

## **The Status of Information and Communication Technologies (ICT) in Governments – 2005:**

An Analysis of ICA Country Reports for the 39<sup>th</sup> Annual ICA Conference

### **Executive Summary**

Unanimously, governments have adopted a citizen-centric approach in providing services. The first era of Internet-enabled E-Government saw the launch of transactional services and information online and national portals that present a seamless face to the citizen. Common services such as taxes, permit applications, fee payments and government forms have been placed online by most governments. Governments also are providing multi-channel services; integrating phone, web, e-mail, and in-person delivery channels to offer better and more consistent services.

Despite the progress to date, the transformation to a fully citizen-centric government is not possible without the organizational, budgetary and architectural building blocks in place to facilitate the transition. Efforts to make the front-end more seamless have highlighted deficiencies in the underlying building blocks that make government work. More than a new service delivery channel, the definition of e-Government has broadened to include all activities that ICT can support. This is reflected in the Country Reports submitted for the 39<sup>th</sup> ICA Conference. As governments strive to live up to the promises offered by one-stop portals and integrated services, infrastructure, architecture, security, identity management, organizational structures, funding, collaboration, performance measurement and business process redesign all come to the forefront.

**Reorganizing for ICT** – Many governments have adopted more centralized organizational structures, management controls and refined business processes to make better use of ICT. Governments value new skills in managers; and not just ICT skills but also change management, project management, and intergovernmental and cross-sector collaboration skills. Government-wide requirements for performance measurement and budgeting are being used to ensure that agencies adhere to government-wide standards, architectures and priorities. ICT investments are being pooled across agencies or cross-government funds are being created to provide for e-Government initiatives that ever-increasingly are crossing government boundaries.

**Implementing E-Government Architectures** – The current shifts in organizational structure coincide with the government-wide architectures and infrastructures that are being implemented. Architectures are becoming more than just conceptual frameworks that exist on paper, as governments implement shared services and automate business rules for intergovernmental services. The development and adoption of standards are enabling interoperability. Dependencies on ICT and threats make security and critical infrastructure protection an urgent concern for all governments. Identity management and authentication are the missing pieces to fully integrated and transactional services, and many governments are addressing this issue. Governments are also aggregating citizen and government data in central registries and repositories to improve data sharing and access.

**Improving Citizen Services** – While governments focus on internal issues, citizen expectations do not remain constant. New devices and wireless technology will

soon expand government services to channels beyond the current phone, e-mail and web channels. Citizens view government as both a service provider, and a political entity. This will require governments to move from transaction to true interaction. Finally, large investments in ICT require a critical mass of citizen users. Take-up of government services has been uneven thus far. Governments are working hard to market mature online services and improve the quality of citizen interactions.

The National Priorities identified in your ICA Country Reports and the agenda for the 39th ICA Conference reflect the challenges as we move forward. Implementing architectures was a frequent priority, as was security and identity management. Making the most of our IT investments is critical, which is why governments stressed basing ICT decisions on measurable outcomes. The need for collaboration was highlighted, arising from interdependencies with other governments, the private sector and international organizations.

Transformation is key, both organizational and managerial. While governments look within for solutions, citizens remain the focus of their effort. The continued emphasis on citizen- (and business-) centric services drives the current operational changes. Addressing these issues now is important, because new devices, means of access and demands for interaction from citizens and business are on the horizon.

The following report is based on the observations, strategies and initiatives featured in eighteen ICA Country Reports submitted for the 39<sup>th</sup> ICA Conference: Australia, Australia, Belgium, Denmark, Estonia, Finland, Hungary, Israel, Japan, Malta, the Netherlands, New Zealand, Singapore, Sweden, Switzerland, Taiwan, the United States, and the United Kingdom. Selected initiatives and strategies from these reports will be highlighted throughout this document. The ICA thanks the authors of the reports for their valuable contributions.

### **The Status of ICT in Government: Introduction**

ICT is becoming more than putting services online. Rather, it is an enabler for all aspects of a citizen-centric government. In recognizing this, governments are reorganizing the bureaucracy, refining business processes, managing systems as parts of government-wide architectures, and improving the quantity and quality of online citizen interactions to realize the full benefits of ICT.

To understand the current status, it is useful to briefly revisit our progress toward citizen centric e-government to date. Most countries have some formal strategy and/or legislation in place guiding their ICT efforts. In general, these statements have expressed support for and defined E-Government, identified priorities and flagship initiatives and promoted citizen-centric models. As a result of these efforts, governments have placed many transactional services and information online. They have also made the front-end as seamless as possible through national portals, integrated service delivery, and coordinated services across delivery channels (phone, in person, web, e-mail, and fax). The front-end can only be as seamless as the back office allows. To move forward, countries must have the necessary building blocks in place for government-wide architectures and collaboration.

### **Status: Organization and Business Processes**

Governments share the vision of an ICT-enabled, citizen-centric government that is seamless and responsive to citizens. One of the greatest challenges in creating such

a government is deciding how to array and manage the organizations and people that will provide services. Governments have implemented architectures that conceptualize ICT systems as part of an integrated whole that supports business goals. Government-wide approaches and strategies have coincided with the increasing recentralization of ICT management. Multi-channel and integrated services have highlighted the need for collaboration. ICT skills and appropriate funding and performance measurement systems are also important building blocks that are being addressed.

