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Theme Paper

**Information and
Communication Technologies
for Improved Governance
in Africa**



**United Nations
Economic Commission for Africa**



Theme Paper

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Information and Communication Technologies for Improved Governance in Africa

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adf'99 This paper was prepared for the Economic Commission for Africa by Bhavya Lal, M.S. Gary Gaumer, Ph.D. Technology Analytics Group Abt Associates Inc. and Salomao Manhica, Executive Secretary of the ICT Policy Commission Mozambique.

ABSTRACT

This paper reviews the issues facing African countries in adopting information and communication technologies (ICTs) to enhance governance in four areas, reducing poverty, providing basic human needs, improving public administration, and enhancing democratization. It summarizes the use of ICTs in these areas – both successes and failures – around the world and in Africa. The theme in our overview of ICT in governance is that ICTs are neutral and that human choices will determine how ICT will be used and whether the revolution in ICTs will benefit all of Africa. The paper focuses on many of the caveats that should accompany ICT deployment and ends with an action framework for practitioners anxious to get started.

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Executive Summary

Governance can be defined as the process through which institutions, businesses and citizen groups articulate their interests, exercise their rights and obligations and mediate their differences. Information and communication technologies (ICTs) can help to sustain this process in three ways: (i) they can support tasks that involve complex decision making, communication and decision implementation, (ii) they can automate tedious tasks done by humans, and (iii) they can support new tasks and processes that did not exist before. When ICTs are properly aligned with governance goals, they can help to create gains in both efficiency and effectiveness.

There is tremendous African optimism that such gains can help address Africa's main governance challenge – how to solve grave economic and social crises with meager resources. Examples of well-thought applications around the world show that ICT can help to:

- *Reduce poverty* by creating a more skilled workforce and increasing the penetration of aid and subsidies to the undeserved
- *Provide basic needs* by improving the quality of healthcare, providing educational opportunities, planning for basic service delivery, and helping to improve agricultural productivity and commerce
- *Improve public administration* by facilitating informed decisionsmaking , managing the burden of foreign debt, revitalizing local economies, improving policing and public safety, improving public administration and efficiency, facilitating regional, national, and sub-national coordination and communication, improving the quality of public services, and facilitating better post-conflict reconstruction and administration
- *Enhance democratization and citizen empowerment* by establishing an "open" online government, enhancing interactions between government and citizens, revitalizing civic institutions and public debate, and promoting equity and empowering minorities

The enthusiasm for realizing the potential of ICTs in Africa is often dampened by the barriers to successful implementation. These barriers are imposed most often by lack of good infrastructure – both physical and regulatory – but also by lack of access to technology in rural or remote areas and to the poor and the underprivileged (generally women and minorities). Lower levels of literacy, both computer-based and otherwise, and lack of content in local languages further exacerbate the difficulties. Nonetheless, the number of governance applications is increasing, as infrastructure and literacy levels improve, and costs drop. Most governments in Africa have Web sites, and while they are still targeted toward foreign audiences, there are signs that there is tremendous progress being made in integrating ICTs in governance applications. As the number of applications increase, there are certain lessons – derived both from successes and failures – that are coming to the fore. The most important ten lessons that have been observed in governance can be summarized as follows:

- Sometimes the simplest technology can produce the biggest results.
- Using technology in governance is a trickier problem than using it in business.
- The newest or most cutting edge is not necessarily more useful or even the correct choice of technology.
- Developing economies cannot afford to experiment, or to be experimental laboratories for new technologies, or for dumping excess product.
- Generating returns from an ICT investment in the public arena requires major investment in training and support on part of its sponsors.

- Most of the challenges do not involve the technology itself, but its alignment with existing processes and the organization's strategic goals.
- Technology is a double-edged sword and almost always brings some challenges with it.
- An ICT implementation that creates information haves and have-nots, either on the basis of access or computer-literacy, will eventually fail to achieve whatever goals of governance it has.
- ICTs may not always bring about the desired benefits.
- Finally, we must make the point that ICTs are not intrinsically valuable, or even necessary for improving governance.

Given Africa-specific barriers of access and education, and general barriers of technology deployment, a framework of action incorporating these lessons learned can be useful for creating applications in governance. The framework can be summarized as follows:

- The first step in using ICTs as a tool to improve governance is to ignore ICTs altogether and focus on selecting and prioritizing improvement goals that are urgent or important. Once the most important goals are established, senior level policymakers must establish milestones that will indicate that the activities designed to meet these goals are on track.
- The next step is to review alternative ICT solutions that support the activities designed to achieve the goals, given constraints on financing, infrastructure, literacy and skills. Each solution must be associated with (financial and opportunity) costs – of infrastructure, training, etc. – and benefits.
- Once the ICT solution is accepted based on the planners' estimation of its merits and costs, a detailed workplan must be developed, with provisions for adequate training and capacity building. Again the key is to focus on strategic goals and user constraints.
- The final step in the process is to lay the groundwork for monitoring and evaluation (M&E) and to incorporate M&E as an ongoing integral part of the process of adapting ICTs to meet needs.

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...there is nothing more difficult to plan, more uncertain of success, or more dangerous to manage than the establishment of a new order of government; for he who introduces it makes enemies of all those who derived advantage from the old order and finds but lukewarm defenders among those who stand to gain from the new one...

Niccolo Machiavelli

1. Challenges of African Governance in the 21st Century

Political observers and ordinary citizens alike were confident that the wave of democracy that traveled south from Eastern Europe and the former Soviet Union to many African countries in the early 1990s would overwhelm despotism. Indeed, a new hope swept across the continent, after the citizens of Mali, Zambia, Benin, Niger and many other nations chose their first democratically elected Presidents. But even "success stories" like South Africa, Mali, and Uganda have trouble meeting high public expectations of rapid economic and political progress. Almost a decade later, there are certainly still reasons for hope, such as a successful second case of "alternance" in Benin and the recent political transition in Nigeria, after 29 years of authoritarianism. Growth figures out of Africa had begun to point to the first hopeful signs of economic revival in several countries, after decades of stagnation. In 1997, economic growth was estimated at around 4.6%, compared to 3.3% in 1995. In 1997, 21 countries had a GDP growth rate of 5% or more and at least 38 countries had positive GDP per capita growth rates.¹

But optimism is waning again, as Africa's new democracies grapple with how to solve grave economic and social crises with meager resources. The challenges seem insurmountable: stimulating economic activity, reducing the massive burden of foreign debt, meeting basic human needs such as clean water and electricity, providing better access to health and education, increasing agricultural productivity, stemming environmental degradation, and reducing poverty. Resource-depleting civil and regional wars exacerbate these difficult development challenges. Some political observers argue that the future of African democracy is at stake, as electorates grow disenchanted and certain elite groups seek a return to the old autocratic ways. Will democracy in Africa consolidate or collapse in the twenty-first century?

By many accounts, the answer to this question hinges on the success of Africa's citizens and leaders in developing effective and efficient governance, and meeting the challenges of development. This paper explores how African women and men and their policymakers may be able to use information and communication technologies (ICTs) to improve governance and what risks such technology may pose as well. The paper serves three primary functions: it provides evidence of the use and benefits of ICTs for governance, it describes the risk that are inherent to improper use, and it proposes a framework that policymakers can adapt to deploy ICTs in improving governance.

We begin by defining governance. A review of the literature reveals many definitions of governance. Some narrowly focus on the role of governments in the development process. These definitions are very command-and-control oriented:

"Governance" stands for the practical exercise of power and authority by governments in the management of their affairs in general and of economic development in particular. From World Bank Report Governance and Civil Service Reform: A Regional Program in Findings Number 23, August 1994

We believe that an open political process which encourages shared pluralist management and decision-making fosters greater government effectiveness. Legitimacy and effectiveness create an environment that nurtures the growth of public accountability. Therefore, in the context of this paper, we will adopt more inclusive definition, one that includes citizens and citizen bodies as well as the private sector, of governance:

"Governance is the process through which ... institutions, businesses and citizens' groups articulate their interests, exercise their rights and obligations and mediate their differences." Louise Fréchette, Deputy Secretary-General of the United Nations, Speech to the World Conference on Governance, Manila, May 31, 1999

Governance comprises the traditions, institutions and processes that determine how power is exercised, how citizens are given a voice, and how decisions are made on issues of public concern.² But even freely and fairly elected governments, where citizens have begun to express their demands openly, often lack capacity to respond efficiently to the needs of citizens by solving – or creating an enabling environment for solving – economic and social problems. Indeed, a more open, participatory government is not a sufficient condition for good governance. Expression of citizen demands, whether for services, accountability, or transparency, is futile without a government willing and able to listen and respond. A democracy without effective administrative capacity is an empty shell. Therefore, the paper explores ICTs both as an instrument of citizen empowerment and public sector reform.

