

Microsoft Corporation  
Law and Corporate Affairs  
1401 Eye Street NW, Suite 500  
Washington, DC 20005

Tel. 202-263-5900  
Fax 202-263-5901 or 5902  
<http://www.microsoft.com/>



November 17, 2009

**Ex Parte**

Ms. Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

*Re: GN Docket Nos. 09-47, 09-51, and 09-137*

Dear Ms. Dortch:

On November 16, 2009, Ms. Diana Pallais and Mrs. Paula Boyd of Microsoft spoke with Ms. Jessica Strott on the FCC's Broadband Team. Ms. Pallais noted that driving digital inclusion and improving broadband adoption requires more than providing low cost PCs and is best done through public private partnerships. In her discussions about achieving digital inclusion, Ms. Pallais also shared lessons learnt and highlighted various case studies.

To provide additional information on the issue, I have attached the paper, [Evolving Public Private Partnerships: A New Model for E-Government and E-Citizens](#), which examines how the incentive alignment across multiple stakeholders can make multiparty public private partnerships ("PPPs") sustainable for all the stakeholders while contributing to the public good of empowering e-citizens to enable e-government. Also attached is the paper, [Wiring Up Technology-led Development in the Emerging World](#), which highlights the importance of embedding technology access initiatives in the context of other policy innovations.

Lastly, a brief discussion including results and lessons learned for Microsoft Partnerships for Technology Access program can be found on pages 32-34 of the Harvard University report, [The Role of the Information and Communication Technology Sector in Expanding Economic Opportunity](#). More information on the Microsoft Partnerships for Technology Access program can be found at <http://www.microsoft.com/industry/publicsector/pta/>. The site also includes video clips outlining Microsoft's approach to PPPs and the impact PPPs have had on seniors, civil servants, small businesses, e-government, and modernizing teacher training.

Pursuant to the Commission's rules, a copy of this letter is being filed electronically in the above-referenced dockets. Please let me know if you have any questions.

Sincerely,  
*/s/ Paula Boyd*  
Paula Boyd  
*Regulatory Counsel for Microsoft Corp.*

Attachments



# Evolving Public-Private Partnerships: A New Model for e-Government and e-Citizens

---

W. Lance Bennett and Philip N. Howard\*

Sponsored by  
Microsoft® Partnerships for Technology Access

\* W. Lance Bennett is professor of political science and Ruddick C. Lawrence Professor of Communication, and Philip N. Howard is assistant professor of communication at the University of Washington, Seattle. The authors acknowledge the helpful comments of Yuri Misnikov, ICT-for-Development Policy Advisor, UNDP Bratislava Regional Centre.

# Evolving Public-Private Partnerships: A New Model for e-Government and e-Citizens

**ABSTRACT:** The first waves of technology adopters in the developed nations are defining the world information economy and becoming e-citizens who increasingly interact with their governments online. Yet the digital divide continues to frustrate economic and political development in much of the rest of the world. This paper examines an approach aimed at digital inclusion through public-private partnerships that give citizens online access to government services and programs. The Microsoft Partnerships for Technology Access (PTA) initiative is developing a model for creating strategic technology alliances among different public and private stakeholders. The PTA model involves understanding the attributes of the second wave of technology adopters. The aim is to help target populations cross the digital divide, and connect more effectively with government and the economy when they do. This paper examines the model, assesses its assumptions, and compares it with earlier methods for stimulating technology access in both developed and less developed countries. The model offers strategies for coordinating the efforts of multiple public and private stakeholders with the aim of identifying citizen segments according to service readiness and getting large numbers across the digital divide to receive government services and participate more successfully in economies. In the process, successful government programs that are met by growing citizen demand may create a virtuous cycle of digital inclusion and government transformation via bureaucratic streamlining, more effective service delivery, and citizen approval. National cases are offered to illustrate the model.

## WHAT IS THE PROBLEM?

The global digital divide is among the most important impediments to economic and political development. People with easy access to computers and Internet services are better able to compete in today's information-rich economy, take advantage of government services online, and communicate with networks of family and friends. Yet most of the world's population does not possess or have access to personal computers, nor does it have a sufficiently compelling reason to prioritize a computer above more basic needs. From the perspective of those on the losing side of the digital divide, the benefits of fast, multimedia networks in today's communication-intensive world economy are accruing disproportionately to the more privileged segments. In the countries where computer and Internet use are maturing, many facets of economic, political, and cultural life are effectively facilitated by, and often dependent upon, information technologies.

The growth in e-government—along with the outlays of computing hardware, Internet access, and the skills needed for various kinds of citizen-government transactions—has also evolved most fully in the more developed nations. According to one rating of 198 nations and more than 1,700 government Web sites, the top nations offering citizens online government services are South Korea, Taiwan, Singapore, the United States, Canada, and Great Britain. Fully 71 percent of North American government sites offer online services. By comparison, citizens can conduct government business online from just 30 to 50 percent of the sites surveyed in Asia, the Middle East, South America, and Western Europe. The proportion of government sites offering online services tails off to less than 15 percent in Eastern Europe, Russia/Central Asia, and Africa.<sup>1</sup>

The first wave of e-government has been achieved mainly through conventional mechanisms such as consumer demand for technologies, corporate products that respond to that demand, and (often unilateral) government sponsorship of access programs, computer purchases, and various online public services. Evidence suggests that users of these online public services developed positive attitudes toward government (Tolbert & Mossberger, 2006; Welch, Hinnant, & Moon, 2005). However, many IT access programs in the first wave have proved both costly and uneven in terms of whether people actually make contact with government after crossing the digital divide. Different strategies based on more coordinated public-private models are required to address the challenges in nations where government resources and IT capacities are weak, and technology markets are poorly primed due to lack of disposable income and consumer credit. This paper examines the proposition that narrowing the digital divide in less developed countries is too formidable a task to leave to any one set of actors—whether in the private or the public sector. An emerging answer is collaboration through public-private partnerships.

---

<sup>1</sup>Daryl M. West, "Global E-Government, 2006," [www.insidepolitics.org](http://www.insidepolitics.org).

## THE PUBLIC-PRIVATE PARTNERSHIP: HOW DOES IT WORK?

A public-private partnership (PPP) involves creating multiple “stakeholders” operating within a consortium. In this process, the critical ingredient for sustainability and success is the realization of direct benefits for each of the stakeholders. Collaboration among public and private players thus depends on building strategic alignments around service delivery solutions that address different risks and incentives among the potential partners. This is often challenging to do, but when done properly, the benefits of the PPP should be widely recognized as win-wins. In the business world, a partnership isn’t worth the effort invested when there is no value to the shareholders. By the same token, in a public-private partnership, the government and the citizens who receive online services need to derive value as much as the private sector stakeholders. Whether led by a business partner, an NGO, or government itself, these programs require creative vision and commitment.

The Microsoft Partnerships for Technology Access (PTA) initiative is developing a model for creating strategic technology alliances. This paper examines the model, assesses its assumptions, and compares it with earlier methods for stimulating technology access in both developed and less developed countries. The basic aim of the PTA program is to put a computer purchase within reach of underserved population segments through a PPP. To make the computer *affordable*, the PTA initiatives are characteristically premised on opening new lines of credit that did not exist for the target segment. To make the computer *relevant*, PTA initiatives harness a government service that benefits a relevant citizen population. That service should be something that the government sponsor would like to use to transform its operations and the quality of its relationships with various constituents. The relevance of a PTA may also stem from a private sector innovation such as delivering personal computers with preinstalled local accounting packages to entrepreneurs, or providing doctors and other healthcare workers with computers preloaded with updated training and continuing education materials. If these connections work well, the computer may create a more empowered citizen who can derive greater benefit from a government service that she may have been unaware of, or underutilizing. These programs can also enable more effective public sector workers and services.

---

A public-private partnership (PPP) involves creating multiple “stakeholders” operating within a consortium. In this process, the critical ingredient for sustainability and success is the realization of direct benefits for each of the stakeholders. Collaboration among public and private players thus depends on building strategic alignments around service delivery solutions that address different risks and incentives among the potential partners. This is often challenging to do, but when done properly, the benefits of the PPP should be widely recognized as win-wins.

---

A larger goal of the PTA approach is to create a virtuous cycle so that successful programs motivate government agencies to continue to use technology as an agent of service delivery and innovation, and to help other agencies see the benefits of doing the same. Similarly, citizens who have satisfying interactions with government may generate new demands and civic practices, and spread word of these positive experiences along their social networks. Perhaps most importantly, this model addresses one of the most crucial questions about the information society: What do people do after they cross the digital divide? Simply getting computers into more homes or share points may mean enabling more people to send e-mail to friends, play games, search for information, or shop. These personal activities may offer added incentives for individuals to buy computers, but they are not the goal of PPP programs.

The added value of successful PPPs is to enable publics to interact with governments. Under the right conditions, the interactive potential of digital technologies may help transform specific e-government transactions into a broader possibility of e-governance by enabling citizens to help officials understand how public service systems can work more effectively. Achieving such transformative results requires visionary officials who see the value of involving citizens as partners in the process of making government more efficient and effective. Including citizens in this process creates an important cycle of feedback between government agencies and citizens—a positive cycle that is key to social and economic transformation.

Even at the level of e-government service delivery, PPPs require substantial investments, backed by vision and commitment among partners who see transformation of government effectiveness as an important objective. Only the synergy created by program success within government, multiplied by diffusion of interest and ICT access across society, can succeed in getting large numbers of people across the digital divide—and engaging with government when they get there. As a United Nations Development Programme (UNDP) report on public-private partnerships put it, the goals of e-government cannot involve simply deploying more technology, or programs will fail for government, business, and, ultimately, for citizens:

*E-government is the use of information and communications technologies (ICT) to transform government by making it more accessible to citizens, more effective, and more accountable. E-government by this definition does not mean putting more computers on the desks of government officials. Rather, it concerns the relationship between government officials and citizens.*

**It includes:**

*providing greater access to government information by making laws, draft laws, regulations, forms, and economic or scientific data collected by the government accessible online;*

*promoting civic engagement by enabling the public to interact more conveniently with government officials, such as by obtaining permits or filing required documents electronically;*

*increasing government accountability by making its operations more transparent, thereby reducing the opportunities for corruption to infiltrate; and*

*supporting development goals by lessening the time and expense small businesses encounter in their dealings with government and by providing rural and traditionally underserved communities with information and communications capabilities.*

*E-government is not a phenomenon limited to the richer countries. Indeed, some of the most innovative uses of the Internet in governance are appearing in the developing world, as ICTs are increasingly being used to streamline government and connect it more closely with the people it is intended to serve. E-government does not simply materialize because a government buys more computers and puts up a Web site. Nor is it sufficient merely to automate administrative practices from the paper world. Rather, e-government is a process of transforming government; as such, it requires planning, political will, and a sustained dedication of resources. Neither the purchase of more advanced technology nor the automation of complex procedures can bring about greater effectiveness in government or increased rates of civic participation.<sup>2</sup>*

In thinking about how such transformations can happen, it is useful to begin by understanding who the next wave of information technology adopters are, and how PPPs differ from earlier models that brought the first wave of e-government to the more developed nations.

---

<sup>2</sup> UNDP report: "Public-Private Partnerships in and for Information Society and E-Governance." Based on workshop on the role of PPPs in advancing e-government services held at the WSIS Tunis meeting November 2005. Linnar Viik, principal contributor.

## E-GOVERNMENT: THE NEXT WAVE

The first wave of technology adoption has crested, with predictions of 1 billion computer users and half again more machines by 2010. This means that the information society in many nations has entered maturity, as evidenced by the transformation of work, information flows, global economic integration, and government-citizen interactions. Yet, as noted above, these tectonic changes have occurred primarily in the more developed nations.

