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# How The Failed Aakash Tablet Is An Object Lesson In India's Long Road Ahead To Tech Innovation

By April Rabkin

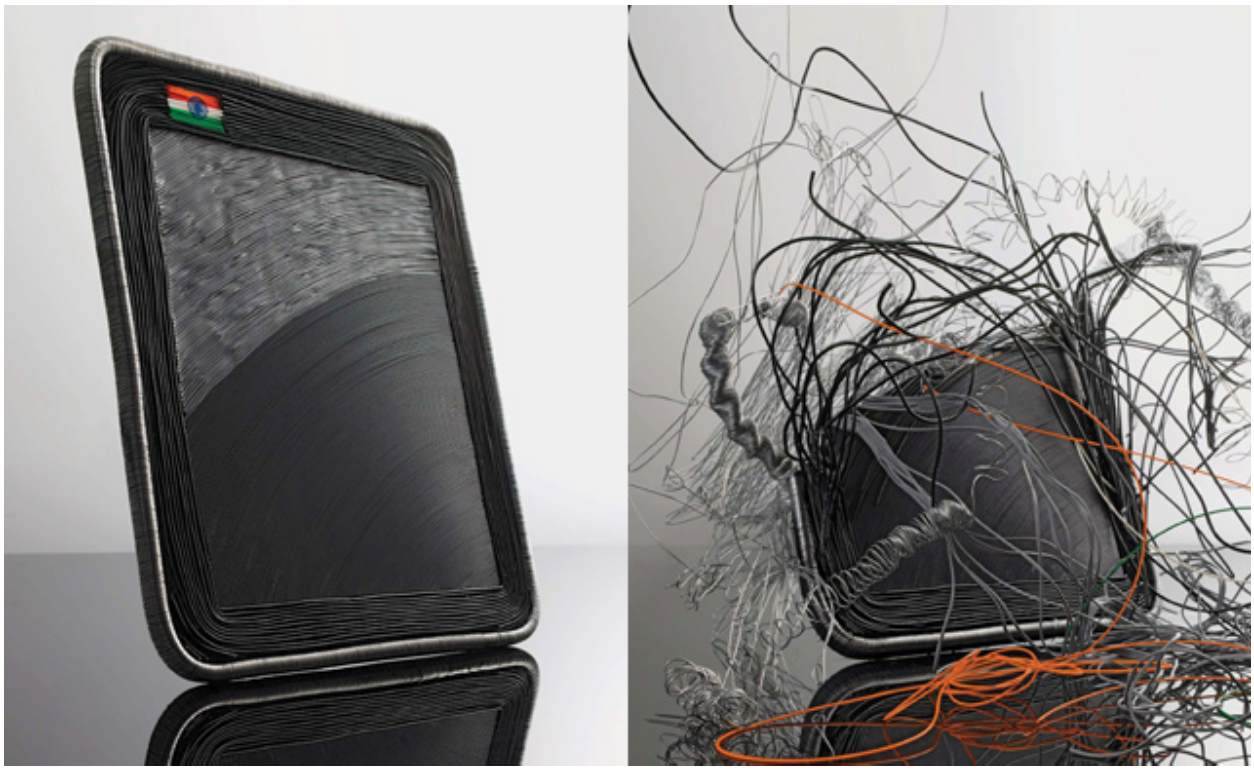

Photo by Jason Pietra; Sculpture by Megan Caponetto

**Last October,** Indian politician Kapil Sibal called a press conference. Indian politicians call press conferences all the time, even those with a last name that is not Gandhi. And with two portfolios--he is both India's minister of human-resource development and its minister of communications and information technology--Sibal typically has a lot he wants to talk about.

But this time he actually had news that would be noticed beyond New Delhi. With a phalanx of reporters and photographers gathered in a government auditorium, Sibal, a Harvard Law grad with a halo of white hair, held up a device he called the Aakash, which is Hindi for "sky." It looked like an iPad.