In the remainder of the paper, we provide a balanced view of the gains and risks of ICTs. The theme in our overview of ICT in governance is that ICTs are neutral, and that human choices will determine how ICTs will be used and whether the revolution in ICTs will benefit all of Africa.

We begin with an operational definition of governance in this Section and proceed to discussing the role of ICTs in enhancing it in Section 2. Section 3 forms the core of the paper and describes how governments around the world have used ICTs to address specific governance challenges. Section 4 reviews applications that deal explicitly with the role of ICTs in citizen empowerment. Section 5 reviews African constraints to uses of ICTs in governance. Section 6 discusses some cautionary lessons about investments into and deployment of ICTs. Finally, Section 7 describes a framework in which deployment of technology can begin.

As a great social leveler, information technology ranks second only to death. It can raze cultural barriers, overwhelm economic inequalities, even compensate for intellectual disparities. High technology can put unequal human beings on an equal footing, and that makes it the most potent democratizing tool ever devised."

Sam Pitroda, Harvard Business Review, 1993

2. The Gains and the Risks of Using ICTs for Governance

To many in Africa, ICTs are nothing more than a vague concept with lots of front-page press. Telephone and cable companies promise "video dial-tone," 500 channels of movies, home shopping, interactive video games and other services of dubious value. Governments' national information infrastructure agendas for action promise "a seamless web of communications networks, computers, databases, and consumer electronics that will change forever the way people live, work, and interact with each other." These pronouncements all imply that the national information infrastructure is ill-defined, does not yet exist, and will be built from scratch.³

In reality, the system is far more concrete and mundane. ICTs are a diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information. ICTs are not single technologies but combinations of hardware, software, media and delivery systems. They encompass a great range of rapidly evolving technologies such as: television and radio, phone lines with operators, phone lines with automated touch-tone answering systems, personal computers (PCs), networked PCs, and PCs with CD-ROMs, fax machines, electronic benefits transfer, smart cards, credit cards, Internet (e-mail, world wide web), kiosks, computer-mediated conferencing and videoconferencing, commercial applications (such as word processors, spreadsheets, simulations) and proprietary applications (such as decision support models and management information systems).

These technologies are rapidly evolving. An example of this trend can be found in Hong Kong where New World Telephone, is installing "PowerPhones" from which users may read or send e-mail, send a fax, search online multimedia directories about hotels and tourist spots, and make a telephone call.⁴ Another example is Internet "telephony" software that now makes it possible to place domestic and international calls from a computer to any telephone anywhere in the world.⁵

In theory, everything that these tools can do could be done by some other means. In practice, their ability to increase the speed and reduce the cost of information tasks means that they can help do things that would not otherwise be contemplated. ICTs therefore have three basic change potentials within the context of governance:⁶

Support. ICTs can assist with existing tasks and processes that involve complex decision making, communication and decision implementation. For example, in Ireland, the Department of Social Welfare created more than a dozen computerized applications in order to support the decentralization of responsibilities from Dublin to outlying offices.

Supplant. ICTs can automate tedious tasks done by humans which involve accepting, storing, processing, outputting or transmitting information. For instance, special software packages can sort incoming e-mail messages by sender, subject matter, or recipient. Mailboxes can automatically respond to simple e-mail requests. Survey systems can send forms to citizens or other recipients, process their responses and format the results without the need for human oversight or intervention.

Innovate. ICTs can support new tasks and processes that did not exist before. For example, computer-based civic networks enable people of diverse backgrounds to communicate on subjects of mutual interest. This diversity, both social and geographic, allows for individuals and groups to

communicate amongst themselves in ways that are largely impossible without electronic communications.⁷

As a result of these changes, policymakers can expect both efficiency gains...

- *Create the same outcomes at a lower cost.* For example, in Ghana, the Controller and Accountant General's Department introduced and networked more than 150 computers in order to reduce data gathering and communication costs and to increase the efficiency of the government's personnel management function.
- *Create more outcomes at the same cost.* In Sweden, the Web and other Internet-enabled applications were used to increase the democratization of local government in Göteborg. At a very low cost, the government was able to create a significantly more participatory democracy.
- *Create the same outcomes at the same cost in less time.* In the US, the Lawrence Livermore National Laboratory developed a Web-based system to increase the speed of parts procurement.

And effectiveness gains...

- *Create the same outcomes at the same cost in the same time but to a higher quality standard.* In Spain and Portugal, smart cards are issued to people to claim unemployment benefits at kiosks and to check on job vacancies and training opportunities.
- *Produce entirely new outcomes that did not exist before.* In the US, "collusion detection software" was developed and applied to root out impropriety in bids and contracts awards for supply of school milk.⁸

There are also inherent risks in the use of ICTs that the quote on top of this Section fails to capture. As we will illustrate in Section 6, ICTs are neither necessary nor sufficient for improving governance. Often, ICT applications may become distractions rather than becoming the *means* to attaining strategic policy ends – the technology tail wagging the reform dog. The bottom-line is that ICT applications, when not integrated with organizational culture and missions, will almost always fail. An example from India illustrates this concept.

In India, part of the Income Tax Department's tax system was computerized. The project ran into difficulties due to political antagonisms between various groups; notably between regional tax commissioners and the central tax board, and between management and unions. As a result, only parts of the information system and only a sub-set of intended process reforms became operational and even these were resisted by staff. There was therefore only very limited achievement of reform objectives.⁹

There are other risks as well: an ICT system, if not thought through fully, may lead to information being incompletely archived and preserved, or cause breaches of security and privacy. But most of all, ICT applications implemented without regard for suitable access to all concerned will create a society of information haves and have-nots – that no degree of good governance can repair. In the next Section, we begin to see how well-designed and implemented ICT applications – because of the ability to integrate multiple media, flexibility of use, interactivity, and connectivity – are inspiring remarkable transformations in governance around the world. These transformations hold the promise for the improvement of the lives of the rich and of the poor, whether living in Africa or outside.

The liberating effects of these technologies have been clear around the world. Satellite stations brought medical advice to those tending to the suffering in Rwanda. Radio and TV broadcasts in South Africa promoted the role of voting in a democracy. Wireless technologies are allowing emerging nations to leapfrog the expensive stages of wiring a communication network -- for example, in Thailand, where the ratio of cellular telephone users to the population is twice that of the US [There are more cellular phones in Thailand than all of Africa: Ed]

Albert Gore, Vice President of the United States

3. ICT Applications in Governance: Survey of Applications

ICTs can further governance goals in many ways - ranging from enabling long-distance education, telemedicine, and environmental management, to strengthening of participatory approaches and the creation of new livelihoods. They can involve more people, thus far unreached or underserved, and can accomplish a deeper geographic penetration, especially to rural areas, than is the case with traditional means and modalities. They can allow access to information sources worldwide, promote networking transcending borders, languages and cultures, and foster empowerment of communities, women, youth and socially disadvantaged groups. ICTs can be indispensable to realizing the global information society and the global knowledge society. In this Section we describe how ICTs can improve governance in particular and focus on three main areas: poverty alleviation, providing basic services such as healthcare and education, and improving public administration. The next Section focuses exclusively on a fourth area - enhancing democratization and citizen participation. Use of ICTs in each of the first three areas is illustrated below with examples from around the world.

3.1 Poverty Alleviation

Creating a more skilled workforce. Through distance learning, use of educational software, and IT-related professional training programs, ICTs can help provide access to culturally appropriate educational, and job training, thus producing a higher-skilled workforce.

The *Gobi Women's Project* is using radio to deliver instruction including livestock rearing techniques, family care, income generation, and basic business skills to 15,000 nomadic women in Mongolia.¹⁰ Many universities offer non-credit, remedial and specialized certification programs via satellite-based educational networks. For example, the University of Namibia offers a distance learning bachelor degree program in nursing in which women constitute between 90-95 percent of the students.¹¹

Increasing the penetration of aid and subsidies. ICTs can help better target aid to the poorest and the most deserving citizens and at the same time make the aid more timely, and cheaper and more user-friendly to administer.

Thirty percent of the people in Tulare County, California, receive public assistance, one of the highest percentages in the United States. The *Tulare Touch Project* operates video touch-screen kiosks to help clients apply for benefits, a normally tedious, error-prone process involving detailed forms and complex regulations. Twenty percent of those receiving Aid for Families with Dependent Children benefits use the touch screen system. Most parties involved seem to like it. For example, social workers praise the system since it reduces clerical work and clients because the system can speak in many languages such as Spanish, Korean and Vietnamese. Initial determination is more quickly established with the system, grant aid is now received within six days of the initial application instead of 45 days, error rates have been dramatically reduced with fewer staff members. In addition to improving

services to the poor, it was determined that this \$3.2 million investment (main-frame computer, laser-disk storage, and touch-screen technology) saved \$20 million in its first year.

