Leadership for ICT-enabled Development

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Abstract—This paper defines the challenges for realizing the promises of ICT-enabled development in terms of the institutional transformations and change processes that must be led, inspired and coordinated. This context provides the basis for defining the demand for e-leaders and the core competencies required of them and of e-leadership institutions. This demand is contrasted with the paucity of e-leadership development programs and institutions. The paper points to indicators of an emerging e-development implementation crisis and the underlying roots of a growing e-leadership capability gap. The paper defines the core competencies needed for a new breed of e-leaders, provides examples of leading programs for developing Chief Information Officers (CIOs), and sets the broad directions for a supply response to meet this challenge.

Index Terms—leadership, information technology, knowledge economy, economic development, e-development, CIO leaders.

INTRODUCTION

Developing countries are spending between US$ 500 billion and one trillion annually on information and communication technology (based on estimates from WISTA, 2008). Developing countries’ ICT spending is growing at a pace far faster than the OECD economies. It is intended to cope with the dual challenges of development and global competitiveness. In today’s technology-driven world, national leaders and development practitioners face an unprecedented challenge: how to harness information technology to manage domestic imperatives, to improve governance and to advance social justice, while simultaneously re-positioning national economies and industries for competitiveness in the global economy. This unprecedented level of spending is the outcome of growing awareness of IT-enabled national development strategies, and of promising models of successful leaders such as Korea, China and India.

In contrast, investments in leadership and implementation capabilities are lagging far behind. This gap has serious consequences, including major e-government failures, poor investment climate and high transaction costs within developing economies as well as unsustainable growth of these promising IT markets. Yet, the changing roles of government, the fast pace of technological change and late comer advantages should present opportunities for transformational leadership roles in these countries. E-leadership is a key ingredient to integrating developing countries into the global knowledge economy and transforming them into inclusive information societies.

There is an urgent need for fundamental changes in leadership practices in developing countries to leapfrog into the knowledge economy. The need for transformational leaders to manage the transition to knowledge economies and information society is particularly acute. However, this pervasive need has not been translated into effective demand for e-leadership development or rewarding careers for CIOs—mainly due to political leaders’ poor understanding of the opportunities and threats presented by the ICT revolution.

E-leaders are called upon to leverage the ongoing technological revolution to build competitive knowledge economies and inclusive information societies in an increasingly global market-driven economy. To carry out this challenging function, they must possess first a broad understanding of the big picture and the forces driving economic, societal and technological change, and second, the frameworks and skills to act on this understanding and mobilize others to do so.

Unless concerted effort is made, the e-leadership capacity gap in these economies is likely to widen over time, ICT development dollars are likely to go wasted. An alternative scenario is that the current rate of growth in ICT spending is likely to taper or decline, and many developing countries may forgo the potential opportunities and developmental payoffs of increasing investments in the new technologies. Lacking concerted action to build e-leadership capacity, developing countries are unlikely to join the emerging global knowledge economy and transform themselves into information societies—and the divide within and across countries would further widen.
New Cadres of Leaders

New types of leaders are needed to operate effectively in the e-world and to bridge the gap between public policy makers (or business strategists) and information technology managers. The new CIO leaders need clear understanding of their roles, of the cross-cutting nature of e-government, and of how e-government could help improve the public sector as a whole. Also poorly understood is the essential role e-leaders should play to realize the substantial opportunities, avoid the real risks and integrate e-strategies into national development efforts.

Diverse types of leaders are needed: a) Leaders who operate effectively in the e-World; b) Leaders who set the enabling national policies and frameworks for the e-World, coordinate e-development programs, and address the digital divide; and c) Leaders who design and manage the process of inserting ICT into their specific businesses, sectors and organizations.

Core competencies are essential for all kinds of leaders. Additional competencies are needed, and perhaps some transformation in the traditional core competencies for leaders to operate effectively in the e-world (type A), whom we may call them leaders in the e-world. We focus here on those leaders who set enabling policies for the e-world (type B); and those who help insert ICT into their businesses and thereby transform core business processes (type C). We will call them e-leaders or leaders of the e-world. They include those traditionally called CIOs.

Realizing the Promise by Transforming Institutions

Four influential trends are altering the shape of public sectors worldwide: a) increasing use of private firms and nonprofits (third parties) to deliver services and fulfill policy goals; b) increasing demand for multiple government agencies and levels to join together to provide integrated services (joined-up government); c) increasing citizen demand for more control and choices for customized service provision; and d) the ICT revolution that enables organizations to collaborate in real time with external partners in ways previously not possible (1). These forces are leading to the rise of government by network. Key benefits have been powerful drivers of the movement to networks: specialization, focus on core mission, process and service innovation, timely access to a broader knowledge base, enhanced information about customers, leveraging public and private funds, speed and flexible response, and increased reach through engaging local governments and nonprofit sectors.