The most remarkable Aakash data point was its price: $35. Meant for the millions of students who can't even afford textbooks, the Aakash is supposed to be India's iPad knockoff. "There are some moments in history," Sibal said, taking a long pause, "that will be milestones recognized by future generations. This is one such moment."

For Indian government minister Kapil Sibal, the Aakash would be proof of India's global stature. | Photo by Thomas Liggett

In this one device, you can find the high hopes not just of an ambitious politician but of an entire nation.

Sibal said that he was about to give 500 prototypes to students for testing. He announced that the government would distribute 10 million at the subsidized $35 price, while millions more would be available for $60 apiece. The device would have videoconferencing capability, a touch screen, and three hours of battery life--not to mention the ability to turn around India's global reputation.

For all its success at churning out engineers by the hundreds of thousands and sending Silicon Valley countless gifted computer scientists, India has never been much good at producing hardware. This is why Sibal seemed so eager and triumphant, and why the Aakash is so significant. In this one device, you can find the extraordinarily high hopes not just of one ambitious politician but of an entire nation. Or, rather, you would be able to find such things--if you could find an Aakash at all.

The Aakash, you see, never made it to market. So this spring, I went to India to see if I could find an Aakash anyway--and to learn what went wrong.

**The price of a PC has dropped** precipitously over the years. In 1957, the IBM 610, which was the first computer designed for use by one person, cost $55,000 ($450,000 in 2012 dollars). Today, it's quite easy to find a PC for $300--but for most of the world, that's still a prohibitively expensive price tag.

Indians take a certain pride in making things cheaper. The Hindi word to describe this is *jugaad*, roughly translated as "frugal innovation." "It means having to constantly adjust to changing circumstances and make do with what you have," says Matt Eyring, a managing partner at the consulting firm Innosight. For consumers, this means coming up with off-label uses for the appliances you do have; some farmers, for instance, use top-loading laundry machines to churn milk. For manufacturers, it increasingly means coming up with devices that can do a job with less power and under harsh conditions, such as refrigerators designed for those at the bottom of the economic pyramid. Applying jugaad to the PC, perhaps the most revolutionary device of our time, is a worthy goal.

Photo by Thomas Liggett

This vision, of course, is not uniquely Indian. In the spring of 2006, Nicholas Negroponte, founder of the

MIT Media Lab and One Laptop Per Child, came to New Delhi to tout plans for his $100 laptop. N.K. Sinha, then a senior official in the Ministry of Human Resource Development working under Sibal's predecessor, was unimpressed. "Why get it from MIT?" he said. "If they can make it for $100, we can make it for $10." The logic wasn't ridiculous: India was doing that kind of thing with software and outsourcing all the time.


So was born the idea of the Aakash, or as it was originally called, the Sakshaat--the Hindi word for "right in front of you" is a reference to when a god appears before you for a face-to-face conversation. But the effort didn't get started in earnest until 2009, when Sinha handed the project to an engineering professor named Prem Kumar Kalra. Kalra had just been named the director of the Indian Institute of Technology-Rajasthan, a new branch of IIT where the curriculum includes product development along with traditional engineering training.

## The Sky Is Falling: An AAKASH History

04.2006
Nicholas Negroponte brings his $100 One Laptop Per Child to New Delhi, spurring a senior official in the Ministry of Human Resource Development to comment that India can produce a laptop for $10.

09.2009
Engineering professor and director of the Indian Institute of Technology-Rajasthan Prem Kumar Kalra takes on the Aakash project.

02.2011
DataWind, a Canadian company, successfully bids to produce 100,000 Aakashes for $4.3 million.

10.2011
Hundreds of Aakashes arrive at IIT Rajasthan for testing; a third of the devices don't start at all.

02.2012
Kalra is asked to resign as leader of the project.

03.2012
Deepak B. Phatak of IIT Mumbai takes over as the new head of the Aakash project.

The IIT system has produced world-class engineers and computer scientists, including respected VC Vinod Khosla and Cisco CTO Padmasree Warrior. Its reputation in Silicon Valley is such that Scott Adams poked fun at it in a *Dilbert* strip. ("Since I became project manager, no one has returned my calls or responded to my emails," a man says in the cartoon. "Luckily, I'm an IIT graduate, mentally superior to most people on earth, so I finished the project myself.")