#### Reorganization and Centralization

The desire to manage services according to citizens' needs has led many governments to reorganize the back office around those needs as well. There is a general trend toward recentralization of ICT and, in some cases, the government as a whole. The most obvious example over the past few years has been the entrenchment of the government-wide CIO position. The country reports offer examples of governments continuing to reorganize the way ICT is managed. Also, we see that recentralization is hardly the preferred approach of all governments. Some governments stay decentralized to encourage flexibility and innovation. However, the moving of organizational pieces remains focused on the top of the pyramid rather than on agencies and officials below.

Finland is indicative of this movement toward centralization of ICT functions and management. The State Treasury's KEIKU program is consolidating financial and personnel functions across government. Such services in over one hundred agencies will be merged into a few centers that serve all government agencies. Finland is also centralizing the management of ICT, with the new appointed government CIO, Leena Honka and the creation of a State IT Management Unit within the Ministry of Finance. The new office will be responsible for government-wide management of ICT. A steering group and coordinating group consisting of members across government departments will assist the unit.

Taiwan faces the challenge of transforming ICT in the context of broader public administration reforms. There, government is being reduced in size by one-third, along with a further reorganization to reduce the number of agencies from 37 to 22. Taiwan has developed a transformation strategy to create an ICT approach suited to the streamlined government. In this case, ICT itself did not precipitate the reorganization, but a larger reform required government to change its management of ICT.

Singapore has developed an innovative organizational approach to managing the eCitizen portal that reflects the integrated nature of the site itself. An eCitizen Council consisting of Permanent Secretaries from eight Ministries as "eTown Mayors" sets strategy and policy for the site. Each eTown represents a different section of the portal. The intergovernmental composition of the management of Singapore's front-end complements its goal of becoming a "Networked Government."

The UK, which centralized management of ICT several years ago with the eEnvoy position has reshuffled its approach. Noted as an upcoming effort in last year's report, the UK has transformed the Office of the e-Envoy (OeE) into the e-Government Unit (eGU). The mandate of this new office reflects the broad trend across governments of looking inward to use ICT to support the business of government. Since its announcement, a CIO Council has been created to diffuse the

business transformation efforts of the eGU. The council consists of membership across agencies and levels of government, making it a truly intergovernmental body.

Not all governments are centralizing control of ICT and eGovernment. Sweden and Switzerland offer contrasts to the centralization trends seen elsewhere. In Sweden, individual agencies still bear the most responsibility for the strategic direction of their services. Little steering of their efforts come from a central body. There is no government-wide CIO or central funding source for ICT outside of agency budgets. In Switzerland, the federal structure of government, featuring 26 cantons and 3000 municipalities, favors decentralized models. Both countries stress the need for collaboration models to coordinate efforts across agencies and levels of government. The trade-offs are increased managerial control and reduced redundancy of investments and efforts in centralization versus better innovation and flexibility in decentralization.

Despite its decentralized approach, Sweden offers a noteworthy initiative involving centralization. Four entities that work in e-Government and broader public administration issues will be consolidated into one agency within the Ministry of Finance by the beginning of 2006. The new agency will work on public administration issues, eGovernment and procurement issues.

Malta has also reorganized the government-wide management of ICT. In June of this year, The Ministry for IT (MITI) became the agency responsible for ICT management and policy across government and the broader public sector. The agency will help determine final budgets and provide oversight on government investments in ICT. Other entities with ICT responsibility have been folded into the new ministry.

### *Building ICT Skills*

Governments have focused on the need for ICT skills to manage and implement e-Government. In Japan, the need for technical expertise has led to the strengthening of the Assistant CIO position. Assistant CIO's serve as technical advisors to CIO's in managing ICT support of business processes and the development of "Optimization Plans," which will be addressed later in this document. Their role is expanding to support ICT government-wide with the advent of an Assistant CIO Council. The council has five working groups that address optimization, governance, optimization implementation, security and ICT. The position has also been expanded to include advisement regarding budget and procurement issues concerning large ICT investments.

In the UK, they are working hard to professionalize the IT management position. Working with both high-level CIO's and newly hired staff; the UK strives to create ICT skills and expertise through six efforts: A Professional Competency Framework, Networking and mentoring, a government IT Academy, Private sector collaboration, connection with the 50,000 national IT staff and their managers, and self-selection for participation.

Estonia has made skill development an important part of its strategy. The government provides ICT courses, workgroups and large seminars to share knowledge, and educate officials on changes in the ICT field. Estonia is also facilitating skill development across international boundaries. The Regional eGovernance Center provides training to ICT and policy officials across Eastern and

Southern Europe and Asia on ICT use and management. The centre was set up by the Government of the Republic of Estonia, the United Nations Development Programme (UNDP), and the Open Society Institute (OSI).

### *Cross Government Collaboration*

No organizational structure, architecture or business process can circumvent the need for collaboration across sectors and agencies. Architecture and policies have been overlaid atop organizational structures, but underlying accountability and funding remain stove-piped. The complexity of networked government requires strong collaboration with other agencies, nations, businesses and external standards bodies. Cross governmental collaboration remains a paramount issue. The ICA Country Reports featured many examples of cross-governmental collaboration.

Denmark faces an important challenge for intergovernmental collaboration, a large reorganization of subnational government. In 2007, 14 regions and 271 municipalities become five regions and 98 municipalities. Of course this has serious ramifications for Denmark's government-wide ICT architecture and Interoperability Framework. The government has identified twenty "must-implement" standards from the framework to preserve collaboration across levels of government through the restructuring. Again, we see broader public sector reforms requiring new approaches to ICT management. As Sweden and Switzerland have noted, nowhere is collaboration more important than in governments with decentralized management of ICT. In Australia, agencies collaborate when there is a compelling business case to provide joint services. Australia is noteworthy because of their emphasis on coordination and alignment across all levels of government and the private sector, as highlighted in the "Connecting Government" report. An example is the Cross Jurisdictional Chief Information Officer Group that supports sharing of practices and collaboration across all levels of government.