3.2 Providing basic services

Improving the quality of healthcare. ICTs can improve healthcare workers' access to knowledge bases about health and disease, e.g. the National Institutes of Health Medline system. They can enhance their ability to collaborate with physicians, epidemiologists, and other specialists regarding immediate health concerns. Automated tools for diagnoses and data storage tools can improve the efficiency and accuracy of care provided.

Health care workers in the state of Andhra Pradesh in India were burdened by demanding data-collection and paperwork responsibilities, which affected the quality of their work and their ability to provide prompt primary health care services to the people they serve. To solve the problem, manual paper registers were replaced with hand-held computers, with the intent to lessen the paperwork burden and improve data accuracy. By freeing up time from paperwork responsibilities, the move empowered the village health care worker to provide timely care to patients.¹²

To improve the prevention and detection of chronic diseases in a rural community, an information service called *Public Electronic Access to Knowledge, Inc (PEAK)* in Corvallis, Oregon used a Gopher server to disseminate health-care decision trees to the public using a civic network. Such decision trees are often published as brochures in health centers to help determine whether or not to consult a doctor about a cold or headache or other borderline ailment. The menu hierarchy of a Gopher server could be used to widely disseminate such decision trees to the public. For example, a user could choose "Headache" from a menu of symptoms. The headache menu would ask whether the headache was behind the eyes, or from the back of the head. Each option would lead to multiple choice questions or a text file describing the appropriate self-care. It would also be possible to send electronic mail directly to a clinic to set up an appointment, if the appropriate decision would be to consult a physician. Such decision trees disseminated over a civic network to the public could help inform personal care decisions for AIDS, child-care, pregnancy, and many other critical health areas.¹³

In Zimbabwe, SatelLife's HealthNet network is having a significant impact on institutional and national development in the health sector. The HealthNet node in Harare provides low-cost e-mail and health information services to the health community. Ministry of Health officials use HealthNet to collect and disseminate weekly surveillance reports on epidemiology and disease control to hundreds of health centers around the country. Raw data is sent electronically from the Districts to the Provincial centers for analysis and compilation into summaries and charts, forwarded onto the Health Ministry, and then resent to the districts via HealthNet. Ministry personnel also use HealthNet for many other professional purposes including ordering drugs from central stores and distributing assignments to students on field assignments.¹⁴

Providing educational opportunities. Telecommunications networks and specialized educational software can be used to supplement traditional education, especially in remote and rural communities. They can also improve educators' access to colleagues' research in other countries, directly and through services such as the Physics Information Network, enhance their ability to participate on the basis of substance (rather than being distance limited) in joint research work with international colleagues, enable dialogues with teachers in other countries and provide access to collections of teaching materials and other information that can be put to direct use in the classroom.

About a third of Chilean public schools are located in areas with no telephone service. Chile's *Enlaces Project* began as a pilot program to provide educational software and training to teachers, particularly in these poorer parts of the country and areas with high indigenous populations, away from urban centers. The locally-produced software package called "La Plaza" became the most widely used part of the program, a package that provides e-mail functions, a document storage and retrieval system, and other useful applications. The use of this package has benefited educators by allowing collaboration among teachers and greater use of limited resources. This project enhances the teachers' ability to educate effectively and to develop the skills required to continue to improve teaching methods, thus improving the educational system itself. The project has since been expanded throughout the country, now connecting over 400 schools in all regions of Chile, including areas whose infrastructure does not make such connections a simple matter.¹⁵

Planning for basic services delivery. Computerized decision support tools can be used to create national and local level plans for basic services such as water, sanitation and electricity. Web databases can improve policymakers' ability to create and report statistics to international organizations in a more timely manner, and to obtain international statistical comparisons in computer form.

The increasing cost of, and government subsidy to, electricity generation in Egypt were continuously enlarging the country's balance of payments deficit and adding to public sector debt. To help address this issue, the government developed a decision support system (DSS) for the Ministry of Electricity. The system assessed the impact of tariff changes on different income groups, provided statistical data on power and energy generation, provided statistical data on the distribution and consumption of electricity, and assisted decision making about the pricing and management of loans within the electricity sector. The DSS led to decisions about a new electricity tariff after assessment of the possible alternatives generated by the decision support model and the evaluation of their impacts on different income groups.¹⁶

Improving agricultural productivity and commerce. ICTs can help to collect, store, process and present complicated data – a prerequisite to robust information for decision-making – quickly, accurately, and more efficiently than is possible otherwise. For example, use of the Internet at community telecenters can improve policymakers' and farmers' access to agricultural libraries, e.g. at the National Agricultural Library in Washington. It can also increase the efficiency of access to economic information pertaining to agricultural markets, such as through PENpages which is a US-based Gopher menu providing full-text information relating to the agricultural sciences, human nutrition, aging, family, community development and consumer issues. It can also provide more timely access to oceanographic and related marine data, such as from the Ocean Information Center in Delaware, USA.

To boost trade and industry in Burkina Faso, a *Business Intelligence Trade Point project* is being set up specifically to enable effective and efficient collection and dissemination of national and international market information by agro-food businesses. Over six years, the national information center was linked to five regional centers by computer, whereby regional centers could request information by phone or fax. A database was developed which would eventually be linked through Internet connections. This project aims to provide this information and train the users in rural areas to access information. Intermediate project outputs included the development of one national information center with well-trained staff and appropriate equipment, customized information services including databases, Internet and more traditional sources of information, five regional centers, training services, and communication services in the form of e-mail, Internet, and word processing.¹⁷

3.3 Improving public administration

Facilitating informed decisionmaking. Through judicious use of commercial or customized software that can help to forecast resources, policymakers can make better decisions.

The Ministry of Health and Population in Egypt is using a Microsoft Access-based forecasting model (coupled with Web site sharing of knowledge and supporting CD-ROMs and documentation) to compute requirements for hospitals in each of its 27 governorates in the next 20 years. The results are being used to rationalize bed supply in each governorate. The computer model helps to create and evaluate policy scenarios, and presents results graphically, but more importantly, it helps to develop analytic capability in the Ministry. Similar models are being developed for capital planning and estimating costs of basic health benefits.¹⁸

The US Environmental Protection Agency used to spend months preparing to provide information to site evaluation contractors for contaminated sites. So it developed *Siteinfo*, a global information system (GIS) application. The software is used by regional staff to create informative reports and map displays of EPA management concerns, regulated sources, human health, and ecosystem information for areas surrounding any given location in the region.¹⁹

Managing foreign debt burden. Economic rebuilding efforts have obliged most developing countries to accumulate massive foreign debts. Decision support tools can help to monitor these loans for debt service payments, term re-negotiations, interest rate levels, and payment management and scheduling.

The magnitude of the debt burden in Egypt (\$33 billion covered in 5,000 loans) led the reform of the debt management program to become a priority issue at Cabinet level. Hence, the government initiated, developed and implemented a debt management system aimed at the rationalization of debt utilization, and at debt reduction and rescheduling. The system was developed to provide a management tool to support and facilitate the registration, monitoring, control and analysis of the country's debts. The impacts of the system, using decision support tools and generators, was the successful negotiation of debt rescheduling with 14 countries. Negotiation was smoothly managed through the provision of information support that was made available via the decision support system. Moreover, loans have been viewed ever since as part of a comprehensive, integrated and dynamic portfolio rather than being managed on an isolated case-by-case basis.²⁰

Revitalizing local economies. Policymakers can enable small enterprises – the engines of job growth – to work together through enterprise networks, to share resources, skills, and services to better compete in the global economy -- and serve their local communities.

While the resort town of Telluride in Colorado enjoyed a tourist economy, residents in other nearby communities were in poverty. The Telluride Infozone was a pilot project for broad spectrum community development and education in rural areas using public Internet access, two-way interactive cable services, and community radio. The project promoted schools and lifelong learning, libraries, health care, government and civic services, arts and culture, and economic development.²¹

Improving policing and public safety. ICTs can be utilized to establish the rule of law with the help of computerized databases, communications networks and channels, and GIS's.