But India has been notably less successful in keeping that top talent at home or at translating that

brainpower into marketable and monetizable technology. IIT Rajasthan, one of a clutch of new schools in the system, was supposed to change that--and the challenge of the $10 laptop seemed like the perfect place to start.

**After weeks of courtship by phone and email, Professor Kalra agrees** to meet me, and I fly to Jodhpur, in the northwestern Indian state of Rajasthan. Rajasthan has long been famous for its maharajas, medieval forts, and Guinness-record-length mustaches, but never for technology. On a dizzyingly hot morning, my rickshaw careens past trash-chomping cows and a kaleidoscope of saris to the dusty cinder-block gates of IIT Rajasthan.

It's undergrads like Sumeet Rajpurohit who really need the Aakash. A 20-year-old computer-science student, Rajpurohit is specializing in Internet-communications technology. Yet he tells me that the only computing device he owns is a Rokea phone (a made-in-China 2G knockoff of a Nokia). Rajpurohit comes from a village a few hours' drive south of Jodhpur, where maybe three or four families own computers. His does not. Anupam Gupta, a project officer specializing in electrical engineering at IIT Rajasthan, explains that of the nearly 3 million students at India's 20,000 colleges, perhaps 10% have their own computers.

With the exception of when Prem Kumar Kalra accuses me of "spying," he's as gracious in person as he had been evasive over the phone.

The longer I spend at IIT Rajasthan, the clearer it becomes that absolutely nobody wants to talk about the Aakash. Kalra, who had agreed to an interview, is suddenly busy. Few students or professors admit to any personal knowledge of the project; one afternoon, after asking too many questions, I'm told to leave the premises.

At times, the dodging turns farcical. The morning after my ejection, I return to try to interview Professor Sandeep Kumar Yadav, an assistant professor who also specializes in electrical engineering.

"I'm looking for Dr. Sandeep," I say to the man I know to be Dr. Sandeep. "Someone suggested interviewing him about the Aakash."

He nods slowly, meeting my gaze as he rises from the swivel chair in his large cubicle. I think he's going to greet me or shake my hand.

"Dr. Sandeep is not here right now," he says. Then he walks past me and vanishes through a door.

**The next day, I finally meet Prem Kumar Kalra. With the exception** of the moment when he accuses me of "spying" (by interviewing students) and threatens to call the police on me for said offense, he's as gracious and garrulous in person as he had been evasive and capricious over the phone and by email. He talks a lot about his goal of graduating "sustainably self-inspiring engineers" and about his proposed collaboration with Stanford University, which has been coined REALM (short for Realizing Engineers' Aspirations for the Last Man, Woman, and Child). "My goal is to make me redundant. It's all about empowerment of different kinds of synergy," he says. "My inspiration comes from the gods."

Photo by Thomas Liggett

He could have used a little help from the gods two years ago, after the tender was put out for the production of the Aakash. The cheapest bid came from DataWind, a Canadian company run by Punjabi brothers Suneet and Raja Tuli. DataWind's track record was a single gadget that had flopped. (CNet's review: "Want free web surfing on an easy-to-use and speedy device? Then the PocketSurfer 2 is exactly not what you're looking for.") But DataWind's bid was unbeatably low: It would produce 100,000

Aakashes for 227 million rupees, or $4.3 million. (The Tulis declined to be interviewed for this story.) And for a minute there, at Sibal's Jobsian press conference last October, the Aakash seemed, finally, to be a reality.