Managing diverse webs of relations to create value is a major challenge for public leaders and managers. Public managers have to reshape the framework of their agencies and lead the way to this transformation. They need to secure goal congruence among diverse parties—particularly difficult in the public sector where outcomes are often unclear, difficult to measure and may take years to realize. They need to avoid contorted oversight and high transaction costs, yet secure accountability. Public managers also work with little data on the exact costs of services and data deficit often foster unrealistic expectations and tensions among partners. They need to choose the right partners and right network, and who should integrate the network and what should be integrated. They need to develop accountability frameworks to realize results form networks of providers: setting clear goals, aligning shared values, creating trust among partners, structuring incentives for results, sharing risks, monitoring performance, and balancing flexibility and accountability.

Technology is a key enabler of network government and accompanying institutional transformation. ICT connects partners to each other and to the public. It provides and facilitates information-sharing channels, collaboration tools, coordination tools, real time synchronized response, share view of the client, and visibility of decision processes. But network integration and coordination cannot be achieved through ICT alone. Building relationships also involves creating the infrastructure and conditions that support long term relationship building: sharing knowledge, creating trust, aligning values, developing communities of practice, and handling cultural differences.

Managing network government requires a different kind of internal capacity within government and calls for skills that are in short supply in the public sector such as project management, sophisticated contracting skills, and more broadly, network governance capabilities. It requires designing, activating, integrating, and managing networks. Public managers must possess some aptitude in negotiating and mediating among diverse partners, building trust and collaboration, and analyzing and managing the risks of networks. They must have the ability and aptitude to work across boundaries. These competencies are scarce in the public sector. To overcome this gap, training and recruitment strategies and even cultural transformation would be needed.

Information technology is a “disruptive technology”: it changes how bureaucracy organizes and works, how power is distributed or controlled, and how information is shared or protected. It also disrupts informal networks and enables new and extended networks, within and across formal organizations. ICT can enable public agencies to change from “command and control” organizations to knowledge-based, networked and learning organizations.
Yet, transformation is hard. E-government is a major change management challenge. Restructuring government bureaucracies and improving public services are key and urgent public policy issues. These are political and managerial issues, not technical issues. It takes sustained and effective leadership to fundamentally reshape institutions. Leadership is needed to empower institutions to overcome resistance to process and organizational changes, to prioritize and manage complex investments, to change skills and mindsets, to avoid duplication of efforts and economize on scarce resources, and to maintain a long term vision of transformation while insisting on concrete results in the short term.

Realizing the Promise by Orchestrating E-Development

A national e-development strategy, or e-strategy, is a guide to policies, investments and implementation mechanisms on how ICT should be developed and used to achieve development objectives of the country (2). It focuses the actions and resources of various stakeholders, and particularly the government, on national ICT-enabled development priorities. It explains the interdependencies and phasing among these actions and investments over the medium term. It specifies the multi-sectoral activities to be covered in a programmatic way and how the government, private sector, civic society and academia will be involved in such activities. It explains how institutions will collaborate and share responsibilities for ICT-enabled development.

E-development is composed of key and interdependent elements: an enabling policy and institutional environment, an affordable and competitive information infrastructure, a dynamic and competitive ICT industry, broad ICT literacy and education, a coherent investment program to apply ICT to public sector modernization, and incentives to promote the effective use of ICT for private sector development and civil society empowerment.

Figure 1: Putting e-development together

In developing countries, co-evolution and investment in complementary components of e-development are necessary. A holistic vision of e-development would stress the synergy among its key elements. Collectively, e-development pillars cover the package of policies, investments and institutions that should enable an economy to leverage ICT for overall economic and social development and in the process transform to a knowledge economy and information society (2-5).

E-leaders are the architects of the national ICT-enabled development strategies. E-leadership and institutional capabilities are necessary to chart coherent national e-strategies and to make the components of e-development evolve together in the complex and changing environment of emerging economies. Over time, e-leaders and e-leadership institutions should be able to identify more and more synergies among all components of policy, human resources, technological competencies and infrastructure, and among applications in e-government, e-business, and e-society. Public CIOs should extend their concerned from exclusive focus on e-government to its interactions with the IT sector and the competitiveness of the local IT service providers, for example.

Managing the Risks

The rising spending in ICT in developing countries represents a huge investment bet based on promises but little rigorous evaluation of development results. Learning to govern the investment process, to make the business case, to manage the changes necessary to monitor and realize the benefits—all are demanding learning tasks for both the public and private sectors. Information markets for ICT are highly underdeveloped in the developing world. Asymmetry in information and bargaining
power among ICT multinationals and developing country users further magnify the risks of misallocated resources, distorted investment priorities, underinvestment in local adaptation and learning, and outright project failure.

E-leaders need to navigate their organizations and communities through this new environment and ride the technological wave—rather than be caught in the undertow. The payoffs are high—so are the downside risks of inaction and misguided action. The sea changes accompanying this technological revolution go beyond misaligned or failed investments or unrealized benefits. They also involve issues of rising inequality, digital divide, and exclusion of the poor—technological change always favors the prepared. Institutional leaders must also manage the accompanying profound changes in organizations, occupational structures and ways of relating and doing business.

**The Demand for E-Leaders**

Leaders are needed for each sector or component of e-development and equally for orchestrating the overall e-development process. These leaders play different roles that range from developing national e-policies and government-wide ICT governance to engaging local communities and grassroots organizations in defining local information and communication needs and experimenting with new ICT applications.

