

Forum

Why a Holistic E-Development Framework?

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A growing number of policy makers and development practitioners appreciate that the ICT revolution is opening up new sources of growth and offering new opportunities to solve long-standing development problems as well as transforming industries and services so fundamentally that it is changing the competitive advantages of countries. ICT is driving a technological revolution that is sweeping entire economies and transforming institutions, learning processes, and innovation systems. Yet, current research, education and development assistance practice have primarily focused on separate elements of this transformation. Much of the documented failures of ICT applications in e-government, e-business, e-education or rural development are traced to fragmented approaches that missed key enablers or operated within the current silos of the ICT paradigm.

Also, several past contributions to *Forum* have lamented the lack of an integrated view of ICT4D research as a part of the larger puzzle of development (for example, Raiti, 2006). Others (Wilson, 2005) suggested ways scholars may enhance dialogue with thoughtful practitioners in ICT4D by framing ICT issues in broader contexts, and by understanding the dynamics of ICT as a process.

In response, I would like to advance the framework of *e-development* as a holistic approach to leveraging ICT for development (ICT4D)—by pursuing mutually reinforcing ICT-enabled initiatives at the national or regional level. It is about creating an information society or knowledge economy “ecosystem”—an integrated approach that defines a vision, coordinates the work of stakeholders, and maps the connections to shape the relationships among diverse players. Accordingly, ICT4D is defined most holistically in order to facilitate a way of systematically thinking about ICT as an enabler of development, of strategically managing integrated ICT4D programs, of tapping synergies among interdependent elements of ICT, and of communicating to a broad community of practice.

Defining E-Development

E-development can be conceived as composed of key interdependent elements: 1) an enabling policy and institutional environment, 2) an affordable and competitive information infrastructure, 3) a dynamic and innovative ICT industry, 4) broad ICT literacy and education, 5) a coherent investment program to apply ICT to modernizing the public sector, and 6) incentives to promote the effective use of ICT for developing the private sector and empowering civil society (figure 1).¹ The first four elements are the enablers to the effective use and wide diffusion of ICT in government,

1. The figure is a highly simplified representation of the key enablers and application areas of ICT and the many possible interdependencies among them.

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business, and grassroots community organizations (e-government, e-business and e-society).

Collectively, these elements—or pillars—of e-development cover the package of policies, investments, and institutions that enable an economy to apply and leverage ICT for social and economic development. At the heart of e-development are e-leaders and e-leadership institutions—individuals, networks, and institutions that develop a vision of a knowledge society, set policies and priorities, forge national consensus on reforms, and coordinate and create synergies among the elements of e-development. To succeed, leaders should rethink and act simultaneously on the ICT infrastructure, human resources, ICT innovation system, policy and institutional regime, and ICT use and diffusion throughout the economy.

This framework can explain the development of ICT as a sector and a cross-sector enabler. It can be also used as a guide to the design and implementation of integrated ICT4D programs at the national levels, much in the same vein as Porter's system of competitive advantage (Porter, 1990; Heeks, 2006) is used to explain both sector development and guide the design of programs to enhance national competitive advantage. Porter's competitive advantage theory takes a holistic and systemic view of key elements or determinants: factor conditions, demand conditions, related and supporting industries, and firm rivalry. It views these elements together as a mutually reinforcing system and their interrelationships as continually evolving.

The proposed e-development framework functions in the same fashion as a way to explain the dy-

namics of ICT-enabled development and to guide the design and strategic management of ICT4D programs. Appropriately coordinated and sequenced, programs covering these pillars can exploit the synergies, transforming the economy and accelerating development.

Taking Account of Interdependencies; Exploiting the Synergies

An integrated approach to ICT poses a challenge for aid agencies and developing country governments alike. Both face incentives that militate against collaboration and integration. Aid funding and public budgets follow sectoral lines, and it can be hard to get new money for centralized, cross-sectoral initiatives. Whatever the source of funding, ICT efforts—e-government investments, telecommunications reforms, connectivity programs, ICT industry promotion, human resource development, content development, sectoral applications—are typically pursued in isolation. Even within an e-government program, ICT investments are typically pursued agency-by-agency or system-by-system (see Fountain 2001). Yet integration offers many opportunities for tapping synergies among the elements of e-development.