Throughout the month, hundreds of Aakashes began to arrive at IIT Rajasthan for testing. The problems were immediately evident. According to one source close to the university, a third of the devices didn't start at all. Most of those that did either failed the basic drop test, overheated quickly, or saw their screens freeze until the battery ran out. A peek inside the box revealed circuitry and imported components held together by electrical tape. "It wasn't up to the mark. It was slow and would get stuck at times," says Ashutosh Mittal, one of the students on the testing team. "We tested many devices and most were faulty." He doesn't have an Aakash to show me.

I do find a handful of defenders. "I found nothing wrong with it," says Ashish Katiyar, another test-team member. "The touch screen wasn't that sensitive, but at that cost, it was compensated for. I found it to be a magical device, really miraculous." He can't show me one, though.

Professor Gupta tells me: "The goal was to have a device that simply works." In his view, the Aakash did not. But he can't show me one either.

When I begin to ask Kalra for his version of what happened and why, he shuts down, except to say that journalists before me have tried and failed on this quest, as if this story were some sort of reportorial holy grail. "A lot of people came to us, but their stories did not come out because they did not have the same thinking process. They were not on the same wavelength," he says, stroking his mustache. "People do not believe you, and so they oppose you. The time will come when they follow you."

For now, the only people who seem to be following Kalra are DataWind's lawyers. The manufacturer reportedly claims that the school owes it $100,000, while the school replies that DataWind owes it $500,000. Kalra acknowledges that the ordeal has tested the limits of his abilities. "You do well under pressure, because it cooks you," he says. "But overpressure bursts you."

Kalra says he has no Aakashes on hand. But he does have a motivational thought. "How did Europe become a leader?" he asks. I stammer around for the right answer, but he delivers it first. "They had one aim," he says. "Leadership in every area."

His point seems especially poignant since, by the time I meet him, Kalra no longer leads the Aakash project. A few weeks earlier, it turns out, the government had sought--and received--his resignation. The request came from Kapil Sibal.

**An ample man, jowly in an almost Churchillian way, Minister Sibal** is finishing up a briefing with

education reporters when I walk into his art-filled New Delhi office. When he learns what I am there to discuss, he stiffens. "I have an important lunch appointment," he says. "I have guests waiting for me at home." Our interview is over.

An aide, Uma Shankar, agrees to talk. He insists that the Aakash is on track: "We are procuring in bulk and distributing to students." Moments later, though, he seems to contradict himself, claiming that the success of the Aakash is that it will change expectations: "Aakash has created a new price point that people try to reach. We pushed the idea that it's possible. The marketplace will deliver on its own."

ROB ELLIOTT/AFP/Getty Images

What marketplace, exactly? India has delivered copious amounts of world-class software, but little hardware. One afternoon in Mumbai, I visit the city's largest electronics hub, Lamington Road, to gauge the state of the nation's computer-manufacturing industry. I stop to chat with Bimal Jhaveri, who owns Hardtrac Computer Services, a chain of 11 retail stores that sell laptops, desktops, and tablets. Not a single product in Hardtrac's inventory is made in India. "India has never invested in computer-hardware manufacturing," he says. "It's always promoted software. The government would need to help manufacturers with land and tax breaks. There are no Indian brands in computers."

And the Aakash? The only place he has ever seen one is in the newspaper. Not a single shopper has ever asked for one, and he doubts one ever will.

**After Kalra's forced resignation, Sibal appointed** Professor Deepak B. Phatak of IIT Mumbai as the new head of the Aakash project. Phatak is a 64-year-old computer scientist whose website is organized under basic headings including "Educational Information" (he got his PhD at IIT Mumbai) and "Recent Publications." One heading, curiously, is "Dream." Underneath, it reads: "Dr. Phatak's dream is to see a resurgent India catching up with the world using Information Technology as the spring board [sic]."

"You can give 100 names to it. But basically, it amounts to a deficit of trust," says Deepak B. Phatak. "Trust evaporated, and each side saw the worst in the other."

