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Wedding innovation with business value: An interview with the director of HP Labs

Prith Banerjee discusses the new mission of corporate research labs and the challenge of managing innovation to create business impact.

HP Labs, the central research arm for Hewlett-Packard, forms a small but critical piece of the company's R&D ecosystem. Prith Banerjee, director of HP Labs, leads a core group of 500 researchers, whose charge is to innovate 5, 10, and 15 years beyond the focus of the other 30,000 R&D engineers within HP. In this video interview, Banerjee discusses how he has tried to align long-range innovation projects with the current business plans and vision of the company. He also talks about the value of localizing research talent, the importance of measuring innovation, and the evolving role of corporate research labs. Lenny Mendonca, a director in McKinsey's San Francisco office, spoke with Banerjee at HP's headquarters, in Palo Alto, California.

The *Quarterly*: *How has the mission of corporate research labs changed?*

Prith Banerjee: Fifty, 60 years ago when you had corporate labs like Bell Labs, they were funded by a percentage of revenue of a monopoly. They could afford to do very basic science and prize-winning work, and they did not have to show any relevance to the business.

The economic conditions today are such that if a corporate lab chooses the high ground that it is going to do 100 percent basic research, people question the relevance. On the other hand, if a corporate research lab says, "I want to be relevant to the business," and you start doing work which is relevant to the next quarter or the next year's products, if you're 100 percent aligned with product-development research, then people ask the question, "HP Labs, you have only 500 people—why are your 500 people doing the same work as the 30,000 R&D engineers at Hewlett-Packard?"

So at either ends of the spectrum, people question the relevance of a corporate research lab. If you're 100 percent basic research, that's no good. If you're 100 percent aligned with product research, that's no good. So at HP Labs, we've taken a portfolio approach, where our goal is for one-third of our research to be basic research, which is looking 5, 10, 15 years into the future; one-third of our research to be product research, product relevant, so it'd be 6 months to 18 months research on an existing product of Hewlett-Packard; and a third of our research to be somewhere in between, what we call "applied research," with timelines of 2 to 5 years.

And we believe that, in today's conditions, a portfolio approach of a third, a third, a third is the right thing.

The *Quarterly*: *What does access to global talent mean for your strategy?*

Prith Banerjee: Today, HP Labs is in seven different locations around the world. We are in India, China, Russia, Israel, and all over the place. And the reason we moved to those locations has nothing to do with cheap labor. By moving a researcher from Palo Alto

to India—and maybe the cost is half that in India—it has nothing to do with cheap labor. It has to do with the researchers in India trying to tap into the talent in India. And the researchers in India are actually working on projects that are relevant to that context. So HP Labs India, its mission is innovation for the next billion customers.

I strongly believe that it is not very easy for researchers sitting in Palo Alto to imagine the problems for the billion people in India, the vegetable vendors in India. What kind of cell phones, what kind of PDA devices would *they* need to solve their day-to-day problems?

Sitting here in Palo Alto, you imagine that the whole world is developed, and it's not. So the researchers in India are actually working on precisely those problems. They are looking at rich, intuitive interfaces; they are looking at devices, sort of a smart phone for the Indian market. There are a billion people in India. More than 70 percent of the people have cell phones, but only 5 percent of people have PCs, computers, in their homes. So what we are trying to do is to see how we can enable the remaining 95 percent of people in India to embrace computing.

The challenge isn't that they can't afford a computer. It's true, a computer is $1,000. But they are affording televisions. They're affording cars. They're affording scooters. So clearly it is not the price, it is the value. Can we bring value to those people in India? And that's an example of a project that is going on—it's a project called a value device, a sort of cloud service and a platform environment that they are working on in India. Completely innovative. And those kinds of projects would not have happened from the researchers in Palo Alto.

The *Quarterly*: *How do you create incentives for collaboration?*

Prith Banerjee: First of all, I told my team that I am not a domain expert, so I cannot look at the world and say, "These are the 20 things we should work on." I look for ideas to bubble up from the bottom up. What we've created is a mechanism for researchers to propose brand new ideas for large, collaborative, very aspirational big-bet projects in front of a board that would be very objective.

And since our objective for HP Labs is sort of the twin goals of advancing the state of the art and providing business impact, we constituted a board which has one-third lab directors, one-third business unit people, and one-third technologists all across HP.

So when research projects came in front of the board, if the business unit people wanted HP Labs to work on very, very short-term business focus things that would be irrelevant to them in the next quarter or next year, they only have one-third of the votes. If the technologists wanted to solve problems just for the sake of science, they only have one-third of the votes. So no one group had enough votes to approve big-bet projects. And

that was fundamentally a mechanism that we set up so that the business unit people and the technologists on the board had to agree on what bets should move forward. This transformation took two years. It was not an easy transformation, so it's not like we just completely scrapped all 150 projects. What we said is, you can take the ideas in this project and make sure they fit together as part of a bigger picture.

The *Quarterly*: *How do you measure innovation?*

Prith Banerjee: Measuring innovation, measuring research output, is one of the hardest things to do. When it happens, you know. Say you have created an iPhone—people know that's an innovative thing. But providing people the incentives and measuring progress along the way is a hard thing.

With respect to the business impact: in the past, people used to do incremental tech transfers. So I'd do a little algorithm and say, "I have transferred it to a business." And it ends up as being just one small subfeature in a product. And if you count only tech transfers as the number of technologies that get transferred to labs, you will again have the wrong output. All you'll have is a whole bunch of very small incremental tech transfers.

So the goal I set is, we will do something big. Rather than doing a whole bunch of incremental tech transfers, the way we have set ourselves up is we *measure* our tech transfers. So at the end of the year, researchers and lab directors say, "These are the technologies we've transferred to the labs, to various businesses."

We go to the CTOs of the various units and we use what is called a $100 test. So we give $100 to the CTO of the imaging and printing group. And we tell him, "These are supposedly 36 tech transfers that happened from our lab to your imaging and printing group," which is a $26 billion business. "You tell us, what value did these tech transfers have?"

So he picks three or four that are really, really strategic, high value—for example, a charger or a printing engine that will enable HP to solve a digital-printing problem. That got a $30 value. On the other hand, very small incremental and imaging-processing stuff that went into a laser printer got a $1 value.

So essentially, we are trying to differentiate between the large transfers and the small transfers. And they are showing up in the labs' scores and the labs' metrics. So basically, I believe that management cannot do top-down goals; nobody listens. Management has to set the incentives, and then the organization works by itself. ○