E-Leaders must possess core competencies that range from awareness of ICT potential and trends to developing their own general leadership skills. They need competencies to communicate in the language of development strategies and development results and thus be understood by policy makers, business leaders and mainstream development strategists. They need to bridge the current divide between ICT specialists and development practitioners. They need to gain the support and confidence of the political and business leadership and inspire the stakeholders of the e-development process.

E-leaders need new competencies to secure a balanced e-development process and tap synergies across all components of e-development. E-government leaders, for example, cannot take for granted the existence of adequate content, connectivity, and user competencies to make e-government investments worthwhile (7). E-leaders have to concern themselves with the whole of the e-development process; this process is dynamic and involves substantial learning and adaptation. Therefore, e-leaders should master the tools of agile e-development: measuring and benchmarking e-readiness, establishing and enforcing ICT governance frameworks, designing public-private partnership schemes, carrying out stakeholder analysis, building coalitions for necessary legal and regulatory reforms, and practicing participatory monitoring and evaluation.

E-leaders also need competencies in designing and managing partnerships and in leveraging ICT to build and facilitate networks of public services providers. Such providers are expected to span the boundaries of single agencies, covering private suppliers, civil society organizations and several public agencies in order to provide integrated, client-focused services. They should govern by networks and leverage ICT to help other leaders build and manage their networks to deliver maximum public value.

E-leaders need to operate at three levels with distinct but complementary competencies:

- As business executives and strategists of public agencies and programs.
- As business process architects and institutional change leaders.
- As technology resource managers.

As top executives and business strategists, e-leaders are expected to be able to visualize the destination of information society, the results of an ICT-enabled development strategy and/or the possibilities opened by ICT for their agencies and countries. They should be able to build an inspiring vision of how ICT will build organizational success. They should be able to interact with other executives and stakeholders to shape this ICT-enabled future and then communicate it to the rest of the organization or sector for which they are responsible. They should possess competencies in strategic thinking, strategic communications and foresight. They should have a broad appreciation and domain knowledge of the business they are in—beyond technology. They should understand the big picture.

Also as business leaders and strategists, e-leaders should define the broad directions for the ICT road map and provide managers and staff with the tools and governance to travel and learn on their way. They should be concerned with mobilizing demand for change and for realizing the developmental results of ICT investments. They should shape and inform expectations for ICT-enabled enterprise. They should also understand the needs of their clients. They should be capable of inventing frameworks and creating environments that bring forth ICT-enabled possibilities in line with business strategy, national aspirations and/or agency missions. They should strive to bridge the digital divide and to build an inclusive information society.

As change leaders, the new e-leaders are the industrial engineers and chief innovation officers of new business processes and new forms of organizations. They are also the chief relationship officers who enable the creating of new networks and work teams.
within organizations as well as new partnerships and supply chains across organizations. Working with other executives, they lead institutional change and inspire managerial innovation. They should have the competencies to facilitate the evolution of current hierarchies into agile, adaptive, networked, client-centered, and learning organizations. They should lead process innovation and client-centered service integration and facilitate the corresponding changes in skills, attitudes and culture (8, 9). They should be able to create sufficient trust to break silos, build partnerships, and engage process innovators, change agents and organizational development practitioners. They must have competencies in organizational development, process innovation, team building, network design and management, partnership and coalition building, and culture change management.

A user-focused e-government and seamless joined-up services can be very challenging and costly (10-13). Client-focus means changing organizational structures and processes and reallocating resources, and this requires change leadership. It also means changes in attitudes and behavior among civil servants. It can be a great challenge to achieve customer satisfaction while reducing the cost of services and making them affordable. It is up to e-leaders to strike the appropriate balance through process and service innovation and effective change leadership.

As *technology leaders*, CIOs are the suppliers and custodians of ICT resources. This remains an essential role of e-leaders and the traditional domain for CIOs and CTOs. Public service constraints often limit access to technical talent with current knowledge of project management methodologies and new approaches to systems development such as rapid prototyping. Also in strong demand are skills to engage policy makers and business leaders in defining systems requirements and process transformation.

Public CIOs are called upon to manage networks of ICT service providers and to engage in increasingly complex partnerships and contractual arrangements that demand current knowledge of the ICT industry and best practices. They should have competencies in outsourcing, portfolio management, project management, business case development, and information resources management. They should have broad understanding of the technological environment--the trends and the imperatives and the ways and means to secure open standards and avoid the risks of technological lock-ins.

The span of skills required by such development executives is thus enormous. On the domestic front, they must conceptualize national strategies that move millions of public sector employees, contractors and citizens forward to electronically connected government. They must leverage IT so that government services are delivered effectively both offline and online. They must popularize IT so that communities even in remote rural areas can have access to virtual libraries, critical knowledge and timely information.

On the international front, these leaders must thoroughly understand global IT dynamics and be able to define investments in infrastructure, human capital formation and industrial promotion incentives to attract multinational business in software, IT processing services and other digital goods (14). Even more broadly, they must assess the potential impact of IT on various user industries and their implications for the competitive positioning of their countries, cities, and enterprises.

