

This copy is for your personal, noncommercial use only. You can order presentation-ready copies for distribution to your colleagues, clients or customers [here](#) or use the "Reprints" tool that appears next to any article. Visit [www.nytreprints.com](http://www.nytreprints.com) for samples and additional information. Order a reprint of this article now.

August 16, 2009

UNBOXED

## The Corporate Lab as Ringmaster

By [STEVE LOHR](#)

THE Internet has changed many things, of course, but one of its more far-reaching effects has been to transform the economics of innovation.

The nation's big corporate research and development laboratories — at [I.B.M.](#), [General Electric](#), [Hewlett-Packard](#) and a handful of other companies — have their roots and rationale in the industrial era, when communication was costly, information traveled slowly and social networks were fostered at conferences and lunchrooms instead of over the Web.

Crowdsourcing and other new, more open models of innovation are really byproducts of the low-cost communication and new networks of collaboration made possible by the Internet.

So, in the Internet era, what is the continuing role and comparative advantage of the corporate R.& D. lab?

Its role will be smaller and its advantage diminished, suggests Michael Schrage, a research fellow at the [Center for Digital Business](#) at the Sloan School of Management at [M.I.T.](#) The idea-production process, according to Mr. Schrage, will continue to shift away from the centralized model epitomized by large corporate labs, going from “proprietary innovation to populist innovation.”

Much of traditional corporate R.& D. spending, he said, has been subsidized by profits that are increasingly under Internet-era pressures. “The economic case for a lot of in-house R.& D. no longer makes sense,” Mr. Schrage said.

The best bet for corporate R.& D. labs, he said, is to adopt a “federated” model that leverages all the innovative work by outsiders in universities, start-ups, business partners and government labs. The corporate lab's role, then, is to be more of a coordinator and integrator of innovation, from both outside and inside the company walls.

Though hardly alone, Hewlett-Packard has aggressively adopted that approach in the last two years, after Prith Banerjee became the senior vice president for research. Under Mr. Banerjee, former dean of engineering at the [University of Illinois](#) at Chicago, H.P. Labs has not only narrowed its focus, placing larger bets on fewer projects, but has also systematically sought outside ideas.

H.P. now runs a yearly online contest, soliciting grant proposals from universities worldwide. The company lists eight fields in which it is seeking advanced research, and scientists suggest research projects in those fields.

The H.P. grants are typically about \$75,000 a year, and many of the collaborative projects are intended to last three years. In June, [the company announced the 61 winners](#) from 46 universities and 12 countries, including 31 projects receiving a second year of funding. “We are tapping the collective intelligence, selectively, of leading academics around the world,” Mr. Banerjee said.

Alan E. Willner, an electrical engineer at the [University of Southern California](#), is one of those academics. He is an expert in photonics, using light photons instead of electrons to transmit information. The goal of the project with H.P. is to cut power consumption and increase data-transmission speeds between computers in data centers, and eventually even inside of chips.

The H.P. project, he said, supports a research student, provides insights from H.P. scientists and has helped double the productivity of his research team, whose members have co-authored 21 conference and journal papers related to the project in the last year.

Another name on all those papers is Raymond G. Beausoleil, an H.P. research fellow. The U.S.C. team, Mr. Beausoleil said, has helped fill a gap in photonics expertise in the company's research program and accelerated its progress. He noted that H.P. Labs has long worked with university professors, but that the outreach tended to be informal and ad hoc. "Before," he said, "there wasn't necessarily a mandate to collaborate."

Opening up is a good approach to some problems. But tight-knit teams inside corporate labs, experts say, can outshine the open model when working on multidisciplinary challenges in projects soon heading to market.

G.E. built up a biosciences unit, starting in 2004, to help push its diagnostic imaging technology to new commercial frontiers. Last year, G.E. and the [University of Pittsburgh Medical Center](#) developed a prototype scanner that sharply cuts the time needed to digitize images on pathology slides.

Now, the G.E. researchers are working on the software and data analysis tools to look into such images for a deeper understanding of diseases. G.E. is collaborating with [Eli Lilly](#) and the [Memorial Sloan-Kettering Cancer Center](#). But the core is a 15-person team at G.E. Research that includes computer scientists, molecular biologists, chemists and statisticians.

"It really helps to have the close and constant communications loops within the team, because engineers have to learn a lot of biology and biologists have to learn a lot of engineering," said Fiona Ginty, a bioinformatics scientist who leads the project.

Probably more than any other company, I.B.M. has successfully reinvented its R.& D. labs over the years, analysts say. Jolted by its early-1990s tailspin, I.B.M. opened its labs to the outside world and to customers. Since the mid-'90s, it has sharply shifted its research focus toward its growth engines of software and services.

I.B.M. is a major underwriter of open research in universities, but also collects more patents for its own use than any other company, year after year.

The open innovation model, says John E. Kelly, senior vice president and director of research, has many advantages. But he points to several innovations that became products after originating in I.B.M. labs.

"You can't leave discovery completely to others and to chance," he said.

Copyright 2009 The New York Times Company

[Privacy Policy](#) | [Terms of Service](#) | [Search](#) | [Corrections](#) | [RSS](#) | [First Look](#) | [Help](#) | [Contact Us](#) | [Work for Us](#) | [Site Map](#)