Yet, the interdependencies among e-development components are significant in advanced knowledge economies and even greater in developing and emerging economies. Studies in OECD countries indicate a strong link between ICT investment, productivity growth, and competitiveness (OECD, 2004). Moreover, they show the significance of "interaction effects"—for example, interactions between ICT investment, infrastructure, skill levels, and the policy environment (Economist Intelligence Unit, 2004). A critical mass or minimum threshold of ICT development can have a significant positive impact on a country's economy. For a developing country, in particular, with circular and multiple causation for information poverty (Myrdal, 1957), the impact of one element of

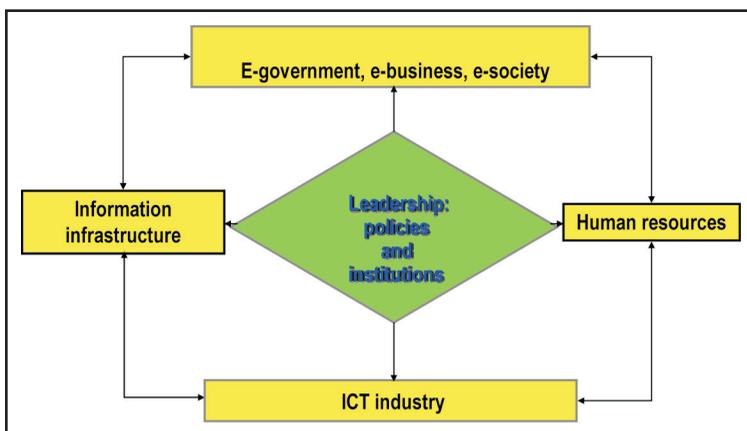


Figure 1. Simplified Links Among Key Elements of e-Development

e-development is heavily dependent on progress in others. Investments in ICT must be accompanied by investments in human resources, process innovations, institutional changes, and policy reforms to fully realize the potential benefits. This is consistent with a key lesson of development experience in general, that is, the need for a comprehensive approach to development (Hanna & Picciotto, 2002).

Consider e-government and e-business. Making e-government and e-business services broadly available to citizens and enterprises requires accelerating Internet penetration and affordable connectivity. And the take-up of online services depends critically on the development of digital literacy and an information culture. Education and the policy environment are keys to making technology work. Moreover, when governments tap domestic firms to act as partners in providing e-government solutions, they support private sector development in ways that can broaden e-development and create competitive domestic markets and learning opportunities for developing the local ICT industry.

Governments can play a critical role in shaping all these interdependencies. Over time, e-leadership institutions should be able to identify more and more synergies among applications in e-government, e-business, and e-society and among the key enablers to ICT use and diffusion. The benefits of tapping these synergies should outweigh the cost of coordination.

This comprehensive view of ICT for development does not imply addressing all constraints, opportunities, and investment possibilities at once. Instead, it allows designers and implementers to prioritize, select, and sequence the most critical interdependencies in view of the whole and of the overall resources and capabilities. It helps anticipate, recognize, and manage the key interdependencies over time.

Integrating ICT into Broader Development Strategies

Experience with national ICT strategies suggests that their links with overall development strategies tend to be weak, particularly in low-income countries (World Bank, 2006, 87–124). Even when such links are articulated in planning documents, they

are often forgotten in practice. The reasons are many: perverse incentives, scarcity of e-leaders, poor understanding of the links, low awareness and ownership of ICT among most public administrators. Moreover, little involvement of core ministries such as finance and economic planning, and pursuit of narrow, technology-driven agendas by ICT ministries or their equivalent further constrains integration of ICT into development thinking and practice.

A holistic approach to ICT for development gives primary attention to the organic links between information, communication, and knowledge and the broader national development goals. It goes beyond the traditional preoccupation of ICT (and science and technology) ministries with technology, innovation, research. It goes beyond organizational “silos” reflected in ministries’ isolated information and communication systems. And it goes beyond aid agencies’ common approach of focusing on ad hoc ICT applications in development projects while neglecting shared information infrastructure, systemic constraints, and sustainability.

Creating an information society requires direction from a national ICT-enabled development strategy. Such a strategy, based on an e-development framework, provides a guide to policies, investments, and implementation mechanisms for developing ICT capability and using it to achieve a country’s development objectives.² It focuses the actions and resources of different stakeholders—but especially the government—on national priorities for harnessing ICT for development. It taps the interdependencies among these actions and investments over the medium term to realize a shared vision of ICT-enabled development. And it explains how institutions will collaborate and share responsibilities for this development.

E-development is about promoting a new type of development strategy, one adapted to the specific strengths, vulnerabilities and aspirations of the country as well as the opportunities and challenges arising from ICT—the general purpose technology of our times. A national e-development strategy is shaped by the broader goals of national growth and development. It may focus on improving governance and the delivery of public services, bridging economic divides, promoting social inclusion, and drastically cutting transaction costs across the economy.

2. For a review of many national e-strategies, see World Bank (2006b, pp. 87–124).

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It may seek to exploit new sources of growth, employment, and competitiveness by promoting the ICT and IT-enabled services industries and the use of ICT by small enterprises to network and compete.