These skill requirements go far beyond the traditional role of chief information officers in the public and private sectors (14-15). These skills cover business strategy, institutional change, and technology management. They span leadership, partnership and integration skills. Such imperatives point to the urgent need for a wholly new type of executive that can be equally conversant in designing national IT-enabled strategy, leading IT-enabled institutional change processes, creating new service delivery channels, and building critical infrastructural systems.

The relative importance and mix of the three roles of e-leaders will vary in relation to the context and to the level of decision maker concerned. It is unlikely to have an e-leader who can have equal competencies as policy maker, institutional change shaper and technology leader. A mix of these competencies and corresponding capacity development programs must be assigned and matched to the level and context of these leaders as suggested in figure 2.

![Figure 2: Relative Importance of Competencies for e-Leaders](image-url)

<table>
<thead>
<tr>
<th>Level of leaders</th>
<th>Policy and strategy management</th>
<th>Institutional change management</th>
<th>Technology &amp; project management</th>
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<tbody>
<tr>
<td>Political, policy and executive leaders</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
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<tr>
<td>Institutional change business unit leaders</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
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<td>Chief Technology Officer and systems managers</td>
<td>Low</td>
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<td>High</td>
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E-Leaders typically manage a conflicting portfolio of concerns: they must strive to align past rules and legacy systems, present customer needs and ongoing changes, and future visions and possibilities. Often the regulatory environment is lagging behind customer needs and technological change, thus reflecting the past. Client needs are often most pressing in the present, and the gap between aspirations and current resources are most wide in developing countries. Most CIO’s time is absorbed by the past and present. The challenge for e-leaders is to provide the vision and thought leadership to align the past and present towards the future.

**The demand for E-leadership Institutions and Governance**

Leadership is critical to economic and institutional transformation, including ICT-enabled transformation. This leadership is partly exercised by individual leaders, including CIOs and CEOs. It is determined by the attitudes, capabilities, knowledge and experience of these leaders. They must inspire and animate strategic investments and plans as well as ICT governance and process transformation.

But individual leaders are not enough. Their vision must be institutionalized, and institutional mechanisms must be fashioned to make these visions implementable and sustainable (16-17). Potentially good leaders cannot operate effectively without appropriate governance and institutional structures. E-leadership institutions are critical to identifying, attracting, and developing potential leaders and to supporting and empowering them to build the enabling environment for all stakeholders for the knowledge economy. Building a cadre of e-leaders and of e-leadership institutions are essential and complementary measures for e-development.

The cross-cutting nature of ICT requires institutional arrangements that ensure coherence of policies and coordination of investments across all relevant sectors. It calls for empowering existing or newly-created government or private-public entities to provide e-leadership and strategy (policy, advisory and governance functions) and to implement, monitor and evaluate programs (operations function). There is no single model, no “one size fits all” institutional solution. However, there are certain common principles that will work across most countries and economies in translating ICT into a powerful tool of development.

Many countries have a history of unsuccessful attempts to deliver on their e-development strategies or component initiatives largely because these countries lacked adequate institutional mechanisms for the creative design, effective implementation and continual adaptation of such strategies. Some countries have ignored the need for a functioning umbrella agency to coordinate the highly interdependent e-development activities within the government. Others have lacked a clear division of responsibilities between different branches and agencies of the government; these have created political and bureaucratic obstacles for e-development and inhibited the proper allocation of resources and policy coordination across government. Yet others have centralized their e-development management under the wrong issues and wrong staffing—under a technically-focused ICT agency or ministry—which isolating ICT policy and investment decisions from mainstream development issues.

There is currently no single model for a country to follow when creating their ICT agencies or ministries. However, there remains a lot to be learned from successful examples around the world and from international best practices, which can provide a set of guidelines and options that any country would do wisely to take into account. Given the critical challenge to move e-development from a set of aspirations to development results, it is urgent to push the state of the art towards a systematic assessment of institutional options and innovations (19-20).

**E-Leadership Development and Current Supply**

E-leaders are at the forefront of the changing role of government from doer to enabler, and the form of government, from hierarchical to networked and connected government. Yet today’s civil service systems are in many ways incompatible with the movement to networked or ICT-enabled government (21-25). The competencies called up are unlikely to be developed within the public sector, and often difficult to engender at the highest levels even within the private sector. In most countries, public managers are rewarded for narrow career structure and specialization within the sector. Apart from technical competencies or awareness of ICT trends and potential, the public sector needs more leaders with collaborative mind-set, and with deep understanding of the private and non-profit sectors as potential partners. It needs reformers, innovators and change managers.

Countries and academic institutions have been slow to recognize the need for a new breed of e-aware leaders and new cadres of CIOs. Even when the need is recognized, supply response has been slow and relatively ineffective. This is particularly the case for public CIOs and e-leaders in government. This is due to uncompetitive compensation, undefined or unattractive career ladder, and poorly understood roles and competencies.
Current CIOs and IT professionals are isolated from mainstream leadership forums and business management practices. This leads to disconnect between ICT strategies and development or business strategies and investment decision processes. Business strategies and ICT plans and investments are often strategically misaligned. Business leaders and policy makers have often oscillated between ignoring, isolating and idolizing ICT in their sectors and organizations. They badly need to systematically integrate ICT into their visions, strategic thinking, investment plans and mainstream management functions.