Local governments in Sweden are implementing a Municipal Platform for Co-operative Use. Building on an inventory of common functions and services, about 50 governments are developing shared services and shared infrastructure that will allow them to achieve economies of scale and wiser investments in ICT. Pilot projects between local governments include child care, application for upper secondary school, reservations for premises, digital assistants, and financial aid renewal.

In Singapore, they espouse networked government. Included in that vision are the private sector and citizens, as demonstrated by the Public-Private-People Integration (3PI) effort that began last fall. Services from the private sector are beginning to be integrated with public channels. 3PI projects include expanding My eCitizen, a personalization tool for the government portal, to include consumer services in addition to government services. The national e-Payment Hub is also seeking to allow electronic payment to both governments and business.

Collaboration is not just necessary to improve services, but also to protect governments from the impacts of external efforts that can adversely affect them. For European Countries in general, interdependency with the European Union adds yet another layer of complexity to intergovernmental collaboration. There is the potential for standards already adopted by individual governments to conflict with other international standards. Belgium noted the need to participate and advocate for their standards with the EU and other forums in order to reduce to the possibility of non-conformity with standard.

### Performance Measurement and Accounting

ICT investments are made and systems are implemented across all agencies. Governments need to ensure that such investments are made wisely, are not duplicative and adhere to government-wide standards and architectures. Governments utilize performance measurement and the budgeting process as a way of reigning in ICT investments and creating an enterprise approach. The goal is to focus ICT on outcomes and require proper planning

The U.S. Government has made "Managing for Results" a major driver of ICT investments. In addition to goals for cyber security, ICT skills development, two goals directly relate to the measurement and management of ICT. One is clear business cases for all ICT investments. The Office of Management and Budget has set a goal that 75% of agency business cases be suitable. A second priority is the use Earned Value Management (EVM) to track and analyze costs and over-budget projects. The goals are to have less than 10% of IT projects over-schedule or over-cost and have at least 13 agencies using EVM in their IT portfolio management

Accounting properly for ICT costs is necessary to make decision regarding investments and strategies. Switzerland has developed principles for accounting and performance measurement of ICT costs. In 2007, a new accounting standard with cost-performance calculations will be introduced. Understanding and agreeing on how ICT performance relative to costs should be calculated required significant effort at building a consensus. Transparency of costs and development of calculations that can address varied systems prove difficult. Work on ICT performance calculation is mostly finished.

Sweden's guidance for cost-benefit analysis of ICT-projects creates a standard approach to measuring the costs and benefits of ICT tailored to government. The standard accounts for both social and business benefits and costs. Alternatives to traditional monetary benefits are offered to account for social benefits. In performance measurement, the government has developed an assessment framework to measure government performance, using an "indicator and enabler" model to endure consistent measures and reporting of facts.

Benchmarking is an important facet of measuring the success of government service delivery. Building on a common methodology for benchmarking ICT investments proposed in 2003, Denmark is creating a common accounting framework for use in the 2005 fiscal year. To further assess the value provided by ICT investments, Denmark is conducting extensive research to determine the benefits that citizens and businesses accrue from government ICT investments.

In Australia, the Demand and Value Assessment Methodologies and an ICT Investment Model are improving performance measurement. The Demand and Value Assessment Methodology is to be used in ICT business cases to justify investments by measuring the public demand for services and the value derived from investments. Measurement is completely transparent and monitored to confirm the "returns" on investment. Alongside the methodology, an ICT Investment Framework is being implemented for strategic planning and alignment with government-wide efforts. The focus of the framework is on cost-benefit analysis and acceptable business cases.

### Funding and Political Support

Countries are also seeing renewed statements of e-Government goals and priorities. While ICT has received political support, follow through has been uneven. The funding and organizational changes needed for e-Government have proven troublesome. Funding remains an issue for many governments, as little is set aside for intergovernmental ICT funding. ICT funding as a whole is significant, which is likely why the approach to intergovernmental funding is to pull from existing agency funding streams through collaboration models. Without support, collaboration and pooling agency resources will remain key strategies. It remains to be seen if the inward turn toward business processes, architectures and infrastructure – while necessary – is sufficiently sexy to garner increased political and funding support.

After initial funding difficulties, Taiwan now has a central source of funding for e-Government with a budget of NTD 3 billion (\$100 million). Establishing central sources of funding has proven more difficult for others. In the United States, the central e-Government fund has only received \$6 million over the past two years, after Congress authorized \$345 million over five years. There is little chance that the fund will receive more than a few million a year in the near future. New Zealand highlighted the difficulties in funding e-Government within its country report. The Treasury determined that e-Government funding should not be treated separately from other investments and addressed the importance of understanding benefits, both social and fiscal, to justify funding. Because of the uncertainty of funding, governments are turning to pooling agency funds to create government-wide services. For example, in Israel ten percent of each agency's ICT budget is deducted to fund government-wide e-Government initiatives.

Some new laws relevant to ICT are being implemented in governments. Sweden's "Government Bill on IT" was introduced on June 30<sup>th</sup>, 2005. The new bill stresses access to all and government's role in supporting ICT as a positive force in society. Special emphasis is given to providing e-government services to children and the elderly. Other goals of ICT in society are service quality, sustainable growth and accessibility.