Where will the next wave of computers go? What strategies for technology distribution, skills training, support, and access will have the greatest impact on economies, societies, and effective government? Looking at world income distributions offers a first step in thinking about these questions. Some 4 billion people earn less than \$1,500 a year, and most of these individuals have priorities other than computer access. While this group of people might benefit from donations of computers, shared and subsidized computing, and mobile technology, they are unlikely to have enough disposable income—or credit—to purchase a computer, afford connectivity, or develop skills that might enable them to join an online citizenry. This does not mean ignoring the bottom of the pyramid. New strategies for digital inclusion are clearly in play (Prahalad & Hammond, 2002; Prahalad & Hammond, 2004; Prahalad, 2006). However, the population most readily available for robust online government service delivery is in the middle of the economic pyramid, where substantial populations are free enough from daily subsistence issues and have enough financial stability to engage in credit transactions if markets are opened to them. More importantly, these populations are often reachable with the IT access infrastructure and skills training needed to make their computer connection satisfying.

The crucial growth challenge for e-government—and the IT industry—is how to make information technology accessible to people in the middle of the economic pyramid. In many countries this represents a sizable population with a modest income, for whom computer ownership is blocked by their inability to offer the traditional forms of collateral needed for credit. Public-private partnerships can enable a growing number of people in this group to use non-traditional forms of collateral to obtain the credit to purchase a computer. For example, a PPP in Pakistan made a fresh line of credit available to 6 million life insurance policyholders and used the policy itself as collateral. The ability to find creative methods to finance and support computing technology can open large national populations, local IT industries, and multinational IT markets to e-government services and support. Beyond financing and government commitment, effective PPP solutions must address populations of potential adopters so they see the personal benefits of participating, and even use their personal networks to motivate others to follow.

## ESTIMATING THE MIDDLE OF THE PC PYRAMID

One useful way of assessing the actual and potential distribution of key IT resources is to translate world income distributions into computer diffusion. Experts estimate that about 12 percent of the global population has easy access to computers at home or work. For example, Algeria is home to some 3.5 million people using some 290,000 computers. On a per capita basis, this means that there are about 8 computers for every 100 people. In some cases these computers really will be “personal” computers—used by one person, often the owner. In other cases the computers will be owned by families or for use at commercial Internet access points, which makes the computer more of a collective resource than a personal one. It is probably safe to infer that most people who

---

The crucial growth challenge for e-government—and the IT industry—is how to make information technology accessible to people in the middle of the economic pyramid. In many countries this represents a sizable population with a modest income, for whom computer ownership is blocked by their inability to offer the traditional forms of collateral needed for credit. Public-private partnerships can enable a growing number of people in this group to use non-traditional forms of collateral to obtain the credit to purchase a computer.

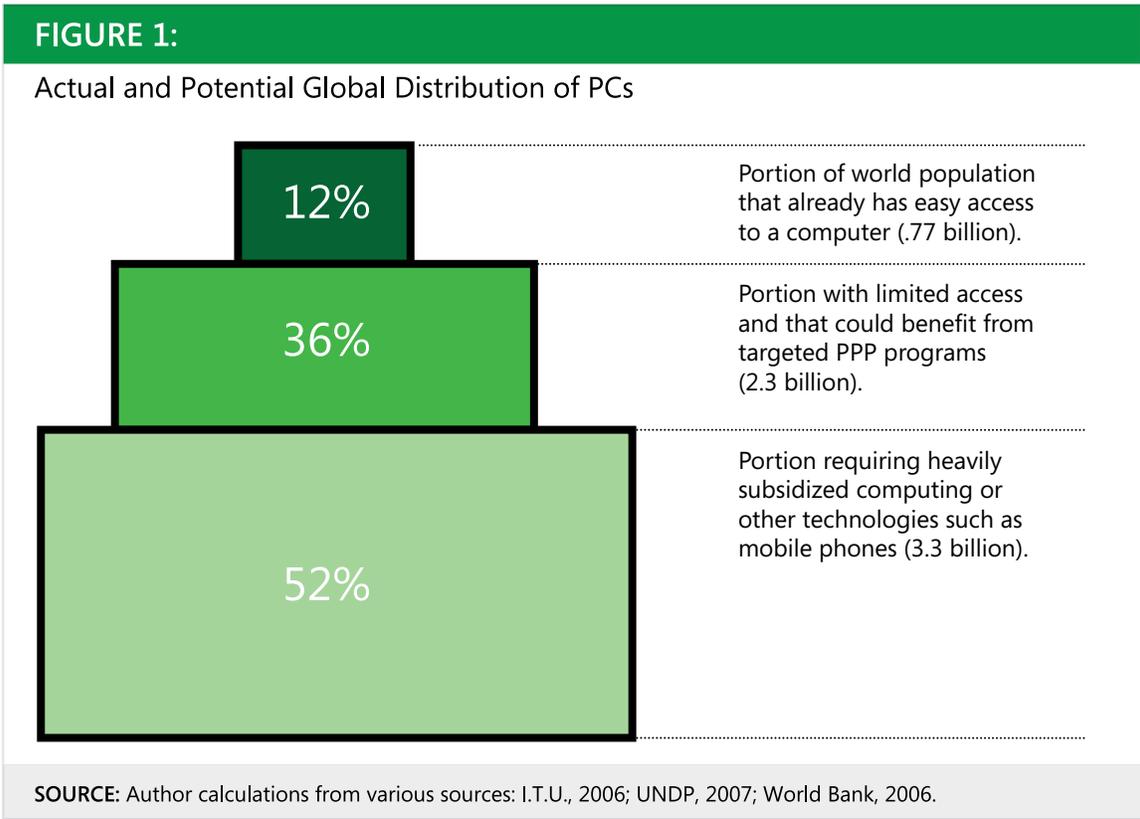
---

already have access to personal computers belong to the higher income brackets in each country. In contrast, using conservative estimates of poverty around the world,<sup>3</sup> about 52 percent of the global population is unlikely to be able to own a personal computer in the near future, and may have limited online participation unless IT equipment and access are donated or heavily subsidized. However, this leaves a significant number of people, some 2.3

billion, who have enough income to enable owning a personal computer one day, and some may even have current but limited access through mobile technology or shared computers. This portion of the global population—about 36 percent—we call the middle of the pyramid (MOP). Figure 1 estimates the middle of the pyramid at roughly two billion citizens. Filtering for age, education, national access infrastructure, and government IT priorities, the realistic near-term addressable population is probably 1 billion or less. Estimates of the addressable population will clearly vary depending on the filtering variables deemed relevant. The Partnerships for Technology Access model takes much of the guesswork and risk out of estimating addressable populations by developing targeted strategies for particular national populations that fall within the middle of the pyramid. More important than raw numbers, then, are questions of a) how much of national populations b) can be reached in what period of time c) through what new models for ownership and access?

---

<sup>3</sup> The definition of poverty varies from country to country. In some countries, poverty is defined as the percentage of the population living on an income of less than \$1 a day; in other countries poverty income level is \$2 a day. In developed countries, the most meaningful definition of poverty comes from estimating the percentage of the population living below the nationally defined poverty line. For many developing countries, the most meaningful definition of poverty comes from estimating the percentage of the population living on an income that is less than half the median income. Unfortunately not all countries report these kinds of data consistently. The conservative assumption is to use the largest poverty level among the types of data reported for each country.



### CHANGING THE MODEL OF INFORMATION TECHNOLOGY DIFFUSION

If even a fraction of the MOP population is to participate in the information society, the models for inclusion will have to be different from the ones that produced the first wave of e-citizens in more developed nations. Although the potential next wave of technology adopters is large in absolute terms, the prospects for bringing many of them online are dim if left to under-resourced governments or weak consumer markets with little access to credit. Even where government resources exist, there may be little gain from efforts to distribute technology to large general populations. Not only is it impossible to communicate in ways that reach and motivate everyone in the MOP population, but the sheer cost can be staggering. In addition, when governments simply try to raise levels of IT across the board in society, there is no guarantee that it will be used productively either for economic or political development gain. The most sensible model is to create policy-based programs that offer incentives for government and citizens, along with risk sharing among IT companies, service providers, and financing agencies. This approach may reduce the near-term size of the addressable portion of the MOP population in many nations, but it enhances the potential for successful e-government applications for the distributed technologies. Program success, in turn, may lead to scale shifts created through virtuous cycles of citizen demand and government capacity. Such successes among target populations are more likely to have compounded network effects across country populations. As noted below, even more developed nations that adopted early mass distribution and government subsidy models for getting personal computers into society are now finding those programs too costly and, in some cases, ineffective. This suggests that the next wave of new computer users in both more- and less-developed countries may be created through PPPs.

## Early Approaches

Until recently, the most common model for promoting computer access for populations beyond the more affluent early adopters has been some form of government subsidy of computer purchases—often without the aid of private sector partners—or adoption and use motivated by targeted e-government services. For example, European nations have experimented with various programs, including tax rebates for individuals and corporations, subsidized purchasing programs, corporate workforce plans, student loan programs, and direct national subsidies for equipment, service, and training.

In Sweden, for example, labor unions argued that workers should have more access to personal computing, and government responded with a plan that allowed companies to deduct the cost of personal computers from salary over a three-year period, and waive the VAT tax (25 percent) in the bargain. This has resulted in nearly a million computers being sold under the plan (including upgrades of earlier purchases) making Sweden the EU leader in home computer use at roughly 90 percent. Italy launched a guaranteed student loan program called *c@ppuccino*, with payments amounting to roughly the price of a coffee a day spread over several years. As a result, Italy is quickly catching up to other EU nations in student computer ownership. Despite boosting general computer use among national populations, the general subsidy programs may be less successful along a number of measures than more targeted PPP approaches. Indeed, several areas of concern have surfaced, suggesting considerations that may be even more serious in less developed nations:

- The lack of strategic targeting of programs results in uneven distribution in different population segments. For example, Hungary shows Internet usage among 87 percent of students and just 3 percent of retirees, compared to 96 percent of students and 45 percent of retirees in Sweden.
- Substantial public subsidies drawn from tax revenues have created revenue strains even in wealthy nations. Successful programs in the UK and The Netherlands were cut back due to government revenue shortfalls, resulting in slowing digital inclusion rates and turbulence in national personal computer markets.
- Programs that are not specifically linked to e-government services have missed opportunities to help citizens use their computing power to link with government, resulting in underused e-government services.
- The lack of specific online service inducements for specific populations also makes advertising and information targeting of computer program audiences more difficult.<sup>4</sup>

Thus, even in more developed nations, the lessons seem to point to public-private partnerships developed around segment-specific programs. The PPP model better shares the costs, risks, and rewards in promoting IT distribution. The targeted e-government programs make it easier to help different population segments see clear benefits in purchasing a computer, while bringing citizens into closer contact with government in the bargain.

---

<sup>4</sup> See "At Home with IT: How Governments Make the Information Society Happen," A report from the Economist Intelligence Unit sponsored by Intel and Microsoft, 2006.

## A CLOSER LOOK AT THE MODEL

The essential elements of the Partnerships for Technology Access (PTA) model involve: a) harnessing existing government services to create a catalyst for demand or b) creating new government services that c) address citizen needs and demands through d) partnerships between government, technology companies, access providers, and finance organizations, among others, in order to e) coordinate the flow of computers, e-services, and skills in targeted, under-served segments of society. This model entails addressing a cluster of challenges, from poverty to piracy, faced by the different players who must be brought together in a PPP consortium.

The key to the model is for a lead member (perhaps a software company, a chip manufacturer, or an equipment maker) to broker a strategic alliance among a group of core players, which generally include particular government ministries or agencies, finance entities such as banks or development aid organizations, and service providers, which are typically national telecoms. When the core players are in place, other important pieces of the partnership can be assembled, such as skills training for those who buy the computers and for the government workers who deliver the services. These complex partnerships require several steps on the part of the organizations operating as brokers in the PPP—organizations that can range from corporate partners such as Microsoft and Intel, or IGOs such as the United Nations Development Programme.