The supply of ICT education and training is also constrained by low awareness of the e-leadership gap, poor definitions of CIO roles and scant research on what constitutes effective e-leadership and core competencies. Educational and training institutions are excessively focused on the technology and technical project management. CIO education in business schools is naturally focused on business conditions and challenges—and there are no equivalent programs for public CIOs. Yet public CIOs and e-leaders face different problems, complex constraints and more demanding political skills, strategic communication, articulation of public value, coalition building, knowledge sharing and change management skills than those of their private counterparts.

An Implementation Crisis?

There are many indicators of a growing gap between rising expectations about the benefits of ICT and actual realization of these benefits so far in developing countries. There are missed opportunities to leverage ICT for development as well outright failures in implementing e-government projects and getting value for money. An emerging crisis in the realization of ICT-enabled development and the transition to an information society may be in the making across the developing world. The underlying root is a growing gap between local leadership capacity and the increasingly complex demands of ICT-enabled institutional and societal transformation. Some of the indicators of this implementation crisis are:

- Low adoption of e-services. Even in advanced countries like the USA and Japan, the rates of adoption of e-government services remain low (13% in 2005).
- Mismatch between technological pace and institutional change At times of fast technological change, the lead time to reach consensus, develop the systems and build the necessary human resources is getting longer.
- Common failure to scale up and to sustain donor-initiated pilots, mainly due to lack of local leadership capacity to replicate and at times, national leadership to help scale up into viable and sustainable national programs.
- Unmet expectations and high rates of failures (60-70%) of information systems projects, particularly in governments. E-government programs, initiated with great fan fair and high expectations about transforming government, often end with creating unwieldy number of websites and migrating the same inefficient and unresponsive back-end processes to the front-end. This amounts to no more than window dressing (10).

There are many additional aspects and sources of this implementation crisis. Long lead times are increasingly required to develop and implement systems and produce tangible results, particularly in public sector institutions. The slow decision making process in acquiring and mastering ICT-enabling tools in government is falling behind the fast pace of change in technology: governance mechanisms concerning investment and procurement of ICT, including those of aid agencies must be overhauled to keep up with this pace. E-leaders need to devise new processes and tools for rapid appraisal, development and deployment.

Realizing the transformational potential of ICT investments is further constrained by low awareness of this potential among policy makers and development professionals and by limited experimentation, monitoring and evaluation. The focus has been on ICT acquisition and automation of current processes. There is little awareness of the need to invest in active leaning, continuous local innovation, phased and cumulative transformation—beyond technology acquisition or “transfer”. Institutionalized learning is needed at all levels. Yet, institutional and technological learning costs are substantial but seldom recognized, funded or planned for.

Innovation and implementation of technology-enabled changes are often frustrated by the failure to partner across sectors. Innovation to transform economies and bridge the digital divide often comes from cross-sectoral partnerships. Yet, public-private partnerships are scarce--and often fail. Leadership skills to bridge the cultural gap between the public and private sectors and to develop appropriate frameworks for private sector participation in e-government programs are in short supply.

An e-Leadership Gap

At the root of this implementation or transformation crisis is a growing e-leadership gap, perhaps a leadership crisis. There is always a cry for leadership when societies and economies undergo real transformation (26-28). But leadership has never been more important to transform slow, aging public institutions into dynamic, flexible learning ones and to create the conditions for an inclusive, interactive, integrated and informed government and society at large. The gap is common across countries but most severe among developing countries.
Key indicators of this leadership gap are the poor preparation and certification of CIOs, the scarcity of project management skills, and the isolation and disconnect between CIOs on the one hand and central policy makers, corporate leaders and line business managers on the other.

Public CIOs in developing countries currently lack a clear role, a career ladder and a development system. These leaders are selected into the job unprepared. They are often engineers and specialists in ICT. When they are selected among managers and generalists, they are burdened by many administrative duties. Their role as CIOs is only a small part of their portfolio.

Although statistics are lacking for developing countries, it is also likely that CIOs enjoy as short tenure as their counterparts in developed countries. The average tenure of public CIOs in the USA used to be two years (in 2002), but has been lengthened somewhat recently. Rapid turnover has been a symptom of the unmet expectations and pressures facing CIOs and the gap between CIOs and their political or business leaders. It reflects the high degree of isolation of CIO from other executives. The high turnover imposes high costs on building effective teams of e-leaders and sustaining communication channels between CIOs and their leaders.

Lack of project management skills is common even among government agencies of the most developed countries. This scarcity is despite the high risks of e-government systems failures and the complexity of enterprise-wide systems implementation. Advanced project management skills and tools are particularly needed for large and cross-agency systems and government-wide information infrastructures. The outcome is high rates of failures of e-government projects.

