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The Last Person

By **THOMAS L. FRIEDMAN**

Jodhpur, India

THERE is a concept in telecommunications called “the last mile,” that part of any phone system that is the most difficult to connect — the part that goes from the main lines into people’s homes. Prem Kalra, the director of the new Indian Institute of Technology in Rajasthan, one of the elite M.I.T.’s of India, has dedicated his school to overcoming a different challenge: connecting “the last person.”

“How will we reach the last person?” Kalra asked me during a visit to his campus here in Jodhpur in the Thar Desert of western India. The “last person” in his view is the poorest person in India. And the question consuming Kalra is can “the financially worst-off person” in India “be empowered” — be given the basic tools to acquire enough skills to overcome dire poverty.

In a country where 75 percent of the people live on less than \$2 a day, that’s a big question. It is why, one year ago, India’s Human Resources Development Ministry put out a very specific proposal that Kalra and his technology institute decided to take up, when no one else would: Could someone design and make a stripped-down iPad-like, Internet-enabled, wirelessly connected tablet that the poorest Indian family, saving about \$2.50 a month for a year, could afford if the government subsidized the rest? Specifically, could they make a simple tablet usable for distance learning, teaching English and math or just tracking commodity prices for under \$50, including the manufacturer’s profit?

The answer was yes. Last month, Kalra’s team — led by two I.I.T. Rajasthan electrical engineering professors, one of whom comes from a village that still has no electricity — unveiled the Aakash tablet. Aakash is Hindi for sky. It’s based on the Android 2.2 operating system, with a 7-inch touch screen, three hours of battery life and the ability to download YouTube videos, PDFs and educational software like Virtual Labs. The government will subsidize the wireless connections for students.

If Indians could only purchase tablets made in the West, the price points would be so high they'd never spread here, said Kalra, so "we had to break the price point" in a big way. They did it by taking full advantage of today's hyperconnected world: pulling commodity parts mainly from China and South Korea, using open-source software and collaboration tools and employing the design/manufacturing/assembly abilities of two companies in the West — DataWind and Conexant Systems — and Quad in India.

The Aakash is a ray of hope that India can leverage technology to get more of its 220 million students enough tools to escape poverty and poor teaching, but it's also a challenge to the West.

In terms of hope, I was struck by a story that Kalra's wife, Urmila, told about a chat she had had with their maid after the Aakash was unveiled on Oct. 5. As Urmila recalled, her maid, who has two young children, said that she had heard "from the night watchman that Mr. Kalra has made a computer that is very cheap, and is so cheap that even she can afford to buy it. The watchman had given her a picture from the paper, and she asked me if it was true."

Urmila told her it was true and that the machine was meant for people who could not afford a big computer. Added Urmila: "She asked, 'How much will it cost?' I said, 'It will cost you around 1,500 rupees.' [\$30.] She said: '15,000 or 1,500?' I said, '1,500.' She was sure that if the government was doing something so good for the poor, it had to have a catch. 'What can you do on it?' she asked me. I said, 'If your daughter goes to school, she can use it to download videos of class lessons,' just like she had seen my son download physics lectures every week from M.I.T.'s [OpenCourseWare]. I said, 'You have seen our son sitting at the computer listening to a teacher who is speaking. That teacher is actually in America.' She just kept getting wider- and wider-eyed. Then she asked me will her kids be able to learn English on it. I said, 'Yes, they will definitely be able to learn English,' which is the passport for upward mobility here. I said, 'It will be so cheap you will be able to buy one for your son and one for your daughter!'"

That conversation is the sound of history changing.

And not just for India. We're at the start of a nonlinear move in innovation thanks to the hyperconnecting of the world — through social media, mobile/wireless devices and cloud computing — which is putting cheap innovation devices into the hands of so many more people, enabling them to collaborate on invention in so many new ways. This Great Inflection will be an opportunity and a challenge for every worker and company because

we're going to see more and more product "price points" broken in big ways.

And that explains why Kalra tells recruiters for major companies to stay away from his campus. He wants his Indian students to think about inventing their first jobs, not applying for them. "I want them to start companies and become C.E.O.'s of their own. It is the only way we can catch China," he says. India can't wait for the world to solve India's problems at India's price points. It has to invent them. It now has tools to do so. This is about to get interesting.