### Three steps toward a successful PPP:

- **Assess national readiness for PPPs.** Some nations are clearly more poised than others for developing sustainable PPPs. Conditions such as political stability, IT infrastructure, and existing levels of Internet access can be used to identify nations that are more or less ready. Such assessments can also identify areas in need of greater attention and more creative solutions in nations deemed less ready.
- **Analyze and address the motivations and risks of the core partners.** For example, governments may be concerned about program efficiency and cost, lack of IT expertise, or resistance to bureaucratic transformation. Finance agencies or banks may be motivated by developing new credit markets, but concerned about risks of securing loans. Telecoms may be interested in diversifying beyond basic phone services, but concerned about revenues and delivery capabilities if Internet service is offered to large numbers at reduced rates.
- **Develop strategic e-government “beacon” scenarios.** These e-government scenarios help government define and prioritize areas for service delivery, while enabling other partners to find well-defined roles that address their risk/gain calculus. Scenarios also make for clearer communication with targeted citizen segments so they can see a personal computer as a means of getting valuable services. For example, putting government purchasing online may streamline an often-congested government process, motivating small businesses to purchase a computer and seek training necessary to use government online purchasing. The idea of a beacon is to draw multiple stakeholders, and attract attention and interest beyond the target population.

## ASSESSING NATIONAL READINESS FOR PPPs

The PTA model identifies several clusters of indicators that may be helpful for assessing whether nations are poised for more successful e-government partnerships:

**Political Efficacy.** The first cluster is termed Political Efficacy, and includes measures of whether the government itself is relatively stable, and provides enough social support to its population to enable substantial numbers to rise above poverty and health issues, and live without high levels of violence.

**Digital Readiness.** Another cluster of indicators involves the Digital Readiness of the society, measured in terms of the numbers of existing Internet users, service provider capacity, and financing capacity on the part of banks and consumers to make computer purchases feasible.

**Government Technology Support.** The third indicator cluster is Government Technology Support, which includes government investment in digital infrastructure, training for support personnel, and policy priorities for introducing technology in schools and other public institutions.

---

The essential elements of the Partnerships for Technology Access (PTA) model involve: **a)** harnessing existing government services to create a catalyst for demand or **b)** creating new government services that **c)** address citizen needs and demands through **d)** partnerships between government, technology companies, access providers, and finance organizations, among others, in order to **e)** coordinate the flow of computers, e-services, and skills in targeted, under-served segments of society. This model entails addressing a cluster of challenges, from poverty to piracy, faced by the different players who must be brought together in a PPP consortium.

---

Nations that seem marginal on some of these dimensions may still be able to make e-government happen in particular areas, but the partnership strategies may be more challenging to develop and implement. Wherever a particular nation may be located along these dimensions, any effective partnership must be based on two additional sets of considerations: the risks and opportunities available to the different stakeholders, and the shaping of a policy delivery “beacon” scenario that addresses those risks and offers clear benefits. These two steps in the PTA model clearly must evolve in tandem.

## ANALYZE AND ADDRESS THE MOTIVATIONS AND RISKS OF THE CORE PARTNERS

Each player in a PPP has a separate set of concerns based on its own goals and cost benefit calculus. Bringing partners together into a consortium in which each delivers its piece of the scenario requires a solution that reduces risks and creates clear potential benefits. The advantage of developing strategic service delivery “beacon” scenarios is that they can be shaped in ways that provide clarity about objectives, contributions, and benefits for the partners. Thus, the next step toward thinking about what kind of a beacon is best suited to a group of partners is to understand their respective sources of pain and gain. Here are some illustrations that may typify different partners in a PPP:

- **Telcos** face a core challenge to their orthodox business model, which is based on charging for duration and distance of calls. The advance of Voice over Internet Protocols (VoIP) puts stresses on these business models because distance and duration are rendered negligible as units of value. Thus, telcos may be motivated to diversify by finding ways to support more computer connectivity capacity and to develop an online subscriber base to hedge against obsolescence and future competition.
- **Banks** need to expand their customer base, but are often stalled in the MOP by lack of credit databases and traditional forms of collateral. Databases developed through PPPs help creditors better assess risk and enable lower interest rate assignment. PPPs often develop creative forms of collateral (such as exclusion from a valued service for non-payment), and generate credit records and entry points for new participants in the formal national economy. In addition, banks may benefit from electronic packages for accounting and payment records, increasing profit margins and streamlining services.
- **Governments** need innovation in service delivery. Many agencies are clogged with paper, patronage, or corruption. Even when technology is purchased, the skills required to use it effectively may not exist. PPPs offer a way for governments to deliver promises of transparency and transformation because they get the support and training they need from the private sector.
- **Citizens** often have frustrating experiences managing their entitlements and other business with government. Receiving an affordable computer and the training to use it makes it easier to conduct business more efficiently, leverage entitlements more effectively and with greater accountability vis-à-vis the government, and to participate in public conversations about common concerns. In addition, many people may enter into formal credit and economic relationships through these programs.
- **NGOs** working in the areas of health, education, or senior services know about citizen frustrations with government, but are often unable to change policies or procedures due to lack of resources. These NGOs may contract with the PPP to help develop appropriate beacon scenarios and even deliver computer training based on their knowledge of target populations.
- **Private sector companies**—local software vendors, computer manufacturers, and multinational IT firms—may suffer slow growth in many countries due to problems with priming MOP market segments. Many companies, including Microsoft, also face problems with piracy, sometimes driven by sales of equipment containing open source software that is converted to pirated programs after sale. PPPs offer competitive positions in emerging markets for both local and multinational IT companies.

As noted above, these pain and gain assessments are best refined in concert with the development of strategic and focused service delivery scenarios that serve as beacons to draw partners together, providing clarity for each partner about risks, rewards, and respective contributions.

## DEVELOPING STRATEGIC “BEACON” SCENARIOS

At the heart of each PTA initiative is a government sponsor with a vested interest in achieving a public policy success such as improving workforce competitiveness or increasing access to healthcare information for senior citizens. The PTA initiative has developed a set of beacon scenarios that illustrate how online policy delivery can become targeted to particular populations, with the dual aim of developing successful e-government programs and drawing motivated publics and partners to them. The beacon areas in the program, as defined by PTA documents made available to the authors, are:

**SENIORS**—Overcoming the obstacles to technology skills and access so that seniors can have the option to re-engage in work, experience new learning opportunities, access health and pension benefits, maintain independent living, and connect with extended family and friends.

**WORKFORCE COMPETITIVENESS**—Leveraging government policies for skills upgrading that make affordable, computer-based technology available to citizens and improve life-long employment opportunities.

**NEW WORLD OF GOVERNMENT**—Raising technology skills and access levels for civil servants and citizens to amplify the benefits of e-government and technology infrastructure improvements.

**PUBLIC HEALTH**—Meeting public health policy goals by enabling digital skills and access for public health professionals and small clinics, and improving citizen access to health information and services.

**ENTREPRENEURSHIP**—Enabling entrepreneurs to use technology to streamline their relationships with government agencies or pursue new revenue streams. Such programs can make it easier to enter the formal economy, help boost competitiveness, and level the playing field for new entrepreneurs.

**EDUCATION**—Working with teachers, educational institutions, and ministries/departments of education to equip education constituents with technology skills and access that help to elevate the quality and impact of education initiatives and investments.

Illustrations of a selection of these beacon scenarios—entrepreneurship, new world of government, workforce competitiveness, senior citizen policies, and education—are drawn below from Microsoft internal documents to show how they work. Accompanying cases describe how different countries have adapted them to their particular policy and partnership situations.

BEACON SCENARIOS:
Education
Entrepreneurs
New World of Government
Public Health
Seniors
Workforce Competitiveness

## The Entrepreneurship Beacon

Small business is the mainstay of economies worldwide. In developing countries, the share of the GDP that comes from the informal economy can be as high as 45 percent—but governments struggle to harness and support entrepreneurs when so many of them operate in the informal economy or draw upon limited business know-how. The UNCTAD *Information Economy Report 2005*<sup>5</sup> indicates that lack of computers in business often inhibits the ability to find information, carry out financial transactions, set up deals, automate supply-chain management, and find and nurture customers. The report also points out added obstacles represented by limited numbers of service providers in some developing countries and lack of computer market knowledge among entrepreneurs. The cost of connectivity often creates the additional barrier of affordability. PPPs that enable computer ownership, affordable connectivity, and skills training can lead to higher productivity and profitability for small businesses, more business transparency, and leveling the playing field for formal economy entrepreneurs and foreign investors. Online services may also promote greater compliance with safety and quality regulatory standards and more uniform tax payment.

**Case Study:** *Entrepreneurship and Government Procurement in Chile.* Many South American governments are making the transition to e-government in stages. Most start by putting commonly used public information up on Web sites as an alternative to information access by phone or office. For detailed and complex processes, governments often look for ways to replace the old, paper-intensive processes completely. In those cases, it becomes important to motivate citizens to make the leap to online services. *ChileCompra*, the e-government procurement portal in Chile, funnels all government procurement contracts through its online marketplace.<sup>6</sup> In the long term, the government foresees a more transparent process that is fairer, more efficient, and accessible to more bidders. In the short term, however, businesses without computers must scurry to adopt technology or be left out. To encourage healthy competition and economic growth, ChileCompra wants more bidders, not fewer. Working with PTA, ChileCompra has formed a PPP called *Mi Pyme Avanza (My Small Business Grows)* to enable small businesses to buy their first computers.<sup>7</sup> Chile's Ministry of Finance has stepped in as a financial partner offering 36-month financing for a computer with linkage to the government portal, Internet connectivity, and useful business software. Private partners Microsoft, Intel, Olidata, Memory, and Chilean retailers are participating. In the first six months of its operation, *Mi Pyme Avanza* surpassed its yearly target of selling 10,000 personal computers to small businesses, empowering them to register and bid in 2007. With more *ChileCompra* subscribers, the public may get more than just efficient bidding for public contracts. As businesses adopt computers more broadly, they can gradually upgrade to electronic business systems that help them manage and grow their businesses.

---

<sup>5</sup> A report by the United Nations Conference on Trade and Development (UNCTAD)  
<http://www.unctad.org/Templates/Webflyer.asp?intItemID=1397&docID=6479>

<sup>6</sup> [https://www.chilecompra.cl/portal/information/information\\_chilecompra.asp](https://www.chilecompra.cl/portal/information/information_chilecompra.asp)

<sup>7</sup> <http://www.chilecompra.cl/mipymeavanza>

## **New World of Government Beacon**

The transition to e-government services requires digital literacy in the civil servant ranks. Adoption of technology in routine processes requires process re-engineering which can, in the short term, be disruptive unless it is accompanied by readiness campaigns for the participating personnel. Targeted training and support are often called for in tandem with technology deployments. This opens great opportunities for professional growth for the civil service, but the trajectory's success is related to how holistic the support is. On-the-job training goes a long way, but it is fair to recognize the daunting cognitive challenges implied in a dual shift: evolve processes that essentially imply a job shift while simultaneously crossing the digital divide. Given the status quo propensity that tends to characterize civil services, and given the size of civil service ranks (commonly comprising 10 percent of the population or more) in emerging markets, it is understandable why governments would undertake these transformations cautiously. But a more holistic adoption and deployment of the technology makes much more sense because the benefits far outweigh the risks.

The new world of government beacon is premised on this promise—technology adoption in the government is optimized when it is accompanied by digital literacy campaigns that empower civil servants with a sense of digital efficacy, while helping them and their families acquire the first computer for their own use. Across the world, PTA has orchestrated civil servant employee-purchase plans that leverage the civil service payroll as the mechanism to deliver a line of credit that puts the computer purchase within reach, and offers them targeted training to optimize the device.