A coherent e-development strategy has other advantages over current practices of governments and aid agencies in developing and applying ICT. By tightly linking national ICT strategies to broader development visions and strategies, it engages policy makers in driving the ICT agenda in response to national development priorities—rather than the other way around. It helps focus the attention of policy makers and program managers on ICT-enabled development results. ICT becomes an enabling force for pursuing policy reforms, transforming institutions, and improving governance and transparency. It can catalyze reforms in education and mobilize knowledge and other resources for social inclusion. Enlightened leaders become engaged in shaping this vision and in using it to build consensus on institutional change and economic transformation.

An e-development strategy is not a mere vision; it operates within institutional and financial constraints. Thus it seeks to optimize the allocation of resources, focusing scarce public resources on the investments with the greatest development impact on those who can produce quick wins with little demand on managerial resources. Investments have to be sequenced and phased in line with these resources and with political demands for tangible and timely results.

By shaping an integrated national program, an e-development strategy also clarifies the comparative advantages of the government, the private sector, civil society, and academia, and determines what roles each can best play in designing and implementing programs. In doing so, it helps build partnerships and coordinate work among these stakeholders. Finally, it provides an enabling policy environment for implementation and a healthy ecosystem for the information society.

E-development attempts to balance top-down direction with bottom-up initiative. The balance will vary depending on a country's size, the diversity of its regions, and its tradition of political and administrative centralization. But since ICT is a new dimension of development and a malleable general-purpose technology, the balance should favor mechanisms to empower grassroots organizations, promote local ownership and innovation. By ensuring

local fit and flexibility, it can meet the special needs of rural populations. It is at the local level that many of the links between elements of e-development must be sought and built—such as those between connectivity (telecenter development), content development, e-literacy, and the delivery of e-government services. E-development establishes a learning framework that supports pilots and bottom-up innovations while promoting shared learning and the scaling-up of successful projects that fit with the overall national strategy.

Engaging All Relevant Stakeholders

National ICT strategies typically describe plans and initiatives in lifeless and bureaucratic terms, devoid of actors and stakeholders. They make little mention of influence, coalitions, partnerships, stakeholder participation, social interactions or governance mechanisms. Nor discussed are conflicting interests and perspectives, power relations, and authorizing environments. Yet, these are the very factors that drive the success or failure of efforts to diffuse ICT (Wilson & Wong, 2006).

E-development provides a framework for thinking about the stakeholders of an information society ecosystem—an approach to help coordinate the work of stakeholders and map the connections and shape the relationships among diverse players. This framework helps tap the interdependencies among the actions and resources of different stakeholders over the medium term to realize a shared vision. It helps clarify the roles of the government, the private sector, civil society as well as academia and aid agencies with the aim of building partnerships among them.

Building Flexibility and Learning into Strategy

National ICT strategies are often conceived of as detailed, long-term investment plans, to be centrally financed, monitored, and controlled. Yet, ICT is a new and fast-changing technology, and diffusing it in diverse social and economic settings requires much contextual adaptation, experimentation, and learning. ICT4D programs need to be flexible—conceived and managed as a learning process, not a detailed blueprint plan.

Pursuing e-development through an inclusive shared vision and an emergent, holistic strategy en-

courages learning from pilots and sharing experience from successes and failures. It also points to the need to discover complementarities and synergies over time. This cannot be done only from the center, top down, or up front. Deliberate strategy, emphasizing focus and control, is complemented by emergent strategy, emphasizing learning and venturing (Mintzberg, Ahlstrand, & Lampel, 1998). An e-development strategy thus requires institutionalized learning, user-driven innovation, diverse feedback mechanisms, knowledge partnerships among stakeholders, and participatory monitoring and evaluation.

Designing and Implementing a Holistic Framework for E-Development

The value added of this e-development framework has been validated in a case study of e-Sri Lanka, a comprehensive e-development program already underway for several years with World Bank assistance. The experience of using an integrated e-development framework to guide the design and implementation of e-Sri Lanka and capture lessons of implementation is documented elsewhere (Hanna, 2007a & 2007b). Lessons from this experience can be summarized in six broad themes with few and brief illustrative examples.

E-development provides a framework for integrating ICT into development strategies by placing ICT interventions within a broader development context and making them meaningful to policy makers.³

In Sri Lanka the e-development framework reframed what were typically seen as isolated ICT applications, separate infrastructure investments, and distinct technical issues into a broader whole and an integral dimension of the country's development strategy.⁴ Considered holistically, these interventions can be linked to a broad, ICT-enabled development vision that keeps the focus of debate on development outcomes and the focus of program design on linking means to ends. Rather than assuming causality between each of the elements of e-development—such as telecommunications, content, e-literacy, and

e-government—and development outcomes, these enablers and applications are strategically combined to secure the intended development outcomes.