Despite the many laws and policies established across governments for ICT and E-Government, many report a lack of political awareness and leadership. In Switzerland's country report, they noted that projects are often left to ICT management to work out, and benefits of investment are not understood by or conveyed to policy makers. Especially difficult is garnering support for the internally-focused initiatives (architectures, business process redesign, etc.) that are not readily understood or appreciated by policy makers. There is somewhat of a shift coming, due to frustration over slow progress in e-Government.

### **Status: Implementing E-Government Architectures**

Architectures have been conceptualized but rarely implemented in any real sense. While these architectures are driving budgets and investment decisions, they, at this point, exist primarily on paper. E-Gov "Middleware" for routing, messaging and initiating business process is being put in place. Shared services are being developed so that multiple agencies and, in some cases, levels of government can leverage each others' investments and applications. To enable shared services and middleware to work, interoperability standards are being developed across governments and by the private sector. Coordinating these standards efforts will be

a major challenge for governments. Security and critical infrastructure protection is of special importance. Threats range from technical to general safety. There is a general consensus that Identity Management and authentication are necessary building blocks for e-Government to advance. Meanwhile, data management is as important as ever. Governments are developing centralized databases and registries of information to enable integrated service delivery.

#### *Security and Critical Infrastructure Protection*

Perhaps the biggest priority is the need to protect government systems. Lack of security is a major obstacle to citizen-centric government. Security is more than just a technical issue, as governments are creating awareness of security threats as well. Critical infrastructure protection is especially important for two reasons. First, the reliance of government on ICT and the Internet creates new vulnerabilities. Second, threats are evolving, with evermore sophisticated hackers and terrorist attacks having the potential to debilitate government systems and services.

ICT is both a supporting piece for critical infrastructure and itself a piece of critical infrastructure. Denmark has taken significant steps to address the risks that come with reliance on ICT. First, digital signatures and expanding the use of the OCES certificates as identifiers will establish secure communication. Second, the development of IT security standards protects systems. A national vulnerability assessment will be available by early 2006. Finally, an integrated emergency planning and preparedness policy was issued in June of this year. Protecting ICT infrastructure was identified as an essential part of that policy.

Recognizing the importance of security, Finland has strengthened its Government Information Services Board, VAHTI. The increased emphasis on security has paid off with improved coordination, privacy protection and planning. Since 2003, the percentage of agencies with information security plans, contingency plans, ICT security officials that report to senior leadership and susceptibility to attacks were all markedly better than just two years ago.

In Switzerland, IT security and infrastructure protection are the goals of the "MELANI" project run by the Federal Strategy Unit for IT (FSUIT). The initiative is jointly operated with the Federal Office of Police (fedpol) and the Computer Emergency Response Team of the Swiss Education and Research Network (SWITCH-CERT). There are two components to MELANI. First, it educates officials responsible for maintaining critical infrastructure to understand vulnerabilities, risks and threats, and how to coordinate with governments and other entities during a crisis. Second, it targets citizens and small- and medium-sized businesses with information regarding threats, practical guides for system protection and an online form for citizens to report incident through the MELANI website.

For business continuity, Singapore has developed "Enhancing ICT Security for Business Continuity and Infrastructure Resiliency, The Infocomm Security Masterplan (ISMP)". The government has budgeted \$38 million for critical infrastructure protection projects. Part of the program is to raise public awareness of cybersecurity threats to citizens and business. Singapore is also constructing a National Cyberthreat Monitoring Center to track and address cyber attacks. Other efforts within the Master Plan are the development of measures for Business Continuity Readiness, Infocomm Security Health Scorecard.

Australia collaborates with sub-national governments and the private sector in protecting critical infrastructure. Eight agencies have responsibility for the over \$50 million allocated to critical infrastructure protection. These funds will help protect telecommunications, internet service providers, broadcasting and postal industries. The approach is truly intergovernmental. The top level organization in charge of critical infrastructure protection is the Critical Infrastructure Advisory Council, which includes membership from all levels of government and the private sector.

Security is more than a technology issue; it is also an awareness issue. In the UK, the public-private effort, "Project Endurance" seeks to raise Internet security awareness, among consumers and business, build public trust and confidence in online transactions, and facilitate the development of more e-services.

### Identity Management

For ICT and e-Government services to be used by government and citizens, there needs to be a trusted environment. A major piece to securing government systems is identity management. Many governments are implementing major authentication systems and establishing identity management policies to create a trusted environment for integrated services so interaction can be seamless and secure.

Electronic citizen identification is an important piece of the government security effort. In Austria, they are developing the "Citizen Card. The government has released a set of minimum requirements based on Austria's E-Government and Signature Acts. This will enable citizens to use any card as their citizen card, so long as it meets the requirements, rather than specify a particular card as the one and only citizen ID. Estonia also has a National ID card in place for personal identification and digital signatures. So far over 800,000 cards have been issues (56% of the population).

Electronic ID Management is viewed as a means to more efficient services. Belgium is creating an "authentic source" so that citizens only need to provide a piece of data once to government. The agency most involved with the information is the custodian of that citizen's data and must make it available to other agencies. All the building blocks for "authentic source" are in place: unique identifier for citizens, non-citizens and organizations, electronic ID cards and PKI enabled digital signatures.

Hungary launched its Client Gate in April of this year. The Client Gate is a transactional gateway available through the national portal that authenticates users and provides e-government services that require secure identity. In order to receive authenticated services through the gateway, citizens must apply in-person for an authentication registration from the Tax and Financial Control Administration. From then on, transactional services can be received online. The gateway will handle payments by card, mobile phone and ATM by the end of the year.

