

## HOW SMALL FIRMS INNOVATE

# Designing a Culture for Creativity

*This product development specialist keeps its staff creative by banning bureaucracy while pursuing its own methodology for innovation. 'Concert pianists' need not apply.*

Tekla S. Perry

**OVERVIEW:** *By creating an organization that is flat to the extreme (employees have no titles, no corporate ladder to climb, and take turns at project management), emphasizing smallness (typical sites have less than 30 employees), and building in flexibility (cabinets and shelves on wheels for easy office moves), IDEO, a contract R&D firm, has become a high-speed innovator. The company hires from multiple disciplines and emphasizes cross-fertilization. Its secret weapon is its five-step innovation methodology: Understand, Observe, Visualize, Implement, and Evaluate. Its international staff of 180, linked by a heavily used electronic mail system, develops nearly 100 new products annually.*

How does a company with 180 employees develop 90 new and radically different products a year? For IDEO, the answer lies in consciously establishing a corporate culture oriented toward creativity.

Established as David Kelley Design in 1978, and renamed in 1991, this Palo Alto, California company does product development for hire—from computers (IDEO has done some 50 designs for Apple Computer Inc.), to medical equipment (including a laser-based blood analysis station), to automotive electronics (a recharging system for electric cars), to toys (a yo-yo is currently under development), to movie special effects (three-ton robot whales for *Free Willy*). IDEO sells itself to companies as offering a fresh look, top product designers, and speed, speed, speed—small projects can wrap up in a month or two, big ones rarely take longer than a year.

In the past 15 years, IDEO has won some 27 Industrial Design Excellence Awards presented by *Business Week*, more than any other company. Tom Peters highlighted IDEO's creative culture in his book, *Liberation Management*. And *Fortune* magazine recently called the company "one of Silicon Valley's secret weapons."

IDEO's creative culture starts with hiring. The company does not recruit; in fact, it has never had any plans or desire to grow. "We only hire people who

[approach us] who we can't stand not to have in the company," founder Kelley said. Such people exhibit extremely high levels of intellectual curiosity. IDEO doesn't look for people who want to become experts on a certain subject; rather, it wants people who are always interested in doing something new, moving on to the next thing. Kelley calls people who prefer to design generation after generation of the same product, each time making it slightly better, "concert pianists," and doesn't see a place for them in his lab.

IDEO identifies its curious intellects by requiring that any potential hire be "lunched" by 10 current staffers. They rate the applicant in 10 or so categories, including love of product design, communication skills, technical knowledge, and drawing skills. A person needs all 9s or 10s to get hired, but once in, receives the company's full commitment. IDEO has never fired anybody, although a few employees have left because they got tired of the pressure to constantly innovate.

### Banning Bureaucracy

IDEO keeps its staff creative by operating without a hierarchy. This company has taken the idea of the flat organization to an extreme. There are no organization charts, no titles. Titles, said Craig Sampson in IDEO's Chicago office, would focus attention away from what is important, which is the quality of the work. Most business cards contain only a field of specialty, like electrical engineering or interaction design. Only some 10 people around the company handle bureaucratic functions such as purchasing or tracking bills and payments; the other 170 dedicate themselves to innovation.

With no opportunities for promotion or advancement to spur employees, motivation comes from peer pressure. "It is about who can do the best job, who can come up with the most clever things," Kelley said, and employees think nothing of working 50 or 60 hour weeks to try to be the best. The no-promotion policy is an added plus for some employees, who elsewhere might be pushed up into management ranks and forced away from their first love, development.

Other motivation comes in the form of internally produced trophies, presented at project completion

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*Employees from IDEO's Palo Alto and San Francisco sites gather for one of the frequent get-togethers that help motivate people for whom there are neither titles nor promotion opportunities to develop 90 new products a year. Photo by Leslie Hirsch.*

ceremonies, and frequent parties and other gatherings. The company's Palo Alto offices hold a weekly bike ride, for example, and the company is currently holding a robot contest, where employees design mechanical devices to fight in a high-tech demolition derby.

The key to avoiding hierarchy, in Kelley's view, is smallness. A typical IDEO site only houses about 25 employees. Too many more, Kelley said, and

people wouldn't recognize everybody in the building, the company would have to institute security procedures, perhaps regulate vacations, and the bureaucracy would begin forming.

