16. Developing Countries

Information technology (IT) has the potential to revolutionize the lives of people in developing countries. Many of the ways that IT can improve lives in developing countries mirror the ways in which it improves lives in the developed world. But the developing world faces several unique challenges—including widespread poverty, hunger, and health crises in both urban and rural communities.

IT alone cannot solve all of the problems facing developing countries, but IT should be part of the solution. With IT, individuals in the developing world can see and share valuable information. Farmers can get up-to-date weather forecasts and information about the

latest fertilizers and farming techniques. Patients in remote villages can see specialists online rather than traveling for hours to the nearest clinic. Schoolteachers can download educational materials and lesson plans for their students. Philanthropists can give a small loan to someone thousands of miles away with the click of a button.

Creating economic, social, and political parity between the developed and developing world will requires more than flash-in-the-pan solutions such as a few Internet kiosks in rural India. Real development will require policies and technical changes that lead to long-term growth and sustainability in developing countries. Fortunately, IT is helping to facilitate such policies and changes. In the educational realm, for example, IT is enabling remote education, overcoming distances that are barriers to development. In the economic realm, IT is bringing cell phones to rural areas of India that enable farmers to get marketplace information in real-time, and IT is also creating sustainable, fluid markets that will allow people to save, invest, and grow—the very same way IT has helped the economies in developed countries. The many ways in which IT is reshaping developing countries—creating better markets and economic opportunities, expanding access to capital, making government more transparent, increasing access to educational opportunities, and improving health care—are discussed further below.

A World Bank survey of over 20,000 businesses in low- and middle-income countries found that firms that use IT have faster sales and employment growth and also higher productivity.

Creating Better Markets and Economic Opportunities

Studies have found that local economies with more access to IT are more productive than those with less access.[1] This finding certainly holds true for local economies in the developing world, where IT is helping to reduce poverty by creating better markets and increasing economic opportunities. People in developing countries can use IT to get access to market information that enables them to gain better terms of trade with wholesalers and other intermediaries and to make better decisions about what and when to produce.

In 2001, for example, the villages and local governments of the Dhar district in central India, with financing from the Indian State Finance Commission, joined together to fund the Gyandoot project to build a low-cost rural Intranet joining 20 village information kiosks.[2] This project enabled villagers in the district to share information and access the Internet using dial-up connectivity through local exchanges on optical fiber or ultra high-frequency radio links.[3] Farmers using this service went online and found a distant village that was will to pay more for their potatoes than the local rate. As a result, the Gyandoot project has increased prices paid to village farmers by 3 percent to 5 percent and saved the farmers from having to pay commissions to middlemen.[4] Similarly, Tradenet.biz is a wireless-based website that people in Ghana and other West African countries can use to trade agricultural products using short message service (SMS) communications.[5]

The Indian Tea Board, the body responsible for the world's largest tea market, has created a similar initiative to use IT to facilitate tea spot trading. Tea has been traded in India since 1861 at the Tea Auction Center in Assam, where transactions have been brokered in person and recorded on paper. In 2008, the tea markets are going digital. The move to computerized tea auctions will allow buyers to bid from anywhere in the world. Studies in other commodity markets have shown even modest reductions in transaction costs through automation can produce large increases in trading volume. The hope is that computerized spot trading will result in more efficient services and fairer prices for India's tea farmers.[6]

Small and medium-sized enterprises (SMEs) are the bedrock of all economies, developing and developed.[7] By reducing the costs of doing business and increasing the ease and spread of global sup-

ply chains, IT is significantly reducing the value of economies of scale and increasing the capacity for growth among SMEs in the developing world. These new SMEs, in turn, are using IT to do business at a far greater rate than their traditional counterparts. In India, for example, 1 million of the country's 7 million SMEs are ready to incorporate IT in their business, creating a market worth $459 million annually.[8] SMEs that use IT are more likely to produce innovative products and services that affect national progress as a whole, creating development that is less dependent on short-term aid and more associated with long-term economic prosperity.[9] A 2005 World Bank survey of over 20,000 businesses in about 50 low- and middle-income countries found that firms that use IT have faster sales and employment growth and also higher productivity.[10]