E-Sri Lanka suggests that e-development can appeal to broad and diverse groups of stakeholders, not just telecommunications specialists, members of the IT industry, or owners of single issues or applications. The e-development framework helped articulate an inclusive vision, linking interdependent actions to co-produce sectoral as well as cross-sectoral outcomes. It sought to identify the competitive advantages of Sri Lanka that ICT could best leverage and the development programs that ICT could enable. It aimed to link Sri Lanka's aspirations as a regional service hub to what ICT might offer as an enabler. Presenting e-Sri Lanka as an enabler of other sectors and programs, such as rural and entrepreneurial development, also helped gain the support of some key sectors and ministries.

Integration of ICT into the development strategy is not a one-way street or a one-time exercise. The vision of e-Sri Lanka had to evolve in line with changes in political leaders, policy makers, and top administrators. As implementation proceeded and awareness grew, the vision developed and the links became clearer to leaders and implementers alike. An early vision driven by the ICT industry evolved into one encompassing the use of ICT to transform the entire economy—a vision in which the national development strategy would drive the e-strategy.

An e-development framework allows opportunities for tapping potential synergies, building cross-sectoral links, and leveraging entry points.

In Sri Lanka, the integrated approach mapped and explored the links among key pillars of ICT for development, helping to move the program from opportunistic entry points toward mutually reinforcing ICT-enabled initiatives at the regional and national level. The process was iterative and cumulative. It started with the private sector's strong interest in promoting software exports, then moved to include the elements of the e-development framework that are key to co-producing the national development outcomes. The ICT Agency received a mandate encompassing the strategic management of all elements of

3. *Little theory or research has linked concepts of development studies to ICT-for-development research. See Heeks (2006b).*

4. *On the issue of reframing, see Wilson (2005).*

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e-development, allowing many interdependencies to be discovered and synergies tapped along the way. Yet, the e-development framework has compelled prioritization, selectivity, and sequencing.

E-development program leaders and managers need to understand stakeholders and engage them as enablers, partners, and implementers.

In both design and implementation the e-Sri Lanka program has promoted partnerships across almost all components of e-development—although not always successfully. The need to retain key constituencies as partners influenced the final scope of e-Sri Lanka and the balance of funding among its components. Contextual factors influenced partnerships of all kinds, including public-private partnerships. As was to be expected in a polarized society, building partnerships has tended to be difficult because it inevitably demands trust and reconciliation of interests. Programs and incentives had to be developed to pilot and nurture cross-sectoral partnerships, such as the partnership grant program under the e-society fund.

Short-term quick wins (for political sustainability) need to be balanced with long-term investments (for economic sustainability).

The newly established ICT agency of Sri Lanka faced both a backlog of demands from powerful ministries and resistance to establishing government-wide standards for ICT investments and architecture. The ICT Agency, with limited capacity and resources, sought to balance the demands for quick results against sustained progress on longer-term goals. This balance was continually swayed by political factors, the strength and stability of the authorizing environment, and the need of a young agency to establish legitimacy. At times the political pressures were too strong to ignore. And at times this led to mission creep. But thanks to the balanced e-development framework and the support of the World Bank and other partners, the political rationale did not predominate over the economic rationale guiding the program.

Centrally driven programs need to be complemented by bottom-up initiatives, innovative partnerships, and grassroots empowerment.

E-Sri Lanka used several mechanisms to institutionalize bottom-up initiatives, including the entrepreneur-

ial telecenter program, the e-society fund, and the ICT capacity-building and industry promotion fund. These mechanisms and the corresponding focus groups unleashed a flood of ideas and energy. They encouraged small enterprises, ICT associations, and nongovernmental and community-based organizations to engage with the ICT Agency in creating and integrating parts of the e-development program. They helped the central agency understand its most vulnerable clients—rural communities and the poor. They helped identify the impact of regulation and policy at the grassroots level. And they continue to address challenges: working toward the scalability and sustainability of local initiatives and capturing the tacit knowledge generated to guide adaptation of centrally funded programs.

The need for flexibility and adaptability in e-development demands an emphasis on social learning, user-driven innovation, and participatory monitoring and evaluation.

The e-Sri Lanka program shows the importance of the central ICT Agency's role as a learning and knowledge-sharing organization. Sri Lanka's ICT Agency encouraged innovation and "action learning" from the start through pilots, focus groups and innovation funds. Focus groups and other consultative forums provided the agency with substantive feedback from stakeholders and beneficiaries. Innovation funds aimed to promote innovation in the ICT industry, human resource development programs, partnerships and ICT-empowered community development. ■

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