Many cities in the US have *Community Oriented Policing programs (COPs)*. COPs in the city of Columbia, South Carolina, has developed a sophisticated system that uses an integrated computer-aided dispatch system, mobile data terminals and message switching and routing tools to allow exchange of information with state and national law enforcement databases. The city's system is used primarily to collect, store, monitor and retrieve information needed by officers in the COP program. Officers can quickly perform license plate and tag checks, produce tow slips if they tow a vehicle, check on stolen property and do online incident and booking reports. The system also automatically captures shift activities to help produce the daily shift-ending reports. The system also helps officers sort data so they can present information to citizens in an easy-to-understand format at neighborhood meetings. Mobile data terminals in patrol cars let officers transmit information back and forth without using two-way radio, dramatically reducing the probability that sensitive messages will be intercepted. The city is also putting together a Geographic Information System (GIS) that will be available for officers in the COP program early this year. Using the GIS, officers will be able to plot criminal activity on an electronic map. Layers of information can then be added to the map to create a picture of crime trends in an area. It is estimated that the system has saved 15,000 to 20,000 hours a year for officers and other personnel who normally have to hand-key various reports.²²

Improving public administration and efficiency. ICTs can contribute to improved productivity and streamlining of internal government administration (procurement, human resources, budgeting, planning, evaluation), by helping to remove paper from the process or by facilitating coordination and consolidation of information. In the process, they can help reduce corruption and increase accountability as well.

Morocco's *Public Administration Support Project* is an effort to use ICTs to enhance the efficiency of its Ministries of Finance and Planning. Such functions as tax administration, auditing, public investment planning, and monitoring have been carried out with the use of computers and computer modeling to assist with expenditure management, resource allocation and collaboration between different ministries involved in economic management. The coordination of the activities of different ministries is also enhanced by the use of ICTs, as the information on their activities is more readily available to other parts of the bureaucracy. According to a World Bank report on this case, since the project began in 1989, the time required to prepare the budget has been halved.

The state of Andhra Pradesh in India has designed a state-wide computerization program that will be used in rural areas, namely at the mandal-level, the administrative unit above the village-level panchayat. The first software application is the issuance of certificates pertaining to land holdings, caste, nativity and income across a common counter, without the current delay of 15 to 20-days.²³

Computerization of the Indian Railways' Passenger Reservation System significantly increased the efficiency of the reservation process, it also reduced corruption (though did not eliminate it), increased rail staff morale, and improved the quality of customer service. Beyond these reform components, it also gave Indian Railways (and India more widely) a more modern image, and it helped to build information age capabilities within the country.²⁴

IT-based machines are being used at milk collection centers in India to measure butterfat content of milk, test its quality and promptly make payments to farmers. The scheme has resulted in the removal of incentives to dilute milk to increase volume, reduced time for payments from 10 days to under 5 minutes, and helped the milk market to expand. It has helped weed out corruption in the sector as well.²⁵

Facilitating regional co-ordination and integration

In 1999, representatives of nine African countries (Ghana, Kenya, Mali, Mozambique, Rwanda, Senegal, South Africa, Tanzania, and Uganda) met in Kampala to kick-off *ExecNet*, an electronic network to provide a forum for African Executive Office staff to share experiences with their regional counterparts on issues of democratic consolidation, good governance, and effective policy management in Africa.

The *SADC Electronic Network* aims to connect its own sectoral offices, units and its Secretariat in Gaborone. The network assists management reform and integration within the region and provides SADC with appropriate and necessary information, using modern technology such as network infrastructure and databases.

Facilitating intra-governmental coordination and communication. ICTs can be used to create collaborative mechanisms within government departments and promote dialog and bridge differences between opposition and ruling parties.

The project *Introduction to ICTs in Information Boutiques* in Burkina Faso is being established in an attempt to sensitize officials and citizens about legal issues contributing to the enforcement of Burkina Faso's "état de droit". By developing training programs about the constitution and using information communication technology on three levels to distribute that information to regional offices, local officials are being educated and trained to communicate this information to their citizens. At the national level, an information database is being developed, training of trainers is being conducted, and educational materials including "interactive" radio programs and multi-media applications are being created. At the regional level, activities include education of local officials using PowerPoint and Internet, training of local officials in meetings and conferences and development of multi-media training materials in cooperation with local media. At the local level, activities include information and discussion meetings, led by local officials, and collecting feedback from citizens on the influence of the constitution on everyday life.²⁶

In Ghana, the objectives of the recently set up *Environmental Information Network* are to strengthen the effective information handling capacity in and networking between participating institutions and to improve on the system of delivery of information to the users of environmental information. The target groups for this project include all stakeholders in the society, including policy and decision makers, civil servants, researchers, students, NGOs, and private groups. Activities include: creation of an information center where information would be collected, databases established and information centers linked, creating promotional print media on environmental issues created by the information centers and information on electronic media (disks and CD-ROM) and hard copy. An on-line search system has been created along with tailor made information services. An electronic networking system in the environmental institutions has made information gathering faster and enhanced capacity for data collection, storage, processing and dissemination.²⁷

Improving public services. Public agencies and private (nongovernmental, both nonprofit and commercial) organizations can be woven together to create new civic networking markets for delivering government services using information technologies.

The *Hawaii Information Network Corporation (Hawaii INC)*, is a private corporation created by the State of Hawaii to encourage and promote the development of an information industry in Hawaii. The corporation operates Hawaii FYI, a public access gateway to the state's electronic services and video conferencing facilities on each of the islands. Hawaii FYI provides a legislative information service called ACCESS that allows any citizen in the State to obtain current legislative information, including the full text of bills, and provides for participation in electronic forums with legislators and others. Hawaii INC also operates

Hawaii Access, a touch screen kiosk system; ASK-2000, an operator assisted referral system; and various agency bulletin board systems.

Spain's Ministry of Labor and Social Security has introduced a dual purpose smart card²⁸, identifying holders for both health and social security. The project began in the mid 1980s from the need to replace paper documents with more durable plastic cards and to reduce fraud in social security. The cards use fingerprinting and kiosk technology and were expanded to include magnetic stripe and then microchip and public kiosks. By December 1998, more than 3 million cards had been issued, of which one million have so far been used.²⁹

Post conflict/natural disaster reconstruction and administration. Since the Internet was designed to be a network to withstand nuclear war, one of its biggest strengths is to facilitate communication during times when traditional communication methods break down.

ZaMir Transnational Net was an electronic mail network in the geographical region of former Yugoslavia especially dedicated to helping peace oriented people and groups, humanitarian organizations, NGOs and the independent media to improve their communication possibilities. The network was used to find relatives in the war zone, as well as for other information exchange purposes.³⁰

Recently, in the period following the devastating earthquake in Turkey, many organizations have used the Internet to mobilize and coordinate aid for the victims of the earthquake. The Turkish Ministry of Foreign Affairs put up a series of bank account numbers on its Web site so interested donors could quickly and directly transfer funds into Turkey.³¹ A database and a corresponding search function Web site was set up to help people find dead or injured relatives in the affected area. The Internet was also being used to coordinate across different relief agencies working in the region.

Constraints on space in the paper prevent us from discussing several other important governance-related applications of ICTs. For example,

- ICTs are being used to bolster African pride and to create Africa-related content in Africa itself. One of the best examples of this effort is MISANET in Southern Africa. Reacting to the fact that Africa's knowledge of itself was mediated through the media centers in the West, MISANET has developed as a resource to be used by Southern African independent journalists to counter the deleterious effects of such mediation.
- ICTs are being used in curbing the outflow of scientists and engineers from the continent to more industrialized countries. ICTs have been deployed to address this problem of "brain drain" by helping to create an intellectual locus within Africa, an example being the Africa Virtual University, a satellite-based educational network targeting post-secondary students and corporate employees throughout Sub-Saharan Africa.
- ICTs are being used to stem the loss of indigenous cultures and rampant westernization, especially of the younger generation by publishing information about local cultures on the Web in local languages. In Haiti, for instance, the first site written in Haitian Creole came online just this summer.

The next Section discusses the use of ICTs for citizen empowerment. While conceptually, the topic is part of this Section, its implication in terms of its importance in changing how Africans govern themselves are so immense, it requires showcasing on its own.

Internet Access: A review of the current state of ICTs in Africa, with a focus on the use of ICTs for governance, is provided in the annex to the report.

During a number of 1-day and 2-day workshops, a total of 100 participants from 15 countries were involved in the process. The participants were selected from the West and Central Africa region, with a focus on the use of ICTs for governance. The participants were selected from the West and Central Africa region, with a focus on the use of ICTs for governance. The participants were selected from the West and Central Africa region, with a focus on the use of ICTs for governance.

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"Imagine a world where the only communication tools are paper and pens. In the society there are only three actors. They are the business-media, the government, and the citizens.

There is plenty of paper to go around. However, only the business-media and the government have pens and the ability to distribute written words. It only takes one a moment to realize who has real power and a voice in agenda setting in this world.

Citizen-based electronic democracy is about getting pens to the people.