As part of its ID management policy, Sweden is working with banks. One of the greatest difficulties in ID management is how to distribute electronic ID's safely and securely. Also, enough ID's must be issued to warrant the development of services that require them for authentication. Because banks have a great deal of experience with such issues, the Swedish government has partnered with them. The government leverages the banks' electronic ID systems by procuring their services to authenticate users of government services. Because the same ID infrastructure is

being used for public and private services, use of the ID's is growing, with more than 1 million transactions per month.

The Singapore Personal Access (SingPass) is a common identifier for e-Government services that require authentication. To create trust in the e-Services accessed, Singapore has created the TrustSg Accreditation Scheme, which requires agencies providing transactional services to adhere to standards for processing online transactions developed by the National Trust Council. A seal signifies to citizens that they are transacting with a trusted service. So far, 84% of agencies have been accredited.

The Netherlands plans to have 50 local governments, 6 "implementing bodies" and at least 75,000 users connected to a government wide authentication network for e-government services. The Netherlands also plans to introduce an electronic ID card in October of 2006. Like Sweden, the Netherlands is also looking to Internet Banking efforts as a model for digital signatures.

New Zealand is taking a cautious approach to Digital Rights Management and Trusted Computing. They are developing principles that address government access to information, access control and protecting sensitive information. Until those principles are in place, New Zealand is holding off on adopting these technologies in government.

Taiwan has developed an Internet certificate mechanism for online authentication. Enabled by Public Key Infrastructure and a Government Root Certificate Authority, Taiwan has established two new certification authorities that provide electronic certifications to citizens (MOICA) and businesses (MOEACA). MOICA has issued approximately 860,000 e-certificates to citizens while MOEACA has issued 6000 to business.

### Architectures

Many governments have developed architectures and begun to implement them through the budget process and agency strategies. Architectures are now taking the first steps to move from conceptual to real through e-Government middleware such as messaging and routing systems connecting agencies, shared services and interoperability standards. Middleware serves as a technical piece that enables messaging to route information and transactions across government systems. This will allow for the automation of business processes and rules across agencies needed to integrate services. Shared services are being developed along side the infrastructure. These services are being shared by multiple agencies and levels of government. The advent of shared services is the first step to a broader movement towards a web services enabled, components-based architecture. Sharing services will allow governments to leverage each others' investments and applications. In order to share services and integrate across systems with middleware pieces, governments are busy promoting interoperability through the development of standards so that systems can understand one another. Many bodies inside and outside of government are developing standards that will be used in the systems that support citizen services. Broad policies are in place for standards adoption in government. Government shared services are being developed so that multiple agencies and, in some cases, levels of government can leverage each others' investments and applications. Participating in standard efforts is important.

Remaining aware of private sector and international standards is paramount to ensure that government efforts conform to those standards.

The largest ICT project in its government's history, the MERKAVA program in Israel is developing a government-wide enterprise resource planning tool that will automate the business processes for common functions across agencies. Finance, human resources, procurement, logistics and management control systems will be integrated for 10 agencies, with plans to include all agencies by 2008. Government workers will use the same ERP business tools and leverage the same data, platform and network, creating a unified government. MERKAVA will enable the government to integrate services and collaborate intergovernmentally.

A notable example of architecture implementation is Japan's Optimization procedure. More often than not, architectures within government have been reflected in the strategies and policies of government, but not in the actual design of systems. Japan's Optimization plan is a method to implement architectures. The Optimization Plan performs an initial review of business processes to make them "rational and efficient." The review looks for ways to introduce unified systems for the back office and outsource processes that are routine or not core competencies. Japan will develop Optimization Plans for 77 businesses to streamline their systems and business processes. Seven plans have been developed already for common functions across all agencies, including Human resource systems and procurement.

Shared services are a major piece of emerging government-wide architectures. The Netherlands is beginning Shared Services for ICT. This program will coordinate shared services development, a central authentication service, infrastructure for data exchange, standardization, and security. The exchange of data will utilize the Government Transaction Portal, which is a "government electronic post office" that routes message across agencies. Pilots are underway for data exchange between agencies via the Transaction Portal. In standardization, the Netherlands is supporting greater use of open standards to enable interoperability with the proposed establishment of a Standardization Council and Forum.

The U.S. is continuing its effort to developed shared solutions for common lines of business identified by its federal enterprise architecture. Agencies that have common services in Financial Management, Human Resources Management Grants Management, Federal Health Architecture and Case Management are working together to develop shared solutions and reduce duplication of investments.

In Belgium, a middleware system called the "universal messaging engine" (UME) is used for the routing and exchange of messages across the federal government systems, regardless of their platform. Another intriguing middleware piece is Singapore's new Government Web Services Exchange (GWS-X). GWS-X is a middleware system that enables data sharing across government agencies through web services technologies. There are possible plans to include some private sector entities in the exchange as well.

Through its Enterprise Architecture Committee, Denmark is focusing its architecture work on improving ICT system use in government and creating data standards that enable data exchange. To improve ICT management and use, they have developed a handbook on enterprise architecture, released an Interoperability Framework with recommended standards, and begun developing a common architecture framework, classification system and reference model for cross-sector user control.

Denmark is also an international leader in XML standards work, which they view as an integral piece of architecture development. Within its XML Committee that steers standards development, they have created five domain committees that will develop shared components: Health, Roads, Universities, E-Business and Environment. They are also active in international and private standards development as well. XML work is underway to establish an online registry and library of XML standards, process xml messages within government and implement electronic billing.