Mobile communications can restructure businesses in developing countries by economizing services, enabling businesses to make "just in time" transactions and deliveries.[11] A 2005 London Business School study found that mobile communications has a significant positive effect on a nation's economy: For every additional 10 mobile phones per 100 people, a nation's gross domestic product rises .5 percent.[12] Another study found that poor Chinese villages that gained telecommunications access had 15 percent higher income growth than villages that did not gain access.[13] Although much of the recent literature emphasizes how mobile phones help producers, consumers benefit from cell phones as well. One study by an economist at Brown University, found, for example, that new phones positively impacted the fish industry in southern India by increasing profits for sellers by 8 percent and bringing down consumer costs by 4 percent.[14]

To help increase access to mobile technology, organizations such as the Grameen Foundation provide microloans to people who want to establish standalone mobile phone operation. Such loans allow people to buy a Village Phone Kit, which includes a mobile phone, an antenna to pick up signals, and a battery or solar panel for recharging.[15] Since 1996, the Grameen Foundation has financed more than 250,000 "phone ladies" in Bangladesh, Uganda, and Rwanda.

Making markets more efficient is important, but developing countries have little chance to advance economically if consumers in the developing world cannot save and accumulate capital.[16] A major cause of financial insecurity in the developing world stems from price volatility. When markets are broken because of geography and poor communication, prices become localized; the localization of prices, in turn, creates significant price volatility. The problem of price volatility is amplified by the fact that people in the developing world have very meager resources. When the price of grain fluctuates considerably, it is particularly hard for an impoverished family in Nigeria or elsewhere who may be living off less than $10 a day to plan for its financial future.

IT allows farmers in developing countries to know for the first time what their goods are worth countrywide so that they can try to sell their goods where they will be most profitable. By creating this information exchange, IT helps to stabilize food prices and to allow the market to dictate where food should be directed. In Niger, for example, cell phones were phased into the economy between 2001 and 2006 in order to help farmers and other market actors get a better picture of national grain prices. A study by the University of California found the program reduced annual price volatility by 10 percent.[17] By providing a better picture of the market, cell phones can also limit the human cost of food shortages. During Niger's 2005 food crisis, prices were 20 percent higher in famine areas than in areas where food was plentiful.[18] If this information was readily available to farmers there would have been a stronger incentive to get food to the areas with the most suffering, significantly reducing the loss of life.

Just as in developed countries, in developing countries IT also increases productivity. In India, for example, the National Dairy Development Board (NDDB) has implemented a program to promote the use of IT to increase milk production. In 2000, the NDDB automated the milk-buying process at 2,500 rural milk collection societies by installing dairy information services kiosks (DISK) that enable farmers to immediately receive payments for their milk (rather than waiting 10 days under the previous system) and manage a database of all dairy cattle in India.[19] The DISK system consists of kiosks where farmers can weigh their milk, analyze it for fat content, and receive a payment using a plastic identification card.[20] Farmers also use the kiosks to access

a complete history of all dairy cattle as well as data on milk production, and they can place orders for a variety of goods and services.[21] The DISK system has now been replicated in 70,000 villages in about 200 districts in India.

India is currently exploring ways to use IT to bridge the information gap between agriculture experts and local farmers. Farmers who are geographically isolated usually do not reap the highest possible crop yields because they do not get the most up-to-date advice on crop cultivation. India's Agricultural Information Dissemination System (agrIDS) is an IT-powered plan to disseminate agricultural information throughout India in order to increase yields and make every farmer an expert. Preliminary studies have predicted that access to real-time crop information will increase crop yields by 25 percent.[22] In a more rudimentary program, farmers in rural India have begun to use IT to subscribe to Reuters alerts to receive updates on weather and market prices via text messaging.[23]

Expanding Access to Capital

Many private companies in developing nations—such as financial institutions—do not have the capital or the incentives to establish services in remote areas. Information can bridge these gaps in two ways. First, IT can help people engage in transactions over long distances, such as sending or receiving money, even in the absence of local financial institutions. Second, IT enables microcredit organizations such as the Grameen Foundation (originally the Grameen Bank) and Kiva to bypass governments and provide loans directly to individuals. These innovative organizations can operate at lower cost than traditional loan programs, and, in the case of Kiva, they deliver 100 percent of the donation to the recipient, without deducting fees for their services (although people can opt to provide an additional 10 percent donation to defray costs).[24]

IT also enables people without access to banking services to exchange money. In particular, many people who live in remote areas in developing countries may have to travel hours to the nearest town to get to a bank. This lack of accessibility, coupled with extremely low incomes (perhaps less than a dollar a day), means that many people in developing countries may not have a bank account. Without the ability to save or transfer money, they must physically transfer payments to family members or to purchase goods or services from vendors outside their villages. Wireless communications bridge this gap by allowing people to send small payments via mobile phones. The World Resources Institute predicts that banking over mobile wireless communications will bring into the formal economy huge numbers of people who were previously excluded.[25]

