0.335	0.428
46	Democratic People's Rep. of Korea	0.000	…	…	0.045	0.000	0.009
47	Democratic Republic of the Congo	0.003	0.000	0.046	0.000	0.000	0.010
48	Denmark	0.655	0.769	0.707	0.590	1.000	0.744
49	Djibouti	0.015	0.030	0.039	0.016	0.000	0.020
50	Dominica	0.324	0.202	0.385	0.305	0.144	0.272
51	Dominican Republic	0.249	0.025	0.335	0.103	0.023	0.147

	Country	Internet Index	PC Index	Cellular Index	Main Telephone Lines Index	Broadband Index	Infrastructure Index
52	Ecuador	0.130	0.072	0.415	0.135	0.006	0.152
53	Egypt	0.089	0.042	0.155	0.148	0.009	0.089
54	El Salvador	0.104	0.056	0.361	0.153	0.019	0.139
55	Equatorial Guinea	0.017	0.020	0.125	0.020	0.001	0.037
56	Eritrea	0.025	0.006	0.006	0.008	0.000	0.009
57	Estonia	0.645	0.541	0.825	0.424	0.543	0.596
58	Ethiopia	0.002	0.004	0.004	0.009	0.000	0.004
59	Fiji	0.105	0.065	0.157	0.137	0.026	0.098
60	Finland	0.626	0.554	0.710	0.378	0.855	0.625
61	France	0.558	0.640	0.560	0.579	0.659	0.599
62	Gabon	0.065	0.036	0.357	0.027	0.003	0.097
63	Gambia	0.043	0.018	0.169	0.035	0.000	0.053
64	Georgia	0.084	0.052	0.251	0.129	0.019	0.107
65	Germany	0.525	0.669	0.671	0.680	0.537	0.616
66	Ghana	0.030	0.006	0.150	0.016	0.002	0.041
67	Greece	0.207	0.101	0.656	0.576	0.138	0.336
68	Grenada	0.210	0.173	0.298	0.276	0.099	0.211
69	Guatemala	0.115	0.023	0.365	0.109	0.007	0.124
70	Guinea	0.006	0.006	0.013	0.003	0.000	0.006
71	Guinea-Bissau	0.025	0.002	0.044	0.008	0.000	0.016
72	Guyana	0.240	0.043	0.245	0.152	0.009	0.138
73	Haiti	0.085	0.002	0.036	0.017	0.000	0.028
74	Honduras	0.052	0.018	0.199	0.100	0.000	0.074
75	Hungary	0.391	0.165	0.652	0.345	0.306	0.372
76	Iceland	0.735	0.535	0.729	0.676	0.931	0.721
77	India	0.061	0.017	0.095	0.038	0.007	0.044
78	Indonesia	0.081	0.016	0.184	0.068	0.002	0.070
79	Iran (Islamic Rep. of)	0.287	0.116	0.125	0.323	0.021	0.175
80	Iraq	0.002	0.009	0.012	0.041	0.000	0.013

	Country	Internet Index	PC Index	Cellular Index	Main Telephone Lines Index	Broadband Index	Infrastructure Index
81	Ireland	0.384	0.587	0.734	0.517	0.387	0.522
82	Israel	0.312	0.813	0.809	0.455	0.654	0.609
83	Italy	0.558	0.409	0.811	0.447	0.468	0.539
84	Jamaica	0.523	0.075	0.697	0.125	0.054	0.295
85	Japan	0.768	0.747	0.522	0.446	0.633	0.623
86	Jordan	0.154	0.069	0.489	0.109	0.026	0.169
87	Kazakhstan	0.095	…	0.347	0.205	0.007	0.131
88	Kenya	0.089	0.016	0.119	0.009	0.000	0.046
89	Kiribati	0.024	0.013	0.002	0.053	0.000	0.018
90	Kuwait	0.332	0.247	0.583	0.197	0.029	0.278
91	Kyrgyzstan	0.063	0.021	0.065	0.087	0.002	0.047
92	Lao People's Democratic Republic	0.005	0.018	0.068	0.013	0.000	0.021
93	Latvia	0.525	0.271	0.626	0.297	0.151	0.374
94	Lebanon	0.296	0.127	0.199	0.195	0.148	0.193
95	Lesotho	0.032	0.001	0.089	0.027	0.000	0.030
96	Liberia	0.000	…	0.029	0.002	0.000	0.006
97	Libyan Arab Jamahiriya	0.045	0.024	0.433	0.084	0.000	0.117
98	Liechtenstein	0.711	…	0.520	0.596	0.780	0.522
99	Lithuania	0.357	0.199	0.910	0.240	0.340	0.409
100	Luxembourg	0.810	0.690	1.000	0.543	0.624	0.734
101	Madagascar	0.007	0.006	0.033	0.007	0.000	0.011
102	Malawi	0.005	0.002	0.019	0.008	0.000	0.007
103	Malaysia	0.493	0.238	0.496	0.174	0.110	0.302
104	Maldives	0.075	0.164	0.578	0.113	0.049	0.196
105	Mali	0.006	0.004	0.069	0.006	0.001	0.017
106	Malta	0.357	0.184	0.566	0.520	0.329	0.391
107	Marshall Islands	0.039	0.097	0.005	0.086	0.000	0.045

	Country	Internet Index	PC Index	Cellular Index	Main Telephone Lines Index	Broadband Index	Infrastructure Index
108	Mauritania	0.036	0.028	0.219	0.011	0.001	0.059
109	Mauritius	0.271	0.187	0.404	0.295	0.055	0.242
110	Mexico	0.190	0.145	0.345	0.190	0.108	0.196
111	Micronesia (Federated States of)	0.162	0.060	0.081	0.116	0.001	0.084
112	Monaco	0.634	0.251	0.320	1.000	0.838	0.609
113	Mongolia	0.114	0.142	0.136	0.061	0.002	0.091
114	Montenegro	0.028	…	0.049	0.035	0.008	0.024
115	Morocco	0.223	0.027	0.342	0.043	0.040	0.135
116	Mozambique	0.010	0.016	0.074	0.003	0.000	0.021
117	Myanmar	0.002	0.008	0.000	0.009	0.000	0.004
118	Namibia	0.045	0.136	0.158	0.071	0.000	0.082
119	Nauru	0.029	…	0.083	0.166	…	0.056
120	Nepal	0.010	0.005	0.022	0.022	0.000	0.012
121	Netherlands	1.000	0.947	0.640	0.484	1.000	0.814
122	New Zealand	0.886	0.571	0.577	0.445	0.447	0.585
123	Nicaragua	0.031	0.042	0.213	0.046	0.011	0.069
124	Niger	0.003	0.001	0.013	0.002	0.000	0.004
125	Nigeria	0.067	0.010	0.156	0.013	0.000	0.049
126	Norway	0.988	0.658	0.715	0.459	0.868	0.737
127	Oman	0.138	0.056	0.458	0.110	0.018	0.156
128	Pakistan	0.086	0.006	0.143	0.034	0.001	0.054
129	Palau	…	…	…	…	…	…
130	Panama	0.075	0.050	0.344	0.136	0.017	0.125
131	Papua New Guinea	0.021	0.073	0.006	0.011	0.000	0.022
132	Paraguay	0.046	0.082	0.337	0.054	0.008	0.106
133	Peru	0.242	0.111	0.195	0.085	0.054	0.137
134	Philippines	0.062	0.059	0.333	0.044	0.005	0.101

	Country	Internet Index	PC Index	Cellular Index	Main Telephone Lines Index	Broadband Index	Infrastructure Index
135	Poland	0.321	0.265	0.629	0.309	0.216	0.348
136	Portugal	0.343	0.148	0.764	0.416	0.436	0.422
137	Qatar	0.389	0.206	0.722	0.282	0.176	0.355
138	Republic of Korea	0.800	0.589	0.551	0.581	0.922	0.689
139	Republic of Moldova	0.195	0.091	0.211	0.252	0.016	0.153
140	Romania	0.364	0.143	0.529	0.201	0.258	0.299
141	Russian Federation	0.203	0.134	0.550	0.290	0.064	0.248
142	Rwanda	0.008	0.002	0.020	0.002	0.001	0.006
143	Saint Kitts and Nevis	0.273	0.288	0.154	0.615	0.038	0.274
144	Saint Lucia	0.388	0.180	0.432	0.338	0.000	0.268
145	Saint Vincent and the Grenadines	0.095	0.153	0.484	0.197	0.149	0.216
146	Samoa	0.050	0.021	0.086	0.113	0.001	0.054
147	San Marino	0.634	1.000	0.417	0.801	0.142	0.599
148	Sao Tome and Principe	0.204	0.042	0.073	0.049	0.000	0.074
149	Saudi Arabia	0.210	0.142	0.513	0.162	0.027	0.211
150	Senegal	0.061	0.023	0.163	0.024	0.008	0.056
151	Serbia	0.150	0.179	0.416	0.269	0.037	0.210
152	Seychelles	0.401	0.219	0.569	0.264	0.051	0.301
153	Sierra Leone	0.002	…	0.012	0.005	0.000	0.004
154	Singapore	0.441	0.753	0.720	0.439	0.573	0.585
155	Slovakia	0.470	0.395	0.596	0.224	0.185	0.374
156	Slovenia	0.716	0.455	0.609	0.442	0.423	0.529
157	Solomon Islands	0.018	0.051	0.006	0.016	0.003	0.019
158	Somalia	0.012	0.010	0.037	0.012	0.000	0.014
159	South Africa	0.121	0.092	0.548	0.103	0.011	0.175
160	Spain	0.482	0.311	0.701	0.439	0.483	0.483
161	Sri Lanka	0.023	0.039	0.168	0.093	0.004	0.066