Steven Clift, Founder of the Minnesota E-Democracy Project, 1996

4. ICT as a Tool for Enhancing Democratization

A vibrant civil society is an empirically verifiable characteristic of legitimate democracies around the world. Development practitioners, partners, and academics place increasing emphasis on the importance of civic culture and associationalism. Alexis de Toqueville was the most famous proponent of a vigorous civil society to strengthen democratic governance. De Toqueville's argument that civil society strengthens democratic governance has been recently revived in Robert Putnam's empirical study of political development in Italy. In Africa, women's groups, trade associations, political advocacy groups, credit and savings cooperatives, environmental groups and various other types of NGOs give citizens control over critical elements of their lives in ways that countervail government tendencies to usurp power and avoid accountability. The African media has also played a key role in increasing government accountability. This Section will explore how these different representatives of civil society have used -- and can use -- ICTs to enhance transparency and accountability.

ICTs can be applied to the broad public good -- particularly by putting information infrastructure to work within local communities, to improve delivery of local government services, improve access to information that people need in order to function as informed citizens, broaden citizen participation in governance, and stimulate economic and community development.

Establishing an "open" government. ICTs can be used by parliaments, governments and public agencies, and even individual politicians to provide government documents and other relevant information to citizens and public and private institutions. This information can help to alert and inform about public issues and associated law-making, and also facilitate debate (for example, citizens can be in a better position to intervene by approaching their MP before a bill comes to the vote). It can also improve citizens' knowledge about candidates for parliaments and other public jobs, for example revealing their qualifications for office and political knowledge, their previous performance on election promises, campaign finance, which interest group they support (e.g. business, religion, worthy causes" such as natural environment or political party). Through such efforts, a government becomes more accessible, and arguably more transparent and accountable, to its constituents.

A Belgian Web site, Cybercrate, provides background information about the system of government, with presentation of issues which have been debated in parliament, quoting the statements of MPs on the issues in question and showing how they voted on bills. Some issues are presented early, so citizens may add their voices to the debate before a vote. The site provides links to established citizens' groups concerned with social, environmental and political issues as well as electronic meeting space where users can bring in new topics, often resulting in lively debate.

Legi-link is an organization that tracks and reports on the parliamentary process in South Africa. Legi-link provides information on upcoming legislations, bills and their progress through parliament, summaries of debates and committee meetings, as well as archives of past legislations. The information is useful for businesses, parastatals, community organizations, provincial legislatures, and local governments.³²

Enhanced interaction between government and citizens. ICTs can promote citizen empowerment by enabling citizens to communicate with each other and with the government electronically. E-mail and other electronic fora can be used to lobby representatives, public officials and commercial enterprises; to publish moral appeals; to protest, and to start referenda or citizens' law-making.

A small group of California activists opposed a 1995 ballot initiative on immigration reform. Within three days of setting up an e-mail list service, the activists had 600 subscribers. Within a week, the list had grown to over 1,000, and within three weeks, there were 40 rallies being organized on college campuses around the country. It has been claimed that a world-wide information and lobby campaign led to delay of an international treaty, the proposed Multilateral Agreement on Investment.³³

The Bologna City Council (Italy) has developed a two-way communications strategy with specific goals, services, and expected benefits. The Iperbole/Internet "civic network" involves telematics, electronic citizenship, a role for local public administrations in providing access to global connectivity, and efforts related to social and economic development, education, literacy, and promotion of critical mass "information society." Due to the large number of people connected (more than 10% of the whole population with a growing rate of twenty new users each day), the Iperbole service has become an efficient way for families, enterprises, public and private bodies to retrieve information at home (or in working, learning, and even public places) about the municipality without having to go to a physical office.³⁴

Thousands of ordinary South Africans participated together with their elected representatives in writing the country's new constitution. The Constitutional Assembly's Web Site gave access to a database containing official documentation, draft constitutional text, submissions from political parties and the public, committee reports and minutes, and other public documents. The Constitutional Assembly used the database to retrieve information on the process efficiently and with minimum delay. Members of the Constitutional Assembly thus had immediate access to all Constitutional Assembly documentation. The Constitutional Assembly has also been able to use the database to monitor the volume and frequency of submissions and find useful statistical information on the process, necessary for logistics and planning.³⁵

Revitalizing civic institutions and public debate. The capacity for governance might be strengthened using ICT-based networking, as the informed (and informational) nature of online "conversations" allows for the development of an educated and sophisticated citizenry. Of course the ability of a government to "empower" its citizens depends on its will and vision.

In the US, the VOICE (Voter Online Information and Communication Exchange) Project, begun by the League of Women Voters, the Public Information Exchange, and Project Vote Smart, was a four-city pilot program to provide information on local, state and national candidates via a Web page. Project terminals were located in public libraries. The Web page was available to anyone with a computer and modem. Citizens could find candidate profiles for local, state, and national campaigns in addition to polling place information, voting information, candidate voting records, campaign contributions, and third-party ratings of candidates.

Promoting equity and empowering minorities.

In Tanzania, Masai pastoralists living in the Ngorongoro have used the Internet to voice their opposition to Government conservation management policy that threatened their land and their livelihood. A member of the Masai community came up with the creative idea of putting his people on the World Wide Web, after he made a video about the pastoralists'

misunderstanding of the Government planners' management plan for their land. He put clips of "real people" from the video to the Website, after gaining the support of the Masai for whom he translated the idea of their story being spread all over the world into Ki-Masai. In addition to forcing the Tanzanian Government to listen to the voices of the local communities, the Masai say that their Web site makes them feel less isolated : part of a "bigger world".³⁶

While access to electronic information can have a positive impact in promoting democracy in Africa (by providing civil society with greater leverage), without parallel efforts to insure that access to the Internet is not restricted to urban, elite populations, political instability may result. The next Section discusses unequal access and some of the other constraints Africa faces as it embarks upon the task of integrating ICTs with society.

Of all the gaps that exist between the South and North, none is growing faster than the information gap, and the information highway threatens to increase the growth rate to the point where some countries and some segments of society -- in both South and North -- may be left out altogether.

David Nostbakken, Executive Director, WETV and Shahid Akhtar, Director, International Development Research Center (IDRC)

5. The Situation in Africa: Constraints and Opportunities

Despite efforts by African leaders and their development partners, Africa's use of ICTs for improving governance is scant, although as demonstrated in the preceding Section, not absent. Most governments have Web sites, at least at the national level, as do many NGOs and civil society groups. Use of other ICTs – such as management/executive information systems, or decision support tools – is common, again mostly at the national level, but based on a review of the case studies of such applications, their deployment is not optimal. The potential for learning from others is enormous but the applications must be developed for the African context and mindful of African conditions. In this Section, we briefly discuss some of these constraints.

A closer examination of ICT use (and lack thereof) reveals three main types of barriers to initiate ICT projects within government:³⁷

Survey of African Government Web Sites. In a brief analysis of Web sites established by African governments, there was some good news – more than three-quarters of all countries in Africa have a Web presence. Most sites, however, have an external focus as demonstrated by the type of information provided (tourism, business/investment opportunities, and general introduction to the geography and culture of the country). Most sites were in English regardless of the local language of the country. Many of the political party sites, on the other hand, appear to have more of an internal focus. These sites tend to include more detailed information about the current political situation, the party platform, the people involved, and often an interactive component such as a discussion forum/chat room or email addresses to which feedback can be sent. Outside of these political party sites, government Web sites generally do not have interactive formats, with a few notable exceptions. Most sites are vehicles of *disseminating* information not soliciting any; only about a fifth of all sites have any significant two-way or interactivity features.

- Many in government are simply unwilling to consider ICTs as a worthwhile tool for improving governance; they are either (i) ignorant about the role of ICTs in governance - we hope this conference will change their minds, or (ii) fearful of them - given the role of ICTs in improving transparency and accountability, or (iii) unsure of their benefits - echoing the sentiment that e-mail is no substitute for vaccines and satellites cannot provide clean water.
- At the other extreme, there are those technology enthusiasts who see ICTs as a panacea for all ills, and ignore many of their drawbacks. They do not recognize that although ICTs reduce some transaction costs for governments, they also introduce new costs arising from the use of computers and networks; individuals and organizations must have computers, must know how to use them, and must pay network connection charges.
- Between the two approaches is the “after-thought” approach, where ICTs have been added to reform plans (perhaps as a result of attending conferences such as this), but due to lack of computer-literacy or a lack of understanding of the role of information, they have been included as stand-alone measures and almost as an afterthought (“oh-yes-and-buy-some-computers-too”).

