

E-GOVERNMENT: ENABLING ASIA-PACIFIC GOVERNMENTS AND CITIZENS TO DO PUBLIC BUSINESS DIFFERENTLY

For presentation at ADF3, Workshop on Governance and ICT, 14 June, 1100 (Session # 5)
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INTRODUCTION

E-government is the use of information and communications technology (ICT) to promote more efficient and cost-effective government, facilitate more convenient government services, allow greater public access to information, and make government more accountable to citizens.

The monumental change wrought in every field by the new information and communication technology is still only in its initial phase among Asia-Pacific governments. A few general considerations should be raised at the outset.¹

First, *ICT is a tool*, immensely powerful yet essentially no different from a photocopier or a car, in the sense that user needs and requirements must come first and dictate whether and how the ICT tool should be used. For certain functions, pencil and paper, or a telephone, or a face-to-face meeting, or a visit to the library is far more effective than computers or the Internet. This obvious point must be stressed because governments, consultants, or donor agencies often encourage computerizing anything in sight. Indeed, it could be argued that ICT innovation is now largely supply- and marketing-driven rather than dictated by the needs and requirements of

¹ An earlier version was published as Wescott et al, 2001.

the users. Thus, as for any tool, it is essential to assess realistically and compare the costs of a given ITC change with the actual benefits expected from it.

Second, *the ICT “techie” and the “public manager” should not work in isolation from one another.* Improvements in public-sector effectiveness stem largely from better rules and procedures in the sector concerned. To apply advanced ICT to obsolete or inefficient rules and processes means in effect to computerize inefficiency. Doing the wrong thing faster is not progress. On the other hand, the absence of relevant ITC knowledge risks either costly mistakes or missed opportunities for dramatic service improvements.

Third, *ICT cannot substitute for good public management and internal controls.* Indeed, the introduction of computers can give a false illusion of tighter expenditure control in cases where a large part of the expenditure cycle occurs in parallel and in “black boxes” outside the computerized system. However, ICT can help governments to implement structural reforms that can improve public management and internal controls.

Fourth, faster and integrated public information systems carry correspondingly greater potential risks for the integrity of the data, and can even jeopardize the entire information database if developed carelessly and without sufficient checks, controls, security, and virus protection. Developing-country governments moving from a manual public accounting and recording system to a computerized one, or from paper personnel files to e-files, should maintain the manual accounts until the new system is stable.

Fifth, it is often argued that the introduction of ICT reduces corruption. Unfortunately, this is not true. Computer technology eliminates many opportunities for corruption for those who do not understand fully the new technology, but opens up new corruption vistas for those who understand the new systems well enough to manipulate them. In a sense, ICT permits an intergenerational shift in corruption and rent seeking.

Sixth, ICT can do little on its own to alleviate poverty. A well known champion of ICT has stated: “...the poor don't have medicines, they're dying, and they don't have electricity. Bringing more computers to developing countries is not going to solve these problems.”²

That said, ICT's wonderful potential has been hardly used in most Asia-Pacific countries to increase government accountability, transparency, and participation; improve the efficiency and effectiveness of public-sector operations; widen access to public services; and disseminate information to the public and get feedback from relevant stakeholders and service users.

This paper begins with a brief review of adoption of ICT over the last 40 years in the Asia-Pacific region, pointing out some reasons why the pace has been slower in the public sector compared with the private sector. It then gives examples of six stages of e-government, and reviews both the benefits and challenges of each stage. Finally, there is a discussion of some of the major, cross-cutting challenges effecting all stages.

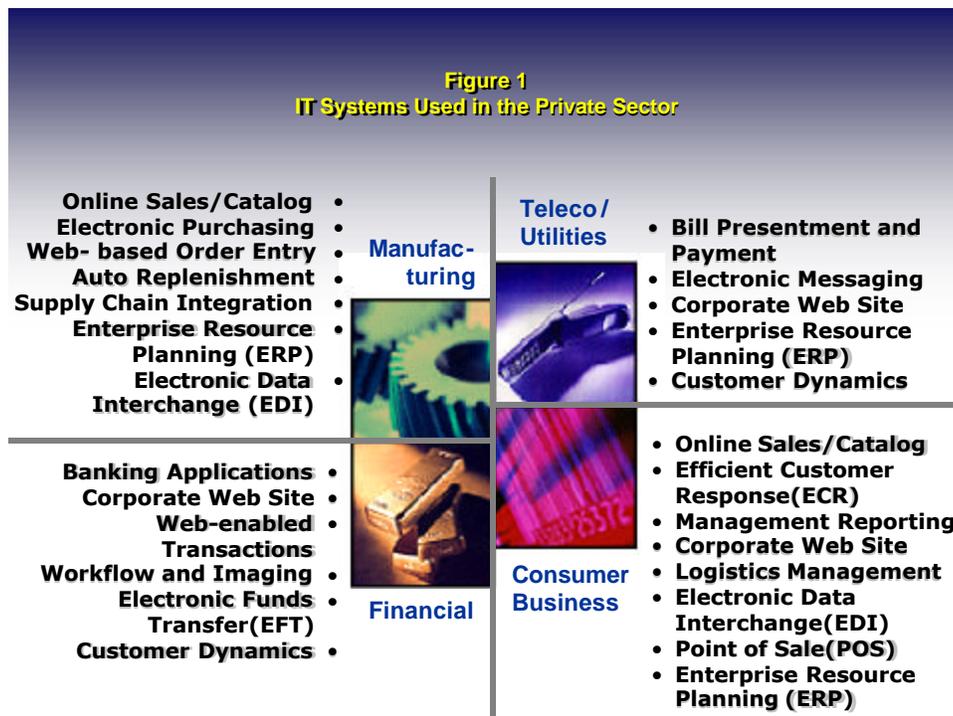
ICT IN THE PRIVATE SECTOR

During the 1960s, the public sector in developed countries led many private enterprises in the use of computers in support of business functions, including management information, payroll,

² From a speech by Ted Turner, October 2000. Bill Gates, Chairman of Microsoft, made a similar statement in his keynote speech at the COMDEX Conference, Las Vegas, November 2000.

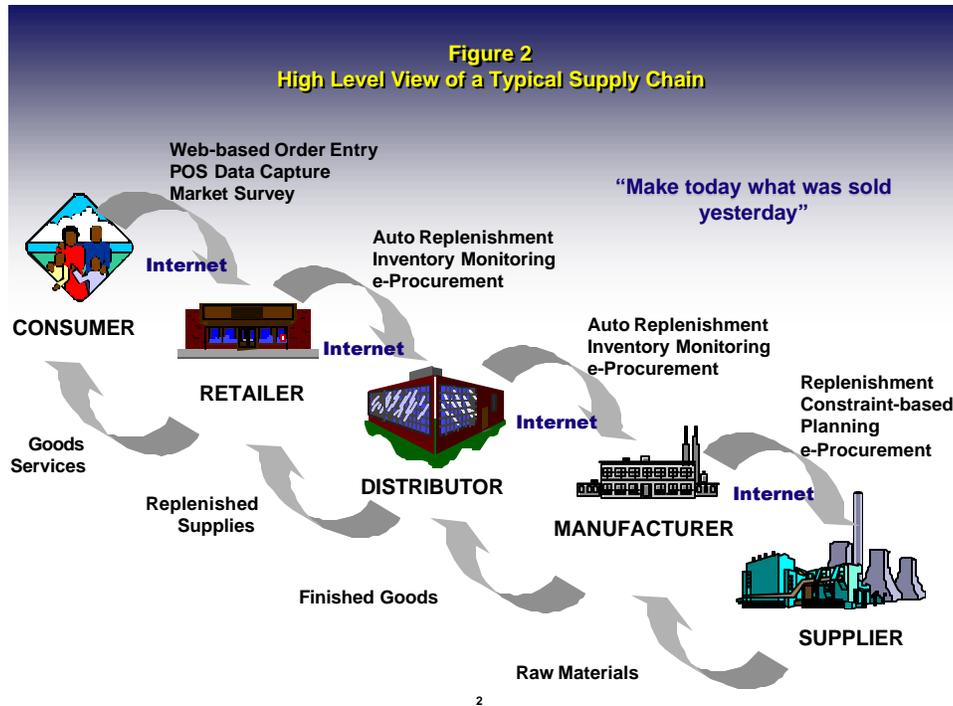
and accounting applications. Subsequently, governments tended to fall behind private industry in adopting ICT systems.