Lack of strong coalitions for ICT-enabled transformation. The public sector cannot do it alone. Neither can the private sector. Nor the civil society. Coordinating institutions and networks and partnerships must be built to push for policy reforms for the knowledge economy, eg, e-policies for access to public information, privacy, security, IPR, etc. E-leaders are called upon to act as catalysts, change agents and coalition builders—to bridge across silos, engage all relevant sectors and stakeholders and orchestrate the e-development process.

Slow supply response from universities and training institutions is often common in all fields. But it is particularly pronounced in new and dynamic areas such as ICT. It is further complicated by the fact that the needed competencies involve intersection among several fields: leadership, public policy, management, technology and institutional development, among others. Some of these fields such as leadership development are relatively less mature than more technology-oriented fields. Even when programs for CIO and technology management are available, they tend to focus mainly on business CIOs.

This gap between demand for e-leaders and supply response from academic institutions and other sources may be interpreted as a market failure or leadership failure. It is often the case that there is a lag in response between investment in physical resources and human capacities, or between demand and supply for new types of technical and leadership skills. This lag may be exacerbated in the case of ICT given the rate of technological change, the versatility of this general purpose technology and our poor understanding of what competencies and standards would be required to manage and lead in this new field. With few exceptions, aid agencies, development thinkers and policy makers have not been proactive in raising awareness about the managerial and leadership capabilities needed to harness this technological revolution. It is time to respond to this growing capability gap.

Promising Responses and Practices

Developed economies have begun to address this e-leadership capacity gap only recently—building on an already established and broad-based leadership cadre, technological know-how, and common public-private partnership practices. As a first step, Many OECD countries have established CIO positions in all government agencies. Much less common is establishing an enabling act to clearly define the authority and responsibilities of CIOs in government, to empower then with the necessary tools and processes, or to create the necessary training and certification programs.

The USA Experience

The USA experience is instructive in establishing a policy framework that has provided effective demand for public CIOs—defining their roles, responsibilities and certification programs. A key to governance and overall implementation of e-government in the USA is the Information Technology Management Reform Act (a.k.a. the Clinger-Cohen Act of 1996) (29). In brief, this Act sets the process for acquiring information technology in the Federal Government and for the responsibilities of the Federal CIOs. Its primary requirements on Government agencies are to: a) Design and implement a process for investment planning and control; b) Establish goals for improving agency operations and delivery of services through the effective use of ICT; c) Designate
a Chief Information Officer; d) Implement an integrated enterprise (IT) architecture; and e) Promote improvements in work processes.

This Act has provided an enabling framework and effective demand for CIOs as e-leaders. It also provided a coherent governance framework for ICI across the US government. Its greatest contribution has been to set the framework for how IT is managed to support both agency and government-wide missions, especially including capital planning and enterprise processes. It also created and positioned the CIO in a senior leadership capacity within agencies and the CIO Council across the federal government. It reformed the IT acquisition and oversight environment and made the IT procurement process more responsive. It also helped move the focus in the government IT community from procurement to management. It has also improved alignment of IT with agency mission. It provided a framework for promoting government-wide infrastructure improvements and standardizing and investing in common business processes (lines of business like human resources management) across agencies (29).

The Federal Government of the USA has also pioneered a program for building the core competencies of public CIOs through partnership with US universities. It is based on certifying graduate level or executive development programs that directly address core competencies identified by representatives of government, industry.

The CIO University is a virtual consortium of universities which offers graduate level programs that directly address executive core competencies. The consortium partners with universities that agree to tailor their courses to teach to certain competencies.

The way that new institutions are added to CIO University is through a process of responding to a Request for Information (RFI). Every two years General Services Administration (GSA), together with the CIO Council’s IT Workforce Committee work together to update the Clinger Cohen Competencies. The update introduces any new learning objectives that the federal government through this process deems necessary for up and coming CIOs. The current competencies and learning objectives are found at: http://www.cio.gov/documents/2004_CCC_Learning_Objectives.doc

The competencies for CIOs have been identified in the Information Technology Management Reform Act. Curricula are developed to build such competencies based on a process that involves industry, academics and senior executives. The process involves senior executives, industry representatives and academic partners.

The USA Federal CIO program certification is a recent development. It is the product of a well thought out process that involved key stakeholders. But the results have yet to be independently evaluated. Many lessons may be learned from such a review. A preliminary review by this author of the curricula of some participating universities reveals that the primary focus is on technology management issues. Moreover, most programs do not yet reach or target top level policy makers and public leaders.

The Federal CIO Council, also established in 1996, has been also engaged in CIO development through inputs into defining core competencies, and the sharing of information and best practices among CIOs. The CIO Council has further evolved. It has established several active committees to address CIO priority concerns and challenges such as investment planning, security and IT human resources development. It has become a key element of ICT governance across the public sector. The Council is expected to play an increasing role in consensus building, vertical and horizontal communication, team-based problem solving, and knowledge sharing.

The Mexico Experience

Mexico presents a case of how a country is trying to institutionalize its e-government strategy by creating a cadre of CIOs at the agency level (30). It suggests that creating a national CIO or central e-government unit is not enough to promote institutionalization and broad ownership among government agencies. Despite political commitment to e-government and e-Mexico visions, such institutionalization is at an early stage and is likely to face many challenges.