Taiwan builds upon a shared government infrastructure of its Gateway system and e-Government Services Platform to exchange and process information across agencies. Common services are developed in 12 business lines (e.g. e-Health, e-travel, e-business, a-taxation, etc.) to leverage the shared infrastructure and architecture. Two pilot projects were begun last year for Business Registration and Travel Services. By the end of 2005, four more common services will be added for Sightseeing Services Medical Service, Household Registration and Government Employment Service.

### Centralizing Data

While new standards and technologies enable systems to interoperate and integrate, it is still important to address how data is physically aggregated and stored for use by government. Many are consolidating data into centralized registries of information to meet information sharing requirements and ensure that citizens only need to provide information once. There is obvious benefit to having all data in one place in a single defined format, but policy and logistical barriers exist for some.

In Denmark, to enable better exchange of data, they have set up rules for rights and access to data in government's electronic registers. A website gives an overview of the registers available from agencies, which other agencies can seek access to. A Coordinating Information Committee handles complaints when access to one agency's registry is denied by another, or allowed when it should not. Access is based on agreed upon principles within government.

The Netherlands is developing several registries of data that the government uses and provides. Six major registers are Natural Persons, Companies, Plots, Addresses, Buildings and Maps Registers. All six will be implemented over the next few years. The Natural Persons and Companies Registers will be based on unique numbers, the Citizen Service Number (CSN) and the Companies and Institutions Number (CIN), which are under development. Legislation on the CSN is currently being debated.

### Status: Improving Citizen Services

While the current emphasis of most governments is on ICT supporting the internal workings of a citizen-centric government, there are still many initiatives that are focused externally. To increase the take-up of the online services currently available, many governments are increasing the marketing of e-Government to citizens and business. Without use, investments in online services cannot pay off. Many are improving the quality and consistency of the citizen experience by creating standards for online information and services for that ever-popular "common-look, common-feel." Wireless technologies and a proliferation of devices are prompting government to expand multi-channel services. Visions of ubiquitous government (u-Gov) built on wireless access through new devices, also called mobile government

(m-Gov), are reframing how governments look at service delivery. Additionally, some countries view ICT as more than a means to becoming more efficient service providers, as shown by E-Democracy efforts to increase participation by and consultation with constituents. Finally, despite the proliferation of Internet access, some remain left behind. Initiatives to reduce the digital divide are seen in some governments.

#### Marketing of Citizen Services

In some cases, the take-up of online service has been slow. Many are marketing online services and creating awareness so that e-Government investments pay off. The assumption, of course, is that these services, should they be known, would be of benefit to citizens. Indeed, much research points to a lack of awareness. Marketing efforts are underway to make citizens aware of available resources. While awareness is low, it should not be overlooked that the quality of the services themselves has significant bearing on uptake by citizens.

In Israel, nearly half of the citizens use government websites, however only 8% know of the government portal. This reflects a willingness to use online services, but a lack of awareness of the services available. To combat this, Israel is launching a large awareness campaign, with the goals of doubling the number of visitors (to 400,000), online payments (to 20,000) per month from now until the end of the year.

Taiwan surveys the public annually to measure the uptake of online services. Again, nearly half (46%) of the public has used government websites in the last year. But only 22% have used online services (i.e. done more than look for information). With Internet penetration of 64%, the gap between use and access has led Taiwan to believe continued marketing of its services is needed to raise awareness.

In the U.S., one of the goals for the original 24 e-Government initiatives launched in 2002 as they become operational is to increase utilization by citizens. A large part of increasing use will be marketing and raising awareness of the services to the public.

Agencies in Singapore promote e-government services extensively, using media, public displays, and direct marketing to raise awareness and increase usage. Results from Singapore's 2004 survey of the public show an awareness of and willingness to use services. An impressive 88% of citizens that needed to transact with government did so on the Internet and 74% were aware of at least three government services.

#### Standard Policies for Online Information and Records

To say those citizens are not aware of e-Gov services is not to say that there is not room for improvement in the services themselves. Standards are emerging to guide governments in providing online services. As part of the government-wide approach to eGov and ICT, countries are also developing common-look common-feel, online information standards and record keeping standards across government.

The U.S.'s Interagency Committee on Government Information (ICGI) released "Recommendations for the Effective Management of Government Information on the Internet and Other Electronic Records." Among its recommendations were to support records management guidance, integrate records management with the Federal Enterprise Architecture and improve accountability for records management.

Many governments are adopting government-wide standards for websites and online services. As part of the U.S.'s ICGI, the Web Content Management Workgroup recommended government-wide web content standards to improve the accessibility and usability of government services for citizens. Policies based on these recommendations were released in December 2004, and agencies must comply by the end of the year. Singapore has also implemented common standard for web interfaces so there is continuity to citizen services across agencies.

Australia has created a Government Service Delivery Access and Distribution Strategy to improve collaboration between agencies and realize integrated multi-channel services. The strategy will be officially released in late 2005. Australia also focused on the front end, releasing a Web Guide in March of this year. The site provides a one stop shop for website managers and developers in government to policies, requirements and resources for government websites. Included are Better Practice Checklists, and Online Information Service Obligations.

New Zealand is developing a Web access strategy, which will set goals for 2007 and 2010 to improve online service delivery. Areas of emphasis are finding information and services, offering value-added services and government use of information and services. The goal is to make ICT and the Internet a major component of government services, information, and business processes. They envision a "no wrong door" approach to service delivery.