Figure 1³ below shows the variety of ICT systems used in the private sector, of developed countries and some developing countries in the Asia-Pacific region, to illustrate the long lead taken by the sector. In manufacturing, the most commonly used ICT systems are on-line sales catalog, electronic purchasing, Web-based order entry, auto replenishment, supply chain integration, enterprise resource planning, and electronic data interchange. In the telecommunications/utilities sector, the following CT systems are used: bill presentment and payment, electronic messaging, corporate Web site, enterprise resource planning, and customer dynamics. The financial sector uses: banking applications, corporate Web site, Web-enabled transactions, workflow and imaging, electronic funds transfer, and customer dynamics. The consumer business sector uses a combination of these systems in the production and delivery of its services.



To illustrate how ICT systems interact with the major players in a business, figure 2 below gives a high-level view of a typical supply chain.

³ Grateful acknowledgement is given for permission to use Figures 1, 2 and 4 from a presentation prepared by the Deloitte & Touche Consulting Group, Singapore, for a workshop in March 1999 sponsored by the Asia-Pacific Development Information Program, UNDP.



The fast-expanding use of the Internet is helping some companies implement fully integrated value chains creating partnerships with suppliers and customers, together with whom they can find ways to cut costs, improve quality, expand markets, and share the benefits. This is changing the old idea of a freestanding business. Internet-enabled companies are bringing suppliers and customers much deeper into their business practices and systems, and need a common understanding with their partners. This in turn is forcing greater openness and transparency among all partners than in the past. Also, customized services, products, and pricing are becoming more the rule than the exception. Increasingly, non-core business processes are contracted out to other providers. Just-in-time inventory systems are becoming common. An unprecedented amount of collaboration is possible, when management skills are up to the task.

ICT IN THE PUBLIC SECTOR

There are many reasons why Asia-Pacific governments have fallen behind private businesses in adopting ICT systems, including difficulties of carrying out organizational change, and the nature of public sector financing and procurement practices.

First, to introduce ITC effectively, the ways organizations do business need to change and the ways people do their jobs need to change too. Such organizational changes may be more difficult in the public sector than in the private sector⁴.

A typical sequence in an ITC project may start out by purchasing an off-the-shelf software package for, say, a new accounting or document management system. Then the agency discovers that the software does not support the way they currently do business. For example, the package may require inter- and intra-agency record sharing that is not presently happening. Current practice may call for a paper trail for approval processing, or paper form filing done over

⁴ Cf. OECD, 2001.

the counter, that the package won't support. Public agencies may have additional factors that a package doesn't support, such as complex regulations and laws. Public officials may also have a lack of understanding and computer skills, and thus not understand, for example, that a computer firewall can serve much the same purpose as a padlock on a file cabinet.

At that point there are two things they can do: They can change the way they do business to accommodate the software, which may mean taking some risks, and shaking up important peoples' roles and responsibilities. Or they can modify the software to fit the way they do business, which will slow down the project, introduce dangerous bugs into the system and make upgrading the software to the vendor's next release excruciatingly difficult, because the customizations will need to be torn apart and rewritten to fit with the new version. Private companies are more likely to take the first route, while public organizations more likely to take the second. Choosing the second route leads to delays, higher software costs and risks, and all too often a decision to abandon a project after large expenditures of time and money⁵.

A second reason for relatively slow ICT adoption by governments concerns the nature of public sector financing and procurement practices. To ensure accountability, government agencies need to go through a lengthy process of securing funds, seeking competitive tenders, and awarding contracts. This lengthy process leads to different problems. To prevent undue influence of any one official, many decisions along the way are made by committees, which can lead to an unclear focus as compromises are made. In addition, a result of the lengthy process is that when acquisitions are made, the technology has often moved far beyond where it was when the project was first conceived. Thus, governments often install systems woefully out of date. They can also pay excessive prices. During the long tender review, new products may have come to the market that can deliver the same ICT power for much less money.

Yet, in recent years many governments in the region are recognizing that they need to address these problems in order to help achieve ambitious goals to reduce poverty, attract investment, and promote sustainable economic development. Many Asia-Pacific governments have published ambitious proposals for recasting government with the help of ICT. While these initiatives differ considerably in scope and emphasis, they also reflect a broad consensus about the possibilities offered by ICT. The growing synergy between information technology and telecommunications will enable governments to be much more flexible in the way they capture and exploit information. In turn, these new flexibilities will offer important new opportunities for designing business processes and configuring organizations, based on vastly expanded possibilities for human connectivity. In particular, such factors as time, geography, organizational boundaries, and national jurisdictions will become less significant in the conduct of human affairs.

New ways of handling and communicating information can allow governments to escape the dilemma between cutting costs and increasing quality, creating government that "works better and costs less." More importantly, new channels of interaction can open up between governments and citizens, enhancing transparency, increasing accountability, and making government more accessible to new forms of participation.⁶

In the last decade, innovative local and national government agencies have started applying ICT to a growing range of public services. These applications focus on two objectives: to

⁵ Koch, et al.

⁶ Nb. the opening remarks of Chris Bellamy at the E-conference on Governance and Public Services In the Information Age, Internet, 1998.

achieve major improvements in speed of response, efficiency, and accessibility of public services; and to bring government closer to the citizens.

The potential benefits of new information and communications capabilities for the services produced by public agencies are the following:⁷

- Lower administrative costs, ICT allows a significant reduction of information handling costs, and compliance costs.
- Faster and more accurate response to requests and queries, including outside normal office hours. ICT allows direct access to transaction or customer accounts held in different parts of government, especially for street-level public services.
- Access to all departments and levels of government from any location. ICT supports the development of more flexible, convenient ways for citizens to access public services. For example, some governments are developing on-line round-the-clock facilities for transacting business such as welfare claims, tax assessment, visa applications, and license renewals. The use of “smart cards” is also being developed to allow access to an increasing range of government services—a kind of electronic one-stop shop. These could prevent fraud or misuse of public services and benefits, resulting in increased public confidence in welfare and taxation services.
- Better governance capability. ICT enables governments to harvest more data from operational systems, thus increasing the quality of feedback to managers and policy makers. Governments are also able to make more information available to citizens and support new kinds of on-line communication between policymakers, elected representatives, individual citizens, or organized lobbies. In these ways, ICT could enhance the steering capability of modern governance. These possibilities exist even in very small developing countries, although, of course, they require a realistic approach suited to their small size and extremely limited administrative capacity (see box 1).
- Assistance to local and national economies by facilitating the government-to-business interface. This could result in improved services to remote rural areas and enhanced emergency support services.
- Additional means of public feedback.