## Workforce Competitiveness Beacon

Governmental forecasts for future workforce requirements regularly focus on digital skills. The U.S. Office of Technology Policy issued a report entitled "America's New Deficit: The Shortage of Information Technology Workers," which stated in part:

*Information technologies are the most important enabling technologies in the economy today. They affect every sector and industry in the United States in terms of digitally based products, services, and production, and work processes. Thus, severe shortages of workers who can apply and use technology could undermine U.S. innovation, productivity, and competitiveness in world markets."*<sup>8</sup>

Similar concerns, along with government policies to promote digital skills in the workforce, can be found all over the world. Examples include the following:

- The "Software Technology Parks of India" initiative to attract and train workers and employers
- Malaysia's "multimedia super-corridor" initiative to attract industry and promote workforce development
- The Ministry of Communication and ICT of Mauritius' initiative to train 400,000 citizens up to the "ICT standard" over four years

As governments invest in promoting IT, and local businesses adopt technology to retool their internal processes and become more productive, many citizens miss the opportunity to board this train. In the long term, these inhabitants not only can inhibit country development but can also increase unemployment costs. A computer, and the adequate training to use it, can become the perfect tool to develop workforce competitiveness. While the locations and players for workforce initiatives vary, the common strategy is to leverage government unemployment and training policies with public-private partnerships, making affordable, computer-based technology and training available to citizens who would otherwise sit on the sidelines of the information economy. For governments, these initiatives may help employment rates, economic growth, foreign investment, and improved e-government services.

**Case Study: Internet Cafés in Botswana.** Botswana faces worrying unemployment in its youthful population. The government is investing heavily in education to build skills for long-term prospects, but even the educated suffer. Among the jobless are some 5,000 educated youths with digital computing skills. The government has an entrepreneurial plan to increase employment for small businesses while boosting long-term work opportunities for many. Botswana's Ministry of IT, Ministry of Youth, and Ministry of Trade are collaborating on a plan developed in collaboration with PTA: turnkey Internet cafés for Botswana. Like all PTA solutions, the cyber cafes offer opportunity rather than handout: willing buyers would purchase the solutions on credit offered through the PPP. What does it take to open a cyber café? Small business owners need a plan, a business location, and the right technology. With personal computers, seating, desks, peripherals like printers and fax machines, and Internet connections, a cyber café can be up and running in weeks. The PTA deal, under development now, would offer those elements in an affordable package. A local system builder and a micro-financing institution are expected to join the partnership to complete the PPP.

<sup>8</sup> <http://www.technology.gov/reports/itsw/itsw.pdf>

With more than 10,000 unemployed youth looking to the government for support, the cyber café solution promises more than just a business opportunity for trained youth. Job seekers can broaden searches due to better access to communications at the cyber cafés. There, they can also learn new skills. Over time, Botswana's government hopes to increase sustainable work opportunities, reduce unemployment and associated unrest, and diversify the economy through computer-aided businesses of all sorts. Cyber cafés, built up through the hard work of Botswana citizens, can help support Botswana's evolution to an information society.

## The Seniors Beacon

As the proportion of senior citizens in countries rises, governments are becoming increasingly concerned about providing for them. Whether in areas of health, social benefits, or social connectedness, many governments are exploring the uses of technology to deliver services to their senior populations. However, computer penetration rates and online experience among seniors are low. Without a larger footprint of technology access, governments will not be able to reach seniors with electronic services.

Helping seniors cross the digital divide takes special focus. Seniors who have not used digital technologies previously at work tend to face a steep learning curve. They often feel inhibited from learning beginning digital skills in fast-paced or self-taught ways. The skills for selecting, installing, connecting, and maintaining a personal computer may seem overwhelming. For seniors who want or need to return to work, lack of digital skills can limit their chances of finding a well-paying job.

PPP initiatives aim at making affordable, computer-based technology and training available to senior citizens to re-open work opportunities, facilitate learning, access pension and health benefits, maintain independent living, and connect with grandchildren, extended family, and friends. For governments, these initiatives provide an opportunity to decrease unemployment, decrease dependency on welfare, improve service to an important set of constituents, and increase the efficiency of government programs.

**Case Study:** *Pension Benefits in Argentina.* Economic upheavals in Argentina over the last decade have eroded financial reserves, leaving many senior citizens dependent on modest government pensions for support. ANSES, Argentina's federal agency responsible for government retirement and pensions, has been exploring ways to improve the quality of life for these citizens through e-government services, and to improve the administration and distribution of their pensions. Electronic delivery of the pension benefits and its derivative transactions would go a long way toward reducing the length of transactions and reinforcing the shift toward citizen-centric service design and delivery. But the challenge, as in all cases where technology adoption is marginal, is how to answer this question: if you build it, how will they come? To find the answer, the PPP called "Conectate" addresses the primary inhibitor for computer acquisition—affordability challenges—through a highly competitive line of credit that includes a 36-month line of credit with no interest—a remarkable offer in a country where the most affordable line of credit is 27 percent a year. But the pensioners are offered much more than a competitive line of credit. They derive a direct benefit in the training and empowerment benefits to help them discover government benefits that pertain to them, or transactional opportunities to simplify their relationship with their government. The program has been greatly successful, selling more than 2,000 personal computers a week during the first two months.

The PPP also helps ANSES save money, while transforming service delivery in ways that promise to improve quality of life for its constituents.<sup>9</sup>

---

<sup>9</sup> <http://www.anses.gov.ar/>

## The Education Beacon

Education is one of the top public policy priorities for governments worldwide. Education policies aim to prepare young people for the future through standards for teacher readiness, curricula design, and learning opportunities for rural and urban students. Governments tend to support personal computing access for students and schools, seeing digital skills as essential in preparing students to contribute to dynamic and competitive economies.

PTA helps policy-makers achieve education goals by enabling affordable access to computer-based learning for students and teachers both in and beyond the classroom. Computer solutions for students and teachers provide interactive learning opportunities and improved access to information, helping prepare young citizens for dynamic information economy jobs. PTA initiatives can help governments:

- Provide affordable access to technology and student-specific training and tools.
- Improve data capture for ongoing pedagogical improvements.
- Improve lifetime employment opportunities and increase earning potential.
- Bridge the gap between urban and rural education through distance learning and Internet access.
- Help train and certify teachers.

**Case Study: Education in Guatemala.** The teacher training process in Guatemala was both inefficient and expensive. One of the most important issues was the deployment of teacher training. The old model was a geographically centralized one, meaning that the teacher had to travel to the capital, Guatemala City, to complete mandatory training. The cost and time of travel was absorbed by the teacher, resulting in discontent across the teachers union.

With both government and teachers motivated to seek a better solution, the PTA program, *Abriendo Futuros* (*Opening Futures*), developed an online training option that enabled teachers to take their training at home, on their own computer, at their own pace and without much interruption of their family time. The program also reduced the friction with the teachers union, as training and certification issues were improved to the satisfaction of most teachers. The government linked online training and continuing certification to the teacher career ladder, so there were strong incentives for teachers to actually take the training. Another gain for the Ministry of Education involved reducing the travel expenses for thousands of teachers. Even though the government subsidized 80 percent of the cost of the teachers' computers, along with the software and content costs, the deployment of the digital training solution proved substantially cheaper than the old approach. Students also benefited as teacher absenteeism declined.

The success of such a sweeping program is improved by setting realistic expectations and goals. Ministry of Education officials understood that a change in culture had to happen and computer literacy had to be acquired before the new model could replace most existing training. The goal was to have the computer at home first, and train the teachers in basic use. For most of the public teachers in Guatemala this was the first contact with computer technology. After computer literacy is attained, simple training courses can begin. The goal was to have one third of all training done online by the end of 2008, and to have 80 percent of all training online by the end of 2010. The foundation is set as nearly 50,000 teachers purchased the *Abriendo Futuros* computer in the first two months of the initiative.

## CONCLUSION: A VIRTUOUS CYCLE?

Digital disenfranchisement is the information-age equivalent of a broken physical infrastructure (roads, ports, telecommunications, and electricity networks) that impedes economic development. Whose responsibility is it to address this gap? Traditionally, infrastructure development and maintenance has been the domain of the government. But there has been a worldwide decline in government spending even in the most conventional infrastructure projects (Akitoby, Hemming & Schwartz, 2007). With a downward trend in infrastructure investment, it is unlikely that the government alone will have the wherewithal to address the infrastructure gap related to the digital divide. Moreover, even among developed nations, unilateral government digital inclusion programs have met with uneven success, created revenues strains, and left to chance whether citizens would find government online after crossing the digital divide.

The formation of PPPs around beacon programs offers a promising model to share risks, reduce costs, and bring citizens into contact with government in more effective and satisfying ways. These partnerships join technology companies, financial institutions, governments, and other players in developing services that people need, while creating public awareness and demand for the skills and technology necessary to use them. PPPs also make it possible for people to get access to the credit they need to purchase machines, software, and services. The PTA partnership has technology companies acting less as traditional marketing and sales operations, and more as matchmakers and brokers and engineers of digital public service delivery systems that work in different political, social, and economic settings. In the process, governments that may be lagging in technology infrastructure and IT skills can transform their technology capacities and their ways of interacting with citizens, perhaps even moving from e-government service delivery to more responsive forms of e-governance.

Improving the lives of citizens and spurring economic development are bold aspirations, particularly in light of evidence that early national efforts at improving e-governance by opening channels for citizen feedback often failed to deliver meaningful experiences to citizens. In the developed democracies, for example, many early enthusiasts for e-governance may have been too optimistic about the spontaneous emergence of online participatory publics, with forums, instant polls, rich contact between citizens and officials, and the full realization of the interactive features of Web 2.0. The reality has been somewhat different. Whether government leaders aspire for greater civic participation, or aim more at developing effective government public service delivery relations with citizens, PPPs designed around particular beacon scenarios may create better foundations for drawing citizens to the process. Whatever the government model in play, it is hard to imagine a promising future without more creative digital communication applications. Yet, each nation presents its own set of challenges and opportunities, as Jane Fountain argued in *Building the Virtual State*:

*The Internet is a revolutionary lever of institutional change. Yet inside the machinery of the state, amid a web of institutional structures that offer perverse incentives for innovation and efficiency gains, the action of this lever is complex, indirect, and mediated significantly by institutional and organizational arrangements (Fountain, 2001, p. 193).*

**The PTA programs discussed above suggest that there are ways forward or around the “perverse incentives” of inertia.**

Perhaps the creative design of service delivery programs that become models for others marks the emergence of a better path toward e-governance than pursued in the first wave of technology adoption. Early efforts to connect citizens to government, particularly in democratic contexts, often produced disappointing results. In more realistic terms, e-governance may involve creating virtuous cycles of broader, more systematic online relations between governments and citizens. The conclusion of a WSIS/UNDP workshop on PPPs and e-government indicates that the first generation attempts at directly inducing citizen input as a defining element of e-governance have generally fallen by the wayside, only to be replaced by what some idealists initially regarded as less exciting citizen-government service transactions online. Yet, the report of this group suggests that it may be through the larger transformative capacities of targeted e-transaction programs that a more meaningful transformation of government-citizen relations across different types of government will occur. In this view, the historic stages of e-governance development go like this:

1. **Information:** Government portals, content management systems, one-way information about programs and procedures.
2. **Interaction:** Forums, citizen input to representatives (these generally encountered problems with credibility because such links are hard to make meaningful and empowering).
3. **Transactions:** Service delivery, streamlining bureaucratic processes in ways that build transparency and trust, creating synergy and emulation in other areas of government.
4. **Transformation:** Enough credibility established at the transactional level to invite higher-level government reassessment based on public approval and demand. E-government creates links among various stakeholders (business, science, academia, NGOs) enabling broader and more meaningful citizen input leading to online civic engagement.<sup>10</sup>

---

<sup>10</sup> UNDP report: “Public-Private Partnerships in and for Information Society and E-Governance.” Based on workshop on the role of PPPs in advancing e-Government services held at the WSIS Tunis meeting November 2005. Linnar Viik, principal contributor.