Mexico has recognized relatively recently (2005) the role of CIOs in government as a major challenge for institutionalizing e-government leadership. It is not yet clear which agents or officials will take this role and what impact this decision will have on the whole modernization program. CIOs will need to have clear responsibilities. They will also need to have clear understanding of the political process, public sector reform priorities, and the horizontal coordination challenges of e-government.

Much of e-government leadership in Mexico has come from the top—from the Presidential Good Government Agenda, to the negotiation of targets with the highest officials of the President’s office, to the organization of several national and international events for the dissemination of e-government practices. This political leadership has been essential in raising the visibility of e-
government strategy, diffusing the e-government agenda and pushing for new initiatives. Yet, long term change requires institutional leadership to share and realize the political vision. A new IT Governance and Regulatory Framework Strategy is expected to help institutionalize e-government in part by formalizing and clarifying the responsibilities of existing structures and committees. The head of the e-government unit was expected to become the ICT coordinator general for the federal government, to provide the central e-government policy leader, with agents of innovation and change at the public agency level. This national level CIO is expected to translate high-level political consensus into ICT and e-government policy.

Ad hoc agency level CIOs hold different posts with different responsibilities, reach, influence, and political leverage. Some are head administrators with many other responsibilities besides e-government. Others are traditional heads of IT units, who are technology savvy, but do not have much influence and reach beyond their unit. Arrangements are being sought to make heads of IT units in agencies report directly to minister-level leaders and to get them involved in the strategic agenda of the agency. But these new CIOs will need much training to prepare them for their new leadership role. They also need specific career tracks. They will face the challenge of delivering politically-negotiated e-government goals with the President’s office without the financial incentives to collaborate with other agencies.

The Experience of Other Countries

In a number of OECD countries, the role of CIOs is slowly evolving from coordination of technical and administrative matters to that of a business executive partner, on equal level with that of the senior management (31-32). Yet, public sector CIOs face unique governance challenges that demand them to become key members of the executive team of government, both at the agency and national levels. Public CIOs need to be multi-talented leaders who seize opportunities to leverage their expertise for strategic and transformational roles. However, it is widely acknowledged that public CIOs in OECD countries have not yet reached the level of influence necessary to work side-by-side with the top decision makers and yet be accountable for the results.

Increasingly, countries have created national CIO positions (32). Early adopters of a national government CIO include: Canada (position created in 1993), Austria (2001), New Zealand (2001), South Africa (2001), United States (2002), Australia (2004), United Kingdom (2004), Singapore (2005) and Finland (2005). Each of the CIOs has a small staff, except for Singapore (650 people), Canada (212), Australia (100), United Kingdom (100) and New Zealand (85). Motivations for the creation of national government CIO position vary but the most common reasons are: 1) to develop a national e-government strategy; 2) to signal political commitment; and 3) to push for reduction in IT spending. Most of these national CIOs report to Minister of State, Prime Minister, Cabinet Secretary, Secretary of Finance, OMB or equivalent.

Responsibility of national CIOs vary from advisory to total operational across a whole range of functions: the Singapore CIO has the most operational responsibility for ICT infrastructure, whereas New Zealand’s CIO leads the national e-government strategy, but has little operational responsibility beyond the national portal. The primary concern of all is to transform government, not to run ICT operations. But with few exceptions (such as Singapore), they lack the authority to execute this that transformation. The most common forms of authority to enforce execution are: advice (or consent) on whether projects should be funded through the budget process, set enterprise standards and their enforcement through the procurement process, and lead the IT strategic planning process.

Strong central leadership is vital to effective execution. Creating a CIO position that is not empowered would not matter to results—except for creating bureaucracy. Regardless of responsibility, the CIO can be successful only when political leadership understand the role of e-government and empower the CIO to enforce the intended transformation in government and service delivery. Moreover, a national CIO cannot do it alone. A counterpart cadre or network of federal agency level CIOs, and of state and municipal level CIOs, is essential to broaden ownership and institutionalize e-enabled transformation for the whole of government and for governments at all levels.

Response to the challenge

E-leaders in developing countries are likely to face major and to some extent different challenges than advanced countries (33-36). Developing countries conditions present additional challenges for e-leaders. Yet, much can be learned from best practices in advanced countries and a few leading developing countries.

First and foremost among these development challenges is the need for catalysts to orchestrate the interdependent components of e-development. Coordinated responses are much more needed yet harder to initiate and sustain in developing countries. Second, the digital divide and affordability issues are much more pressing for developing countries. Barriers to the effective use of ICT in government are more difficult to overcome in developing countries where the civil service is less motivated and skilled and perhaps more resistant to change than in the more developed civil service systems. Nascent ICT sectors and the predominance of...
small and micro enterprises in the local economy add further challenges to ICT adaptation and effective diffusion. The risks of adoption of the new technologies are high and the risks of non-adoption are perhaps much higher. And the information markets for these technologies are much less perfect for the developing countries.

Developing countries have yet to respond to the e-leadership capacity gap—both strategically and systematically. The broad outlines of recommended responses should cover both supply and demand measures for e-leadership development.