THE SIX STAGES OF E-GOVERNMENT

As e-government becomes more widespread in the region, one can expect a progression through six stages⁸. Not all governments or agencies will reach all stages, and there will be much variety within a government, with different agencies at different stages. The stages are:

- setting up an email system and internal network;
- enabling inter-organizational and public access to information;
- allowing 2-way communication;
- allowing exchange of value;
- digital Democracy; and

⁷ Drawn from Dutton (1996).

⁸ Some define e-government more restrictively, focusing on stages two to four, and making it the public sector equivalent of e-commerce (cf. UN et al, 2001 and World Bank, 2001). However, this paper takes a broader approach to reflect the many benefits that can result from other ICT applications in the public sector. Major English dictionaries do not yet list the word “e-government” or the phrase “electronic government.”

- a portal taking citizens where they need to go.

Stage 1: Setting up an email system and internal network

Most organizations begin by setting up systems focusing mainly on internal processes. The first networked application in many organizations typically supports basic administrative functions such as payroll and accounts. Adopting such systems can deliver significant benefits, but also carry significant risks. On the benefit side, ICT can allow a significant reduction of information handling costs, and compliance costs. The savings come from reduced labor costs, and speeded up and more accurate processing of tasks. For example, a personnel information system can routinely prepare separation documents for staff past the normal retirement age, helping to avoid the situation in many Asia-Pacific governments of staff working and being paid for many years past this age. A debt management system can routinely bring up payments due, thus helping to avoid penalty fees and other problems.

Two major risks in implementing such systems are the possible alteration or loss of records during migration, and the chance that essential functions won't be performed as new systems have teething problems. To minimize these risks, organizations can:

- maintain manual backup until integrity of electronic system is assured;
- ensure the capture/creation of reliable records to serve as evidence of accountable acts and transactions;
- safeguard the integrity and authenticity of all records within the regime for as long as they are required; and provide for the accessibility and updating of records⁹.

There is also a political risk in developing countries in the region of possibly making government workers redundant in a labor surplus economy. Most regional governments cannot lay off government workers prior to retirement age except in unusual circumstances, so they typically retrain and redeploy such workers.

Another type of stage-one system is e-mail. Although email can reach outside of organizations via the Internet, most government organizations in the region that adopt email use it most for internal messages. Email has many advantages over other systems. Because of its informality, it can lead to an increase in lateral, and bottom-up, communication. Emails don't need to be sent up and down through the hierarchy; they can be sent directly to the person concerned. This can improve information sharing, coordination and feedback.

However, the very ease of use carries with it the risk of miscommunication. Sensitive and critical messages are still best given over the phone, or in person.

Different examples of internal systems are the Supreme Prosecutor's Office and the Seoul District Prosecutor's Office, which in 2000 established computer crime investigation departments. Computer crime investigation teams were established in local prosecutor's offices nationwide. This is aimed at effectively addressing offenses which become more and more

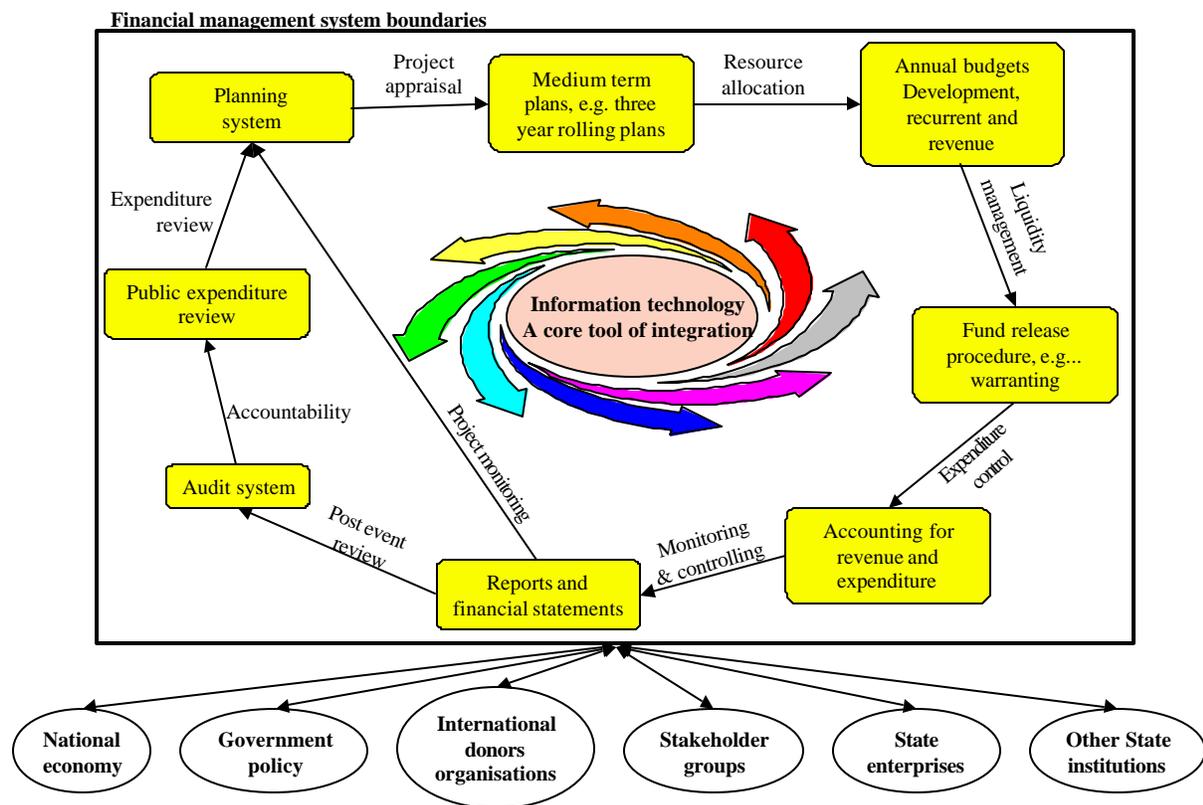
⁹ Pederson, Ann. 'Migrating legacy systems into the electronic environment'. (Sydney: School of Information, Library & Archive Studies (SILAS), The University of New South Wales, 1998) (Online). Available: <<http://www.irmt.org/resources/malap.doc>>.

technological and tactical, and also at assisting investigation on corruption with modern computer techniques¹⁰.

In Pakistan, the entire tax department is being restructured, and ITC systems being introduced with the purpose of reducing contact between tax collectors and tax payers¹¹.

A more complex type of stage-one system integrates all departments and functions across an organization with a single computer system that can serve all those different departments' particular needs. Such "enterprise resource planning" systems can help integrate financial data, and standardize HR information. Such systems enable more data (e.g., expense items) to be shared between different departments, thereby reducing the number of times the data have to be collected. For example, the Ministry of Finance and Planning of the Government of Sri Lanka is presently designing an integrated system along the lines of Figure 3.