Outside the government, from a traditionally "demand" point-of-view, the situation is even more dismal. The biggest constraint is abject poverty. A recent study showed that the 15 richest people in the world have a net worth that is greater than all of sub-Saharan Africa.³⁸ Computer equipment is essentially unaffordable by individuals. Internet access in Africa is scarce and expensive, even in the larger cities, let alone in rural areas which comprise 70-80% of the population. Statistics show that on average, only 1 out of 5000 Africans is an Internet user – compared to 1 out of 6 in North America, and 1 out of 40 worldwide.³⁹ In Nigeria, one of the largest countries in Africa, with a population of over 100 million, only 1 out of 100,000 people is an Internet subscriber.⁴⁰ As a result, it often seems hopeless to build ICT applications that require significant citizen participation.

Even if physical access could be provided, as is being done already in many parts of Africa through telecenters, kiosks, and other media, many Africans cannot use ICT tools, an outcome of poor literacy, both computer-based or otherwise. A recent UNDP report points out that in Benin, more than 60% of the population is illiterate so the possibilities of expanding access beyond the current 2,000 or so Internet users are heavily constrained. English is used in almost 80 percent of Web sites and in graphics and instructions, yet less than 1 in 10 people worldwide (far fewer in Africa) speaks the language. To make matters worse, there are massive inequities in society and the educated and the affluent, mainly men, have significantly higher access to the Internet. A UNDP report notes that the average South African Internet user had an income seven times the national average.

The access barriers can have an especially pernicious effect. Lack of Internet access to the less affluent exacerbates existing distortions in society - citizens with a higher socio-economic status, already overrepresented in the political process, can build an even stronger lobby in the government. Furthermore, those well-versed in technology and computers can have an advantage over those who are not.

While these barriers are high, they are not insurmountable and opportunities for Africans to access technology are improving. There are increasing numbers of Internet users in the continent, and more Africa-centered Web content, in French as well as in local languages, is being created with each passing day. Public access telecenters are springing up everywhere in the continent. Other signs of hope are:

- In Senegal, there are about 70 phone shops that provide Internet access.
- *Information Boutiques* have been established in Burkina Faso to enlarge the range of choices for the population to actively participate in the development of their country. The Information Boutiques collect and distribute information about things such as judicial issues, providing training and acting as intermediaries between local citizens and the government. A web site is being established to create an easily accessible ICT facility where information can both be published and collected in order to promote the participation of citizens in the decision making process. Local capacity building is also being introduced with the use of ICT training for staff and users of the Boutiques.⁴¹
- Botswana and Rwanda are privy to some of the world's most sophisticated networks with 100 percent of main lines being digital.⁴² In Haiti, the poorest nation in the western hemisphere, where the average per capital income is \$250 a year, more and more people are starting to use wireless connections and radio modems to access the Internet.⁴³

Africa can capitalize on the experience collected in other parts of the world and adapt solutions to its particular context. For example, the Costa Rica Foundation for Sustainable Development has introduced small deployable information centers through a project called Little Intelligent Communities (LINCOS). The structures contain essential communication tools that integrate into functions in health, education, and commerce. The units comprise a working high-bandwidth satellite link, (and depending on application) a space for telemedicine, environmental monitoring, a computer lab, or a walk-up information booth. Sample prototypes are already being used in Costa Rica.⁴⁴

To help with the process, the donor community has also invested extensively in infrastructure and capacity building in Africa. At the last count, there were about 90 agencies or programs operating on various aspects of ICT development in Africa. The Department of Foreign Affairs in the Netherlands has proposed providing eight of Africa's universities with high bandwidth internet connectivity.⁴⁵ Recently, USAID sponsored the kick-off meeting for a proposed electronic network of African Executive Offices (discussed in Section 3, see sidebar for a brief description of the cybercafé at the meeting recently held in Uganda).

Non-governmental and civil society organizations too, both foreign and African, are trying hard to empower marginalized population groups and provide training and support for ICT use.

African Presidential Advisers Surf the Internet in Kampala

The CyberCafé was a major highlight of the *African Executive Office Network (ExecNet)* Conference held in Kampala in 1999. A team of Ugandan experts brought in through USAID's Leland Initiative transformed the Sheraton Hotel lounge into a CyberCafé featuring fourteen computers, all hooked up to the Internet. All conference coffee breaks took place in the CyberCafé, where participants were invited to "surf the Web" in English, French, and Portuguese. Catchy music piped through the computers and an appealing assortment of Web sites created a lively, fun café atmosphere. Enticing Web Sites from each of the nine participating countries drew the delegates - sometimes hesitant at first - to the computers. News web sites and government sites displaying information about their bureaucracies were among the most popular.

Information found on the Web drew strong responses - both positive and negative - from participants. The South African delegate was thrilled to find information on the Web Site of a national commission that she used as an example of participatory governance at her presentation the very next day. Another participant expressed dismay at the misinformation he found on one of his country's private Web Sites: "This information on life expectancy is wrong," he exclaimed. In response, he noted that his government really should have an official Web Site posting the accurate figures. His observation resonated with others who felt that African governments need to be more proactive in putting information out on the Internet.

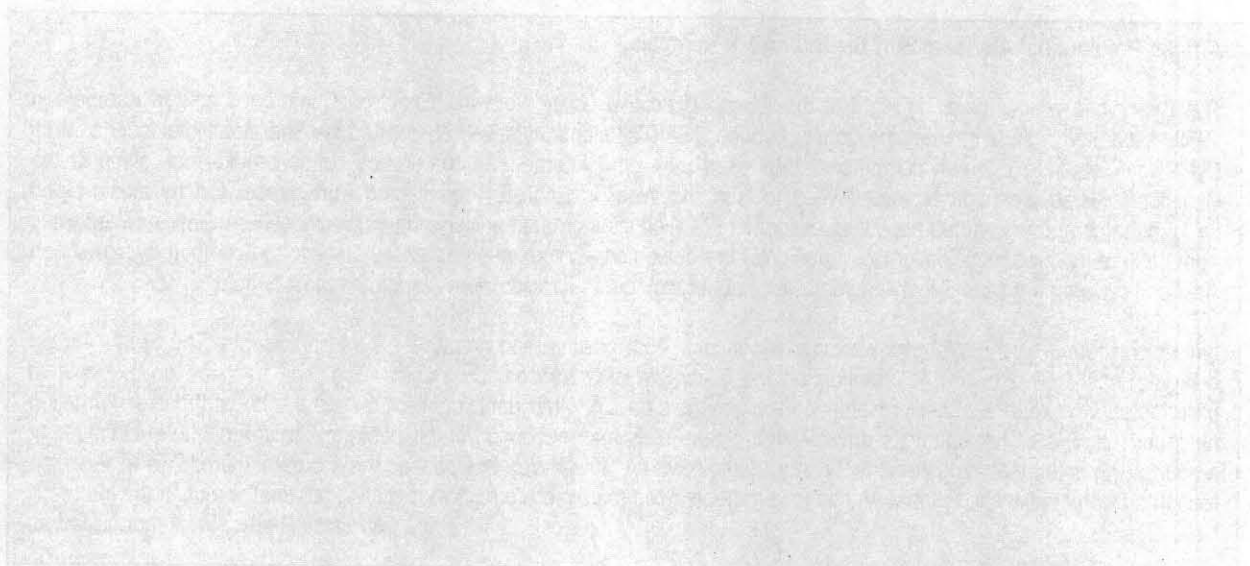
Catherine Rielly, Abt Associates Inc.

- Project SCOPE, a US-based networking organization has been collaborating with UNAFEZA, an organization in Congo that works for the civil and human rights of Congolese women. UNAFEZA undertakes many projects to empower these women and move women into the political and economic life of the country, by promoting economic autonomy, community organization and increasing the health care resources available to women and children. The role of Project SCOPE has been to complement a much broader initiative by developing community communications centers that will help with the other efforts by enhancing training, information dissemination and communication among different groups working with UNAFEZA.
- *SatelLife*, a US based not-for-profit NGO organization recently opened the Regional Information Technology Training Center (RITTC) in Nairobi, Kenya. RITTC provides training in the use of basic information technology, including e-mail, CD-ROM, and World Wide Web/Internet technology to health professionals, with special emphasis on users' particular information needs. Supported by World Bank's infodev initiative, full scholarships, including tuition, room and board, and instructional materials will be offered to seventy health professionals from Eritrea, Ethiopia, Kenya, Tanzania, and Uganda during the 1999-2000 academic year.⁴⁶

In the next Section, we highlight some of the lessons African policymakers and ICT practitioners are learning as they design and implement ICT applications for governance.

The report also notes that the use of ICTs in Africa is still in its early stages. While there is a growing awareness of the potential of ICTs, the infrastructure and human resources needed for widespread use are still lacking. The report calls for a concerted effort to address these challenges and to harness the power of ICTs for development.

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The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise to the occasion. As our case is new, so we must think anew and act anew.