One basic response is to establish governance frameworks and enabling acts for managing ICT in the public sector, creating and positioning the CIO role in a senior leadership capacity, and making top policy makers and heads of agencies accountable for using ICT to improve management and service delivery. Such enabling frameworks are necessary to build effective demand for CIO and e-leadership development within the public sector. They can also provide a model for institutionalizing the CIO role in the private sector in developing countries.

A second measure is to reorient academic programs and research to address e-leadership: put the e-where it belongs—that is, dead center in our discussion of leadership research and practice. A mechanism for certification and regular review of such programs may be necessary. Providing smart subsidies for content development or designating investment in centers of excellent may be also necessary to adapt teaching materials and cases to the conditions of the public sector in developing countries.

A third measure is to move beyond teaching—towards accelerated learning from experience and building communities of practice. ICT Multinationals, local and international academic institutions, and aid agencies should partner to accelerate this learning process. National and state CIO councils can play a critical role on team-based problem solving, peer reviews, and the dissemination of best practices. Possible regional and global CIO councils can further accelerate knowledge transfer and the adoption of best practice to and among developing countries.

Fourth, e-leadership capacity should be nurtured and deepened across sectors and at different levels. E-leadership is needed at all levels, at agency, enterprise, municipality, regional and national levels. Capacity development programs should also reach small business, NGOs, community leaders, and those representing the poor.

Fifth, policy makers, CIO councils, ICT industry associations, NGOs and academic leaders should be engaged in defining the core competencies needed for e-leaders and creating incentives for academic and training institutions to respond and meet these requirements. Public and business leaders and particularly academic institutions should help blend know-how of public and private sectors, local and global business, national leadership and grassroots institutions.

Finally, capacity building for e-leadership should go beyond individuals and cover the development of leadership institutions and networks. This may include innovating new e-leadership institutions to set e-policies, ICT governance in public sector, build common platforms, articulate visions, create partnerships across sectors, and support local innovation and adaptations. It may also involve building coalitions and networks to support ICT policy reforms, administrative reforms, managerial innovations and ICT-enabled renewal, public-private partnerships, local best practices, innovation ecologies and clusters, and the development of a national innovation system.

The above analysis of implementation challenges and examination of emerging experience suggest that e-leadership development programs should be built around key principles. The following six principles may guide the design of such programs:

- integrating leadership, strategy, institutional change and technology management education into a coherent capacity building program;
- managing the whole e-development process from beginning to end: from vision and strategy through implementation and assessment;
- focusing on holistic ICT-enabled development, not just technology or infrastructure;
- creating communities of practice among top policy makers and ICT leaders around the world;
- bringing together all stakeholders—public, private, university and non-profits for mutual learning and teaching; and
- adapting and co-creating content to capture the best practices and tacit knowledge of leading practitioners and blend the inputs of global and local partners.

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1 One interesting practice in the survey of federal CIOs in the USA—of their needs and practices—being conducted annually by the Information Technology Association of America (ITAA).
CONCLUSION

Given the pace of ICT spending in developing economies and the huge bet being made by governments in this area, the lack of a defined executive leadership role and competency roadmap presents unacceptable risks of massive ICT policy and investment failure. The emerging implementation crisis in e-development is essentially due to leadership failure. This is manifested in missed opportunities to realize the potential benefits of ICT for development, to reduce the high rates of failures in e-government investments, and to contain costs secure sustainability. It is also reflected in weak and slow market response to the growing gap in public CIO and e-leadership education.

Conversely, the formalization of such a role—a new CIO or e-leader—and the creation and delivery of key competency building training can create a cadre of global development-oriented IT executives with the requisite capabilities to lead IT initiatives, infuse IT into economic development strategies and programs, and continue to generate significant market opportunities for the global IT industries. This new breed of leaders would become the organizational architects and city planners of the information society.

CIOs, where a cadre has been established, fall far short of their role and required competencies, even among developed countries. There is a need to provide a vision of what public CIO should look like in developing countries. This vision should cover relevance of such position, core competencies and accountabilities, and the enabling policies, tools and processes. Future e-leaders and the new CIO leaders should be recognized as members of the most senior leadership teams. They must acquire political, leadership and policy skills in addition to the necessary program, project and technology management skills. They should be viewed as visionaries and strategist. They should have deep understanding of the mission, business and clients of their agencies. They should master the demand side as well as the supply side of IT leadership.

Global and local partnerships are urgently needed to build a cadre of e-leaders in every aspiring nation. The core competencies needed should be defined locally but benefit from the emerging best practices among leading nations. Experimentation with content is essential in view of current knowledge of e-leadership roles and competencies. Multiple delivery modalities should be also explored since practicing CIOs and potential e-leaders are short on time and conceptual frameworks, yet have substantial experiences on which to draw, reflect, critique and systematize.

This leadership development is an urgent task if developing countries were to bridge the growing gap between their aspirations to leapfrog to the knowledge economy and current institutional realities and local capabilities to realize the promise. Leadership has never been more important to transform slow, rigid and hierarchical institutions to dynamic, flexible and responsive institutions. Given the scarcity of leadership talent in all countries and the lead time needed to develop human resources, the time to act is now.

References