In Kenya, for example, a partnership between Vodafone and Safaricom, Ltd., recently created a service called "M-Pesa" (which means, "mobile money") that allows people to send money using a network of mobile phones. The sender pays cash to an agent in one location, who then sends a code number via a text message to another agent located where the person who is receiving the cash lives; the second agent then makes the payment to the intended recipient.[26] This service has proven extremely popular, with 6,000 new subscribers signing up each day.[27] The M-Pesa program had hoped to add 200,000 customers in its first year, but that many customers signed up in just a single month.[28] A year later, the number of customers reached 1.6 million, and Vodafone is expanding the service to Tanzania and India.[29]

Privately funded foreign aid is a vital form of financial support for developing countries. For every $1 of aid from official institutions in developing countries, there is currently $2.61 of privately funded foreign aid. And in some developing countries, there is even more private aid. In the Philippines, for example, there is $25 of private aid for every $1 of foreign aid from official institutions; in India there is $31, and in Mexico, there is $150 of private aid for every $1 dollar of foreign aid from official institutions.[30]

Streamlining aid from individual donors in order to make sure it gets to people in need is challenging. IT is making it easier than ever to address that challenge. Kiva, for example, operates a person-to-person microlending website that allows individuals to make microloans to individuals in developing countries and then track how the loan recipient is using the money, helping donors decide whether or not to accept repayment of the loan (99 percent are repaid) or to reinvest it.[31] Kiva can deliver funds loaned by

individuals much more quickly than traditional government or bank loan funding would be delivered. Thus, for example, the owner of a Ugandan store can post a request for financing to buy supplies and within hours receive a loan of $75.[32] Potential lenders can determine whether to make a loan based on the recipient's individual risk rating. Kiva further mitigates risk by disclosing scams immediately (as well as good news from entrepreneurs who received loans).[33] Kiva had facilitated more than $22 million in microloans in over 40 countries as of February 2008 and hoped to reach $100 million by 2010.[34]

A significant source of capital for the developing world comes from money sent from migrants back to their home country. Transfers of money from foreign workers to their home countries—called remittances—constitute the second largest financial inflow into developing countries, dwarfing international aid.[35] A recent study found that in 2006 global remittances totaled three times that of aid provided by donor nations to the developing world.[36] IT is helping to make expatriate aid more successful by connecting potential donors with those in need. The website Mukuru.com, for example, allows members of Zimbabwe's diasporas to buy goods such as food and gas over the Internet for family members back home. The site has 10,000 clients so far and intends on expanding to serve a half dozen more countries next year.[37] Traditionally, there have been high transaction costs for remittances due to diffuse and decentralized payment methods and the lack of information provided to migrant workers. Recognizing the potentially debilitating effect such costs could have on the developing world, the U.K. Department of International Development created a website called Send Money Home, which offers free advice about exchange rates, transfer rates, financial planning, and more. This website not only helps migrants get the best transaction price by allowing users to choice amongst a series of private providers but also assists migrants in making the best financial decisions for themselves and for the people to whom they are sending money.[38]

IT enables microcredit organizations to provide loans directly to individuals; as of February 2008, one organization had facilitated more than $22 million in microloans in over 40 countries.

Making Government More Transparent

Having a functioning, responsive government is a precursor to a nation's economic well-being, yet much of the developing world suffers from governments who are unresponsive to their citizens because of corruption. Although corruption affects governments in every country, the toll of corruption is particularly harsh in developing countries when resources are diverted from pressing social needs. Corruption not only disproportionately impacts poorer citizens but also makes businesses less competitive. One study has shown that corruption has increased the cost of doing business for SMEs in India by 20 percent.[39] In addition, many studies have found that corruption is inversely related to foreign direct investment.[40] IT helps make governments more transparent by giving leaders who want to be responsive to their citizens the tools to do so and by increasing accountability for leaders who do not act in their people's best interest.