Through the process of creating strategic e-government scenarios built around PPPs, various kinds of success can be shared by the partners. Success in these terms can mean changing the ways government works and creating more satisfied citizens. Success also means building out technology capacities to enable developing nations to compete more effectively in the world economy. For local and multinational companies in the technology sector, success can mean expanding markets and applications for technology because they have learned new ways to do business. Stimulated by these and other outcomes, PPPs may create virtuous cycles as successful government programs generate models and demands for others. When such programs become broadly available across diverse social and economic sectors, citizens, businesses, and governments may begin to interact beyond particular services to create new applications and generate useful feedback. Nations may then harness the power of networks necessary to move from e-government as simple service transactions to e-governance as networked business, government, and citizen interactions connect nations more successfully to the global economy.

## REFERENCES

- Akitoby, B., Hemming, R., & Schwartz, G. (2007). *Public Investment and Private Partnerships*. Washington, DC: International Monetary Fund.
- Coleman, S. (2007). E-Democracy: The History and Future of an Idea. In C. A. Robin Mansell, Danny Quah, Roger Silverstone (Ed.), *The Oxford Handbook of Information and Communication Technologies* (pp. 362-382). Oxford, UK: Oxford University Press.
- Fountain, J. E. (2001). *Building the Virtual State: Information Technology and Institutional Change*. Washington, D.C.: Brookings Institution Press.
- Henisz, W., Zelner, B., & Guillen, M. (2005). The Worldwide Diffusion of Market-Oriented Infrastructure Reform, 1977-1999. *American Sociological Review*, 70(6), 871-897.
- Howard, P. N. (2007). Testing the Leap-Frog Hypothesis: Assessing the Impact of Extant Infrastructure and Telecommunication Policy on the Global Digital Divide. *Information, Communication & Society*, 10(2), 133-157.
- I.T.U. (2006). International Telecommunications Union Database (Publication). Retrieved March 2006, from International Telecommunications Union: [www.itu.org](http://www.itu.org).
- Lee, C. K., & Strang, D. (2006). The International Diffusion of Public-Sector Downsizing: Network Emulation and Theory Driven Learning. *International Organization*, 60, 883-909.
- Macintosh, A., White, A., & Renton, A. (2005). *From the Top Down: An Evaluation of E-Democracy Activities Initiated by Councils and Government*. London: Office of the Deputy Prime Minister.
- Office of Technology Policy. (1997). *America's New Deficit: The Shortage of Information Technology Workers*. Washington, DC: U.S. Department of Commerce.
- Prahalad, C. K., & Hammond, A. (2002). Serving the World's Poor, Profitably. *Harvard Business Review*, 80(9).
- Prahalad, C. K., & Hammond, A. (2004). Selling to the Poor. *Foreign Policy*.
- Tolbert, C., & Mossberger, K. (2006). The Effects of E-Government on Trust and Confidence in Government. *Public Administration Review*, 66(3), 354-369.

## REFERENCES

UNCTAD. (2005). Information Economy Report. Geneva: United Nations Council on Trade and Development.

UNDP. (2007). Human Development Report 2007 (Publication. Retrieved June, from UNDP: <http://hdr.undp.org/>).

Welch, E., Hinnant, C., & Moon, J. (2005). Linking Citizen Satisfaction with E-Government with Trust in Government. *Journal of Public Administration Research and Theory*, 15(3), 371-391.

West, D. M. (2005). *Digital Government: Technology and Public Sector Performance*. Princeton: Princeton University Press.

West, D. M. (2006). Global E-Government, 2006. [www.insidepolitics.org](http://www.insidepolitics.org)

West, D. M. (2006). *Global E-Government* Providence, RI: Center for Public Policy, Brown University.

World Bank. (2006). World Bank Development Indicators (Publication. Retrieved March, 2006, from World Bank: [www.worldbank.com](http://www.worldbank.com)).

**Partnerships for Technology Access (PTA)** is an innovative global initiative that makes technology solutions affordable and relevant for underserved citizens and small business owners through public-private partnerships. PTA draws on the expertise of governments, technology partners, and financial institutions to craft technology solutions that meet citizen needs, invigorate markets, and help achieve public policy goals.

**Dr. Diana Pallais** is the Worldwide Senior Director for the Partnerships for Technology Access (PTA) initiative at Microsoft Corporation. Dr. Pallais leads the new business and engagement model that PTA represents, where innovation happens through public-private partnerships (PPPs), access is delivered affordably through financing, and technology is made relevant by embedding it in a public service that benefits the citizen constituency in question. In essence, PTA's mission is to structure sustainable collaboration across diverse stakeholders who will derive a discrete benefit from their participation in the PPP consortium. At the same time the stakeholders in the PPPs are also expected to commit to a greater good that benefits a target citizen constituency through innovation in the delivery of a public service that is important to them.

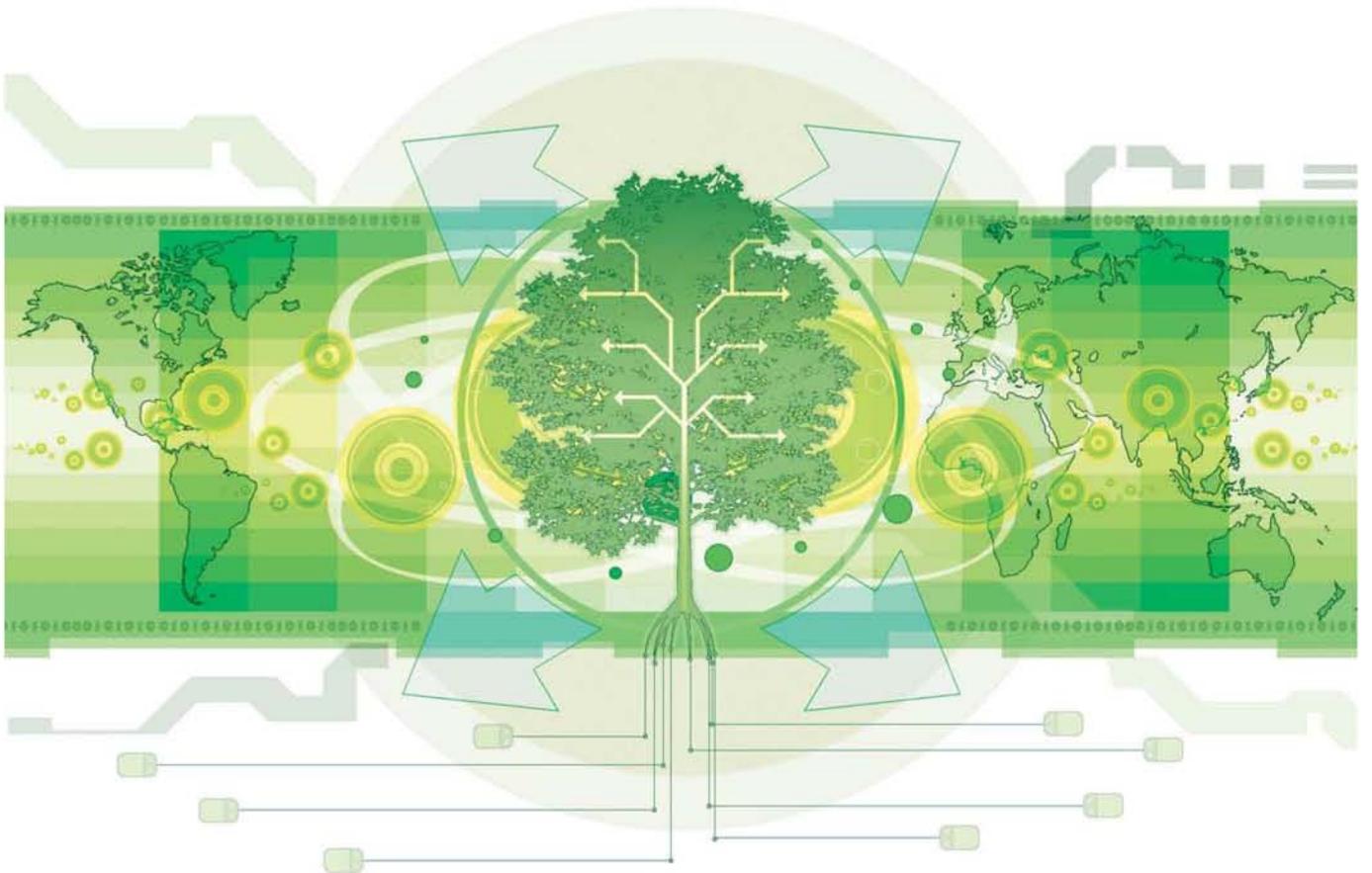
Dr. Pallais' background includes academia, diplomacy, and business. As an academic, Dr. Pallais taught and researched topics related to international political economy and the role of institutions in economic development. As a diplomat, Dr. Pallais served as a negotiator and delegate in her native Nicaragua in the efforts to promote regional economic integration in Central America. At Microsoft, Dr. Pallais has served in various capacities all related to the public sector and the intersection of technology and governance.

The information contained in this document represents the current view of Microsoft Corporation on the issues discussed as of the date of publication. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information presented after the date of publication.

© 2008 Microsoft Corporation. All rights reserved. This white paper is for informational purposes only. MICROSOFT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS DOCUMENT. Microsoft is a trademark of the Microsoft group of companies. All other trademarks are property of their respective owners.

# Wiring up Technology-led development in the emerging world

A report from the Economist Intelligence Unit



Sponsored by

**Microsoft®**



## Preface

*Wiring up: technology-led development in the emerging world* is an Economist Intelligence Unit white paper sponsored by Microsoft and AMD. The Economist Intelligence Unit bears sole responsibility for this report.

Our editorial team conducted the interviews and wrote the report. The findings and views expressed in this report do not necessarily reflect the views of the sponsors.

The research for this paper was conducted in July 2007. The author of the report was Kim Thomas, and the editor was Matthew Shinkman. Mike Kenny was responsible for design and layout. Our thanks are due to all interviewees for their time and insights.



## Wiring up

Technology-led development in the emerging world

# Executive summary

Governments in the emerging world are increasingly turning to technology to support their economic and social development goals, including things like strengthening competitiveness, improving quality of life, supporting disenfranchised population segments and ultimately boosting economic growth.

While in the past the focus of technology access programmes was largely on narrowing the “digital divide”—in other words boosting personal computer (PC) penetration—a new generation of programmes is taking a significantly different approach, which governments believe will make them both more effective and more cost-efficient.

These new initiatives differ from their first-generation counterparts in four important ways.

- Rather than focusing exclusively or primarily on getting large numbers of PCs into the hands of local populations, these new programmes take a more holistic approach, considering information technology (IT) as a means to a specific public policy end. This in turn involves delivering a wider basket of goods to end-users, combining not just a fuller suite of hardware, software and connectivity tools, but also services, support and access to credit. Even further, the best-run programmes aim to capture the much bigger second-order benefits of such programmes by creating a cadre of “e-citizens” qualified and eager to make use of new technologies.
- More broadly, governments are doing a better job of ensuring that today’s technology access initiatives are driven by a clear policy objective. Rather than

starting with the narrowing premise of addressing a digital divide, forward-thinking governments are looking at technology access as a tool for narrowing other “divides” in society, including those between generations, regions, socio-economic classes, and the underemployed.

