



betting it will need soon.

"Corporations in general have done a lousy job of understanding what are the emerging skill sets that will be needed," said J. Randall MacDonald, who joined I.B.M. as a senior vice president for human resources five years ago.

Identifying the new skills valued in the marketplace, Mr. MacDonald said, will become an increasingly important competence for corporations. Employees, he added, must gain trust in a company's calls on emerging skills. And employees must take on the responsibility - on their own and assisted by company education programs - to equip themselves with new skills.

"It's very much a trust-responsibility equation," Mr. MacDonald said. "It's something that can drive a sense of trust back into the workplace."

Compensation, of course, is a prime motivator in the workplace. And the pay system at I.B.M. has been overhauled to try to foster a more entrepreneurial culture. Under Louis V. Gerstner Jr., the outsider who took over as chief executive in 1993, I.B.M. executives were not only granted stock options but also required to buy I.B.M. shares on their own. About 75,000 employees now hold stock options or grants.

With the accounting-rule change this year to treat options as an expense, I.B.M. sharply reduced its share grants. But Mr. MacDonald said that bonuses, ranging up to 30 percent of annual salary, would ensure that the most productive employees were rewarded. "There are wide swings in variable pay," he said. "What we're really trying to drive here is a performance-based company."

To achieve that goal, I.B.M. employees have had to adopt a more flexible, self-reliant style of work. Lynn Yarbrough, a former intensive care nurse, was hired by I.B.M. in 1988. At the time, she worked out of the Atlanta office and used her nursing and health care expertise to help design software and sell hardware tailored for use in hospitals. She routinely went to her Atlanta office, worked with the same people and talked to her boss most days.

Now, I.B.M. has pulled out of making hardware and software products for individual industries. Ms. Yarbrough, 51, is now a consultant in the I.B.M. services unit that advises health care providers on how to use technology to improve care and reduce costs. Over the years, she has taken courses from a few days to a few weeks on topics like project management and genomics.

Ms. Yarbrough has a home office in Panama City Beach, Fla., but she is mostly on the road accompanied by her laptop, cellphone and suitcase. She typically works on assignments that last from a few weeks to several months as a member of teams of I.B.M. consultants and technologists, ranging in size from a handful of people to more than a hundred.

Ms. Yarbrough says she enjoys her job at I.B.M., yet her real enthusiasm and commitment seem to be reserved for her field of expertise more than a single company. "There is this wave of technology that is washing over health care and it will totally change how medical care is provided and consumed," Ms. Yarbrough said. "I feel I'm working on the leading edge of both technology and health care."

Big companies and startups alike wooed Jia Chen when she left Yale University in 2000 with a Ph.D. in physics and a portfolio of published research on nanotechnology. She chose I.B.M., she recalled, with the notion "let's start with a couple of years and see how it goes."

Things have gone well so far, said Ms. Chen, a 33-year-old researcher at Watson Labs, where she has been for the last two years. Before that, she worked at I.B.M.'s advanced microchip plant in East Fishkill, N.Y., which was invaluable firsthand experience for someone trying to develop molecular-scale circuitry to eventually replace silicon semiconductors.

In the old days, the I.B.M. bureaucracy was infamous for slowing the progress of innovative ideas into the marketplace. "Swimming through peanut butter" was the description of frustrated technologists at I.B.M. These days, Ms. Chen appears to have no such qualms. Small companies, she said, may be quicker at times. But I.B.M., she said, has "a lot of experience in how to transform a scientific idea into a technology."

Whether Ms. Chen stays or leaves someday, I.B.M. has afforded the young scientist opportunities that will help her wherever she works. Beyond her research programs, Ms. Chen has taken courses on communications and leadership skills. She speaks at about 10 scientific conferences a year. M.I.T.'s Technology Review magazine selected Ms. Chen this year as one of the 35 top technology innovators under the age of 35.

Those are steps to success, said Robert B. Reich, a professor of economic and social policy at Brandeis University. "The most important community for an individual will not necessarily be a company, but a looser community of people with similar skills and social connections," said Mr. Reich, a former Secretary of Labor in the Clinton administration. "Continually building up those skills and connections is what a career is today."