	Country	Internet Index	PC Index	Cellular Index	Main Telephone Lines Index	Broadband Index	Infrastructure Index
162	Sudan	0.106	0.127	0.081	0.018	0.000	0.066
163	Suriname	0.080	0.049	0.466	0.187	0.019	0.160
164	Swaziland	0.045	0.045	0.158	0.044	0.000	0.058
165	Sweden	0.866	0.924	0.698	0.617	0.815	0.784
166	Switzerland	0.675	0.954	0.673	0.720	0.928	0.790
167	Syrian Arab Republic	0.087	0.046	0.156	0.172	0.001	0.092
168	T.F.Y.R. Macedonia	0.148	0.245	0.457	0.250	0.056	0.231
169	Tajikistan	0.003	0.014	0.024	0.045	0.000	0.017
170	Thailand	0.147	0.076	0.414	0.113	0.005	0.151
171	Timor-Leste	0.001	…	0.029	0.002	…	0.007
172	Togo	0.057	0.040	0.071	0.013	0.000	0.036
173	Tonga	0.034	0.066	0.195	0.142	0.020	0.091
174	Trinidad and Tobago	0.140	0.109	0.833	0.258	0.049	0.278
175	Tunisia	0.143	0.069	0.473	0.129	0.005	0.164
176	Turkey	0.186	0.061	0.467	0.263	0.118	0.219
177	Turkmenistan	0.015	0.080	0.012	0.085	0.000	0.038
178	Tuvalu	0.182	0.088	0.079	0.088	0.009	0.089
179	Uganda	0.028	0.018	0.042	0.004	0.000	0.018
180	Ukraine	0.136	0.051	0.703	0.278	…	0.234
181	United Arab Emirates	0.413	0.258	0.781	0.292	0.163	0.381
182	United Kingdom	0.630	0.847	0.767	0.582	0.684	0.702
183	United Republic of Tanzania	0.011	0.010	0.095	0.004	…	0.024
184	United States	0.778	0.844	0.509	0.593	0.609	0.666
185	Uruguay	0.244	0.153	0.439	0.293	0.097	0.245
186	Uzbekistan	0.071	0.034	0.015	0.070	0.001	0.038
187	Vanuatu	0.039	0.015	0.036	0.033	0.001	0.025
188	Venezuela	0.171	0.102	0.454	0.160	0.062	0.190

	Country	Internet Index	PC Index	Cellular Index	Main Telephone Lines Index	Broadband Index	Infrastructure Index
189	Viet Nam	0.194	0.015	0.117	0.195	0.019	0.108
190	Yemen	0.014	0.021	0.060	0.048	0.000	0.029
191	Zambia	0.047	0.012	0.090	0.008	0.001	0.032
192	Zimbabwe	0.105	0.073	0.039	0.026	0.003	0.049

Table 5
Infrastructure Data 2008

	Country	Internet Per 100 Users	PC Per 100 Users	Cellular Subscribers Per 100 Users	Main Telephone Lines Per 100 Users	Broadband Per 100 Users
1	Afghanistan	1.72	0.32	8.11	0.53	0.00
2	Albania	14.98	1.73	48.89	11.30	0.01
3	Algeria	7.38	1.06	62.95	8.52	0.59
4	Andorra	32.65	...	96.14	52.78	15.40
5	Angola	0.55	0.70	14.33	0.62	0.00
6	Antigua and Barbuda	35.59	14.85	105.55	44.77	7.02
7	Argentina	20.91	9.07	80.52	24.17	4.01
8	Armenia	5.75	9.85	10.54	19.71	0.07
9	Australia	75.12	76.61	97.02	48.81	19.15
10	Austria	51.19	61.12	112.80	43.44	17.40
11	Azerbaijan	9.79	2.31	39.23	14.03	0.03
12	Bahamas	31.88	12.38	70.50	41.19	4.14
13	Bahrain	21.30	17.62	121.71	26.18	5.23
14	Bangladesh	0.31	2.42	13.25	0.79	0.00
15	Barbados	59.48	14.87	76.65	50.14	11.87
16	Belarus	56.47	0.81	61.44	34.72	0.12
17	Belgium	45.66	37.62	92.55	45.21	19.13
18	Belize	12.36	15.19	43.01	12.32	2.04
19	Benin	8.04	0.43	12.13	0.89	0.00
20	Bhutan	3.09	1.60	4.67	4.04	…
21	Bolivia	6.20	2.40	28.85	7.13	0.14
22	Bosnia and Herzegovina	24.28	5.43	48.25	25.28	1.02
23	Botswana	3.40	4.87	55.68	7.78	0.09

	Country	Internet Per 100 Users	PC Per 100 Users	Cellular Subscribers Per 100 Users	Main Telephone Lines Per 100 Users	Broadband Per 100 Users
24	Brazil	22.55	16.09	52.90	20.54	3.14
25	Brunei Darussalam	43.35	8.82	66.51	20.99	2.74
26	Bulgaria	24.38	6.34	107.59	31.28	5.01
27	Burkina Faso	0.59	0.24	7.46	0.70	0.01
28	Burundi	0.77	0.73	2.03	0.41	0.00
29	Cambodia	0.31	0.31	7.94	0.23	0.01
30	Cameroon	2.23	1.23	13.80	0.61	0.00
31	Canada	67.89	87.31	52.51	64.12	23.57
32	Cape Verde	6.09	11.56	20.99	13.80	0.35
33	Central African Rep.	0.32	0.30	2.48	0.25	0.00
34	Chad	0.60	0.16	4.65	0.13	0.00
35	Chile	25.24	14.75	75.62	20.20	5.94
36	China	10.35	4.22	34.83	27.79	3.85
37	Colombia	14.49	4.15	64.31	17.00	1.36
38	Comoros	2.56	0.68	2.01	2.12	0.00
39	Congo	1.70	0.48	12.25	0.40	0.00
40	Costa Rica	27.61	23.11	32.82	30.72	1.34
41	Cote d'Ivoire	1.63	1.78	22.03	1.41	0.01
42	Croatia	34.60	19.42	98.11	40.22	5.53
43	Cuba	2.13	3.35	1.35	8.61	…
44	Cyprus	42.22	33.41	92.06	48.34	5.87
45	Czech Republic	34.69	27.40	119.01	31.48	10.64
46	Democratic People's Rep. of Korea	0.00	...	…	4.40	0.00
47	Democratic Republic of the Congo	0.30	0.02	7.44	0.02	0.00
48	Denmark	58.23	69.46	107.25	56.89	31.73
49	Djibouti	1.36	2.75	6.37	1.56	0.01

	Country	Internet Per 100 Users	PC Per 100 Users	Cellular Subscribers Per 100 Users	Main Telephone Lines Per 100 Users	Broadband Per 100 Users
50	Dominica	28.75	18.23	58.68	29.40	4.56
51	Dominican Republic	22.17	2.32	51.05	9.94	0.74
52	Ecuador	11.54	6.55	63.23	13.07	0.20
53	Egypt	7.95	3.78	23.86	14.33	0.27
54	El Salvador	9.26	5.09	55.03	14.81	0.61
55	Equatorial Guinea	1.55	1.79	19.26	1.99	0.04
56	Eritrea	2.19	0.57	1.36	0.82	0.00
57	Estonia	57.36	48.91	125.19	40.90	17.22
58	Ethiopia	0.21	0.39	1.09	0.91	0.00
59	Fiji	9.36	5.90	24.17	13.27	0.83
60	Finland	55.60	50.01	107.76	36.49	27.14
61	France	49.57	57.86	85.08	55.82	20.91
62	Gabon	5.76	3.25	54.39	2.59	0.08
63	Gambia	3.82	1.65	25.99	3.40	0.00
64	Georgia	7.49	4.70	38.43	12.47	0.61
65	Germany	46.67	60.47	101.92	65.53	17.03
66	Ghana	2.70	0.58	23.09	1.58	0.06
67	Greece	18.38	9.17	99.62	55.52	4.38
68	Grenada	18.64	15.65	45.53	26.65	3.13
69	Guatemala	10.22	2.08	55.60	10.49	0.22
70	Guinea	0.52	0.56	2.36	0.33	0.00
71	Guinea-Bissau	2.26	0.22	7.10	0.76	0.00
72	Guyana	21.30	3.86	37.45	14.66	0.27
73	Haiti	7.51	0.19	5.87	1.70	0.00
74	Honduras	4.58	1.67	30.44	9.62	0.00
75	Hungary	34.75	14.90	98.95	33.27	9.70
76	Iceland	65.30	48.30	110.58	65.21	29.53
77	India	5.44	1.54	14.83	3.64	0.21