Much of the corruption in the developing world is rooted in the inaccessibility of government resources. What is usually a free and open process in the developed world, such as filling out the necessary paperwork to start a business, can be impossible in developing countries without bribing government officials.[41] The easiest way IT is combating this problem is by "disintermediation" between services and citizens.[42] By automating procedures that would traditionally require interaction with a local bureaucrat, IT helps reduce the power asymmetries between officials and citizens, thereby reducing the likelihood of forced bribes and corruption. It is interesting to note that a recent World Bank survey of eight e-government projects across India found a decrease in corruption for each area once the govern-

ment program became computerized—and in one of the areas, bribes were reduced from 30 percent of transactions to less than 1 percent.[43]

Far more detrimental to developing countries than bribery is what developmental economists call "the resource curse"—where countries rich in natural resources produce little long-term growth and have undemocratic governments because leaders derive wealth from selling their country's natural resources instead of growing a vibrant domestic economy or related tax base.[44] Once the country's resources run out or global markets reduce demand for those resources, such countries do not have any domestic markets or cash reserves to fall back on. Researchers have found that countries with unrepresentative governments and natural resources actually end up worse off than countries without domestic natural resources.[45] By bringing greater transparency to governments in the developing world, IT is beginning to be used to solve this problem.

The partnership created in 2007 between SAP AG, the largest business software company, and the Extractive Industries Transparency Initiative (EITI) illustrates how.[46] EITI was created by a group of governments, companies, civil society groups, and investors to link the sale of resources to economic growth and poverty reduction by requiring governments and companies to disclose statements of all financial transactions.[47] Partnering with EITI, SAP is using its IT resources to share data on participatory companies and countries, encouraging mutual accountability and transparency. Although the SAP-EITI partnership is relatively new, it is already showing impressive results. More than half of the 54 resource-rich countries in the world have committed to implementing EITI or are in the process of doing so—and Nigeria received a markup in its sovereign risk rating after implementing EITI, showing that investors believe the program will help stabilize the country.[48] Beyond cutting down on corruption, programs like EITI have the ability to create economic opportunity. According to James Farrar, SAP's vice president for corporate citizenship, "these countries are resource rich but capacity poor. If processes like EITI succeed, we will have huge markets there."[49]

In addition, IT is making governments in developing countries more accountable by providing the tools necessary to prove human rights violations. Amnesty International, for example, is working with the satellite-imaging firm AAAS to record violence in Darfur to prove Omar al-Bashir's government's involvement in the genocide. The group posts before and after pictures of villages that have been destroyed on its website Eyes on Darfur.[50] Similar satellite imagery and video recordings were posted online by Amnesty International in 2006 to show the devastating effects of the Zimbabwean government's policy of brutally evicting poor inhabitants from their shelters and then demolishing entire urban settlements.[51]

Another way that IT is increasing government accountability in the developing world is via the Internet. Blogs, e-mail, and search engines have allowed people all over the world to communicate and shine light on inappropriate action from unrepresentative governments. The recent protests over the repressive ruling junta in Burma were far less violent than in 1988, and one of the reasons suggested is that, unlike the 1988 protests, the more recent demonstrations were all over the Internet and people across the globe could watch how the military treated protestors.[52] In the information age, repressive governments are finding it harder and harder to hide behind national boundaries.[53]

In the Brazilian state of Amazonas, satellite technology is enabling 10,000 children to be educated in areas where a lack of serviceable roads often prevents them from going to school.

Increasing Educational Opportunities

IT is increasing educational opportunities in the developing world in several ways. One is by increasing educational opportunities for women. A disproportionate number of the people without access to pri-

mary education in the developing world are women. Women also make up two-thirds of the world's illiterate population.[54]

A prime example of the use of IT in educating women is the Internet radio production training offered by the nongovernmental organization in Brazil called CEMINA (Communication, Education, and Information on Gender in Portuguese). Several years ago, CEMINA created a women's radio network that promotes communication and education on gender and civil rights issues. Its women's radio program is aired throughout Brazil on over 400 radio programs. With the advent of digital technology, radio production has become much easier. In the past few years, CEMINA has formally trained over 1,500 women in Internet radio production at community telecenters in underserved communities. Integrating a familiar technology (the radio) with the Internet has made it easier to train women to use the new technology. CEMINA's Internet website called "Radio Fala Mulher" (Women Speak Up in Portuguese) allows users to ask questions, propose topics, and share material. The overwhelming success of this project has led CEMINA to expand its mission to include information on child labor.[55]

IT is also being used to help overcome the geographic isolation that has often made it impossible for students in remote rural areas to get access to a formal education, particularly if they must travel miles to get to the nearest school. In the Brazilian state of Amazonas, for example, satellite technology is enabling 10,000 school children to be educated in areas where a lack of serviceable roads often prevents them from going to school. Teachers present their classes at a state educational facility, and the classes are then broadcast in real time to the rural communities via a two-way satellite link.[57] During the broadcast, students can communicate with 260 onsite teachers.[58] The result is that students who otherwise might have little access to education can now "go" to school.