A genial man with a pencil mustache, plastic glasses, and a love for knickknacks, Phatak has zero experience with product procurement, great enthusiasm for the Aakash, and an appreciation of the burden he has taken on in what's supposed to be his last year before retirement. "I have not slept in several days. I'm surviving on tea and cigarettes lately," he tells me over Sunday lunch at his house, which sits amid lovely gardens on the IIT campus in Mumbai. (Well, tea, cigarettes, and his wife's aloo ghobi, a curried potato-and-cauliflower stew that is delicious.) "Every morsel of time that I have will go into this process until it is clean and clear and put in place."

Phatak is passionate about extending education into every corner of India. On the walls of his house, amid the mounted elephant heads--representations of the god Ganesha--are numerous photos of his sons, both of whom are engineers. His dream was for them to go to America, and they have. Every

windowsill is crammed with tokens of appreciation from have-nots, students from the remote, rural schools where he regularly gives speeches, hoping to open young minds to the possibilities beyond their villages. Phatak believes the Aakash is for these young people. For him, it's the as-yet-unrealized vision of Gandhian self-reliance, equal measures economic development, social justice, and Indian can-do spirit. "Young people always get ideas if there is some channel," he says. "If there is support, fantastic things can happen."

Phatak's first months on the job have not been fantastic. Nobody on the Aakash 1 team will give him a firsthand account of what went wrong. He hasn't spoken with Kalra. And the only words that Sibal has said to him were during the meeting at which he was named Kalra's successor. There were a dozen people in the room, and Phatak was sitting at the back. "Can you do it?" Sibal asked. Phatak nodded yes, and that was that.

From the reams of documents he has since read, he concluded that the missing ingredient has been trust. "You can give 100 names to it. But basically, it amounts to a deficit of trust," he says. "It failed because trust evaporated, and each side saw the worst in the other."

He has zeroed in on one particular rejected bank transfer. IIT Rajasthan withheld 10% of a payment to DataWind as a guarantee in case of technical problems. But this maneuver wasn't covered in the contract, so DataWind's bank rejected the entire transfer.

This, of course, addresses none of the technical failures, and when I ask Phatak about that, he concedes that one failing of the first Aakash may have been that its deadline was too ambitious. "Several decades too soon," he says. On a whiteboard in his office, Phatak has scrawled himself a reminder, Douglas Hofstadter's maxim about how hard it is to estimate how much time it will take to accomplish a complex task: "It takes longer than it should even if you take into account Hofstadter's law."

When I ask if he has a prototype of the Aakash that I can see, he shakes his head apologetically. He doesn't have a machine. What's more, he doesn't even have its specs.

**The Aakash has become an object lesson in the** Indian government's ability to create great expectations and its inability to deliver on them. The bold overpromise and subsequent underdelivery says a lot about not only India's managerial and technical shortcomings but also the desire of its politicians and media to promote a story of India as a rising superpower.

The eagerness to peddle this line seems not to have faded. The government still insists that the next-generation Aakash will debut this fall.

My hopes of seeing this fabled machine did not fade either. Finally, Phatak suggested that I contact WishTel, one of the manufacturers that is bidding to produce the next-generation Aakash, and I arranged an appointment with Milind Shah, WishTel's founder.

Shah and I meet one suffocating evening in the bar of a Mumbai airport hotel. He is just off a plane from New Delhi and is exhausted. As we sit watching two lounge singers, a laser show, and huge flames that intermittently and inexplicably burst from the stage floor, he tells me that he has spent the past several days in futile pursuit of Sibal and his entourage.

Shah, whose family has a business selling surveillance systems, hopes to make a tablet with educational materials in all 22 of India's official languages. For now, he is calling it the Ira Thing, after the Hindu goddess of wisdom, and proudly declares it "an education-delivery system."

When I ask to see the prototype, he happily obliges, pulling one out of his bag. Finally! He turns it on, the

screen flickers, and then almost instantly fades away. I haven't even pressed a button, and already it has run out of power.

*Harish Tyagi/epa/Corbis (Sibal); Gurinder Osan/AP/Dapd (Aakash tablet)*

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