Figure 3: Integrated financial management model



The Ministry has a vision of rebuilding itself into a high performing organization. It starts with the important advantage that recruitment has not been politicized as in some other ministries and public agencies in Sri Lanka. The vision is in part determined by the previous experience of the Central Bank, which is about to implement a re-organization, which will include a 50% cutback in staff. A new implementation unit run according to private business practice will work with each department to help them reorganize around the new systems being designed, thus avoiding the risks and expense of customizing software, as described above. In the vision, the unit will grow

¹⁰ Paek, Keebong, 2000.

¹¹ Maqbool, Khalid, 2000.

larger, and the ministry smaller, over the long term. Such a model has been followed successfully in other finance ministries that have moved to integrated financial management systems such as the one being designed for Sri Lanka, as a way to offer competitive compensation and an attractive working environment.

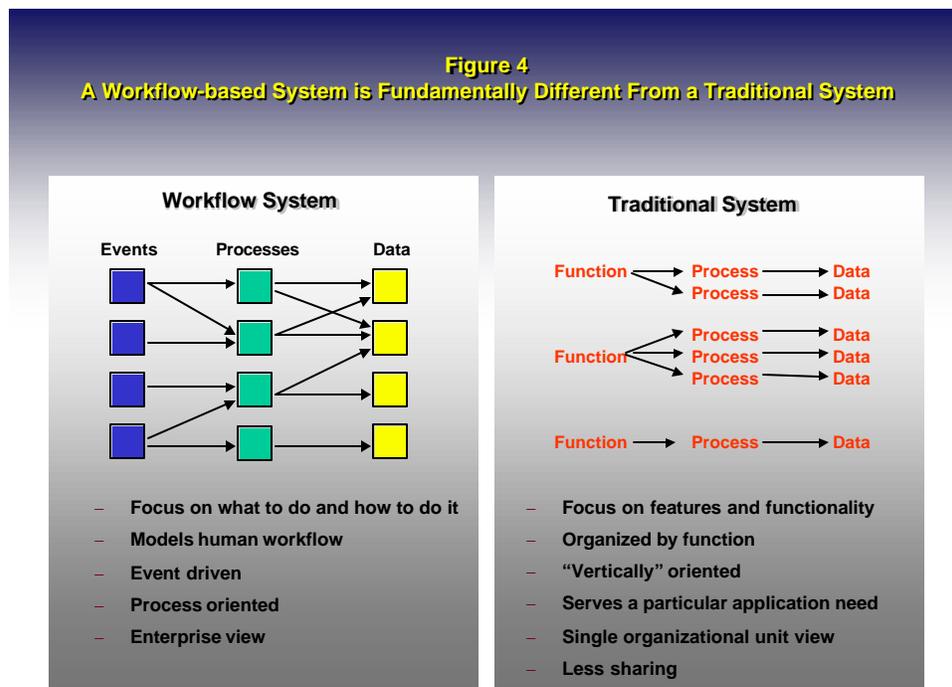
These systems may be integrated with the Internet (e-mail, messaging), electronic commerce, and workflow. These systems present opportunities to the public sector in the areas of financial management—treasury/cash management; human resource management, including payroll, records management, and benefits administration; and facilities/resource management, including procurement, forecasting, and materials management. Although these systems were initially proprietary and client/server-based, the latest versions are increasingly Internet-based, allowing information to be accessed by anyone who needs it, and reducing training and other costs.

Stage 2: Enabling inter-organizational and public access to information

The next stage is to enable better inter-organizational and public access to information. The first step for an organization often involves developing systems that help to manage workflow. Workflow is a general term applied to the ability to move images, files, documents, etc., from workstation to workstation, using specific business rules for review, authorization, data entry, data editing, and task assignment. Business processes that are accomplished by moving paper can now be managed electronically—from the very beginning to final disposition. The delays normally associated with hard-copy documents and manual processing can be minimized with workflow systems.

A workflow system is fundamentally different from a traditional system. As shown in figure 4 below, a workflow system focuses on what to do and how to do it, and is event-driven, process-oriented, and modeled after human workflow. In contrast, a traditional system focuses on features and functionality, is organized by function, is “vertically” oriented, and serves a specific application need.

The major components of a workflow are procedures, tasks, events, and workers. A procedure



is a series of interrelated tasks required to complete an instance of work. An event is an occurrence that triggers the start of a procedure or task. A task is a discrete element of work that can be assigned to an individual worker; it can be defined in terms of the information required to complete it, the application used, the workers who can perform the task, and the timeframe and priority that should be assigned to it.

Promising ICT applications in Asia-Pacific public sector workflow systems include, among others:

- claims processing and management;
- bid and proposal routing and tracking;
- handling of customer service and complaints;
- grant and scholarship award, approval, and processing; and
- human resource recruitment and hiring.

For example, the National Tax Service of the Republic of Korea recently introduced its Tax Integrated System, a computerized system which accumulates all tax-related information. As a result, unfair influence of tax officials in selecting taxpayers to be audited was considerably reduced. In addition, manual assessment of 5 million cases on a yearly basis has been replaced by computer-assisted assessment, making 5 million face-to-face meetings between tax officials and taxpayers unnecessary¹².

Finally, governments are enabling inter-organizational and public access to information through websites. The common form for this is a site with information normally provided through a brochure or information sheet. An example from Indonesia is Figure 5.



¹² Han, Sang-Yool, 2000.

Stage 3: Allowing 2-way communication

The next stage allows 2-way communication between the government and the public using ICT. An initial stage is to post one or more telephone or fax numbers or email addresses on a website, and to encourage the public to send messages. There are many other possibilities, such as the Pacific Islands' examples cited in box 1.

Box 1
Information Technology in the Pacific Islands

In the Pacific Islands, new capabilities associated with ICT could help to:

- *Simplify government bureaucracy.* For example, a United Nations virtual meeting in January 1998 linked governments and NGOs in 10 countries with a listserv. A productive exchange took place, saving over US\$25,000 in travel costs, and cutting out wasted travel time by busy officials.
- *Break down barriers between functional domains.* The Fiji Public Service Commission is introducing a personnel management system to facilitate, among many things, more effective training and monitoring of the performance of participants in the newly established senior executive service.
- *Allow public services to be reoriented to solving problems for clients.* The Federated States of Micronesia uses a Web-based system linked with Hawaii for medical advice on difficult cases. A listserv links over 100 doctors in the Pacific Islands, serving as an early-warning system on outbreaks of disease.
- *Open up government, making it more transparent and accountable.* The Solomon Islands used the Web in 1998 to help it assess the prior experience of an international contractor bidding on a government contract for pre-shipment inspection of logging exports. Previously, the government approved contracts with unqualified firms. In Vanuatu, the Ombudsman's Office set up a listserv in 1997 to get legal advice on how to defend itself before the High Court against a suit by the Council of Ministers (many of whom were accused in the Ombudsman's reports of misconduct) seeking to abolish the office. The Ombudsman's Office succeeded in its legal defense, although the Ombudsman Act was subsequently repealed by Parliament.
- *Develop new forms of citizen participation.* Web-based chat sites such as the Tonga Kava Bowl and Niugini.com facilitate freewheeling political discussion that would be difficult to sustain in regulated print media. They also allow the diaspora in the US, Australia, and New Zealand to participate in the political debates in their countries.

Source: <http://www.undp.org.fj/governance/Index3.htm>; Yvan Soures, "PACNET: The Pacific islands tuned into the XXIst Century" *Pacific Health Dialog*, 1998.