Some large companies in the private IT sector are helping to educate people living in the developing world, as well. Forward-thinking companies consider where the next big market will be. For companies in the IT sector, it is important that customers be comfortable with the technology they offer. For that reason, IT specialists and companies have begun training individuals and SMEs throughout the developing world in new technology.[59] As an example, Microsoft's Community Technology Skills Program partners with local organizations such as libraries or small businesses to offer donations, software, curriculum, and technical expertise. Thus far, Microsoft's program has created over 37,000 partnerships across more than 100 countries and regions.[60]

A U.S.-based not-for-profit organization called Geekcorps, similar to the Peace Corps, is dedicated to cultivating high-tech skills and businesses in the world. Geekcorps has been on the ground in West Africa and other regions for more than five years. In Ghana, for example, Geekcorps places a volunteer IT specialist from the developed world with SMEs to train their local employees. Although the Geekcorps program in Ghana has involved, on average, only 14 companies a year, that is a start—and the progress is nontrivial considering that Ghana is a country where nearly 50 percent of the population lives on less than $1 a day, and there were fewer than two telephones per 100 people in 2001.[61]

Improving Health Care

In addition to improving educational opportunities, IT is helping to improve health care in developing countries. In Uganda and Mozambique, for example, since 2003, the AED-Satellite Center for Health Information and Technology has distributed 600 personal digital assistants (PDAs) to health care workers, who use them to collect public health data, which they upload to a central server.[62] Health care professionals in these countries' capital cities analyze the data and send responses and other information back to the local health care workers, thereby helping to educate them and improve the services they provide.[63] Another example is the Karnataka Telemedicine Project. Launched by the Indian Space Research Organization launched in 2002, this project connects a special hospital for heart care in Bangalore, India, with hospitals in remote districts using very small aperture terminals (VSATs), which are most commonly used to transmit narrowband data.[64] The project thus enables medical specialists to provide diagnoses and treatments to patients via videoconferences.[65]

An equally compelling example of IT's use in improving health care is what cell phones are doing to reduce the infant mortality rate in Mali. In rural Africa, most cases of infant mortality are from diseases that are easily treated but are not detected. A new project called Pesinet provides cell phones to trained women in rural villages, who then transfer medical information on the village's infant population to trained medical professionals. The simple monitoring process can significantly improve infant health. When a similar program was run in Saint-Louis, Senegal, for example, the infant mortality rate dropped from 120 infant deaths per 1,000 births to eight deaths per 1,000 births. Beyond yielding the astonishing medical outcomes, the infant health project is surprising cheap, costing around $1 per child per month.[66]

Yet the right tools without the right technicians do little good for the world's poor. Sub-Saharan Africa is the sickest region on the planet, carrying 25 percent of the globe's disease burden, yet it has only 3 percent of the health workforce. Because of Africa's geography and poor infrastructure, training local health care providers has often been an insurmountable challenge. Yet IT and e-learning are creating cost-effective solutions by overcoming physical boundaries and the traditional economies of scale associated with developing a health care industry. In South Africa, for example, nurses dealing with skin diseases are given laptops and webcams and are remotely assisted by dermatologists from all over the world.[67]

Another way that IT is improving access to health care is through the availability of geographical information systems (GIS). A GIS is a combination of digitized maps, aerial images, and geographic data. Developing countries' health care officials can use GIS programs to determine where certain diseases are prevalent, which enables them to design effective systems to deliver health care to targeted areas.[68] In particular, good health care system management depends on local and national health care officials being able to make informed decisions regarding resource allocation.[69] Using GIS data, health care officials in developing countries can determine the prevalence of diseases and also health care coverage. This information helps them to decide how to allocate scarce health care resources. South African health care officials in the Hlabisa subdistrict, for example, used GIS to determine where health care coverage was lacking and were able to plan new clinics accordingly.[70]

One of the most disheartening health care challenges in the developing world is the number of deaths caused from curable diseases such as tuberculosis (TB). In many instances, despite the availability of medicine, TB patients still die because they do not take the medication as regimented. To tackle the problem, doctors in Cape Town came up with a simple but extremely effective idea—text message TB patients reminding them to take their medication. The medical team estimated 71 percent of their patients had access to cell phones and after the pilot study only one treatment failure was reported out of 138 patients. Currently, the South African government is working to expand the text-messaging reminder program nationwide to HIV patients.[71]