	Country	Internet Per 100 Users	PC Per 100 Users	Cellular Subscribers Per 100 Users	Main Telephone Lines Per 100 Users	Broadband Per 100 Users
78	Indonesia	7.18	1.47	28.30	6.57	0.05
79	Iran (Islamic Rep. of)	25.54	10.53	19.38	31.19	0.66
80	Iraq	0.14	0.83	2.22	4.00	0.00
81	Ireland	34.13	52.99	111.40	49.81	12.29
82	Israel	27.74	73.40	122.74	43.88	20.75
83	Italy	49.63	36.99	123.08	43.12	14.86
84	Jamaica	46.48	6.75	105.78	12.03	1.70
85	Japan	68.27	67.45	79.32	43.02	20.09
86	Jordan	13.65	6.22	74.40	10.52	0.83
87	Kazakhstan	8.42	...	52.86	19.77	0.21
88	Kenya	7.89	1.44	18.47	0.84	0.00
89	Kiribati	2.15	1.18	0.68	5.11	0.00
90	Kuwait	29.53	22.33	88.57	18.99	0.93
91	Kyrgyzstan	5.60	1.90	10.29	8.37	0.05
92	Lao People's Democratic Republic	0.42	1.69	10.77	1.27	0.00
93	Latvia	46.65	24.53	95.13	28.64	4.78
94	Lebanon	26.28	11.45	30.53	18.85	4.70
95	Lesotho	2.87	0.08	13.92	2.67	0.00
96	Liberia	0.03	...	4.87	0.21	0.00
97	Libyan Arab Jamahiriya	3.96	2.22	65.81	8.09	0.00
98	Liechtenstein	63.22	...	79.03	57.50	24.76
99	Lithuania	31.69	17.98	138.06	23.19	10.79
100	Luxembourg	72.01	62.37	151.61	52.40	19.80
101	Madagascar	0.58	0.55	5.47	0.68	0.00
102	Malawi	0.45	0.19	3.33	0.80	0.00
103	Malaysia	43.77	21.54	75.45	16.83	3.48

	Country	Internet Per 100 Users	PC Per 100 Users	Cellular Subscribers Per 100 Users	Main Telephone Lines Per 100 Users	Broadband Per 100 Users
104	Maldives	6.64	14.86	87.88	10.88	1.57
105	Mali	0.50	0.40	10.87	0.59	0.02
106	Malta	31.73	16.61	85.96	50.16	10.44
107	Marshall Islands	3.51	8.77	1.13	8.27	0.00
108	Mauritania	3.17	2.56	33.57	1.10	0.02
109	Mauritius	24.10	16.87	61.50	28.45	1.74
110	Mexico	16.90	13.08	52.63	18.33	3.44
111	Micronesia (Federated States of)	14.39	5.41	12.70	11.22	0.04
112	Monaco	56.34	22.69	48.76	96.41	26.59
113	Mongolia	10.14	12.84	21.05	5.90	0.07
114	Montenegro	2.53	…	7.83	3.37	0.25
115	Morocco	19.85	2.46	52.07	4.12	1.27
116	Mozambique	0.90	1.43	11.60	0.33	0.00
117	Myanmar	0.18	0.74	0.42	0.93	0.00
118	Namibia	3.97	12.26	24.37	6.84	0.00
119	Nauru	2.59	…	12.97	16.00	…
120	Nepal	0.90	0.49	3.76	2.15	0.00
121	Netherlands	88.87	85.55	97.15	46.63	31.72
122	New Zealand	78.77	51.55	87.61	42.91	14.18
123	Nicaragua	2.77	3.77	32.68	4.43	0.34
124	Niger	0.28	0.07	2.32	0.17	0.00
125	Nigeria	5.95	0.91	24.05	1.26	0.00
126	Norway	87.76	59.41	108.57	44.27	27.54
127	Oman	12.22	5.06	69.59	10.65	0.58
128	Pakistan	7.64	0.52	21.98	3.34	0.04
129	Palau	…	...	…	…	…

	Country	Internet Per 100 Users	PC Per 100 Users	Cellular Subscribers Per 100 Users	Main Telephone Lines Per 100 Users	Broadband Per 100 Users
130	Panama	6.69	4.56	52.46	13.17	0.54
131	Papua New Guinea	1.83	6.64	1.27	1.08	0.00
132	Paraguay	4.13	7.47	51.31	5.25	0.25
133	Peru	21.49	10.01	29.95	8.22	1.71
134	Philippines	5.48	5.37	50.75	4.30	0.15
135	Poland	28.57	23.99	95.45	29.81	6.86
136	Portugal	30.47	13.40	115.95	40.12	13.85
137	Qatar	34.55	18.64	109.60	27.21	5.57
138	Republic of Korea	71.11	53.18	83.77	55.99	29.27
139	Republic of Moldova	17.35	8.28	32.38	24.27	0.52
140	Romania	32.36	12.96	80.45	19.44	8.18
141	Russian Federation	18.02	12.13	83.62	27.94	2.03
142	Rwanda	0.70	0.21	3.40	0.18	0.02
143	Saint Kitts and Nevis	24.28	26.07	23.70	59.26	1.21
144	Saint Lucia	34.49	16.30	65.72	32.58	0.00
145	Saint Vincent and the Grenadines	8.40	13.87	73.64	19.03	4.72
146	Samoa	4.46	1.96	13.41	10.89	0.04
147	San Marino	56.30	90.33	63.52	77.22	4.52
148	Sao Tome and Principe	18.11	3.83	11.51	4.74	0.00
149	Saudi Arabia	18.66	12.82	78.05	15.68	0.87
150	Senegal	5.45	2.14	24.99	2.37	0.24
151	Serbia	13.34	16.19	63.29	25.91	1.16
152	Seychelles	35.67	19.84	86.52	25.44	1.63
153	Sierra Leone	0.19	...	2.21	0.49	0.00
154	Singapore	39.21	68.02	109.34	42.32	18.19
155	Slovakia	41.76	35.72	90.60	21.62	5.87

	Country	Internet Per 100 Users	PC Per 100 Users	Cellular Subscribers Per 100 Users	Main Telephone Lines Per 100 Users	Broadband Per 100 Users
156	Slovenia	63.62	41.08	92.56	42.60	13.41
157	Solomon Islands	1.63	4.60	1.26	1.55	0.09
158	Somalia	1.11	0.91	6.08	1.22	0.00
159	South Africa	10.75	8.36	83.33	9.97	0.35
160	Spain	42.83	28.11	106.39	42.38	15.34
161	Sri Lanka	2.05	3.54	25.88	9.01	0.14
162	Sudan	9.46	11.45	12.66	1.72	0.01
163	Suriname	7.12	4.45	70.80	18.03	0.59
164	Swaziland	4.02	4.07	24.29	4.27	0.00
165	Sweden	76.97	83.49	105.92	59.52	25.87
166	Switzerland	60.02	86.18	102.12	69.38	29.46
167	Syrian Arab Republic	7.69	4.20	23.96	16.62	0.03
168	T.F.Y.R. Macedonia	13.15	22.17	69.56	24.10	1.79
169	Tajikistan	0.30	1.30	4.07	4.31	0.00
170	Thailand	13.07	6.86	63.02	10.92	0.16
171	Timor-Leste	0.12	…	4.88	0.25	…
172	Togo	5.07	3.63	11.23	1.30	0.00
173	Tonga	3.02	5.99	29.84	13.73	0.64
174	Trinidad and Tobago	12.48	9.88	126.42	24.87	1.57
175	Tunisia	12.68	6.22	71.88	12.42	0.17
176	Turkey	16.56	5.56	71.00	25.39	3.74
177	Turkmenistan	1.32	7.20	2.17	8.24	0.00
178	Tuvalu	16.19	8.00	12.38	8.48	0.29
179	Uganda	2.51	1.67	6.73	0.36	0.00
180	Ukraine	12.06	4.61	106.72	26.84	…
181	United Arab Emirates	36.69	23.35	118.51	28.12	5.17
182	United Kingdom	56.03	76.52	116.39	56.15	21.71