### Multichannel

Perhaps the most important development in citizen services over the past few years has been the penetration of new devices and wireless access. Its importance is reflected in the agenda of this year's ICA Conference. Wireless technologies and the proliferation of access devices are drivers, creating new possibilities for interfaces with government that transcend the traditional sit-at-computer-and-surf approach to online services. Governments will soon move beyond the beyond the multi-channel approach of phone and web. Whether we speak of U-Gov or m-Gov multi-channel will soon mean access anywhere via anything, including Internet, TV, cell phone, handheld, etc. With a robust electronic authentication system and adequate security and authorization controls, we could someday see online and in-person service become indistinguishable from one another.

Hungary has embraced multichannel services and u-Gov. The Government offers multichannel services through its Governmental Customer Contact Centre. The Centre handles contacts by phone, fax, e-mail and the Internet. Along with the Government portal, the e-Government Backbone Network and Client Gate, the Contact Centre forms Hungary's Central Electronic Services System. Hungary is positioning itself to move beyond current channels with its m-Government effort to utilize wireless technologies. In Hungary, mobile phones have far greater penetration than computers. The capabilities of these devices are increasing every day. The government has already implemented some services through SMS and wireless access protocol. Among the services implemented for mobile phones are parking fine payment, notification of school results, applications for public facility use, and vehicle history reports. Many of these services charge fees. The overall goals of m-Gov services for Hungary are to allow sign-in, payment and interactive services through phones. Lack of authentication for SMS, the split of fees between

government and phone providers, records management issues and vagaries of data protection laws are all issues that must be addressed for further expansion of m-Gov.

Wireless implementations are being piloted internally by Singapore's, "Under the Technology Experimentation Programme." The programme has created a Mobile Mail Solution that will allow government officials to securely access and use their e-mails, calendar and contact lists anywhere in the world any time.

### Civic Engagement

Citizens often seek dialogue from public officials rather than answers. The usual model of e-Government has been that citizen has a problem or need; government has a solution or answer that the citizen can get online. This model emphasizes government's role as a service provider. The e-Government successes so far have been the putting transactional services online and integrating services regardless of organizational boundaries. The oft stated vision of "not just automating business processes but transforming government" has been slow to come to citizen participation. That is changing. The 2005 Country Reports highlight several initiatives where e-government is expanding beyond the service provider model to be more responsive and interactive with citizens. Citizens desire not just to receive services, but to have input and consult on policies they deem important. For the most part, governments have simply placed existing processes for citizen consultation online, rather than transform it. For transformation, business processes must change to incorporate new types of input into policymaking. Consultation may go beyond the current formal means of engaging citizens.

Denmark's DanmarksDebatten is an important effort that is facilitating dialogue between citizens, government and other citizens. The site offers an e-democratic debate resource on government policies. Politicians and authorities can use the forum as a way to engage and receive feedback from citizens. Because of an outreach effort in 2004 to raise awareness of the tool within government, the site has 100 government offices registered and 10,000 visitors used the national debate homepage. The site provides a free resource for agencies wishing to dialogue with citizens. With technical improvements and efforts to create awareness among the public planned, DanmarksDebatten is a promising initiative.

Belgium highlights greater transparency as one of the key goals of its e-Government initiative, and specifically notes more involved participation in decision-making and more access and communication with agencies. Access to government information regarding citizens is a major component as well. Estonia also views greater participation as a key benefit of e-Government. In its strategy, Estonia notes that efficiency and better service delivery should allow a "broadening of participatory democracy," greater voter participation and more dialogue between citizens and public officials.

In Estonia, there seems to be support for offering e-Voting in the local council elections of 2005. The system will utilize PKI enabled authentication using digital signatures and ID cards. By the election, the vast majority of citizens eligible to vote will have an ID card. Denmark is also involved in E-Voting, and is working with County of North Jutland to implement e-voting along with local debates through the DanmarksDebatten tool.

### Digital Divide

Internet penetration is very high, making the disadvantages all the more stark for those without access. With the constant evolution of new devices and means of access the digital divide could evolve as new delivery channels offer more service alternatives. As a result, many governments are still working on reducing the digital divide.

Taiwan has been increasing the construction of telecommunications infrastructure with universal telecommunications access, offering public kiosks, establishing computer labs with Internet access in all schools and improving accessibility for the disabled in order to combat the digital divide. The Executive Yuan has demonstrated political support for bridging the digital divide. Access to all permeates all of the e-Taiwan programs. Digital Opportunity is one a four key efforts. The eight concrete measures for Digital Opportunity are: improving TV service coverage in remote areas, providing home computers for students in remote areas, broadband Internet for all villages, establishing digital opportunity centers in remote regions, promoting e-commerce among small- and medium-sized businesses, developing e-business applications among farmers, and implementing an APEC Digital Opportunity Center to enhance international IT capacity building.

Other governments have made removing the digital divide priority. Malta identified as its first strategic objective for 2004-2006, "Step up the fight against the digital divide across all levels of society". The strategy was published in July 2004 and serves as Malta's vision for ICT by the end of 2006. Sweden emphasizes an information society for all in the proposed "A Government Bill on IT: From IT-policy for society to policy for IT-society." The bill was proposed on June 30<sup>th</sup> 2005 and states that the goal of Sweden's ICT policy is to create a "sustainable information society for all."