- This has made it more important for public technology access programmes to include a tightly-focused end-user group. While some older programmes faced problems with lack of focus (which in turn made it difficult to sustain the commitment of either public or private-sector partners), today’s successful programmes are specifically targeting segments of the population which, when empowered with technology, have the greatest potential to stimulate development and growth. These can include teachers, students, healthcare professionals and underemployed citizens, among others.
- In turn, these changing objectives have made it easier to build robust and complementary public-private partnerships (PPPs) around technology access. PPPs minimise risk by spreading it across the consortium partners, and take advantage of the unique skills and abilities of the public and private sectors. Most importantly, a well-structured PPP—which includes well-defined targets that offer a clear return on investment for all parties—can deliver a far greater outcome than any of the individual consortium members would be able to achieve on their own, according to experts.



This paper examines a number of success stories from emerging markets around the world, and sets out several factors, listed below, that policymakers and consortium members should keep in mind when structuring their programmes.

- **Get the technology right:** different circumstances and on-the-ground conditions require different types of technology—PCs, kiosks, mobile phones or other delivery mechanisms should be chosen with these parameters in mind.
- **Engage stakeholders and demonstrate a clear return:** projects need to engage stakeholders, both the target groups and programme member organisations, by articulating clear benefits to all members of the consortium and demonstrating a clear

return on investment—be it social (in the case of non-governmental organisations—NGOs—and government agencies), economic (in the case of the government) or financial (in the interest of all partners).

- **Think big:** The first-order benefits of technology access initiatives—getting young people into jobs, linking senior citizens with far-away families, providing teachers with new educational skills—are extremely important. However, there is also a bigger second-order benefit to be had for societies at large. By offering underserved citizens access to technology, connectivity, and a relevant range of services, governments can begin to create a cadre of “e-citizens” who begin naturally to use technology not just in interaction with government, but also in creating new economic and social links with broader society.



## Wiring up

Technology-led development in the emerging world

# Using technology to boost economic development

Emerging markets are booming. Growth in the emerging world has been several percentage points faster than global growth since 2001, and on average almost five percentage points faster than OECD growth in the same period. Nonetheless, the gap in income per capita between the emerging world and the developed world remains massive, and governments in emerging markets are under pressure to stimulate even faster growth in an effort to catch up with living standards in the most developed nations. To do this, governments in Latin America, Africa, Asia and eastern Europe are increasingly looking to harness the power of information and communications technology (ICT).

Some years ago, the emphasis in these efforts was primarily on increasing technology penetration, access and use—narrowing the “digital divide.” And with some substantial justification: a range of studies from organisations such as the European Commission, World Bank, and OECD has established a well-documented link between technology adoption and increased productivity, which in turn drives faster economic growth. A 2004 study by the Economist Intelligence Unit<sup>1</sup>, for example, showed that once a minimum threshold of information and communications technology (ICT) development is reached, countries with high penetration levels for fixed telephone lines, mobile phones, PCs and the Internet achieved significantly higher real GDP growth

than those with lower penetration rates. Moreover, the benefits seem to go beyond the economic. “It is clear that there is a pretty strong correlation between access to information and civil liberties, democracy and economic prosperity—all the things that would be regarded as benchmarks of a healthy society”, says Stephen Minton, an analyst at IDC.

In Egypt, for example, where several years ago household PC penetration was only about two in 100, the government launched a “PC for every home” initiative, in which it partnered with technology companies to offer PCs to home users. A similar programme in Romania offered subsidies to citizens under 25 years old to purchase home computers.

However, these and other similar programmes have run into difficulties, with take-up and usage falling below expected levels and little discernable economic impact having been achieved. Alex Wong, director of the global education initiative at the World Economic Forum (WEF), has seen many examples: “You hear too many stories of a big technology company contributing computers into a country’s education system, and a year later they are sitting unused as paperweights”. Even worse, in many cases programmes failed even to get off the ground. “The failure rate for these programmes—which the media can’t really capture—was tremendous, which was very discouraging for those of us involved,” says one senior practitioner.

1. Economist Intelligence Unit, 2004, *Reaping the benefits of ICT: Europe’s productivity challenge*, sponsored by Microsoft.



## The new generation of technology access initiatives

This has led governments around the emerging world to conduct a wholesale rethink of how best to achieve their economic development goals through the use of technology. As a result, a new generation of technology access programmes is now emerging, which differ from the first wave of initiatives in four key ways.

### Creating an ecosystem

Experience from earlier programmes, alongside the results of a number of academic studies, suggests that on its own, increased PC penetration is insufficient to support specific policy goals, let alone to stimulate growth.

When the WEF set up its IT Access for Everyone (ITAFE) programme, it decided to learn from the success and failures of digital access projects already in place. What it found, says Simon Mulcahy, head of Information Technology Industries at the WEF, is that projects will succeed only if they offer the right combination of services on the demand side, and the right combination of hardware, software and connectivity on the supply side: “For any project to really succeed you had to have this whole ecosystem of things working like a greenhouse. If you want a plant to live in this world, you need sunlight, water and soil, and if you remove one of those ingredients it doesn’t work. And it was the same thing with the majority of these projects: if they failed or succeeded it was on the basis of them having or not having a complete set of these critical factors.”

In the case of technology access, these factors go beyond the core hardware, software and connectivity—including things like access to credit, technology support, services, training and quality assurance.

The “ecosystem” goes even broader than that, however: our 2004 report on ICT and productivity found that without a strong education system and a healthy business environment that included opportunities for businesses to access venture capital, businesses were not able fully to harness the benefits of technology. ICT development, then, cannot take place in a vacuum: it has to be part of a wider programme of economic and social change, such as literacy initiatives, liberalisation of import laws and investment in skills.

### Turning the premise on its head

First-generation initiatives revealed an often-fatal flaw in the fundamental premise. Starting with a singular focus on pushing technology out into the population resulted in the development of programmes to which none of the partnering organisations beyond the mainstream IT firms (governments, banks, and non-government organisations) were truly committed in the long term. Metrics focusing on number of PCs shipped pleased technology companies, but provided little incentive for governments to take an interest in longer-term use, let alone measurable economic impact.

Practitioners in the private sector are now realising that the premise behind these programmes needs to be turned on its head—and that the ultimate value they provide needs to be measured around a public service enhancement, rather than considering technology adoption as an end unto itself. New-generation initiatives now start with an economic policy objective, and look specifically at the economic “divides” that exist in a society—generational, gender-based, regional, health-based, educational, and the like—and aim to narrow one of those divides,



## Wiring up

Technology-led development in the emerging world

rather than focusing on “the digital divide” itself. Embedding these initiatives within a broader policy context ensures that all parties—including the non-government sector—have a meaningful reason to commit resources and leadership to the project. This is a crucial difference, and a source of competitive advantages for those initiatives that are working best. As one leading non-governmental executive puts it, “the nations that are getting the policy aspects right are moving faster.”

## Engaging the private and NGO sectors

This more fundamental mandate also means that governments need help. “Economic development is too important and too formidable to attempt unilaterally,” says Diana Pallais, Director of Microsoft’s *Partnerships for Technology Access* initiative. “For that reason actors on both sides of the public-private divide are realising the merits of collaboration through public-private partnerships (PPP).”

The typical PPP includes one or more government ministries or agencies, banks or development aid organisations to provide financing, technology companies to provide software, and service providers such as national telecommunications companies and IT training providers.

There are several advantages to such an approach. The government can harness the resources of the technology companies to provide training and support, both in business and technology skills, to the target audience. By including banks and financial services providers in the equation, it is possible to provide loans for the PCs to make them affordable for users.

Another advantage of PPPs is that they minimise risk, says Lance Bennett, professor of political science and communication at the University of Washington: “You shift the complexity in the PPP model to the construction of the partnership itself and the creation of the incentives of the different players. Once you

find something that looks like a winning scenario from the standpoint of different players, you are much more likely to get a stable result than if [government] were simply going it alone and looking for unilateral solutions.” This also improves the prospects for long-term buy-in of both the public and private sectors, which is particularly crucial given the time-lag on measurable returns in initiatives involving big up-front capital expenditure.

The trick with this approach is that the different players often come into the programme with aims and objectives that are different and even conflicting. Governments, for example, will aim to keep product costs down and seek to provide broad exposure to IT and the development of IT skills. Technology companies, on the other hand, will of course be looking to maximise their profits and push their own products. These partnerships must thus be based around carefully defined benefits that are articulated in terms that accrue directly to each consortium member’s mission. As one senior business developer from the technology sector points out: “It is important to know the public policy goals and the pains and aspirations of every partner in the consortium.”

The biggest benefit, though, is that when carried out successfully, a PPP delivers far more than any of the individual participants could have delivered on their own, as Hoda Baraka, first deputy to the minister of communications and information technology of Egypt, acknowledges. “The public-private-international organisations-NGO relationship is central to the success and implementation of the initiative,” she says of the Egypt Educational Initiative (EEI) programme. The private sector brought not just finance and technical knowledge, but valuable industry know-how: “We train supervisors and school heads not only on ICT skills, but the use of ICT in school management, class management, problem solving and decision making. We are implementing tools that encourage critical and analytical thinking, and encouraging competition. This is where the



private sector has experience and expertise.”

Another clear example of the synergies to be gained from PPPs is around the provision of credit. In many cases, technology-based initiatives target individuals who may have difficulty affording the kit. Banks can get involved to provide credit, but there’s often the problem that these banks would otherwise be hesitant to lend to vulnerable segments of the population—those for which risk ratings are incomplete, collateral tends to be insufficient or non-standard, and simple identification can be a logistical challenge. Here governments can offer guarantees, lend moral backing, or offer up their own information on targeted end-users, to make the banks more comfortable. Equally non-government players can help both governments and technology companies get more direct access to disadvantaged population segments, with which they work on a daily basis.

### Taking a targeted approach

While getting broader in scope, new-generation technology access initiatives are also getting narrower in end-user focus. This is partly a function of the realities on the ground: in most of the world’s poorer countries PC penetration is extremely low, and Internet access virtually non-existent. When nine out of ten citizens lack proper access to technology, it becomes impractical to tackle the entire problem at once.

A narrow target end-user is also the natural extension of putting the economic policy objective first—the focus on narrowing a national “divide” automatically provides a clear target population with clear developmental needs.

Most importantly, though, experience from both developed and emerging market failures shows that PC adoption programmes that are too diffuse and open-ended can have sustainability problems. These programmes often run into political difficulties, as wide-ranging subsidies can get expensive and prove

politically difficult to sustain. At the same time, the lack of a specific target group and narrow policy objective can lead to operational difficulties—making it difficult to define metrics and measure success, for example. The lack of a narrow “raison d’etre” also makes it hard to sustain authorities’ interest over multiple budget cycles.

For these reasons, the new generation of programmes using technology to spur development in the world’s emerging markets are now focusing on specific target groups, such as the education community, rural populations, the elderly or small businesses.

In addition to bolstering a programme’s chances of long-term survival, the primary short-term advantage of targeting such groups is that it makes it easier for programme managers to really understand the target constituency and come up with solutions which are truly relevant to the end-user—in turn making it much more likely that uptake and longer-term usage will be high.

“[Focusing on a specific population segment] makes the realistic distribution quite a bit smaller, but it makes the utility of the technology higher, and it focuses the government end of things,” says Dr Bennett. “You may end up producing smaller numbers of actual computers in a given country, but that is where the virtuous cycle comes in—the hope being that if you generate enough of these ‘beacons’, you have people out there who are telling their friends and family members about their life online.”

This virtuous cycle leads to a derivative, but crucial benefit for governments: with a critical mass of users able to access the Internet, governments have a strong incentive to build out the range of e-government solutions that they offer. These services can improve administrative efficiency and in turn free up resources and money for other programmes to boost economic growth.