In another example, the Philippines Department of Budget and Management (DBM) has started posting on the Internet its major budgetary releases to government agencies in a bid to make transactions more transparent to the public. The Web site includes information on the government's accounts payable and the amount released by the DBM as payment for these accounts. Through this scheme, private contractors can check the veracity of the department officials' pronouncements against the DBM budgetary releases. The details of all accounts payable and releases for each government agency are posted on the Web site each month,

along with the names of the contractors and the amount of payment they are supposed to receive monthly. The DBM also posts its budget on the Internet after its passage by Congress and approval by the President¹³.

ICT can facilitate communication even if the citizens are not directly using ICT. For example, the computer-aided Administration of Registration Department (CARD) has computerized 214 registration offices since April 1998. Deeds are registered in one hour and other services like the issue of encumbrance certificates and valuation certificates are accomplished in 15 minutes. As of February 2000, about 700,000 documents had been registered under CARD. The opaqueness of property valuation in the past forced citizens to hire middlemen. Time consuming manual copying and indexing of documents, and storage in paper forms have all been replaced. There has also been a modest increase in revenue after factoring out the normal upward trend¹⁴.

Stage 4: Allowing exchange of value

In the next stage, ICT supports the development of more flexible, convenient ways for citizens to conduct business where there is exchange of value with the government. For example, the Singapore Government has developed on-line round-the-clock facilities for transacting business such as welfare claims, tax assessment, visa applications, and license renewals.

There are also many examples in the region of government-to-business transactions that take place on such systems. For example, the Philippines Customs Bureau has developed systems for customs payments, processing of clearance documents, and releasing of shipments from customs control. The new on-line system has led to fast and secure transmission of payment details. The time for reconciling of payments collected by banks and remittances to the National Treasury has been reduced from four months to a few days. A computer program called "Selectivity" categorizes shipments into high-, medium-, or low-risk transactions so that they can be coursed through appropriate examination procedures. These and other systems minimize the chance of fraud and corruption arising from contact between business people, officials, and messengers¹⁵.

Another good example is the Republic of Korea Public Procurement Service: a central government organization responsible for procuring commodities and arranging contracts for construction projects involving government facilities. Commencing in the year 2000, the purchase of commodities and all accounting transactions conducted among the Public Procurement Service, public organizations, and private supply firms will be via Electronic Data Interchange (EDI). Starting from 2001, all tasks will be executed through the EDI system.

In addition, cyber shopping is in operation for the procurement of office supplies, cultural products, and recycled goods. This service will be greatly expanded. There is also

¹³ Republic of the Philippines, 2000.

¹⁴ India, 2001 and World Bank, 2001.

¹⁵ Guillermo L. Parayno, 2000.

computerization of contract data underway, and the use of automation to simplify procedures, thus reducing the opportunities for officers to contact customers for illegal purposes. Databases are being set up for the pre-qualification and cost accounting processes, and for storing information on supply firms. Documents from contractors, including performance records, will be obtained using computer networks of relevant organizations instead of receiving such documents directly from contractors. This will help prevent prospective contractors from submitting false documents¹⁶.

It is expected that Asia-Pacific governments will soon follow the example of other regions and set up electronic production networks, where, for example, information requests, license renewals, tax payments, and e-procurement are outsourced to public and private specialist organizations¹⁷.

Stage 5: Digital Democracy

There are at least two important sets of ICT applications that can potentially support participatory and democratic processes in the region: applications that empower civil society organizations, and those that allow citizens to vote and otherwise express opinions over the Internet.

Civil Society organizations in the region have greatly increased their influence in recent years by using ITC. For example, Grameen Phone Limited is a commercial operation spun off an NGO, providing cellular services in both urban and rural Bangladesh (see Box 2).

Box 2: Does Connectivity Mean Productivity: The Grameen Phone Project — An ICT Success Story¹⁸

The ADB-supported Grameen Phone project¹⁹ in Bangladesh proved that connectivity meant productivity. This is one concrete example of a success story.

Grameen Bank has a micro-lending operation in 35,000 villages through 1,100 branches and 12,000 workers. Typically, a woman would borrow \$100 to \$200 without collateral from Grameen Bank to purchase a cow. The cow would then produce milk that she would sell to her neighbors, enabling her to make a living and pay off the loan. This process allowed the poorest of the poor to stand up on their feet. An enterprising Bangladeshi, when he approached the Grameen Bank, substituted a cellular phone as the object of business instead of a cow. A woman could borrow, say \$200 from the Bank, purchase a handset and sell telephone services, by going door to door to villagers, thereby making a living and thus paying off her loan. In two years time, he managed to establish a partnership called Grameen Phone Limited – and run a very successful commercial operation providing cellular services in both urban and rural Bangladesh.

The average daily earning of two dollars by phone operators is an indication of the phone's utility. However, more interesting are the anecdotal evidences of how people living in villages with phones began thinking of doing things differently after the phones arrived, suggesting the multiplier effect of the technology. For example, one lady thought of raising a large number of chickens, a business she was afraid to pursue for fear of not being able to call a veterinarian on time if the chickens developed a

¹⁶ Byungtae Kang, 2000.

¹⁷ Jones, p. 45.

¹⁸ Reproduced largely from Friedman, 2000, p.360-362, drawn from ADB, 2001.

¹⁹ ADB provided \$16.7 million loan and \$1.6 m. equity investment in 1997, ref. BAN 7143/1603.

disease. Another man reported his plan to cultivate bananas on a large scale, because he is now able to obtain market prices on time to make the correct shipping decisions. One woman contacted the doctor on time to save her child, who was running a high fever. The migrant workers throughout the world with roots in Bangladeshi villages can now call home to know how their families are doing, and if the money they are sending is indeed reaching its destination. There are many examples cited in this success story, but what is remarkable to note is the positive social impact of this digital technology in the hands of the poor. It showed how it could unleash new thinking and create new business models that could be appropriate for poor countries, as entrepreneurial skills of the poor are stimulated and catalyzed. Since many developing countries have large poor populations, it is not difficult to imagine the great potentials that could be unleashed if the poor are properly harnessed for development.

Interested civil society organizations also use the information and communication technologies to combine forces, raise funding, and challenge international corporations and agencies. These challengers are diverse coalitions of NGOs, trade unions, extremists from left and right, and nationalists. The groups are organized in a loose, leaderless, network made possible by ITC, and making it nearly impossible for the agencies being challenged to identify a body to work out a negotiated solution²⁰. The self-organizing qualities of Internet-enabled networks allow net-citizens to challenge the prescriptions and “best practices” of governments and inter-governmental organizations. This makes the work of these organizations more difficult, but also helps prevent the premature adoption of standards of so-called “best practice” which may rather be practices that protect the interests of particular organizations²¹.

In the long term, digital democracy will come to the region in another form. Citizens in the region will have the opportunity to use ITC-enabled voting sites such as those in use in, for example, the USA²², and under consideration in Japan²³

Stage 6: A portal taking citizens where they need to go

In the sixth stage of e-government, a portal integrates information and services from various government agencies to help citizens and other stakeholders handle common interactions. The advantage of such a portal is that users can receive "one-stop-service", and don't need to know which government agencies are responsible. For a particular issue, users can obtain procedures so that they know what to do under various circumstances; find out who to contact for further information and services; use various on-line services for payments and other transactions; obtain a checklist of things to bring when you apply for services in-person; find the answers to frequently asked questions; and engage the services of relevant commercial enterprises. One of the most developed systems of any government worldwide is in Singapore²⁴. In a recent study of e-government maturity, Singapore ranks 2nd out of 22 countries surveyed worldwide²⁵.