President Abraham Lincoln, Second Annual Message to US Congress, December 1, 1862

6. Cautionary Lessons about ICT Investment and Implementation

Despite the widespread support of ICTs in governance, a majority of them do not produce desired benefits. According to Richard Heeks, an expert on ICT-based public sector reform, more than 60% of ICT projects result in some 'degree of failure'.⁴⁷ In this Section, we describe ten lessons about the deployment of ICT for improving governance.

1. *Sometimes the simplest technology can produce the biggest results.*

In the US, a number of organizations have found that the "800" number, a device to allow calls to be billed to the recipient, is the most efficient way to deal with large numbers of constituents. For example, when budget problems in the Maryland state legislature threatened a program designed to set up public open spaces, the Chesapeake Bay Foundation used a toll-free "hotline" to make it easy for constituents to send a message to state lawmakers. A newspaper and radio campaign promoted the 800 number. Callers were asked to leave their names and addresses if they wanted a postcard expressing concern sent to their state legislators. Separate companies transcribed the addresses, looked up legislative district codes, and mailed postcards to the appropriate officials. Hundreds of postcards were sent to lawmakers during an eight-week period, and the program survived.⁴⁸

2. *Using technology in governance is a trickier problem than using it in business.* As mentioned earlier, access (infrastructure, literacy) is a limiting factor, and, just as importantly, unlike in the private sector perception of benefits and burdens in the public arena may be quite politically charged. For example, a national card ID system may improve functioning of public programs, but may be viewed by others as a tool of suppression.

As in the Spanish example in Section 2, national roll-out of the smart card can be imperiled by Spain's complex system of national and regional government. The card's dual-purpose (both for social security and health) could be a casualty. Fingerprint-recognition technology could be the focus of public opposition in regions with a tradition of opposition to central government.

3. *The newest or most cutting edge is not necessarily more useful or even the correct choice of technology.* When dealing with social applications, the rule should be to begin with the minimum necessary technology. High end technology can usually accommodate a wider set of needs but is not necessarily preferable in every setting.

In the U.S., high end interactive video telemedicine has failed in many rural areas because it was difficult to integrate into the work methods of the rural and specialist physicians involved. As a result, many programs with sophisticated equipment and telecommunications have very low utilization. However, rural programs using store-and-forward technology, rather than relying only on interactive video, met with higher utilization. The "lower tech" solution was more readily integrated into routine practice at both ends of the connection.

4. *Developing economies cannot afford to experiment, or to be experimental laboratories for new technologies, or for dumping excess product.* Supply driven pressures exist, and they will mount as new technologies replace outdated ones. Therefore, having ICT options for solving governance problems is not an issue, neither is having access to aid or loan funds (particularly from countries

with important suppliers of the technology). Investing in unneeded technology is wasteful. One study shows that providing desktop computing, software and support in government costs around \$10,000 per employee per year.⁴⁹

The introduction of touch screen kiosks into rural communities in South Africa's North-West province was focused mainly on the imagery and "gee-whizery" of kiosk technology. It failed to consider community information needs and was soon scrapped having contributed little to its democratizing agenda.⁵⁰

5. *Generating returns from an ICT investment in the public arena requires major investment in training and support on part of its sponsors.* According to a Gartner Group study, the costs of training, support and operations of technology investments are 4-5 times the purchase price of equipment. Nonetheless organizations often spend larger fractions of their budgets on procurement and not enough on skills development.

An example is GOVERNET, a project initiated by the Commonwealth Secretariat under the auspices of COMNET-IT to networks regionally, bringing together public sector administrative and management reform professionals in Eastern and Southern Africa. The network aimed to facilitate the exchange of information between senior public sector workers, academics and management specialists, so as to bring about reform in public sector management. Despite the initial euphoria, the network has not quite yet succeeded. There could be many reasons for its lack of success but two of the most important ones were that the project lacked a "champion" at the Secretariat, and proposed users of the network lacked training.

6. *Most of the challenges do not involve the technology itself, but its alignment with existing processes and the organization's strategic goals.* Very often planners believe getting the technology alone will solve their problems. In fact, computerization has made it harder to achieve more information-driven cross-boundary improvements such as decentralization or improved delivery of public services. The challenge is not choosing the right technology – the challenge is how to use the hard lessons to date to establish decision rules, processes, and financing practices that will serve African governments, all of whom have different needs, different perceptions of risks, and different baseline technology infrastructures.

At the National Literacy Mission Authority in India, the Director of Adult Education was enamored of the potential of IT to improve the management of literacy programs having seen a software firm's demonstration. Despite glaring technical and data constraints, he commissioned a complex executive information system (EIS) that eventually failed to produce desirable results.

There is also evidence that ICTs engender fear among employees that introduction of computers will lead to a loss of jobs leading to half-hearted support and even outright rejection and opposition of ICT measures. This is not an unfounded fear and an important reason why ICT applications must be carefully designed in Africa – where "supplanting" humans is not as important a goal as it may be in industrialized countries.

7. *Technology is a double-edged sword and almost always brings some challenges with it.* For example, in the literature on e-democracy, there are countless mentions of the misuse of e-mail by special interest groups – whose e-mail campaigns clog politician's office computers, which apart from being a nuisance, misrepresent public opinion.

The most sophisticated ICT system is only as good as the quality of information it holds. A system that reports inaccurate information creates a self-reinforcing feedback loop – quality of information is poor, so users do not value the system; because users do not value the system, information quality remains poor.

Russia's government information systems are chronically inaccurate because of double counting, over- and under-reporting, data mishandling, a massive black market and unmotivated state officials who work in an environment of widespread bribery and corruption.⁵¹

8. *An ICT implementation that creates information haves and have-nots, either on the basis of access or computer-literacy, will eventually fail to achieve whatever goals of governance it has.* An ICT implementation must ensure suitable access for marginalized population groups – if they are the intended audience, and provide adequate training for users and beneficiaries of systems.

A year after the introduction of an Intranet into the Johannesburg Metropolitan Council's one-stop property information center, the system was little used because its introduction had been technology focused, ignoring the skills, information needs, and communication preferences of the relevant stakeholders. According to the evaluation of the system, staff and clients who came to the center preferred to speak to people rather than deal with technology, center staff was not fully trained on the system thus creating a barrier to its uses, and some of the necessary information was not placed on the system.⁵²

9. *ICTs may not always bring about the desired benefits.* Occasionally, the result may be quite the opposite of what is planned.

In the case of the railway reservation system in India mentioned before, computerization did make it harder for the clerical staff to be corrupt because the software, not the clerk, now decided – based on booking date – which passengers would fill vacated slots. However, corruption was not eliminated: first, station managers retained manual control over a certain proportion of the train places, supposedly to cover emergencies or last-minute travel by VIPs. Some continued to provide these places to non-emergency, non-VIP passengers in return for cash. Second, ticket touts showed how ingenious and resourceful they can be. Knowing that their best customers were businessmen in a hurry, they would book places well in advance on the main inter-city trains using a very common man's name, citing his age as 35. These places would then be sold at a premium to last minute travelers, most of whom were men who could get away with appearing 35 years old to the ticket collectors.⁵³

10. *Finally, we must make the point that ICTs are not intrinsically valuable, or even necessary for improving governance.* Although the phrase "information technology" is nearly always associated with computers and related electronic technology, there are other useful and productive techniques that can help deal with and manage information. Introducing technology for its own sake usually leads to failure. It leads to practitioners taking their eyes off the "information ball" and becoming dominated by technology-driven processes and considerations.

In the United Kingdom, Royal Mail revamped postal operations not through ICTs (as many other countries have) but through strategic visioning and organization-wide process management efforts, including a strong performance measurement piece which cascaded process goals from the top of the organization to the individual level. The result was postal operations recognized as "world class." What the organization did was to take the very hard step of examining their mission and how, on a day-to-day basis, they delivered on that mission from the perspective of their customers.

There are several other lessons that space constraints prevent us from exploring. They include:

- Productivity gains from ICT applications are generally overestimated. Designers and beneficiaries need time to climb up the learning curve and sometimes it may take time before tangible benefits materialize.

- ICT systems sometimes lead to shoddier record-keeping and lost information. Users must ensure that prior information is archived rather than lost.
- Computerized systems, if poorly designed, used or maintained, may make unauthorized access easier. It must be ensured that sensitive information is accurate and secure from malicious or accidental access and alteration.

The next chapter builds on all of these preceding chapters and lays out a logical framework for action.

Technology is too important to leave to the technologists

Jerry Mechling, Kennedy School of Government, 1997

7. A Framework for Action

In this Section, we lay out a plan of action for policymakers and practitioners that can help them to design and implement ICT projects for improving governance. This planning template recognizes some of the lessons discussed in the preceding Section.