## Wiring up

Technology-led development in the emerging world

## Bridging the divides

Current initiatives in the emerging world are focusing on several population segments that are likely to not just benefit themselves, but also are well-positioned to unlock broader economic benefit through their networks with other population segments. These include (among others) students, senior citizens, rural citizens, unemployed workers, women and civil servants. Below we examine programmes in place today that address these segments.

### Targeting the education system: contributing to a knowledge economy

There are clear benefits to targeting schools with technology adoption programmes. Children tend to be more receptive to new technology than adults, and the opportunity to acquire ICT skills when young will serve them well in the job market later. Targeted use of ICT in the classroom can also make for more effective teaching, providing pupils with access to a wide range of educational materials and the ability to research information outside the local environment.

One prominent example of a public-private partnership set up to provide greater access to technology in the education system is the Jordan Education Initiative (JEI). The JEI, which has been running since 2003, was launched under the aegis of the World Economic Forum (WEF) as a partnership between several interested parties: the Jordanian government; global technology companies such as Microsoft, Hewlett-Packard and Cisco; local Jordanian businesses; and non-governmental organisations (NGOs). Between them, private-sector partners have contributed more than US\$25m to the programme.

The objective of the JEI was not just to improve the quality of education offered in schools, but to build the capacity of the local technology industry and to

develop a model that could be used in other countries (the Indian state of Rajasthan has since launched a similar initiative). Jordan was an ideal location for such a project, says JEI's executive director, Haif Banayan, because it has high literacy rates and a young population, but it has been experiencing a brain drain. With few natural resources, the country needed to put a new emphasis on the acquisition of skills: "The aim was to enhance the critical thinking skills of the Jordanian people, to start developing research skills and entrepreneurship—these are all skills that we felt were important to building a knowledge economy in addition to the standard modes of education".

In general, though, programmes focused on pushing computers into schools run the risk of falling into the same trap as other insufficiently-targeted programmes: they can lose relevance over time. Laura Mellow, chief operating officer of NGO Inveneo, describes the organisation's experience of visiting villages in Uganda: "As we visited different schools, we saw computers that had been stacked up in the corner because they were not sustainable."

New-generation practitioners are thus also focusing on the wider educational ecosystem in order to ensure this sustainability. The government of Guatemala, for example, covers 80% of the cost of the hardware and software in a programme which provides low-paid public school teachers access to PCs, technology training on demand and a modern digital curriculum. The financing partner in the programme has committed to provide interest-free loans for the estimated 60,000 teachers who will be involved in the initiative. The initiative offers PCs pre-loaded with professional development material, enabling teachers to conduct training locally which previously



had required time-consuming and expensive travel to the capital city to complete. For the government this represents a cost savings, but it's also a big investment in morale for the country's teachers.

The Egyptian Education Initiative (EEI), launched in 2006, has developed ICT projects that focus—among others—on education system staff and adult learners. The multi-partner programme, supported by technology companies such as Microsoft, IBM, Intel, Cisco and Oracle, has trained some 6,000 university administrative staff and faculty in ICT skills and trained adult students in the use of advanced ICT tools. The country's universities have been equipped with student labs, enabling students to access electronic content.

## Small businesses: kick-starting the economy

The emerging market economic policies that tend to find their way into the headlines most are those which impact on the mega-firms in these economies—restructuring, privatisation, and mergers and acquisitions. However, in virtually all emerging market economies—and in fact around the world—small and medium enterprises (SMEs) represent at least 95% of total private firms, and account for the substantial majority of employment. This means that governments in emerging markets are increasingly looking to find ways to stimulate the development of these firms in order to boost employment, encourage entrepreneurship, and spur faster economic growth. Given the imperatives that these small and dispersed firms face, technology can play a particularly important role in supporting policy objectives in this area.

Small and medium-sized enterprises (SMEs) stand to gain a great deal from digital access, because it enables them to automate backend processes and to connect with suppliers and customers. "ICT is highly relevant to small businesses," says Sarbuland Khan, executive co-ordinator of the UN's Global Alliance for ICT and Development (GAID), an organisation that

### Sample technology access initiatives

Initiative	Description
Jordan Education Initiative	A PPP programme to introduce computers and ICT facilities to 100 Jordanian schools. Has been running since 2003, and as a result of its initial success has been copied elsewhere.
Botswana Partnership for Technology Access project	A programme to encourage Botswana's 25,000 civil servants to buy PCs. Two key elements were providing a useful network of services and devising a loan scheme that would make the PCs affordable.
Common Services Centre project in India	A project by the Indian government to put 100,000 Internet kiosks in community centres throughout India, mostly funded by the private sector. The aim is to give citizens access to both e-government and microfinance services. Trained assistants will be on hand to help users.
Mi PYME Avanza (My Small Business Grows) (Chile)	An initiative providing small and medium enterprises (SMEs) in Chile access to affordable and targeted PCs, internet access, training, and preferential credit terms. The immediate appeal of this initiative is the ability to participate in online tenders with <i>ChileCompra</i> , the government of Chile's e-procurement portal through which 100% of the government's purchases are transacted.
PC for every home (Egypt)	A PPP between the Egyptian government, Microsoft, local PC manufacturers, eLabs (an organisation representing local software providers) and national banks to offer affordable PCs to home users. The initiative has resulted in PCs going to 300,000 homes.

is bringing together organisations such as the World Bank and the International Telecommunication Union (ITU) to improve broadband penetration in Africa. "If they can take advantage of basic ICT, they can advance their business, eliminate middle men and get better access to market information. They can produce more effectively at lower cost, and they can sell at a better price. The issue there is how to reduce the cost and improve the speed at which they get the information."

Affordability will always be an issue, but SME-focused PPPs also need to establish relevance for small businesses, many of whom may have established



## Wiring up

Technology-led development in the emerging world

### Senior Citizens: bridging the generational divide

In 2002, the financial crisis in Argentina left senior citizens in a particularly vulnerable position, and the government began to look for ways to specifically target this population segment with new services which would improve their quality of life and help them find ways to better support themselves financially. As part of this effort, the Administración Nacional de la Seguridad Social (ANSES, the social security provider) began to dabble in finding ways to transform its service delivery through technology. However, it soon became clear that ANSES would have to address the “access” gap—low PC penetration—among pensioners. It made little sense to invest further in e-government unless the target constituency—the 4.3 million pensioners—would be able to access the new services in volume. This was the genesis of the *PC Abuelos* (“Grandparent PC”) PPP, which focused on bringing technology and connectivity to this traditionally underserved segment as a way to provide them government services more efficiently, enhance their ability to stay in contact with family members, allow them access to the world of information on the Internet, and even build new skills.

ANSES project managers running the PC Abuelos initiative, which launched in July 2007, took the important step of seeking to understand the characteristics and preferences of their target segment before developing their offering, and what

they found was encouraging. Some 10% of the population of Argentina is over 65, so the target group provided plenty of scope for economies of scale. At the same time, more than 50% of the senior citizens are located in the interior of the country, so the delivery of the PC to the user’s home as part of the offering provides real value for the end-user segment. Perhaps most importantly, Argentina benefits from a very high literacy rate (above 97%, according to the latest census figures), meaning most seniors would be relatively easy to train on using unfamiliar technologies. The solid market research conducted in advance of the project was one of its key success factors, according to Amado Boudou, the general secretary of ANSES.

The social security agency realised that it would need to bring in outside expertise and resources, and chose to partner with Microsoft and Banco Nación (BNA), one of the country’s largest banks, in a public-private partnership (PPP). The first challenge the consortium tackled was the development of a relevant and effective product. Studies conducted by the consortium suggested that seniors were particularly interested in using computers to stay in better touch with family. The solution is thus centred around a high-quality PC, pre-loaded with software targeted to senior citizen use, a broadband connection, and delivery and installation options. For those senior citizens most unfamiliar with technology, extra digital literacy training was offered as well.

The consortium faced several key

challenges in encouraging uptake of the offer. First, given that most of the country’s pensioners live on around 1,000 pesos (US\$320) per month, affordability was a constraint to overcome. Because of the size of the customer base, BNA was able to offer loan terms well below the prevailing rate.

Mr Boudou explains: “Forty months’ financing and a zero percent rate is very attractive for our target end-users—consumer credit for pensioners in Argentina is generally either inaccessible or only available at very high rates.” The bank already managed ANSES’ monthly pension payment distribution, so the consortium was able to take monthly payments for the PC solution out of these payments directly, minimising hassle for the end-users and mitigating credit risk for the consortium.

The programme has thrown up some huge technical hurdles. “The whole back office process that we implemented to carry out this programme was a big challenge,” says Mr Boudou. “PC manufacturers had to integrate their systems with Banco Nación’s branches in order to automate sales and deliveries, and we at ANSES had to link our databases with those of BNA so that credit approval could be granted online. This was a major operation.”

The results have so far been impressive. “Without an advertising campaign—only having distributed leaflets in pensioners’ centres and BNA branches—and only seven weeks into the programme, we have distributed 9,000 PCs, and we are receiving around 2,000 orders per week,” says Mr Boudou.

“off-line” business models. Mohamed Azzam of eLabs says, “Awareness is the key success factor in this operation. I don’t think cost is the only problem. People have been working for years without automation. Things are changing: they need the computer to communicate with clients, they need

the computer to manage the files, the records, and to manage and control the inventory, production plans and so on.”

In Vietnam the government—via the Ministry of Post, Telecom, and IT—partnered with Intel, a host of local service providers, and Vietcom Bank (a state-



## Wiring up

### Technology-led development in the emerging world

held commercial bank and the country's leading payments provider) to build a programme supporting the development of interlinkages and skillbuilding among the country's SMEs. The "Smart PC Smart Business" initiative offered a choice of hardware and software solutions along with broadband connection, and the bank partner in the consortium offered users one year interest-free financing.

Chile's government set up an electronic portal, called ChileCompra, to centralise its procurement process at all government levels in 1999. The portal initiative was begun with the central objectives of cutting red tape and equalizing the bidding process.

By 2006, the portal incorporated the buying power of nearly 900 government agencies seeking bids for work amounting to over US\$3bn. Bids per tender rose substantially and average procurement costs for most agencies fell. By 2007, 224,000 companies have registered as suppliers, and they are now bidding on 35,000 contracts a month.

However, programme leaders realised that not all companies were benefiting from the new ChileCompra offering—those without a computer and broadband connection have no way of accessing the service. The government calculated that some 80,000 small businesses remained unregistered, and for these companies, ChileCompra hadn't really made much difference—worse, it had put these small firms at a significant disadvantage with respect to getting work from the government. With an aim of recruiting 10,000 small businesses by the end of 2007, the government set up the "Mi PYME Avanza" (My Small Business Grows) initiative in public-private partnership with a range of domestic and global technology providers. The initiative provides small businesses with an affordability package for a PC and connectivity, along with credit at preferential rates. The key issue for programme developers was how to make the solution relevant to the end-user. "The problem that entrepreneurs have isn't 'I need a PC,' it's 'How do I get to know my customers better?

How do I make fewer errors on an invoice? How do I handle my payroll?'" says Roni Lieberman, of Memory Software, a private partner in the Mi PYME Avanza initiative. The answer was in part to pre-load the PCs with business-relevant software (a small business accounting package, for example) and to provide end-users with training up front, given generally low levels of digital literacy among the target user group.

All of the thought put in at the beginning seems to have paid off: as of late 2007, the initiative was looking likely to triple its original target of 10,000 small businesses signed up.

### Rural communities: ensuring development opportunity for all

The emerging markets also suffer from extreme income inequality, and the impact that such inequality has on both social harmony and the ability to grow the economy rapidly. Many of these countries are also disproportionately rural, with a very high overlap between the rural and poor populations. These populations also tend to exhibit higher unemployment rates than those in urban areas. Governments are thus looking at ways of encouraging rural development in order to boost employment in distant rural areas and thus bridge socio-economic and geographical divides in their economies. Here too, technology can be a key enabler of these policy objectives.