²⁰ IIE, 2001 and Aaronson, Susan Ariel, 2001.

²¹ Jones, pp. 38-9.

²² Election.com , 2000.

²³ Koizumi urges adoption of 'e-voting' in local polls. *Japan Times*, 1 June, 2001.

²⁴ Government of Singapore, 2001.

²⁵ Accenture, 2001.

Another example in a less-developed setting is in the Indian State of Andhra Pradesh²⁶. Several projects connected to the state's portal have been launched for better service delivery to the citizens:

- Twin Cities Network And Services (Twins);
- Computer Aided Administration Of Registration Department (Card);
- Fully Automated Services Of Transport Department (Fast);
- Multi Purpose Household Survey;
- Andhra Pradesh State Wide Area Network; and
- Secretariat Knowledge And Information Management Systems.

Connectivity has already been established and is operational between Hyderabad and all the district headquarters, plus two other major towns. This connectivity will be taken to the mandal and village levels next year and is proposed to be optimally used by the government departments and agencies to translate e-governance into reality. A video-conferencing facility between Hyderabad and the 25 cities/towns has been operational since January 1999 and will eventually be extended to all major departments.

SOME CROSS-CUTTING ISSUES CONCERNING ICT IN THE ASIA PACIFIC REGION

E-government is expanding in the Asia Pacific region, but it has far to go to catch up to some western countries, and to applications in leading businesses in the Asia Pacific region itself. The following will briefly address four cross-cutting issues having a bearing on the speed and character of developments over the next few years: ICT and corruption, ICT national and regional strategies, information as a public good, and making it happen.

ICT and Corruption

It is frequently assumed that the introduction of more advanced ICT reduces opportunities for corruption. The reality is more complex. While ICT can facilitate combating corruption, it can also have no effect, or even provide for new corruption opportunities. Computerization creates changes in one or more of the following related aspects:

- *Skills*. Computerization is often associated with an “upskilling” of corruption, providing new corruption opportunities for those with ICT skills, and removing opportunities from those without ICT skills.
- *Confidence*. With computer systems being regarded as an objective, all-seeing, and all-knowing, corrupt staff members lose confidence and refrain from corrupt practices.
- *Access*. Computerization of records often closes down access to some staff members but opens up access to others who operate the ICT systems. Depending on relative integrity, corruption may increase or decrease.
- *Control*. Data quality and computer omnipotence make some managers assume that ICT removes the opportunities for corruption. They may therefore fail to institute controls on computerized systems. And this last is probably the most dangerous tendency, for the lack of controls will be evident to those in a position to take advantage of it.

²⁶ Government of Andhra Pradesh, 2001. Another Indian example is the Government of the city of Delhi, where forms are available for 22 different permits, certificates, licenses, registrations, and tax payments. Government of Delhi, 2001.

- *Productivity.* ITC advances, like other technological changes, can improve the productivity potential of government organizations. However, only the managers and staff of these organizations know the actual productivity improvement obtained. It is in the collective interest of the managers of these organizations that the productive potential of these advances be underestimated by their superiors. In such cases, organizations may receive more resources than they need, which can in turn be used to increase the income or leisure of management or staff. This form of corruption was widely practiced in centrally-planned economies.²⁷

In all cases, corruption comes from a combination of two sets of factors. At the micro-level, the factors are the individual's circumstances, skills, access, and autonomy. At the macro-level, organization and national management systems, politics, and culture. Management decisions about computerized information systems may affect skills, access, confidence, and autonomy. However, they are most unlikely to affect the personal circumstances or the environmental factors of corruption.

Corruption is rooted in the cultural, political, and economic circumstances of those involved. ICT does little to affect these root causes, and has a potential role, but one that is limited and forms only a part of a much larger picture.

ICT National and Regional Strategies

To ensure that diverse ICT capabilities are effectively harnessed, there is a need to establish coherent strategies at the national and regional levels. Such strategies help coordinate ICT policies with closely related areas such as regionalism, industrial development, employment, privacy, data protection, and regulation of the mass media. For instance, policies that will enable citizens to gain access to vital facilities are crucial to gaining widespread commitment to innovations. The strategies can also seek to develop a user charges policy and provision for subsidized services. In addition, appropriate legislation and regulations are needed in areas such as editorial control over networked information, public access to information, privacy and data protection, and intellectual property rights. Finally, an ICT strategy should make a clear distinction between the provider of ICT infrastructure and the suppliers of information and services.

An example of a national strategy is: "IT for all Indians by 2008". The Prime Minister of India has called on India to become an information technology superpower and one of the largest generators and exporters of software in the world within 10 years. A high-powered National Task Force on IT and Software Development was set up on May 1998 as a first step toward this goal. The national IT policy entails the creation of a government-wide information infrastructure to simplify service delivery, reduce duplication, and improve the level and speed of service to the public. This will provide the public (business and individuals) with the opportunity to send and receive, over electronic terminals, the information that currently passes between them and the government on paper. The government will encourage the establishment of Internet service providers to provide access to even the most remote locations in the country. It will collaborate with the private sector to put in place secure electronic fund transfer (EFT) systems, since this is critical to the successful implementation of electronic commerce, as well as direct service delivery to citizens.

²⁷ Olson, 2000, pp. 145-6.

To increase ICT accessibility, computers and the Internet will be made available in every school, polytechnic, college, and university and in all public hospitals in the country by the year 2003. Likewise, government processes and procedures will be reengineered to bring about transparency at work, reduce constraints, increase efficiency and productivity, and reduce the cost of service delivery, among other benefits. Projects will be integrated across departments to provide a single point of contact for the electronic delivery of services to citizens. Maximal transparency in governance through citizens' charters for every government department and public body will be available to citizens over the Internet.

In another national example, the People's Republic of China launched a "Government Online" project in early 1999 to get most government agencies online. The project will initially encourage agencies to post information on their functions, duties, organizational structure and administrative procedures, making available government documents and archives, releasing their daily activities, and implementing an electronic filing system for documents. There are also plans for an online taxation system, and online auctions to combat corruption in awarding government contracts²⁸.

An important step in moving forward on a national ITC strategy is building public awareness. An example of a process for this in Mongolia is in Box 3.

Box 3
ICT Seminar for Mongolia

The Asia-Pacific Development Information Programme (APDIP) held a seminar on ICT policies and infrastructure development for Mongolia in Kuala Lumpur, Malaysia, on 23–26 March 1998. The curriculum was tailored to the specific needs of government officials from Mongolia and was intended to provide professional expertise in the development of ICT policies for their country.

The seminar introduced broad issues that need to be addressed in determining and implementing ICT policies. The focus was on specific global ICT frameworks, the establishment of infrastructure, national information and services, quality of service, financial mechanisms, taxation, Internet regulation, and legislation. Practical applications of the Internet, such as electronic government, electronic commerce, telemedicine, distance education, and teleworking, were emphasized.