Looking Forward

IT should not be regarded as a silver bullet for development or a substitute for traditional development tools. IT will most effectively improve the lives of people living in the developing world by being used in conjunction with the adoption of sound government policies, the development of functioning markets, investments in infrastructure, and the education of a more advanced workforce.[72]

Many obstacles remain to be addressed before the full potential of IT can be realized in the developing world. One obstacle that is impeding the spread of IT in developing countries is language. Asia, for example, is the most populated region in the world—and a huge potential market for IT. Yet 80 percent of the people living in Asia cannot read English, making much of the world's Internet content inaccessible. Asia itself is one of the most culturally and linguistically diverse regions of the world, with more than 2,000 languages.[73] In order for IT to have its full impact in Asia and other parts of the developing world, more needs to be done to create Internet content in local languages. Making the content of the Internet in the local language of the users is called "localization." Localization requires not just changes in language, but also the definition of standards for such things as encoding, keyboard layout, sorting sequences, and local terminology.[74] Various types of applications in local languages are required, as well. Commercial in-

centives are not high enough in developing countries for software vendors to create the needed changes on their own. For that reason, intervention by governments and nonprofit organizations is needed. One partnership of universities, government agencies, and IT specialist in Asia working to create policies for localized language content and facilitate technical support for localization is the PAN Localisation Project. The project is currently working to localize content in Laos, Cambodia, Bangladesh, Nepal, Bhutan, and Sri Lanka.[75]

Another obstacle to IT use in the developing world is a lack of digital literacy among many countries' populations. Several reports have shown that people who are unfamiliar with technology have trouble on the Internet with "branching" (being able to navigate a nonlinear environment), synthesizing and reproducing retrieved data, and assessing the quality of the information.[76] Digital literacy in the developing world is also related to the lack of access to digital technology in developing countries. As access to the Internet and other forms of IT increase throughout the developing world, opportunities to learn how to use IT will increase as well. One approach to increasing digital literacy in the developing world is to use more familiar technologies to train new users—just as CEMINA used the radio to teach woman in Brazil how to use the Internet.

A third obstacle to IT use in developing countries is the lack of access to digital technology. The Internet has the potential to transform the lives of people in the developing world. Yet, although the number of Internet users in developing countries has steadily increased—from about one Internet user per 1,000 people in 1993 to 73 Internet users per 1,000 in 2003, significant gaps in access to the Internet remain.[77] More encouraging has been the mass increase in cell phone usage. In 2004, for example, sub-Saharan Africa had only 5–8 million Internet users but 52 million mobile phone users.[78] Expanding the development potential of IT further will require a mixture of broadening access to IT, as well as deepening the existing digital infrastructure into the wider social and economic fabric of the developing world.

Finally, cost is a roadblock to the use of IT in the developing world. To a large degree, people in developing countries cannot afford technology, such as a wireless handset or a personal computer. On the other hand, the declining cost of computing power is enabling manufacturers to build cheaper handsets and personal computers, bringing them for the first time within reach of some of the world's poorest citizens. This is the goal pursued by Nicolas P. Negroponte, who created the One Laptop Per Child Foundation (OLPC) to offer personal computers for as little as $100. Unfortunately, purchases of the OLPC laptop computers have fallen short of OLPC's goal of $1 million even though the governments of several developing countries, Haiti, Rwanda, Peru, and Uruguay, have ordered the laptops.[79] Nevertheless, a positive outcome of the OLPC program has been to spur other companies to compete to produce inexpensive laptops—Intel's "Classmate" offered for around $250, Acer's laptop for $350, and the Indian company called Novatium Solutions' basic "NetPC" for about $80.[80]

The declining cost of computing power is enabling manufacturers to build cheaper handsets and PCs, bringing them for the first time within reach of some of the world's poorest citizens.

Perhaps most impressive is the Indian government's announcement in May 2007 that it was supporting the development of a laptop that could sell for as little as $10.[81] Although this goal may be unrealistic, government-supported researchers already have designed a prototype that would cost about $47.[82] Some have argued conversations about $47 laptops in the context of the developing world where 3 billion people live off of less than $4 a day are premature. Clearly, not everyone on the planet is going to own a computer overnight, but any movement to reduce the cost barrier to computer ownership is an important step to closing the digital divide and expanding IT to the world's poor.

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