	Country	Internet Per 100 Users	PC Per 100 Users	Cellular Subscribers Per 100 Users	Main Telephone Lines Per 100 Users	Broadband Per 100 Users
183	United Republic of Tanzania	1.00	0.93	14.78	0.40	…
184	United States	69.10	76.22	77.40	57.15	19.31
185	Uruguay	21.68	13.85	66.83	28.31	3.07
186	Uzbekistan	6.30	3.08	2.71	6.74	0.03
187	Vanuatu	3.46	1.38	5.85	3.21	0.03
188	Venezuela	15.21	9.25	69.04	15.49	1.97
189	Viet Nam	17.21	1.39	18.17	18.81	0.61
190	Yemen	1.25	1.91	9.54	4.62	0.00
191	Zambia	4.22	1.12	14.02	0.79	0.02
192	Zimbabwe	9.32	6.61	6.36	2.54	0.08

Table 6
Education Index 2008

	Country	Adult Literacy	Gross Enrolment	Education Index
1	Afghanistan	28.0	42.774	0.329
2	Albania	98.7	68.636	0.887
3	Algeria	69.9	73.674	0.711
4	Andorra	99.0	62.588	0.869
5	Angola	67.4	25.600	0.535
6	Antigua and Barbuda	85.8	76.000	0.825
7	Argentina	97.2	89.709	0.947
8	Armenia	99.4	70.849	0.899
9	Australia	99.0	100.000	0.993
10	Austria	99.0	91.912	0.966
11	Azerbaijan	98.8	67.081	0.882
12	Bahamas	95.8	70.828	0.875
13	Bahrain	86.5	86.091	0.864
14	Bangladesh	47.5	56.011	0.503
15	Barbados	99.7	88.862	0.961
16	Belarus	99.6	88.710	0.960
17	Belgium	99.0	95.132	0.977
18	Belize	75.1	81.842	0.773
19	Benin	34.7	50.674	0.400
20	Bhutan	47.0	52.000	0.487
21	Bolivia	86.7	86.024	0.865
22	Bosnia and Herzegovina	96.7	69.000	0.874
23	Botswana	81.2	69.528	0.773
24	Brazil	88.6	87.518	0.883
25	Brunei Darussalam	92.7	77.721	0.877
26	Bulgaria	98.2	81.461	0.926
27	Burkina Faso	23.6	29.348	0.255
28	Burundi	59.3	37.930	0.522
29	Cambodia	73.6	59.988	0.691
30	Cameroon	67.9	62.332	0.660
31	Canada	99.0	99.232	0.991
32	Cape Verde	81.2	66.450	0.763
33	Central African Republic	48.6	29.820	0.423
34	Chad	25.7	37.462	0.296
35	Chile	95.7	82.910	0.914
36	China	90.9	69.132	0.837
37	Colombia	92.8	75.058	0.869
38	Comoros	56.8	46.410	0.533
39	Congo	84.7	51.402	0.736
40	Costa Rica	94.9	72.978	0.876
41	Cote d'Ivoire	48.7	39.623	0.457
42	Croatia	98.1	73.457	0.899
43	Cuba	99.8	87.560	0.957
44	Cyprus	96.8	77.556	0.904

	Country	Adult Literacy	Gross Enrolment	Education Index
45	Czech Republic	99.0	82.856	0.936
46	Democratic People's Rep. of Korea	…	…	…
47	Democratic Republic of the Congo	67.2	33.667	0.560
48	Denmark	99.0	100.000	0.993
49	Djibouti	70.3	25.326	0.553
50	Dominica	88.0	80.968	0.857
51	Dominican Republic	87.0	74.113	0.827
52	Ecuador	91.0	75.000	0.857
53	Egypt	71.4	76.875	0.732
54	El Salvador	80.6	70.412	0.772
55	Equatorial Guinea	87.0	58.073	0.773
56	Eritrea	60.5	35.266	0.521
57	Estonia	99.8	92.432	0.973
58	Ethiopia	35.9	42.077	0.380
59	Fiji	94.4	74.789	0.879
60	Finland	99.0	100.000	0.993
61	France	99.0	96.549	0.982
62	Gabon	84.0	72.413	0.801
63	Gambia	42.5	50.130	0.450
64	Georgia	100.0	76.299	0.921
65	Germany	99.0	87.956	0.953
66	Ghana	57.9	53.437	0.564
67	Greece	96.0	98.950	0.970
68	Grenada	96.0	73.090	0.884
69	Guatemala	69.1	67.282	0.685
70	Guinea	29.5	45.094	0.347
71	Guinea-Bissau	44.8	36.668	0.421
72	Guyana	99.0	85.042	0.943
73	Haiti	54.8	53.000	0.542
74	Honduras	80.0	71.195	0.771
75	Hungary	99.4	89.331	0.960
76	Iceland	99.0	95.367	0.978
77	India	61.0	63.822	0.620
78	Indonesia	90.4	68.209	0.830
79	Iran (Islamic Republic of)	82.4	72.814	0.792
80	Iraq	74.1	59.558	0.692
81	Ireland	99.0	99.947	0.993
82	Israel	97.1	89.617	0.946
83	Italy	98.4	90.639	0.958
84	Jamaica	79.9	77.930	0.792
85	Japan	99.0	85.854	0.946
86	Jordan	91.1	78.051	0.868
87	Kazakhstan	99.5	93.766	0.976
88	Kenya	73.6	60.569	0.693
89	Kiribati	...	75.054	…

	Country	Adult Literacy	Gross Enrolment	Education Index
90	Kuwait	93.3	74.870	0.871
91	Kyrgyzstan	98.7	77.725	0.917
92	Lao People's Democratic Republic	68.7	61.496	0.663
93	Latvia	99.7	90.220	0.965
94	Lebanon	88.3	84.575	0.871
95	Lesotho	82.2	66.011	0.768
96	Liberia	51.9	57.407	0.538
97	Libyan Arab Jamahiriya	84.2	94.148	0.875
98	Liechtenstein	99.0	86.371	0.948
99	Lithuania	99.6	91.439	0.969
100	Luxembourg	99.0	76.703	0.916
101	Madagascar	70.7	59.689	0.670
102	Malawi	64.1	63.105	0.638
103	Malaysia	88.7	74.332	0.839
104	Maldives	96.3	65.844	0.862
105	Mali	24.0	36.679	0.282
106	Malta	87.9	80.938	0.856
107	Marshall Islands	…	71.126	…
108	Mauritania	51.2	45.605	0.493
109	Mauritius	84.3	75.342	0.813
110	Mexico	91.6	75.611	0.863
111	Micronesia (Federated States of)	…	…	…
112	Monaco	99.0	…	…
113	Mongolia	97.8	77.358	0.910
114	Montenegro	96.4	74.521	0.891
115	Morocco	52.3	58.494	0.544
116	Mozambique	38.7	52.945	0.435
117	Myanmar	89.9	49.535	0.764
118	Namibia	85.0	64.744	0.783
119	Nauru	…	50.627	…
120	Nepal	48.6	58.092	0.518
121	Netherlands	99.0	98.429	0.988
122	New Zealand	99.0	100.000	0.993
123	Nicaragua	76.7	70.640	0.747
124	Niger	28.7	22.702	0.267
125	Nigeria	69.1	56.173	0.648
126	Norway	99.0	99.228	0.991
127	Oman	81.4	67.052	0.766
128	Pakistan	49.9	40.011	0.466
129	Palau	…	96.920	…
130	Panama	91.9	79.543	0.878
131	Papua New Guinea	57.3	40.721	0.518
132	Paraguay	93.5	69.051	0.853
133	Peru	87.9	85.762	0.872
134	Philippines	92.6	81.133	0.888

	Country	Adult Literacy	Gross Enrolment	Education Index
135	Poland	99.8	87.186	0.956
136	Portugal	93.8	89.820	0.925
137	Qatar	89.0	77.692	0.852
138	Republic of Korea	99.0	97.236	0.984
139	Republic of Moldova	99.1	69.739	0.893
140	Romania	97.3	76.828	0.905
141	Russian Federation	99.4	88.867	0.959
142	Rwanda	64.9	50.873	0.602
143	Saint Kitts and Nevis	97.8	73.086	0.896
144	Saint Lucia	94.8	74.760	0.881
145	Saint Vincent and the Grenadines	88.1	68.917	0.817
146	Samoa	98.6	73.731	0.903
147	San Marino	99.0	….	….
148	Sao Tome and Principe	84.9	65.166	0.783
149	Saudi Arabia	82.9	75.966	0.806
150	Senegal	39.3	39.643	0.394
151	Serbia	96.4	74.521	0.891
152	Seychelles	91.8	82.237	0.886
153	Sierra Leone	34.8	44.641	0.381
154	Singapore	92.5	87.300	0.908
155	Slovakia	99.0	78.330	0.921
156	Slovenia	99.7	94.251	0.979
157	Solomon Islands	76.6	47.637	0.669
158	Somalia	…	…	…
159	South Africa	82.4	77.032	0.806
160	Spain	99.0	98.049	0.987
161	Sri Lanka	90.7	62.749	0.814
162	Sudan	60.9	37.345	0.531
163	Suriname	89.6	77.065	0.854
164	Swaziland	79.6	59.811	0.730
165	Sweden	99.0	95.270	0.978
166	Switzerland	99.0	85.654	0.946
167	Syrian Arab Republic	80.8	64.770	0.755
168	T.F.Y.R. Macedonia	96.1	70.135	0.874
169	Tajikistan	99.5	70.797	0.899
170	Thailand	92.6	70.757	0.853
171	Timor-Leste	50.1	72.032	0.574
172	Togo	53.2	55.027	0.538
173	Tonga	98.9	80.082	0.926
174	Trinidad and Tobago	98.4	64.855	0.872
175	Tunisia	74.3	76.342	0.750
176	Turkey	87.4	68.735	0.812
177	Turkmenistan	98.8	73.000	0.902
178	Tuvalu	…	69.231	…
179	Uganda	66.8	62.965	0.655
180	Ukraine	99.4	86.450	0.951