The framework can be summarized as follows: The first task in using ICTs as a tool to improve governance is to ignore ICTs altogether and focus on selecting and prioritizing improvement goals that are urgent or important. Once the most important goals are established, senior level policymakers must establish milestones that will indicate that the project is on track. The next step is to review alternative solutions to the problem given constraints on financing, infrastructure, literacy and skills. Each solution must be associated with costs – of infrastructure, training, etc. and benefits. Once a solution is accepted based on the planners' estimation of its merits and costs, a detailed workplan must be developed, with provisions for adequate training and capacity building. The final step in the process is to lay the groundwork for monitoring and evaluation. These steps are described below in brief.

1. Select and Prioritize Governance Improvement Goals

The first step in the process is *selecting governance goals* that are urgent or important and *not* to let availability of technology or someone's pet ICT project idea drive the ICT agenda. For example, a government might wish to manage its debt burden better by consolidating loans from different sources or allow citizens participate in tactical decision-making such as assigning budgets for school districts or open communication with the private sector, citizens and citizen bodies to improve democratization. The underlying principle is to focus the plan on governance issues, not on particular technology solutions. The *mantra* here is that ICT is a means, not an end.

It is also important that the objectives be expressed in operational terms and are *specific* and *measurable*. "Establishing a presence on the Web" in itself is not a particularly useful goal. Neither is "improving democratization." Policymakers may need to identify specific subgoals within the context. For example, subgoals for improving democratization could be: expedite citizen access to government services and information, promote citizen participation in political debate and government decision making, and enhance government accountability.

The next task is prioritizing among the various improvement goals identified, since resource constraints will prevent all of them from being pursued simultaneously. Criteria for prioritization may include:

- degree of urgency (*e.g. efficient communicating and coordinating during health crises situations*),
- focus on long-term strategic goals (*e.g., lowering population growth by improving the literacy rate of girls*),
- directives from higher levels of government (*e.g. a promulgation from the national government on improving tax collection by 20%*),
- impact on enhancing democratization, and (*e.g. promoting equitable citizen participation in local government*)
- costs and benefits

There may be many other criteria. Prioritizing among competing projects, all of whom have their advocates, with some of the advocates more influential than others, is perhaps the most challenging aspect of the planning process.

2. Develop and Evaluate Alternative ICT Solutions

The next step in planning is to develop alternative solutions in order to accomplish the goals of the most important project(s) identified in Step 1.

All feasible solutions should comprise combinations of technology and policies that as a set address the goals identified at the beginning of the process. The solutions must take into account financial, regulatory, infrastructure, knowledge/skills, technical and other constraints. Planners must estimate preliminary budgets for each of these solutions, propose timelines and roll-out plans, and then evaluate solutions based on long-term benefits and costs.

Technology. Each solution must specify a technology (ies) for attaining the goals set forth in Step 1. To continue the example begun above, in order to enhance democratization and citizen participation in a county with rural and urban population centers, the government could select a combination of Internet and phone-based services as the main communication tools with some focus on radio, television and telephone-based services.

At this stage, many planners acquiesce to suboptimal technology decisions. For example, opting to acquire outdated hardware from the industrialized world because it is cheaper or state-of-the-art software because it is given away for free by the vendor are both poor decisions. As mentioned in the preceding chapter, technology choices should be based on long-term strategic objectives (such as availability of technical expertise and training on outdated technology) not on short-term considerations of low capital costs.

Another challenge in selecting appropriate technology is to compensate for inequity of access (infrastructure, literacy-related, and cultural). In Africa, a creative solution in remote and poor areas has been provision of radio-modem based computers to local radio stations that disseminate information to people.

Capital, maintenance and training costs. Each solution must estimate initial and recurring costs and other resource requirements. In the example above, costs must include those of acquiring hardware and software, for developing and hosting⁵⁴ Websites and for citizen access, for creating and organizing information that must be disseminated, e.g. manpower and conversion of paper-based forms to electronic ones, for phased program roll-out, and training for all stakeholder – senior policymakers, mid-level program officers, and most importantly, citizens.

A major deficiency in planning for ICT solutions is a failure to provide sufficient training and support services for the solution. Often, the push by equipment vendors to sell solutions fails to properly emphasize these non-equipment costs.

A workplan. Each solution must be formed into a workplan with a clear link between proposed activities and goal attainment. All activities must be listed with staffing and resource requirements. Use of software such as MS Project can impose the necessary discipline on project planning activities.

Cost Benefit Analyses and Choosing Among the Alternative Solutions. Too often, solutions are not evaluated or formally compared with one another. It is critical to understand the factors that drive benefits and the factors that drive costs. These “expectations” must (eventually) be wired to the implementation plan if the benefits are to be recovered and realized. For each of the solutions the net benefits must be compared with those for other solutions, and evaluated as to likely magnitude, and likelihood of achievement. This assessment will never produce a strict economic decision, but it should help decision-makers understand what the nature of the issues are that drive the economic case for doing

the project----and help them construct implementation plans that have a better chance of realizing the critical benefits.

3. Develop the Implementation Plan

Once a solution has been chosen, planners should make a plan for acquiring and allocating resources for the project. Constraints, or barriers to achieving the planned benefits must be identified and steps taken to overcome them. In the case of the democratization example above, there will be access and literacy constraints. These can be addressed as follows:

- If citizens lack access to the Internet, a potential resolution could be to provide Internet connections at libraries or other community centers, invite tenders for Internet “kiosks⁵⁵” and cybercafes in shopping centers and near government buildings.
- If the constraint is high costs of owning computer equipment and high fees for Internet access, the plan should include arrangements to offer access free of charge to disadvantaged citizens, subsidize access to citizen associations and nongovernmental organizations, or provide discounts to small and medium enterprises.
- If the constraint is computer illiteracy among users, the budget should reserve resources for providing free or low-cost computer training, and consider more user-friendly computers and software with graphic user interface. In a community with low literacy, it would be far better to plan for a Web site that is graphics-intensive, and computers that are touch-screen controlled. On the other hand, in a community where access to the Internet is via conventional computers with slow modems (as might be generally the case in Africa) it would be detrimental to propose elaborate graphics that could be expensive and time consuming to download.
- If the constraint is high cost to government (for providing Internet-based services and information processing costs), the government could invite private sector funding to offset the cost of Internet.

Project roll-out should be sensitive to these kinds of limits, to the culture of the organization and to the requirements of realism. Finally, there must be adequate provision for continual (as opposed to usual up-front only) training, not only on software and hardware issues for users, but also on obtaining senior policymaker buy-in.

4. Monitoring, Evaluation and Feedback

The last step is ongoing monitoring and evaluation (M&E) of the program in order to assess if any mid-course corrections are necessary to ensure that improvement goals are being met.

M&E activities must be incorporated at the design phase of the project and continued through its life. They do not need to be especially sophisticated and can be built into the project itself. In the democratization example, if the goal is to expedite citizen access to government services and information, a potential indicator of success could be reduced number of in-person inquiries at government offices. If the goal is to promote citizen participation in political debate and government decision making, an indicator of success could be increased participation of citizens, via electronic means or otherwise, in local government affairs. Finally, the degree of enhancement of government accountability can potentially be measured by focus groups or even by surveying citizens as to their satisfaction with the quality of responses to complaints and comments.

Endnotes:

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- ⁴ South China Morning Post, 1998
- ⁵ See <http://www.net2phone.com/english/index.html>
- ⁶ This framework and many of the examples in this paper are adapted from Richard Heeks' book *Reinventing Government in the Information Age*, Routledge Press, 1999.
- ⁷ Information and Communications Technologies (ICTs) and Governance: Linkages and Challenges, the Institute On Governance Ottawa, Canada October, 1996.
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- ²⁷ A plastic card (like a credit card) with an embedded integrated circuit for storing information.
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- ²⁹ Reference from <http://www.zerberus.de/org/zamir/zm-pub.html>
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- 52 Heeks, Richard, *Reinventing Government in the Information Age*, Routledge Press, 1999 pp29
- 53 Heeks, Richard, *Information Technology and Public Sector Corruption*, 1998
- 54 Given that the framework developed in this paper is conceptual, we do not discuss technical issues, such
as those involved in hosting Web sites, other than saying that planners need to decide whether the
government should host the site itself or lease space on someone else's server. Both options have their
advantages and disadvantages. Keeping the site in-house is more secure and prevents tampering.
Outsourcing to commercial Internet Service Providers (ISPs) is generally cheaper – the organization saves
on one-time start-up costs as well as on monthly expenses. With the latter choice, the government can
focus fully on the message, free up valuable IT staff resources, and leave site management to a third
party.
- 55 These would house "Internet-only" computers that are being developed commercially and are expected to
cost only a few hundred dollars – a small fraction of what present day full-blown computers cost.