### Divergent Paths

The Country Reports show some general consensuses on the status and future of e-Government. Governments, in general, view ICT as an enabler of services. The focus on placing services online has been supplanted by an emphasis on the internal building blocks of services; architectures, business processes, management and organizations. Meanwhile, governments are continuing to look for ways to improve the citizen experience. Despite these commonalities, some differences in approaches to e-Government emerge from the Country Reports. The report will highlight two: centralization vs. decentralization and internal vs. external focus.

### Centralized vs. Decentralized

While many countries are centralizing management and control, some have adopted decentralized management of ICT. The beginning of e-Government could be characterized by a decentralized approach. Agencies created websites and services relatively independently. The embrace of citizen-centric government led to government-wide portals and integrated services. In many cases, the internal workings of government have been following suit with government-wide architectures, and centralization of policy making and management authority. Exceptions to this trend are shown by Sweden and Switzerland. In each, significant responsibilities reside with the agencies. In Switzerland the management of ICT in agencies is even somewhat decentralized, as many agencies do not even have a CIO position. Cross government efforts require coordination and leadership by the

constituent agencies rather than a decree from above. The trade-offs are increased managerial control and reduced redundancy of investments and efforts in centralization versus better innovation and flexibility in decentralization. The need for improved management of the back-office favors centralization, while the emergence of u-Gov and new devices perhaps calls for flexibility and innovation, to which decentralization is perhaps more conducive.

#### *Internal Business Processes vs. Expanding Citizen Participation*

While these two concepts are not mutually exclusive, they are in some ways competing priorities. As governments are wont to do, they have set ambitious goals to both transform the inner workings of government while improving citizen services. Indeed, improving the back-office can lead to improvement of the citizen experience through more integrated service delivery. However, limited time and money requires governments to prioritize. Funds and effort expended in reorganizations and shared infrastructures cannot be spent expanding to new service delivery channels or increasing citizen participation – and vice versa. Most governments are looking inward to architectures, organizational structures and business processes. Exceptions are remaining focused on improving the citizen experience and expanding services.

#### **Emerging Issues**

Looking beyond 2005, governments will likely continue the transformation efforts they have begun with architectures and centralized steering of E-Government. Meanwhile, new technologies and citizen expectations will redefine what service means.

**Actualizing architectures** – Continuing along their current paths, countries will actualize the government-wide architectures designed. Currently, architectures exist primarily in budgets, plans and strategy, but rarely in the actual configuration of government systems and services. The shared services, middleware messaging and routing systems, and standards will mature as governments move toward a web services component-based model. There will be an emphasis on defining and formalizing business processes across government boundaries in order to make use of the infrastructure in place. Architectures will start to gain traction within government as the tools and frameworks begin to be used.

**Implementing electronic ID Management** – Authenticating users with a single ID that enables them to receive services across all agencies is the prerequisite for entering the next frontier of citizen-centric government. Without it, visions of integrated services can not be achieved. Also, lack of an ID management solution will slow down citizen adoption on ICT enabled services. ID management will continue to remain a top priority for governments. Once successfully implemented, take-up and integration of services is feasible.

**Continued Recentralization** – So far we have seen government reorganizations at the top of the government pyramid with government CIO's and new organizations steering e-Government. The need for controls and enterprise-wide approaches has driven further recentralization. This recentralization of ICT will begin to filter down through the agencies and programs that deliver services. Currently, governments have placed additional layers of oversight and management over atop the agency-centric landscape with little change beneath. Some agencies and programs will

eventually be combined, with internal processes common across agencies being the first to centralize.

**More Formalized and Frequent Collaboration** – No amount of centralization or technology will remove the need for collaboration. Collaboration will become more formalized in order to deliver on the e-Government promises made. This collaboration will need to be complemented by funding and accountability structures that are intergovernmental and cross-sector as well. In addition to ICT skills, intergovernmental approaches and integrated services require project management, collaboration and negotiation skills. Managers skilled at collaboration and negotiation will enable the coordination of ICT throughout government. International entities and private sector efforts to develop standards and technology will require even greater cross-sector collaboration as e-governments become interconnected governments.

**Online Civic Engagement** – There has been a focus in e-Government on government as a service provider. Ideally, citizens view the role of government beyond that narrow scope. Citizens do not just want to receive services. Government will expand citizen services to change and improve how governments interact with citizens. Already, there are efforts underway to receive public comments to regulations and policies online, but these are largely automations of processes already in place. The future will see a renewed emphasis on using ICT to improve the level of online consultation by citizens and creating government forums for online deliberations. These will take hold only when public officials and business processes change to incorporate all the possibilities for public input into policy making in a manner that is meaningful and constructive.

**Proliferation of Devices and Wireless Access (u-Gov, m-Gov)** – Citizens will further complicate the delivery of government services by adopting new means for access to government services and preferences for interaction. In five years, many citizens could become reliant on cell phone as their primary devices, replacing the traditional computer. This will have significant ramifications for how governments deliver services. As web-enabled devices and access points multiply, it could create a complicated array of channels, where many constituencies have many preferences. Some will prefer in-person or phone; others may enjoy using the old desktop to log on, while the young and tech savvy might gravitate toward other channels like cell phones. TV also will be an access point as devices in general connect to the Internet and integrate functionality (i.e. wireless phone as phone, mp3 player, web access device, and text messenger).

### **Conclusion**

After several years of placing services online and espousing citizen-centric government, ICA members are now looking inward to address the infrastructures, organisations, architectures and business processes that use ICT to support citizen services. The focus has moved from the front-end to the back-end. Meanwhile, citizen preferences for access and interaction with government hardly remain static. The challenge for governments in the coming years will be to organise and manage service delivery while remaining attuned to the ever-shifting needs and preferences of their citizens.