	Country	Adult Literacy	Gross Enrolment	Education Index
181	United Arab Emirates	88.7	59.895	0.791
182	United Kingdom	99.0	92.984	0.970
183	United Republic of Tanzania	69.4	50.409	0.631
184	United States	99.0	93.324	0.971
185	Uruguay	96.8	88.933	0.942
186	Uzbekistan	99.4	73.846	0.909
187	Vanuatu	74.0	63.428	0.705
188	Venezuela	93.0	75.519	0.872
189	Viet Nam	90.3	63.936	0.815
190	Yemen	54.1	55.241	0.545
191	Zambia	68.0	60.465	0.655
192	Zimbabwe	89.4	52.417	0.770

Table 7
Service Delivery by Stages 2008 (% Utilization)

	Country	I	II	III	IV	V	Total
1	Afghanistan	7	43	30	0	0	80
2	Albania	5	50	50	8	4	117
3	Algeria	7	26	34	0	0	67
4	Andorra	5	40	37	1	2	85
5	Angola	8	66	56	0	1	131
6	Antigua and Barbuda	7	18	15	1	1	42
7	Argentina	8	74	60	19	6	167
8	Armenia	8	41	31	0	1	81
9	Australia	7	85	76	38	19	225
10	Austria	8	78	75	32	6	199
11	Azerbaijan	6	58	49	2	3	118
12	Bahamas	7	47	36	0	0	90
13	Bahrain	7	64	55	22.5	7	155.5
14	Bangladesh	7	39	52	5	2	105
15	Barbados	8	37	40	1	4	90
16	Belarus	6	58	28	3	3	98
17	Belgium	7	47	73	22	12	161
18	Belize	7	26	54	0	4	91
19	Benin	8	13	13	1	2	37
20	Bhutan	6	39	48	20	9	122
21	Bolivia	8	72	62	9	5	156
22	Bosnia and Herzegovina	6	41	41	0	0	88
23	Botswana	7	26	23	6	3	65
24	Brazil	7	75	64	27	7	180
25	Brunei Darussalam	5	41	31	1	1	79
26	Bulgaria	8	61	67	9	0	145
27	Burkina Faso	7	20	25	3	3	58
28	Burundi	1	2	1	0	0	4
29	Cambodia	5	21	26	6	1	59
30	Cameroon	1	18	19	3	0	41
31	Canada	8	84	88	36	13	229
32	Cape Verde	8	57	49	0	2	116
33	Central African Republic	0	0	0	0	0	0
34	Chad	1	1	2	0	0	4
35	Chile	8	72	59	22.5	7	168.5
36	China	8	70	64	3	7	152
37	Colombia	8	80	52	12	14	166
38	Comoros	2	3	3	0	0	8
39	Congo	7	6	3	3	2	21
40	Costa Rica	8	59	49	9	7	132
41	Côte d'Ivoire	7	6	6	0	0	19
42	Croatia	7	59	55	5	3	129
43	Cuba	8	27	28	0	1	64
44	Cyprus	7	69	60	5	2	143

	Country	I	II	III	IV	V	Total
45	Czech Republic	8	77	79	22	7	193
46	Democratic People's Republic of Korea	1	2	2	1	0	6
47	Democratic Republic of the Congo	5	10	11	0	0	26
48	Denmark	8	89	110	67	25	299
49	Djibouti	5	11	18	0	0	34
50	Dominica	1	0	1	0	0	2
51	Dominican Republic	8	65	63	8	8	152
52	Ecuador	7	63	52	7	4	133
53	Egypt	8	65	78	24	6	181
54	El Salvador	8	69	69	18	9	173
55	Equatorial Guinea	7	8	4	0	0	19
56	Eritrea	2	7	10	0	0	19
57	Estonia	8	79	77	35	14	213
58	Ethiopia	0	22	29	1	0	52
59	Fiji	6	32	44	0	0	82
60	Finland	7	73	82	24	3	189
61	France	8	85	91	41	23	248
62	Gabon	5	5	12	0	1	23
63	Gambia	5	19	28	0	0	52
64	Georgia	6	67	33	0	0	106
65	Germany	8	69	70	17	8	172
66	Ghana	7	37	42	1	1	88
67	Greece	8	68	44	3	1	124
68	Grenada	5	37	38	2	0	82
69	Guatemala	8	63	57	8	6	142
70	Guinea	5	6	10	0	0	21
71	Guinea-Bissau	0	5	2	0	0	7
72	Guyana	5	26	38	1	1	71
73	Haiti	2	10	7	0	0	19
74	Honduras	8	54	34	8	7	111
75	Hungary	8	79	75	16.5	6	184.5
76	Iceland	6	68	57	7	0	138
77	India	8	57	56	18	4	143
78	Indonesia	6	58	31	4	1	100
79	Iran (Islamic Republic of)	6	50	20	0	1	77
80	Iraq	8	13	8	1	2	32
81	Ireland	7	78	76	34	7	202
82	Israel	7	75	69	36	12	199
83	Italy	8	73	60	2	10	153
84	Jamaica	7	39	48	0	2	96
85	Japan	8	88	76	39	11	222
86	Jordan	8	67	78	19	9	181
87	Kazakhstan	6	60	20	6	4	96
88	Kenya	6	38	43	2	2	91
89	Kiribati	1	5	14	0	0	20

	Country	I	II	III	IV	V	Total
90	Kuwait	0	55	50	12	7	124
91	Kyrgyzstan	8	46	30	3	2	89
92	Lao People's Democratic Republic	5	1	5	0	0	11
93	Latvia	8	64	59	1	2	134
94	Lebanon	8	44	54	7	4	117
95	Lesotho	7	51	45	0	0	103
96	Liberia	3	17	12	0	1	33
97	Libyan Arab Jamahiriya	3	8	9	3	1	24
98	Liechtenstein	8	12	35	0	1	56
99	Lithuania	8	77	75	12	10	182
100	Luxembourg	8	65	79	20	10	182
101	Madagascar	7	28	30	3	4	72
102	Malawi	8	22	36	0	0	66
103	Malaysia	8	77	81	29	7	202
104	Maldives	8	39	39	2	0	88
105	Mali	7	24	20	2	0	53
106	Malta	8	85	78	34	12	217
107	Marshall Islands	3	1	17	0	0	21
108	Mauritania	1	7	7	2	1	18
109	Mauritius	8	63	57	13	0	141
110	Mexico	8	79	81	32	11	211
111	Micronesia (Federated States of)	6	7	11	0	0	24
112	Monaco	8	52	54	0	0	114
113	Mongolia	7	67	41	6	5	126
114	Montenegro	8	48	50	0	5	111
115	Morocco	0	30	29	1	2	62
116	Mozambique	5	37	40	7	4	93
117	Myanmar	8	18	7	1	0	34
118	Namibia	7	21	22	0	2	52
119	Nauru	0	0	3	0	0	3
120	Nepal	8	37	41	0	0	86
121	Netherlands	8	85	93	36	14	236
122	New Zealand	8	75	78	19	12	192
123	Nicaragua	1	51	34	0	0	86
124	Niger	8	9	4	0	1	22
125	Nigeria	8	32	27	0	0	67
126	Norway	8	85	112	59	19	283
127	Oman	7	49	68	16	5	145
128	Pakistan	8	60	52	5	2	127
129	Palau	6	9	38	0	0	53
130	Panama	7	60	45	6	6	124
131	Papua New Guinea	5	8	13	0	0	26
132	Paraguay	1	57	61	7	5	131
133	Peru	8	75	72	9	5	169
134	Philippines	8	66	61	12	6	153