The government Intranet was demonstrated as a means of extending administrative reach and information distribution throughout the organization. Concrete examples were provided of how useful information for country advancement can be disseminated through a CountryNet. A CountryNet unites the public face of activities and organizations within a country. An application facilitating electrocardiogram (ECG) readings over the information systems network was also presented to illustrate the significance of using telemedicine to extend specialist medical care (usually concentrated in urban areas) to less developed areas. APDIP Programme Manager Gabriel Accascina discussed several applications to improve governance. He showed how citizens can be empowered with on-demand information such as current laws on women's rights. Accascina described the benefits of providing relevant and timely information more efficiently to business, then gave an example of how tourism can be promoted over the Internet.

The seminar resulted in two proposed actions for Mongolia: the establishment of a national ICT agenda for Mongolia, under the direction of the prime minister; and the strengthening of public awareness of ICT and its benefits to the country.

Source: APDIP Web site, 1998

²⁸ Kalathil, 2001.

Another approach is to develop regional ICT strategies. ASEAN's concern about ICT is demonstrated by its recently created e-ASEAN Task Force²⁹ to develop a broad and comprehensive action plan for an ASEAN *e-space* and to develop competencies within ASEAN to compete in the global information economy. The Task Force will also establish an ASEAN Information Infrastructure. In developing this, the Task Force will examine the physical, legal, logistical, social, and economic infrastructure needed to create the basis for ASEAN's competitiveness in the 21st century.

Similarly, APEC³⁰ recently launched a wide-ranging Action Agenda for the new economy that outlines programs that will use advances in ICT to boost productivity and stimulate growth and extend services to the community. The Action Agenda includes ways to promote the right policy environment and build capacity to create a framework to strengthen markets, e-commerce, knowledge and skills development, and provide affordable and more efficient access to communications and the Internet. APEC supports the development of distance learning capacity of the region and ICT as a core competency for teaching and learning to prepare young people to meet the global challenges. It also strongly supports the development of ICT to enable networks to extend health and medical services to a wider community and to address basic health issues.

Information as a Public Good

Governments are the biggest single collectors and producer of information in the Asia-Pacific region, and the way in which they manage the information has wide-ranging consequences. Wide dissemination of government information can improve the relationship between the government and the people. In the commercial sector, the efficient availability of government information can promote information-related business activities. As governments realize that the information collected is a valuable asset, they may wish to use it commercially and turn it into a traded commodity.

Different governments have at least three different views about the nature of information (and, hence, its tradability) :

- *Information is a public asset.* Everyone owns public sector information since it has been gathered about and from everyone, often compulsorily. Therefore, information should, in general, be made available either for free or at a charge that reflects merely the cost of information transmission³¹.
- *Information is a private asset.* Public sector information is owned by the government agency that owns (or pays for) the computer on which that information resides. Since the public sector has invested money in producing information that often has considerable commercial value, it may sell information at whatever price the market will bear.
- *Information is not an asset.* Government information is not seen as important enough to raise issues of ownership, value, and charging. Where used, information is virtually a personal asset of particular government employee. Information is not

²⁹ ASEAN, 2001.

³⁰ ADB, 2001; APEC, 2001.

³¹ Following this line of argument, Brin (1999) recommends that images from rapidly increasing surveillance cameras in public places (including government offices) should be freely available to citizens over the Internet, as a check against possible abuse by authorities.

generally made available and individuals do not have rights of access, except perhaps through “under the counter” payments³².

Increasingly, government departments are in fact commercializing information and seeking to sell it. There is also an increase in private sector participation in government information marketing programs.

The increasing willingness of governments to use ICT to sell information to the users has raised a number of questions. The issue of ownership of data once it is sold requires clear guidelines from the government. In the UK, guidelines are being implemented for government agencies in supplying information to private companies. Since some parties may misuse government information, there must be controls to regulate the use of this information. Finally, as governments become key information suppliers in the market, the extent to which they should compete with private companies and the manner in which information should be traded become important considerations. Clear government policy is therefore important for the development of a good government information trading service.

Making ITC Happen

Barriers to ICT Innovations and Implementation

Failures in government policies are often one of the reasons why public benefits from ICT are wasted. One study identified the following main problems: inadequate attention to the human element in systems development; insufficient priority given to the need for affordable, accessible, user-friendly applications; widening gap between the educated, technically proficient citizens and the less advantaged; and failure to forge effective partnerships between government agencies and the private sector. Among the barriers to innovation in the provision of public services are the following:⁴⁰

- Defense of functional organizational boundaries by agency “barons”;
- Fragmentation caused when departments or agencies develop systems exclusively for their own clients, although integrative multifunctional and cross-departmental “one-stop-shop” applications have greater long-term potential;
- Constraints and demotivation faced by champions of innovation in the risk-averse bureaucratic cultures that typify many public agencies;
- Over-centralization of government, leading to the weakening of local government and fewer opportunities for local innovation;
- Anxieties among staff members caused by fears of employment cuts, job reorganization, and geographic redistribution;

³² Heeks, 2001. The UK Government and its e-government partner Microsoft plan to sell the system developed for online transactions to other governments. Abrahams, 2001.

³³ See <http://www.apdip.net>.

³⁴ Taken from issues of the *Honey Bee Newsletter*, June–September 1998.

³⁵ See <<http://www.e-envoy.gov.uk/>>.

³⁶ Taken from Heeks (2001).

³⁷ Dutton (1996).

³⁸ Taken from Philippine newspapers, November 1998.

³⁹ These innovations were taken from the Ethos home page, 1998.

⁴⁰ As outlined in Dutton, 1996.

- Perception among many staff members and citizens that cost cutting is the overriding objective of ICT initiatives and that claims about improving services fulfill a primarily rhetorical role;
- A narrowly focused “business case” for ICT investment that fails to identify as key priorities the kinds of benefits that will build a broad constituency to support the continuing introduction and use of new applications;
- Negative reactions from citizens who do not want to be treated purely as “customers” or “clients” and who might see ICT as a wedge for the introduction of inappropriate business methods into public services;
- Experiences of past ICT failures, making users reluctant to be involved in new ventures;
- Difficulties in scaling up to larger operational systems from small pilot projects;
- Practical incompatibilities when communicating between systems in different departments, local authorities, levels of government, and private enterprises; and
- Failure to enact the needed complementary changes in organization and procedures.

Policies to Promote Successful Innovations⁴¹

A political climate that supports risk taking

For any innovation to be successful there must be willingness to take risks. However, traditional public-service cultures are “risk-averse,” in part because scarce public funds are at stake. While various ICT experiments in the 1990s show that there are many entrepreneurs and innovators in public agencies, change is likely to evolve only incrementally unless a political climate that promotes and rewards risk taking is created.

Encouraging local initiatives

Local agencies can more easily nourish innovations related to their communities because they are closer to the public, community groups, and businesses. Likewise, the large number and diversity of local governments in many countries can greatly facilitate the emergence of innovative ideas, provided a political climate and organizational arrangements are established to nurture them. Moreover, reorganizations of local government structures can offer a “window of opportunity” for authorities to rethink and change the way they do things, including how to deploy ICT.

As noted, a problem that commonly hampers local innovation is the budgetary constraint: available resources are too small to support investment in long-term programs. One way around this problem is to develop joint ventures and multiple funding sources involving a mix of public agencies at the local, national, and international levels and private investments. Establishing a common fund for the promotion of innovations in the development of ICT applications could also be feasible.