Rural communities, though, provide a unique set of challenges for technology access initiatives. They are the least likely group to be connected to grid electricity; they are unlikely to be connected to the Internet backbone; they tend to have high rates of illiteracy; and they may speak languages for which no software is yet available.

The temptation is to say that such communities are not yet ready to use advanced technology, and that there is no point attempting to introduce PCs in areas where the local conditions make them difficult to install and harder to use. Yet such communities have



## Wiring up

Technology-led development in the emerging world

### Adapting to the conditions

The rural population arguably throws up the most complex logistical and technical challenges for governments and consortia looking to introduce technology in support of growth. A number of smaller players in the field have found innovative ways around some of the most intractable barriers, which can provide interesting lessons for the larger PPPs when constructing new programmes in challenging environments:

- The rural population generally lives under more demanding physical conditions, which can make introducing delicate technological devices tough. Inveneo, a US-based non-profit social enterprise, has developed a set of robust, inexpensive, low-power hardware and open source software

components, including a computer, server and wireless networking gear that can be used in extreme physical conditions and can be powered by alternative energy sources such as solar power. Depending upon the location, the unit can also include a voice over IP (VoIP) handset and access to long-range wireless technology (Wi-Fi).

- Language can be a big problem too. Rajdeep Sahrawat, vice-president of NASSCOM, which represents the Indian software industry, notes that in his country at least 15 languages are commonly spoken, and about one-quarter of the population is unable to read or write. Mr Sahrawat argues that technology firms need to think about creating relevant content in local languages, and finding different channels for it beyond just the PC-based model.
- Sometimes PCs themselves aren't the right delivery mechanism. The kiosk

approach has been successful in many countries where the cost of PCs puts them beyond the reach of most ordinary people.

- In rural Mali, the NGO Geekcorps developed a programme to connect radio stations in remote communities wirelessly to the Internet. Traditional wireless (Wi-Fi) antennae from the US would have been expensive and difficult to replace. Instead, Geekcorps used an antenna, known now as the BottleNet, made from a plastic water bottle, wire mesh and a motorcycle tyre valve stem. One community radio station in the remote Mali location of Bourem Inaly now downloads films from WorldSpace and transmits them wirelessly, using Wi-Fi repeaters made out of tin cans, to televisions. They now have 50 "CanTV" subscribers paying US\$3 a month for the films. The radio station, originally dependent on USAID money, now supports itself and has been able to take on an extra member of staff.

as great a need for access to information and services as urban communities, and as such increasingly emerging world governments are explicitly including rural development in their broader economic development frameworks.

In the Chinese province of Guangdong—one of China's richest—the government faced the problem of managing economic development in a situation in which the fastest-growing parts of the province were expanding at around 20% per year in real terms, while the rural areas were being left behind. The authorities felt that these areas' remoteness and inaccessibility was an explicit factor in their inability to achieve faster growth, as was a general lack of skills and access to information in these isolated regions.

A public-private partnership was set up between the provincial government, Intel, and a number of local partners to set up technology centres in the

poorest farming villages in the region, each equipped with a handful of PCs and an internet connection (provided by China Telecom), and roll out entry-level training on basic IT literacy and skills to the farmers themselves. Locally relevant content, including agricultural trading information and farming techniques, and access to e-Government services for land registration and policies—is provided via a portal installed on the PCs.

As of early 2007, the consortium had set up more than 1,000 of these centres, and government officials expect the programme to drive increased income for farmers and thus start to chip away at the growing income inequality in the province.

There is also a role to be played by third-party international organisations in setting up PPP consortia, especially when the target segment—as in the case of the rural population—is already being



served in some form by these organisations. USAID, for example, runs a “Last Mile Initiative” in which it brings together governments, NGOs, and private sector players to push connectivity and technology solutions out to remote and underprivileged citizens in countries like Vietnam, the Philippines, Nigeria, and Macedonia.

In the Philippines, USAID provided funding and facilitated a partnership between local authorities in the municipality of Manolo Fortich and the local telecommunications company, which resulted in the creation of a “community e-centre”—a dedicated PC and broadband station—within the municipality’s employment services office. The e-centre also included a webcam and VOIP facilities, enabling candidates to interview directly with Manila-based agencies from their remote location. In the first month of operation, 10 users found jobs via the new e-centre.

A key success factor in the initiative, according

to programme managers, was the recognition that training on digital literacy and other business skills would have to be an ongoing process, in order to ensure the long-term usability of the e-centre itself. The USAID-led team built a capacity-building training program for the local government personnel involved before launching the service, which focused on building the strategic and business skills necessary to operate the centre. However, the training efforts also included the creation of train-the-trainer modules for basic computer and Internet literacy.

In Vietnam, USAID’s Last Mile Initiative brought together private and public-sector partners in a consortium which delivered cutting-edge Wi-Max internet connectivity to Lao Cai, one of the country’s remotest and poorest regions. In this case, a crucial factor in bringing the programme partners together was the development of a “joint vision” for the project’s outcome—the enhancement of economic opportunity for Vietnam’s rural communities.



## Wiring up

Technology-led development in the emerging world

## Ensuring success up-front

There are a number of factors that have helped to ensure the success of the PPPs outlined above, and which practitioners point to as crucial in the programme design phase.

### Engage stakeholders and demonstrate a clear return

Projects need to engage stakeholders, both the target groups and programme member organisations, by creating clear benefits to all members of the consortium and demonstrating a clear return on investment—be it social (in the case of NGOs and government agencies), economic (in the case of the government) or financial (in the interest of all private sector partners). Crucially, these benefits need to be above and beyond those which any of the consortium members could achieve working on their own.

Often, the metrics used to judge performance require individual consortium members to “get outside their comfort zone”—private-sector partners need to widen their definition of success to go beyond the usual number of units sold, and think beyond their usual go-to-market strategies, in order to become genuine stakeholders in the developmental results sought by the public sector. “This is what makes these initiatives so interesting: the stakeholders go outside the norm in terms of process, and have to rethink how they define success metrics to be able to justify the investment. But when it is done well, the benefits transcend the traditional success metrics for all, and the PPP’s sustainability is ensured by this ‘equilibrium of incentives’,” says Diana Pallais of Microsoft.

It is also obviously critical to ensure in advance that a project will have buy-in from the end-user population. For instance, pensioners should be able to see clearly the benefits, such as accessing their

government entitlements more effectively. Civil servants should be able to envisage an increase in their efficacy at work, as their workplace is transformed by technology. Teachers should be able to keep up with pedagogical advances and invest in professional development in novel ways. Stakeholders will often include NGOs, which may have a fuller understanding of a particular group’s requirements than either the government or the private sector.

International organisations, such as USAID, the World Bank, and the World Economic Forum, can also play a critical role in this sense, helping to facilitate links between consortium members and playing an “honest broker” role at the objective-setting phase—although often their work cycles are considerably longer than the typical gestation period of a PPP.

### Get the technology right

It may sound obvious, but getting the technology right is crucial to the overall success of policy-driven initiatives—and not something that all programmes have achieved. Different conditions on the ground, and differing policy objectives, necessitate a flexible approach to the kind of technology put in place. In regions where literacy is low, even if the infrastructure is sound, most citizens will not have any use for a PC in their home. Their need for information is not diminished, however: they just need a different way of getting access to it. That could be through paying someone in a local community centre to look up information on the Internet, or it could be through using a mobile phone to make an appointment. In a region where the climate is consistently hot and electricity is supplied by local generators, a robust PC with low power use will be more suitable than a traditional desktop or laptop computer.



## Wiring up

### Technology-led development in the emerging world

The key advantage that the emerging markets possess is that they are not hindered by legacy infrastructure, and they have the opportunity to leapfrog developed nations by introducing cutting-edge technology where none existed before—for example, by deploying wireless broadband technologies such as WiMax to provide last-mile connectivity, as in the case of the Last Mile Initiative in Vietnam, for example.

In this sense, emerging markets are often ahead of the curve. As Dan Shine, director of AMD's 50x15 initiative, says, "Emerging market governments, with an eye toward the future, are beginning to take advantage of an increasing number of innovative and personalised solutions and services hitting the market today. The catalyst for this trend is choice, pure and simple, and everyone in the equation benefits."

### Think big

The fundamental importance of long-term buy-in on the part of all consortium members makes big-picture thinking a prerequisite. Short-term metrics around expanded technology footprint and usage within the target segment are essential for keeping these initiatives on track, but the second-order effects of giving underprivileged citizens access to technology—the creation of new economic networks, greater inclusiveness in society, and an expanded appetite for

e-government and online services in general—require a focus on creating the "e-citizen" of the future.

The role of government is most important in this sense, as for emerging market citizens access to e-government services is often a more important motivating factor in the take-up of PCs or other devices than access to online commerce opportunities. For citizens, the ability to access government services online can have a dramatic impact on their lives, largely because of the substantial cost of getting these services through "real-world" distribution channels. Ethan Zuckerman, a fellow at Harvard's Berkman Centre for Internet and Society describes an example: "In India, if you want to get a birth certificate that declares you to be a dalit [member of a low caste], which means you have access to different social services, normally you would have to get on the bus, get on a truck, travel to the regional capital, and that might take you a day in either direction to do it. If you offer the ability to access those government services at a fraction of the cost you have created something of value."

The aim, though, should be to think beyond the first-order impact and focus on creating a cadre of "e-citizens" who begin naturally to use technology as an enabler not just of their relationship with government but also of their economic and social interactions with broader society.



## Wiring up

Technology-led development in the emerging world

## Conclusion

Emerging-market decision makers around the world are increasingly looking to the power of technology to help them to achieve a range of public policy goals, and crucially to speed up economic development and catch-up with the developed world. The challenge of using technology to narrow the socioeconomic, generational, and gender divides in countries where few people are familiar with computers is immense, and the most effective approach is “to eat the elephant one bite at a time”, says one expert.

Targeting specific groups, such as the unemployed, the young or the elderly, with a specific developmental objective in mind is more effective than attempting to introduce PCs to everyone. It provides governments with a stronger long-term incentive, but also creates motivation for the

technology, software, connectivity, and financing partners needed to run these programmes. It also ensures that the solution is indeed relevant to the end-user, which will in turn drive faster uptake—the bottom line of programme success.

A focus on the potential broader impact of getting disadvantaged communities linked in to the information society is also crucial for long-term success.

The trick, says Mr Mulcahy, is to bring the different partners, objectives, motivations, and project elements together effectively: “If you can get the elements of the value proposition right, and deliver in such a way as to unlock real social value, you are really onto a winner.”

Whilst every effort has been taken to verify the accuracy of this information, neither The Economist Intelligence Unit Ltd. nor the sponsor of this report can accept any responsibility or liability for reliance by any person on this white paper or any of the information, opinions or conclusions set out in the white paper.

LONDON  
26 Red Lion Square  
London  
WC1R 4HQ  
United Kingdom  
Tel: (44.20) 7576 8000  
Fax: (44.20) 7576 8476  
E-mail: london@eiu.com

VIENNA  
The Economist Group GmbH  
Oelzeltgasse 3/7  
1030 Vienna  
Austria  
Tel: (43 1) 712 41 61-0  
Fax: (43 1) 714 67 69  
E-mail: vienna@eiu.com

NEW YORK  
111 West 57th Street  
New York  
NY 10019  
United States  
Tel: (1.212) 554 0600  
Fax: (1.212) 586 1181/2  
E-mail: newyork@eiu.com

HONG KONG  
6001, Central Plaza  
18 Harbour Road  
Wanchai  
Hong Kong  
Tel: (852) 2585 3888  
Fax: (852) 2802 7638  
E-mail: hongkong@eiu.com