	Country	I	II	III	IV	V	Total
135	Poland	7	76	65	8	5	161
136	Portugal	8	77	66	27	1	179
137	Qatar	7	36	52	22	0	117
138	Republic of Korea	8	86	94	42	16	246
139	Republic of Moldova	7	47	37	0	2	93
140	Romania	6	62	53	1	2	124
141	Russian Federation	7	61	28	3	1	100
142	Rwanda	6	38	34	1	3	82
143	Saint Kitts and Nevis	7	25	48	2	2	84
144	Saint Lucia	8	25	47	3	1	84
145	Saint Vincent and the Grenadines	8	29	38	4	0	79
146	Samoa	5	23	25	0	0	53
147	San Marino	1	35	24	0	0	60
148	Sao Tome and Principe	7	14	13	0	0	34
149	Saudi Arabia	8	53	66	7	5	139
150	Senegal	8	28	51	1	4	92
151	Serbia	2	56	47	0	0	105
152	Seychelles	7	31	49	0	3	90
153	Sierra Leone	1	9	6	0	1	17
154	Singapore	8	73	66	29	7	183
155	Slovakia	7	66	67	1	1	142
156	Slovenia	6	73	69	0	2	150
157	Solomon Islands	5	13	22	2	0	42
158	Somalia	0	0	0	0	0	0
159	South Africa	8	64	72	17	4	165
160	Spain	8	73	84	33	11	209
161	Sri Lanka	8	51	47	8	4	118
162	Sudan	4	6	9	0	0	19
163	Suriname	1	5	5	0	0	11
164	Swaziland	5	35	32	0	3	75
165	Sweden	8	87	110	68	21	294
166	Switzerland	8	50	77	17	15	167
167	Syrian Arab Republic	0	28	34	7	3	72
168	Tajikistan	1	7	3	0	0	11
169	Thailand	7	63	60	12	9	151
170	The former Yugoslav Republic of Macedonia	8	56	43	0	0	107
171	Timor-Leste	6	21	21	0	0	48
172	Togo	6	11	5	0	4	26
173	Tonga	1	19	26	6	0	52
174	Trinidad and Tobago	8	67	56	0	2	133
175	Tunisia	7	6	26	0	0	39
176	Turkey	5	54	46	14	7	126
177	Turkmenistan	2	7	5	0	0	14
178	Tuvalu	0	5	7	0	0	12
179	Uganda	8	36	33	2	1	80

	Country	I	II	III	IV	V	Total
180	Ukraine	7	82	51	9	11	160
181	United Arab Emirates	7	63	84	50	10	214
182	United Kingdom of Great Britain and Northern Ireland	8	79	77	32	11	207
183	United Republic of Tanzania	8	18	41.5	0	0	67.5
184	United States of America	8	90	111	55	21	285
185	Uruguay	8	62	59	18	5	152
186	Uzbekistan	8	33	37	2	2	82
187	Vanuatu	2	2	5	0	0	9
188	Venezuela	7	55	64	4	10	140
189	Viet Nam	7	52	59	5	10	133
190	Yemen	7	10	5	0	0	22
191	Zambia	0	0	0	0	0	0
192	Zimbabwe	0	12	14	0	0	26

Table 8
E-Participation Index

	Country	e-Participation Index	Ranking
1	United States	1.0000	1
2	Republic of Korea	0.9773	2
3	Denmark	0.9318	3
4	France	0.9318	3
5	Australia	0.8864	5
6	New Zealand	0.7955	6
7	Mexico	0.7500	7
8	Estonia	0.7273	8
9	Sweden	0.6591	9
10	Singapore	0.6364	10
11	Canada	0.6136	11
12	Japan	0.6136	11
13	Luxembourg	0.6136	11
14	Ukraine	0.5682	14
15	Jordan	0.5455	15
16	Netherlands	0.5227	16
17	Norway	0.5227	16
18	Viet Nam	0.5227	16
19	Bhutan	0.5000	19
20	Austria	0.4773	20
21	China	0.4773	20
22	Lithuania	0.4773	20
23	Argentina	0.4545	23
24	Brazil	0.4545	23
25	Colombia	0.4318	25
26	Mozambique	0.4318	25
27	United Kingdom	0.4318	25
28	Belgium	0.4091	28
29	Bolivia	0.4091	28
30	Lebanon	0.4091	28
31	Switzerland	0.4091	28
32	El Salvador	0.3864	32
33	Malta	0.3864	32
34	Costa Rica	0.3636	34
35	Spain	0.3636	34
36	Bahrain	0.3409	36
37	Venezuela	0.3409	36
38	Dominican Republic	0.3182	38
39	Israel	0.3182	38
40	Saudi Arabia	0.3182	38
41	Botswana	0.2955	41
42	Malaysia	0.2955	41
43	Thailand	0.2955	41
44	United Arab Emirates	0.2955	41

	Country	e-Participation Index	Ranking
45	Finland	0.2727	45
46	Honduras	0.2727	45
47	Mongolia	0.2727	47
48	Philippines	0.2727	47
49	Azerbaijan	0.2500	49
50	Egypt	0.2500	49
51	India	0.2500	49
52	Ireland	0.2500	49
53	Portugal	0.2500	49
54	South Africa	0.2500	49
55	Cambodia	0.2273	55
56	Italy	0.2273	55
57	Latvia	0.2273	55
58	Poland	0.2273	55
59	Slovenia	0.2273	55
60	Burkina Faso	0.2045	60
61	Czech Republic	0.2045	60
62	Ghana	0.2045	60
63	Hungary	0.2045	60
64	Iraq	0.2045	60
65	Libyan Arab Jamahiriya	0.2045	60
66	Oman	0.2045	60
67	Senegal	0.2045	60
68	Sudan	0.2045	60
69	Togo	0.2045	60
70	Trinidad and Tobago	0.2045	60
71	Chile	0.1818	71
72	Congo	0.1818	71
73	Qatar	0.1818	71
74	Cameroon	0.1591	74
75	Cape Verde	0.1591	74
76	Germany	0.1591	74
77	Saint Kitts and Nevis	0.1591	74
78	Antigua and Barbuda	0.1364	78
79	Bangladesh	0.1364	78
80	Barbados	0.1364	78
81	Croatia	0.1364	78
82	Kyrgyzstan	0.1364	78
83	Liechtenstein	0.1364	78
84	Madagascar	0.1364	78
85	Peru	0.1364	78
86	Turkey	0.1364	78
87	Angola	0.1136	87
88	Belize	0.1136	87
89	Benin	0.1136	87
90	Ecuador	0.1136	87
91	Jamaica	0.1136	87

	Country	e-Participation Index	Ranking
92	Mauritania	0.1136	87
93	Mauritius	0.1136	87
94	Niger	0.1136	87
95	Panama	0.1136	87
96	Seychelles	0.1136	87
97	Swaziland	0.1136	87
98	Belarus	0.0909	98
99	Bosnia and Herzegovina	0.0909	98
100	Brunei Darussalam	0.0909	98
101	Cote d'Ivoire	0.0909	98
102	Cuba	0.0909	98
103	Cyprus	0.0909	98
104	Greece	0.0909	98
105	Iran (Islamic Rep. of)	0.0909	98
106	Kazakhstan	0.0909	98
107	Lesotho	0.0909	98
108	Mali	0.0909	98
109	Monaco	0.0909	98
110	Montenegro	0.0909	98
111	Pakistan	0.0909	98
112	Russian Federation	0.0909	98
113	Rwanda	0.0909	98
114	Uganda	0.0909	98
115	Uzbekistan	0.0909	98
116	Andorra	0.0682	116
117	Comoros	0.0682	116
118	Fiji	0.0682	116
119	Guyana	0.0682	116
120	Iceland	0.0682	116
121	Kuwait	0.0682	116
122	Liberia	0.0682	116
123	Nigeria	0.0682	116
124	Palau	0.0682	116
125	Paraguay	0.0682	116
126	Republic of Moldova	0.0682	116
127	Saint Lucia	0.0682	116
128	Saint Vincent and the Grenadines	0.0682	116
129	Samoa	0.0682	116
130	Sao Tome and Principe	0.0682	116
131	Serbia	0.0682	116
132	Slovakia	0.0682	116
133	Sri Lanka	0.0682	116
134	Uruguay	0.0682	116
135	Afghanistan	0.0455	135
136	Armenia	0.0455	135
137	Bahamas	0.0455	135

	Country	e-Participation Index	Ranking
138	Bulgaria	0.0455	135
139	Burundi	0.0455	135
140	Eritrea	0.0455	135
141	Gabon	0.0455	135
142	Georgia	0.0455	135
143	Guatemala	0.0455	135
144	Guinea	0.0455	135
145	Indonesia	0.0455	135
146	Kenya	0.0455	135
147	Namibia	0.0455	135
148	Papua New Guinea	0.0455	135
149	Romania	0.0455	135
150	Syrian Arab Republic	0.0455	135
151	Tonga	0.0455	135
152	Albania	0.0227	152
153	Algeria	0.0227	152
154	Djibouti	0.0227	152
155	Gambia	0.0227	152
156	Haiti	0.0227	152
157	Kiribati	0.0227	152
158	Malawi	0.0227	152
159	Maldives	0.0227	152
160	Micronesia (Federated States of)	0.0227	152
161	Nepal	0.0227	152
162	San Marino	0.0227	152
163	Sierra Leone	0.0227	152
164	Solomon Islands	0.0227	152
165	T.F.Y.R. Macedonia	0.0227	152
166	Tunisia	0.0227	152
167	Turkmenistan	0.0227	152
168	United Republic of Tanzania	0.0227	152
169	Vanuatu	0.0227	152
170	Central African Rep.	0.0000	170
171	Chad	0.0000	170
172	Democratic People's Rep. of Korea	0.0000	170
173	Democratic Republic of the Congo	0.0000	170
174	Dominica	0.0000	170
175	Equatorial Guinea	0.0000	170
176	Ethiopia	0.0000	170
177	Grenada	0.0000	170
178	Guinea-Bissau	0.0000	170
179	Lao People's Democratic Republic	0.0000	170

