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# Computers for the Third World

## The simputer is a handheld device designed for rural villagers

By Fiona Harvey

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It doesn't look like much. A drab, gray piece of plastic, about five inches long and three inches wide. A black-and-white screen, three inches by two inches, showing a few simple snippets of text. And yet this nondescript little computer may hold the key to bringing information technology to Third World countries.



Image: Courtesy of ENCORE SOFTWARE LTD

The device is known as the Simputer. I recently got a chance to evaluate one of the preproduction models that have been put together by the Simputer Trust, a nonprofit organization based in Bangalore, India. This year Encore Software, a Bangalore company that licensed the technology from the trust (not to be confused with the California software company of the same name), plans to

**FARM WORKERS** in Bolare, a village located southwest of Bangalore, India, try out a literacy tutorial program on the Simputer. Because the device can convert text to speech, it can help teach villagers how to read the local language, Kannada.

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Simputer stands for " simple, inexpensive, multilingual computer." It was designed to meet the needs of rural villagers in countries such as India, and have never even seen a computer before. Loaded with some elementary

have an enormous impact."

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The Simputer was conceived by a team of computer scientists at the Indian Institute of Space Technology and Sciences in Trivandrum. In poor regions, the developers kept the hardware requirements to a minimum. The Simputer's microprocessor is an Intel Strong-ARM chip, which is known for its low power consumption. The device will have as much as 64 megabytes of random-access memory and 32 megabytes of flash memory, as well as a modem that can connect to a telephone line. And the computer runs on the Linux operating system, which is available free of charge.

Like the Palm, the Visor and other personal digital assistants (PDAs), the Simputer is designed to be used by illiterate people. The device doesn't have a keyboard or handwriting-recognition software, but in certain applications the user can select letters or numbers from a software-generated keyboard that pops up on the screen. In addition, the Simputer has a program called Tapatap that allows the user to tap the squares of the grid in a particular sequence. Although this method is laborious, so the Simputer's applications have been carefully designed to minimize the need for tapping in text.



Image: Courtesy of ENCORE SOFTWARE LTD

**PREPRODUCTION MODEL** of the Simputer has a black-and-white screen and built-in speakers. A Bangalore company named Encore Software plans to sell the device for about \$250.

free of the annoying graphical clutter that most of us are accustomed to seeing on our PCs. Below the screen are seven small buttons, one an on-off switch and the rest for use with certain embedded applications such as the

But how will illiterate people be able to use the Simputer if they can't read the directions on the screen? There are two answers. One is the simplicity of the device's interface: because each display page shows only a few possible commands, even illiterate users should be able to learn by trial and error the purpose of the icons and buttons on each page. The second answer is software that can turn text into speech. The Simputer holds a database of phonemes-- basic linguistic sounds-- and from these it can generate an audio representation of any word as long as it is spelled phonetically and in characters from the Roman alphabet. It will work for various Indian languages, including Hindi, Kannada and Tamil, allowing the Simputer to read the text aloud on its tiny built-in speakers. The Simputer Trust says the software will be made available in other languages as well, depending on where the device is used.

I was unable to test this function on my preproduction model, which lacked the text-to-speech program. I can confirm, however, that the Simputer is remarkably easy to use. Its screen is

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eight kilobytes of data-- not very much by commercial standards but enough might club together to buy one," notes Shashank Garg, vice president for Simputer to find out the latest prices for cotton, allowing him to strike a better same device to examine government property records, eliminating the need to make a difficult journey to the city.

But the device does have some drawbacks. It's slow, taking about 15 seconds to boot up and often needing several seconds to digest the

is left idle for a while, making it necessary to reboot the machine. Also, powering the device may be a daunting task in areas that do not have a reliable electricity supply. Although the Simputer can run on three AAA

developing world, even batteries are expensive and hard to come by.

Fortunately, Simputer users may be able to draw on muscle power instead. A decade ago English inventor Trevor G. Baylis created the Freeplay radio, which is powered by turning a crank that winds up a spring inside the

generator. Freeplay Energy Group, the company that now sells these radios, recently produced a similar charger that can power a mobile phone. In a demonstration this year some energetic hand-cranking yielded enough energy to run an Apple laptop for a few minutes. With a few adaptations, devices such as these could charge up the Simputer.

But the Simputer may not be the best tool for bringing information to the world's poorest nations. Because most people in developing countries have

up networks in those areas. Mobile phones are cheaper than the Simputer, and the most advanced models can send text messages and access the Internet. Communities choosing between the devices may find a mobile

and conducting business.

that may be helpful but is not essential? When so many communities in the computers really a priority?

technology for the *Financial Times*.

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