IDEO's facilities are located in cities that attract both clients and creative people, like San Francisco, Boston, Chicago, Tokyo, and London. In Palo Alto, Calif., the company headquarters, the desire to keep operations small has led to the company being spread through

seven buildings. "We are small enough so that everybody here knows all the projects that are happening in this office and feels a part of them," said Sampson in Chicago. "Employees have a sense of ownership and significance."

### **Mentors and Project Leaders**

New employees are assigned mentors to help them survive without an organization chart. There isn't even a human resources department—the mentor will tell the employee from whom to request various services, to schedule the CAD classes, for example, that every employee is required to take, or to find office space. Mentors also introduce employees to project leaders and help them pick their first assignments.

The job of project leader rotates. When a client comes in with a project, and Kelley or the nominal leader at one of the other offices decides to take it on, a project leader is assigned. This happens somewhat organically, Kelley explained, as someone excited about the project just seems to emerge. Anyone in the company can be a project leader; the person must simply be "presentable to the client." On small projects, the leader can be presented as a hot new designer right out of school; on bigger projects, to be presentable leaders must have some kind of track record and be able to tell the client about their experience.

As a project evolves, the project leader attends "manpower meetings" to recruit an appropriately sized team to handle the necessary tasks, rarely more than a dozen people. When the project is over, a closure ceremony is held, and the team disburses. Kelley sees this closure ceremony—a party where trophies are presented and the team reminisces about the project—as very important in preparing staffers to be immediately launched into a new development effort.

Frequent groupings and regroupings mean that IDEO designers must often change offices. IDEO's newer buildings have been designed to accommodate this—small offices in various clusters open onto central conference spaces; clusters are assigned to teams depending on their size. Staffers keep personal possessions in wheeled bookshelves and small file cabinets which can be rolled by a trolley, so moves can be accomplished without spending time packing and unpacking.

Such constant change avoids burnout, said Bill Moggridge, who joined his London design company with David Kelley Design to form IDEO. "When we get work that is similar for a long time, some of our people get bored and dry. The best cure is to find another project they can engage with."

### **Cross-fertilization as Catalyst**

IDEO counts on cross-fertilization as a key catalyst for innovation. All design teams are interdisciplinary, combining staffers trained in engineering, art and

### **Small or Large, Successful Innovators:**

- Hire good people.
- Keep bureaucracy out even as they pursue objectives clearly and systematically.
- Make the project king, establishing definitively who the project manager is and what the objectives are.
- Cross-fertilize in every possible way—multidisciplinary teams, e-mail, etc.
- Allow people to fail in a culture of try it, fix it, try it again, and learn from the experience.
- Have fun.—The Editor.

industrial design, psychology, and other fields. Every Monday morning, the staff of each IDEO site meets for a show-and-tell, where each project at that site is reviewed and each employee given a chance to tell about something interesting, whether it be a new type of rubber he tracked down to solve a problem or a movie he saw over the weekend. Each site releases the highlights of this meeting as a one-page newsletter and circulates it through IDEO's other sites around the world.

Cross-fertilization also comes via electronic mail. E-mail use is rampant—IDEO has no corporate library, and developers seek out answers to questions both routine and arcane via e-mail.

Perhaps the most unique method of cross-fertilization is IDEO's swap policy. Any IDEO employee anywhere can move to any other IDEO office for any length of time, provided he can find an employee willing to trade places with him; he needs no other permission. (In addition to jobs, employees sometimes trade houses as well.)

The swap, of which five or six are currently going on, enables bridges to be built between the IDEO locations. Having spent time in London, for example, a Palo Alto designer will be aware of London staffers' expertise, and will be able to suggest tapping it when the need arises in a Palo Alto project. "We found the most effective means of creating communication was having individuals experience both offices, and that we should always have at least one swap working (in every office). We found a year is a crucial minimum for a swap—less than six months doesn't allow them to absorb the culture," said Moggridge, who is a frequent traveler to IDEO's international locations.

The company also has shorter term transfers when necessary for projects. "When we have an overload in one place," Moggridge said, "the e-mail starts to buzz as project managers search the whole company for somebody who is interested in coming to help."