	Country	e-Participation Index	Ranking
180	Marshall Islands	0.0000	170
181	Morocco	0.0000	170
182	Myanmar	0.0000	170
183	Nauru	0.0000	170
184	Nicaragua	0.0000	170
185	Somalia	0.0000	170
186	Suriname	0.0000	170
187	Tajikistan	0.0000	170
188	Timor-Leste	0.0000	170
189	Tuvalu	0.0000	170
190	Yemen	0.0000	170
191	Zambia	0.0000	170
192	Zimbabwe	0.0000	170

Table 9
Data for countries without an e-Readiness Index

	Countries	Web Measure Index	Adult Literacy	Gross Enrolment	Internet Per 100 Users	PC Per 100 Users	Cellular Subscribers Per 100 Users	Main Telephone Lines Per 100 Users	Broad Banding Per 100 Users
	D.P.R. Korea	.0201	…	…	0.00	...	…	4.40	0.00
	Kiribati	.0669	...	75.10	2.15	1.18	0.68	5.11	0.00
	Marshall Islands	.0702	…	71.10	3.51	8.77	1.13	8.27	0.00
	Micronesia (Federated States of)	.0803	…	…	14.39	5.41	12.70	11.22	0.04
	Monaco	.3813	99.0	…	56.34	22.69	48.76	96.41	26.59
	Nauru	.0100	…	50.60	2.59	…	12.97	16.00	…
	Palau	.1773	…	96.90	…	…	…	…	…
	San Marino	.2007	99.0	…	56.30	90.33	63.52	77.22	4.52
	Somalia	.0000	…	…	1.11	0.91	6.08	1.22	0.00
	Tuvalu	.0401	…	69.20	16.19	8.00	12.38	8.48	0.29

ANNEX TWO

TECHNICAL NOTES AND METHODOLOGY

Technical Notes and Methodology 2007-2008

a) Telecommunication Infrastructure Index

The Telecommunication Infrastructure Index 2008 is a composite weighted average of five primary indicators. These are: PCs/100 persons; Internet users/100 persons; Telephone lines/100 persons; Mobile phones/100 persons; and broadband/100.

Data for UN member states was taken primarily from the UN International Telecommunication Union (ITU). The data was standardized by constructing indices for each of the indicators as follows: Based on the scores of the countries, a maximum and minimum value is selected for each of the five indicators. The country's relative performance is measured by a value between 0 and 1 based on the following:

Indicator value = (Actual value - Minimum value) / (Maximum value – Minimum value). For example, for United Arab Emirates, which has 36.69 Internet users per 100 persons, the Internet Index = (36.69 - 0) / (88.87 - 0) = 0. 413

Constructing the Indices		
Indicator (per 100 persons)	Maximum Value	Minimum Value
PCs	99.33	.02
Internet Users	88.87	0
Telephone lines	96.41	.02
Mobile subscribers	151.61	.42
Broadband	31.73	0

The Telecommunications Infrastructure Index was constructed as a composite measure of PCs, Internet Users, Telephone Lines, Mobile subscribers and broadband per 100 and assigns each variable a 20 per cent weight.

Infrastructure Index = 1/5 (PC index) + 1/5 (Internet user index) + 1/5 (Telephone line index) + 1/5 (Mobile user index) + 1/5 (Broadband Index

b) Web Measure Survey Methodology

The overarching purpose of the web measure survey is to assess each UN member states' online presence through its national site, as well as five pre-determined ministries along with associated and integrated portals and/or subsites. In order to undertake a thorough review while simultaneously ensure fairness and accuracy, a rigorous methodological framework was developed in 2003. While it has evolved by necessity, the overarching model remains fairly consistent. For 2007-2008 there were a number of fairly significant changes to the survey itself and the methodology, most of which added a higher degree of rigor to the survey. These key changes are itemized below:

1. Shorter Survey Window: In the past, the research team completed the actual data collection during a 60-day survey "window" during which all country web sites are reviewed and also re-evaluated by senior researchers (with the help of

translators when necessary). For 2007-2008, the survey window was shortened by almost half to 5 weeks (approximately 35 days). All sites were reviewed during this time frame and no changes were made to the data after the survey window was closed. This shorter time frame ensures a greater degree of fairness and comparability to the survey, while at the same time adding a degree of rigor to the process. For instance, in the past, sites or pages that did not open or were not working on the initial attempt were revisited up to two additional times on different dates to see if they were working. In 2007-2008, non-working sites/pages were only given one additional chance to open. Similarly, researchers were instructed to follow the "citizen user" approach even more strictly, whereby they scored information and features based on a real user approach (that is, can they find it easily, quickly, intuitively) rather than making extraordinary efforts to seek out the information and features at a given site. This added rigor puts even greater pressure on countries to design their web systems with the citizen user in mind.

2. New Questions/Longer Web Measure Survey for 2007-2008: A number of new questions were added in 2007-2008, resulting in a significantly longer survey with a larger number of total points available. The new questions were primarily in the interactive presence, transactional presence, and networked presence sections. The greater number of points available allowed for a much wider range of point distributions, and the 2007-2008 results clearly reflect this.

3. New Probe Questions/Follow On Points: In 2007-2008, follow on questions and points were added to a number of questions on the previous survey. This was done to add rigor to the survey, for example, by taking questions that originally probed a feature simply at the informational level and adding follow on questions as to what format the information is in, is it downloadable, is it available via email, etc. This clearly had an impact on the point distribution, as countries missing some or all of these features then would miss out on multiple points whereas in previous years this would only be worth one point.

4. Overall Greater Scrutiny: Given the other key factors listed above, researchers overall were instructed and trained to review the sites with a greater degree of scrutiny. Again, the citizen user approach was reinforced, and if researchers could not easily identify information and features, they were scored "0" for not being available. Similarly, certain holdover questions that were scored leniently in the past were specifically given more rigor. Overall, there has been an exponential increase in the number of web sites included in the global survey, the amount of information and services at those web sites, and the scale of those web sites. Thus, for many countries, especially those with poorly designed but expanding sites, the ability of researchers to easily find, identify, and score features within a **reasonable amount of time and effort** (the average citizen user approach) has decreased, and those sites may receive significantly lower scores.

General Approach—Perspective of the Average Citizen User

It should be noted again here that researchers score the information and features on whether they can be found and accessed, as opposed to whether or not they in fact exist. Thus, in surveying each site, reviewers are instructed and trained to take the approach and mindset of an average citizen user. This was an especially important factor in 2007-2008, as the number of web sites surveyed increased significantly, and overall the amount of information and features provided at the web sites increased dramatically. While it is possible, although implausible, to search the sites meticulously for all content and features, this approach misses the key point that the average user needs to find information and features quickly and intuitively for a site to be "usable." Even if researchers had the resources to search for hours to locate a specific feature or function at a given site, no average citizen or government web site user would expend that kind of time or effort. The actual time spent for any given country review varies widely depending on how extensive the online presence is, and generally how "good" or "bad" the actual web sites are, both in terms of design, user-friendliness, as well as the extent of the content offered. Given the wide variation between sites, it is hard to provide an approximate time for reviewing a single country but a researcher typically reviews one or possibly two countries in a full day. As described above, once completed by the original reviewer/translator, a country is subject to complete re-review by a senior researcher (along with a translator when necessary) who re-verifies all answers and, if applicable, compiles outstanding judgment calls that are determined in conjunction with the lead researcher. Through this method, all surveyed sites are assessed by at least two people, at least one of whom has years of experience in assessing these government sites.

The survey team is charged with utilizing at least the six official UN languages to complete the survey: Arabic, Chinese, English, French, Russian and Spanish. As in previous years, the international research team along with translators made every effort to review each country in its official language or in the pre-dominant language on its site(s).

Selecting the appropriate site/URL at the national level

One of the baseline decisions for researchers when undertaking this survey was identifying the specific site(s) to review as the national government site for each country. Regardless of where a nation is in its e-government development, a priority should be to provide users with a clear indication as to which of the potentially many government sites available is the "official" national government site—in a sense, the gateway, or starting point for national users. Not only is this fairly easy to do—a simple, clear statement at the chosen web site is sufficient to start with—but also an important step toward providing government information and services to the public in an integrated, usable and easy-to-find manner.