Making a case for the business goals of public service

Although financial goals for public services must be set, the focus of appraisals of public sector ICT applications should be broadened so that genuine priority is given to identifying and meeting the needs of users and stakeholders. This vision should be reinforced by a shift in the

⁴¹ *Ibid.*

focus of ICT projects from “backroom” administrative support to direct improvements in the quality of front-line services offered to customers and clients.

A new approach to justifying public sector investment is to combine traditional, financial, appraisal criteria with the need to take account of enhancing service quality, including the provision of tangible solutions to citizens’ problems. For instance, electronic support for one-stop services in welfare benefits administration should be appraised not only for its capacity to produce savings in costs associated with maintaining clients’ files, but also in terms of intangibles related to improvements in customer service.

Institutional Development

Changes in public management systems are more likely to succeed if transformations are seen as long-term processes. ICT should be used to create a readiness for organizational innovation through the development of information and knowledge resources in ways that are sensitive to the needs of knowledge workers. In turn, public-service staff should be trained to understand and communicate the nature of the new services they are providing and of the logic of the organizational changes made to support them. ICT also needs to be reinforced in schools, as discussed in Box 4.

Box 4
ICT and Education in Malaysia

In a move to boost ICT literacy in Malaysia, the Education Ministry has proposed plans to ensure that all Malaysian schools will be fully equipped with computers, by the end of the Seventh Malaysia Plan (which began in April 1998). The Ministry Office also attached importance to the availability of adequate software support in the form of computer-assisted learning packages for mathematics, Bahasa Malaysia, and English. Malaysian primary schools will be the first to use such packages once the network is fully established.

Currently, one secondary school per state is equipped with network facilities that link it to the Education Ministry’s technology education division. Both e-mail and Internet services are also available on this network, which was set up by Telekom Malaysia at a cost of M\$3.8 million.

Source: The Ethos Home page, Internet, December 1998

The private sector is a crucial influence on the electronic delivery of public services, as it acts to create a familiarity with similar capabilities in daily life. These everyday experiences with electronic services establish benchmarks against which citizens may judge public sector electronic service delivery. Furthermore, the introduction to public services of competitive tendering, privatization, and “outsourcing” has meant that business ICT know-how is being applied directly to public services.

Grassroots partnerships

A key element in effective management of many ICT projects is the establishment of working partnerships among citizens, community groups, business enterprises, ICT vendors, and public agencies at all levels and across all functions. This has been particularly evident in the US,

where local agencies have taken a strong role in leading innovation. The following important guidelines are proposed for building a political climate that motivates effective grassroots partnerships:⁴²

- Involve the grassroots: local citizens, community groups and other nonprofit organizations, national and local government agencies, business enterprises, and all others that are significantly affected by ICT innovation.
- Develop a community infrastructure to facilitate the use of new electronic facilities, including adequate training, education, and implementation support through schools, libraries, community centers, town halls, and other means.
- Set up a planning task force and explore ideas and alternative possibilities using techniques like community workshops and technology demonstrations.
- In the preparation phase, ensure cooperation and resolve key issues, such as how costs and risks are to be shared. Pilot projects and demonstrations can also be valuable at this point.
- At the operational stage, scale up resources and clarify the roles and responsibilities of lead agencies and participants.
- Establish directories and other information about relevant public agency and electronic democracy services.
- Ensure that budgets are allocated specifically to support the above activities.

In practice, however, the forging of level partnerships along these lines can be difficult. Some ideas generated at the grassroots may not coincide with the aims of senior policymakers, and vice versa. If original intentions are not satisfied, problems may likely ensue. Thus, it is important that senior management communicate openly with all constituencies to ensure that goals and commitments to achieving successful outcomes for public expenditure ICT developments are well represented.

CONCLUSIONS

Asia-Pacific governments are only in the initial phases of adopting ICT to improve financial management information and reporting, streamline the delivery of government services, enhance communication with the citizenry, and serve as a catalyst for empowering citizens to interact with the government. As they move forward, they should:

- always fit the new technology to user requirements and the real objectives of the activity;
- see to it that the new technology goes hand in hand with improved rules and processes;
- recognize that ICT cannot substitute for good public management and internal controls, nor will it eliminate corruption in the absence of other measures;
- protect data and systems integrity; and
- aim at an integrated strategy and avoid a piecemeal approach that can fit specific needs but makes for a chaotic and even dangerous system. (Note, however, that an integrated approach requires compatibility and coordination, but not necessarily a single system.)

⁴² Derived from United States Office of Technical Assessment, from chapter 5 of Dutton et. al. (1996).

During the 1960s, the public sector in developed countries led many private enterprises in the use of ICT in support of business functions. With falling ICT costs in the 1970s, private industry went into the lead, where it remains today in most sectors.

There are several reasons for slower adoption of ICT by public-sector institutions, particularly in Asia-Pacific developing countries. These include:

- higher costs of ICT introduction due to the scale of public organizations;
- the inertia of existing options and habits;
- paper trail required for approval processing;
- security and concerns;
- confidentiality of information;
- obsolete regulations and laws; and
- lack of understanding and computer skills.

In the last decade, innovative local and national government agencies, largely in developed countries, have started applying ICT to a growing range of public services. The potential benefits of new information and communications capabilities for the services produced by public agencies include:

- lower administrative costs, through a significant reduction of information handling to meet compliance requirements;
- faster and more accurate response to requests and queries, including outside normal office hours;
- access to all departments and levels of government from any location;
- better enabling governments to harvest data from operational systems, thus increasing the quality of feedback to managerial and policy levels;
- assisting local and national economies by facilitating the government-to-business interface; and
- expanding means of public feedback.

As e-government becomes more widespread in the region, one can expect a progression through six stages. Not all governments or agencies will reach all stages, and there will be much variety within a government, with different agencies at different stages. The stages are:

- setting up an email system and internal network;
- enabling inter-organizational and public access to information;
- allowing 2-way communication;
- allowing exchange of value;
- digital Democracy; and
- a portal taking citizens where they need to go.

An important aspect of the current innovations is the sharing of information about the progress being made in renewing government activities. In time, and as appropriate in the local context, successful initiatives will revolutionize the way governments operate and provide services.

With the growing demand for information, governments are increasingly selling information to users. Clear policies should be established for the development of good practices in government information trading.

While ICT can detect and remove some forms of corruption, it can also provide new avenues for corruption for those public servants that are adept at manipulating the new technology. Essentially, the ultimate impact of ICT corruption is shaped by management decisions about information.

Recent ITC developments and opportunities in the public sector are reviewed, including use of the Internet, electronic service delivery, workflow systems, enterprise resource planning, and knowledge management. Specific ITC cases are presented from Bangladesh, Malaysia, Mongolia, and the Pacific Islands.

Successful ITC innovation by public agencies requires a willingness to take risks and top-level support. The large number and diversity of local governments in many countries can greatly facilitate the emergence of innovative ideas, provided a political climate and organizational arrangements are established to nurture them. The focus of public sector ICT applications should be broadened to include not just more efficient administration, but also improved quality of front-line services offered to customers and clients. Changes in public management systems are more likely to succeed if transformations are seen as long-term processes. ICT should be used to create a readiness for organizational innovation through the development of information and knowledge resources in ways that are sensitive to the needs of knowledge workers. In turn, public-service staff should be trained to understand and communicate the nature of the new services they are providing and of the logic of the organizational changes made to support them. Finally, working partnerships should be set up among citizens, community groups, business enterprises, ICT vendors, and public agencies at all levels and across all functions.

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