### **Recipe for Innovation**

IDEO has developed a methodology for innovation. This methodology is the company's bulwark, since by

innovating in such diverse fields, the company has little chance—or desire—to develop expertise in any one field, be it computer interface design or package design. Says Kelley: "We don't have technical expertise to hang our hats on, what we have is our methodology. We have to believe we are experts in how to innovate."

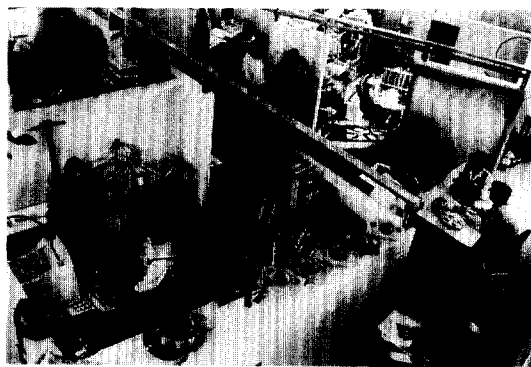
The IDEO methodology has five steps: Understand, Observe, Visualize, Implement, and Evaluate. Some of these steps are iterated many times in a single project. And throughout this process, the project leader holds brainstormers. Brainstormers run under strict rules, posted in the brainstormer rooms: Defer judgment. Encourage wild ideas. And build on the ideas of others. Brainstormers are attended by no more than eight people, by invitation only, and since, according to the IDEO culture, brainstormer invitations are a sign of worth they are rarely turned down. "Brainstormers are the candy," Kelley said. "You are in the middle of a project, handling endless details, and then you get invited to a brainstormer, where you get to have all sorts of good ideas and leave with no responsibility for them. It's cathartic, to dump your ideas."

To *Understand*, the first step in IDEO's innovation methodology, the project leader must immerse himself in the product. To design a new chair, he studies the history of chairs and the companies that make chairs. He researches the cost structure of chairs and the ergonomics of chairs. And he buys every different kind of chair he can find and rips them apart. He also tries to understand the client, meeting representatives from marketing, manufacturing, and other key departments.

The next step is to *Observe*. "This is the place most of the ideas come from that are really great," Kelley said. Observation is overseen by human factors experts on the staff. "If we're making a toaster," Kelley said, "instead of sitting here with a bunch of people who might or might not be mindful of how they make toast, these human factors people (most trained as psychologists) develop a questionnaire, go into the field, and watch people make toast."

*Visualize* is a critical step. IDEO developers prototype early and often. Each IDEO office has a shop where employees can build their own prototypes—out of Styrofoam, or cardboard, or Legos, or tinker toys, or whatever works. IDEO also has large central shops staffed by machinists and model-makers to which engineers can send CAD drawings and quickly get back more sophisticated prototypes.

"We believe in a prototype-driven culture, not a specification-driven culture," Kelley said. Prototypes allow project teams to be sure they are all imagining the same design when they discuss a product. Prototypes are shown to clients and others; designers hear what is wrong with them, and the designers build another prototype and start the process again.



*IDEO's Palo Alto office is typical, with wheeled bookshelves and wide doors which can roll closed for privacy or open to make the center conference table seem like part of the office. Photo by Sandra Frank.*

For a medical system, for example, IDEO designers might make dials out of paper and ask nurses to set the blood pressure, slipping in cards with numbers to simulate the setting.

Kelley believes many companies could benefit from such quick and dirty prototyping ("By our method you could never design a VCR you couldn't program," he said), but researchers at larger companies are afraid to do cardboard-and-tape-and-Styrofoam prototypes. "They are afraid of looking bad to management, so they do an expensive, sleek, prototype, but then they become committed to it before they really know any of the answers. You have to have the guts to create a straw man."

These straw men are repeatedly knocked down, and the process gives IDEO's staffers thick skins. They fail early, and often, and go back and fix it. Failure, Kelley said, is part of the culture. "We call it enlightened trial and error."

The next step, *Implementation*, is the creation of a sophisticated prototype that can be turned over to the client company and eventually manufactured.

Finally, by *Evaluation* IDEO improves its own processes. It looks at the completed project, sees what it did well and what it could have done better. It also reviews what it learned from the client company. "We try to be mindful of what is happening when we innovate," Kelly said. "We pick the things each client does well, and assimilate them into our methodology. We're not good at innovating because of our flawless intellects, but because we've done 2000 products, and we've been mindful." ☺