The criteria included the following:

1. Is there a distinct national government site or portal?

2. Is there a Presidential or Prime Minister's site (whichever office heads the government of the country in question) that clearly states that it is the national government site?

3. Is there a site operated by another agency, ministry or other government body that is clearly identified as the national government site?

4. If none of the above, is there a viable Presidential or Prime Minister's site, even if it is not clearly identified as the national government site (and as long as it is not simply a press or publicity site)? In other words, does it include information about the national government and its services even if there is no clear statement or indication that it is indeed the official national government site?

If no site could be found that clearly met any of the above criteria, then the country received no points for the Emerging Presence section of the survey because it was deemed that there was no "true" national site but rather a substitute national site had to be used. While this is uncommon, when applicable it typically involved countries which have only one government site online, which usually turns out to be a pure Ministry of Information or Ministry of Tourism site.

It should be noted that while sites illustrate some of the problems above, most have in fact engaged in the procedure of actually noting on their national site that it is their "Official" Government site, or Gateway to Government, or other such statement. A good example of creating and identifying a single government access point is the Malta national site, http://www.gov.mt, whose title bar indicates "Government of Malta Information & Services Online" while the homepage itself, in addition to the "Government of Malta" header clearly states the site's purpose up front: "Welcome to www.gov.mt where you can access Government services." Such clear user-friendly presentation is not limited to larger, industrialized nations; the Saint Vincent and the Grenadines national site, http://www.gov.vc, for example, includes a visible header simply, but effectively, stating "The Official Web Site of the Government of Saint Vincent and the Grenadines" and the footer, at the bottom of the homepage, repeats the message. These types of clear indicators on national sites obviously made the choice for researchers easy, as it would for citizens.

A persistent dilemma over each of the survey cycles faced by researchers is the number of countries that provide more than one apparently legitimate national access point. While some have simply not yet consolidated their government entry points into a single site or portal that can be clearly distinguished, others have actually done this on purpose – offering different access points to different audiences. Since the use of integrated portals or web sites is an increasing—and apparently effective—trend in the e-government strategies of states worldwide, when faced with this situation researchers selected as the primary site a National Portal or other portal if it was deemed to be the official homepage of the government; however, to accommodate strategy, more than one site could be scored if it was clearly part of a tightly integrated "network" of national sites. But it should be noted, that countries for which more than one site was assessed were neither at a disadvantage nor received any benefits from having more than one national entry. A case in point is Norway, which has an official government site for "Information from the Government and the Ministries," http://www.regjeringen.no, as well as a site self-described as "your gateway to the public sector in Norway," http://norge.no. Clearly, both are official government sites. The former is, as indicated, informational while the latter provides the guide to the actual services. To accommodate strategy, one site is deemed the primary country national site, in this case Odin, and is assessed as usual; however, since the two entry sites are clearly integrated in that they link to each other, the second, Norge.no, was then evaluated in terms of the services offered there.

In this way, the survey was able to assess the basic structure and information offered at the primary site while incorporating the integrated stand-alone services portal without penalizing a country for its strategy.

Some countries have engaged in the convenient practice of organizing and providing their information architecture by audience. This user-friendly "tab" design system enables a country to target different users simultaneously while retaining only one national site gateway. Notable examples of this strategy found around the world, include the USA.gov portal, http://www.USA.gov, Mauritius, which classifies the audience tabs as "sub-portals," http://www.gov.mu, Singapore, http://www.gov.sg, as well as the United Arab Emirates, http://www.government.ae.

Despite improvements in consolidation and integration, there are often seemingly overlapping, yet different entry points depending on the audience. Australia, for example, has several sites depending on purpose, such as the business entry point, http://www.business.gov.au. Similarly, the U.S. has an "Official Business Link to the U.S. Government," http://www.business.gov, site.

For purposes here, because this survey is concerned mainly with citizens, one specific group is too limited to constitute a "national site." While in these instances researchers were able to identify the primary national site and disregard the audience-specific gateways, this illustrates the importance for government to clearly identify official government sites for what they are and what purpose they fulfil. Specifically, in addition to identifying a national site as "official", the emphasis remains on what appears to be the best starting point for citizens. After the starting point is chosen, other national government sites are included and taken into account, provided that the main site links to the other access points. Basically therefore, no country is penalized for setting up additional access points as long as these are clearly integrated and identified in an easy to manage fashion.

Selecting the appropriate site/URL at the ministry level

Finding and selecting the appropriate site(s) at the ministerial level is typically an easy task because most national sites provide links to the ministries, often under a clearly defined header or subsection. Such approach not only encourages citizen utilization and enhances the delivery of information across government but should, in fact, be considered a standard feature of any national site. Obviously, where this practice was in place, ministerial sites were easily identified by researchers. In instances where this was not the case, researchers consulted the data collection database with ministry URLs from the two previous reports. If still unavailable, researchers next attempted to locate the ministerial URLs at other national government sites, which might provide them. If unsuccessful the researchers continued by trying to find them through the most common search engines. Finally, independent online collections of government URLs were consulted. If none of these methods resulted in finding the appropriate ministry it was determined to be unavailable. Similarly to locating a national site URL: if a meticulous search by researchers could not locate the site, then it is unlikely a citizen would expend the time and effort to do so.

Selecting the appropriate site/URL if unavailable at the national level

One obstacle in conducting a truly global survey is the fact that some countries do not offer certain public services at the federal level, but rather at the regional level. It should be made clear that no country is penalized for offering a service at the regional as opposed to the federal level per se. In fact, when the issue arises, researchers tend to be inclusive in assessing the matter as long as the information and/or service can be found from the national level. For example, motor vehicle services in the United States are a state issue not a federal service. Even so, the federal USA.gov portal clearly re-directs the user where to go by providing links to the specific state URLs where the service can be accessed: http://www.USA.gov/Topics/Motor_Vehicles.shtml.

A more difficult problem arises when not only a specific service is located at the local level but when entire ministerial functions are altogether missing at the national level. If researchers are unable to locate a ministry as per the above described method, then the final step was to find out whether the country in question actually had such ministry at the national level or whether the function might be locally administrated. While this is a rare occurrence, there are some notable examples, such as Canada where education is not a federal issue but rather managed at the provincial and territorial level. With no department available to survey at the national level, the methodology had to be expanded in order to incorporate for structural variation between countries. Again, no country was penalized for administrating services at the local rather than the national level.

In these instances, it was, after much discussion and analysis, determined that the best proxy for incorporating structural variation, is to survey the specific ministerial function equivalent in the largest local level entity offering the service. Consequently, in the case of Canada, Ontario's Ministry of Education, http://www.edu.gov.on.ca, was assessed as the substitute site. Similarly, in Switzerland, where labour is a local – not a national – administrative issue, the Department of Labour in the Canton of Zürich was the alternative site surveyed, http://www.awa.zh.ch. While obviously this is not a perfect equivalent, it was concluded to be the fairest alternative in conducting a truly global assessment when taking cultural and structural variation into account. In fact, judging by the numbers, the method was clearly not to anyone's disadvantage as Ontario's site was tied for the highest scoring ministry in Canada while the Zürich site was the second highest scoring in the country.

Another dilemma, albeit more minor, arises in those countries where one, or more, ministries are combined into one. Most notably, a fair number of countries have a "Ministry of Health and Social Welfare," such as the Republic of Korea, http://www.mohw.go.kr. In these cases the ministry is assessed as usual and its score simply duplicated for each of the covered ministries. Similarly, a very small number of countries have combined three ministries into one, such as Japan which has a Ministry of Health, Labour, and Welfare, http://www.mhlw.go.jp, whose score is then multiplied by three.

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UN E-Government Survey 2008

From E-Government to Connected Governance

The UN E-Government Survey 2008: From E-Government to Connected Governance assesses the e-government readiness of the 192 Member States of the UN according to a quantitative composite index of e-readiness based on website assessment, telecommunication infrastructure, and human resource endowment. ICTs can help reinvent government in such a way that existing institutional arrangements can be restructured and new innovative arrangements can flourish, paving the way for a transformed government.

The focus of the report this year, in Part II, is e-government initiatives directed at improving operational efficiency through the integration of back-office functions. Whilst such initiatives, if successful, will deliver benefits to citizens, the primary purpose is to improve the effectiveness of government and governmental agencies. Models of back-office integration, irrespective of the delivery mode, fall into three broad categories: single function integration, cross functional integration, and back-office to front-office integration. The level of complexity, expressed in terms of the number of functions within the scope and number of organizations involved, is the primary factor influencing a successful outcome – with a tendency amongst the more ambitious projects to fail to deliver the full anticipated benefits. The key variables involved in the delivery of back-office integration are the people, processes and technology required.

Whilst the technology is increasingly resilient and 'fit for purpose', the evidence indicates that success or failure is less a technological issue and more a people issue - in particular, the ability to change public service cultures and motivate public sector workers to new ways of working, address trade union concerns, and provide adequately skilled and competent management and leadership.

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