

Folk Computing

Technology is generous in rewarding those who adopt it and ruthless in punishing those who don't. The information and communication technology (ICT) revolution is dividing the world into the "haves" and "have-nots." For countries interested in changing their fortune, it's essential that they learn to identify and deploy the technology waves—also called inflection points—to their masses.

Two inflection points have changed how we deal with information and a third is soon approaching. In the first one, techniques evolved to communicate data and compute it very fast. In the second phase, the focus shifted from raw data to information. The Internet and Web were the main vehicles of this revolution. The third inflection point is arriving because of progress in wireless technology, computing power that we can package in increasingly small sizes, with decreasing costs, and in an increasing variety of sensors and bandwidth.

About 10 percent of the worldwide population is currently using ICT. Another 10 percent is aspiring to benefit from it in the next few years. The number of people in developing countries that are currently touched by this technology is insignificant—less than 5 percent. But most people are likely to have access to ICT by 2010.

There are three significant barriers to adopting ICT in developing countries: infrastructure, affordability of devices, and ability to use these devices. Rapid advances in different technology areas are addressing the first two barriers. Wireless infrastructures are making phones available to remote areas in the poorest countries. Industry analysts project that the cost of these devices will rapidly decrease, and if the devices are widely adopted in developing countries, the volume will result in bringing down the cost even more.

But not much progress is taking place in the consumer's ability to use these devices. Most people in developing countries don't speak or

understand English and are illiterate in their native language. If it isn't possible to educate them, how will it be possible to teach them to use computers using foreign metaphors like desktops and file folders? Some of these people have neither seen a desk nor ever used a file or a folder. Clearly, if the benefits of ICT have to reach the masses, an entirely different approach to access and use current devices will be required. The access mechanisms must be natural to use and easy to learn, and they shouldn't require users to learn another country's cultural metaphors. What these access mechanisms would look like is anybody's guess. And that is the opportunity.

Multimedia is essential to bringing the ICT revolution to developing countries. Use of audio, images, graphics, video, and touch is more compelling to people than a keyboard and mouse. Interface mechanisms for computers based more on natural senses for humans are much less intimidating. There's a definite place for keyboards and mice, but the current domination of them is a major obstacle in bringing ICT to developing countries.

This has far-reaching implications for technologists. Currently, we think of everything as text oriented. We use multimedia only to enhance or augment content. In many cases, we consider multimedia unnecessary. To deploy ICT globally, the roles of multimedia and text must reverse. We will want everything in a multimedia format, with text as one of the abstract mechanisms used for specific, although useful, purposes. These systems will put computers in the background and bring their useful functionality to the forefront.

The important question for the multimedia research community is, Do we want to develop applications for every human on this planet or only for the 10 percent of privileged people in the developed world?

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