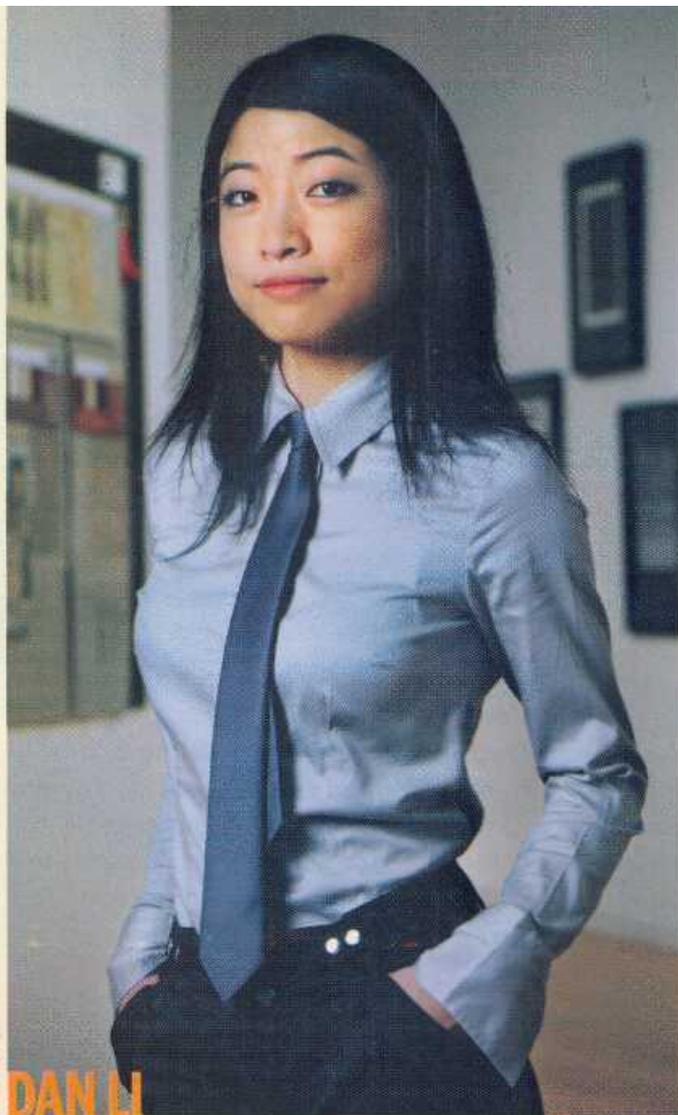


The Talent

DESPERATE TO INNOVATE, COMPANIES ARE TURNING

(L TO R) PHOTOGRAPHS BY ROGER MASTROIANNI; PETER SCHINZLER; BRIAN SMALE; ROBBIE MCCLARAN



DAN LI

"In China, we have a lot of engineers and a lot of designers, but they don't really work together. We don't talk as much about the idea of design management.

-Dan Li ("Grace") is a 2004 engineering grad of Beihang University in Beijing. Now she is a design grad student at the University of Cincinnati and a research assistant in P&G's innovation division.



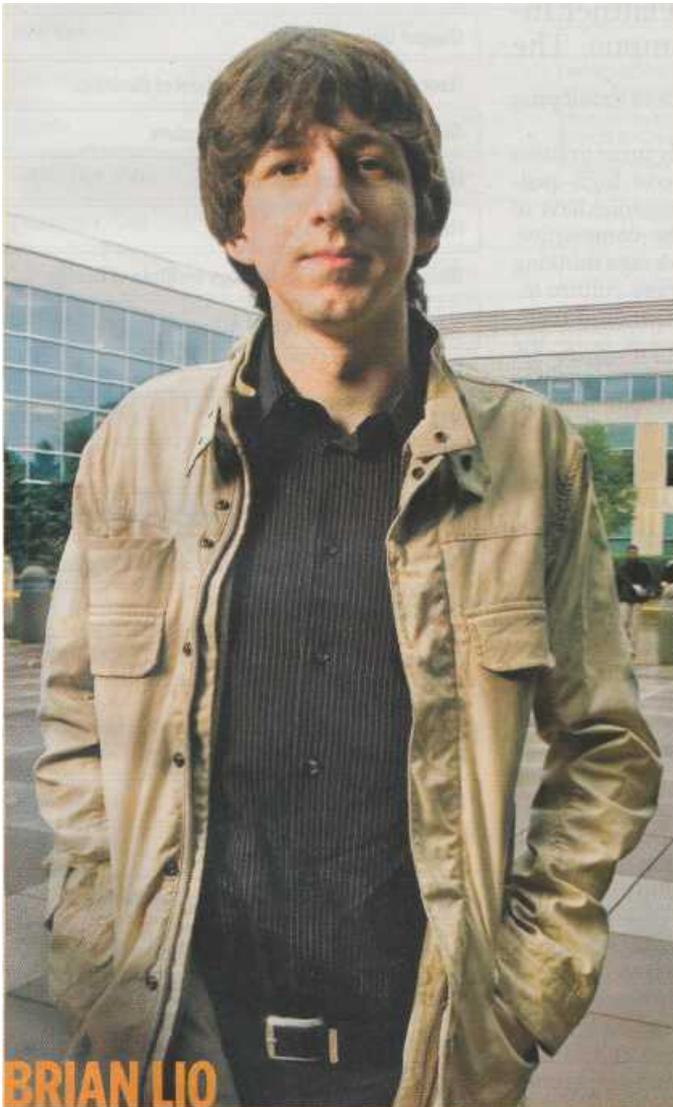
MARTIN MANGOLD

"The combination of business and design gives you different solutions than if you only had a classical financial perspective on a problem.

-Martin Mangold graduated in 2006 from the Zoilverein School of Management & Design (Essen, Germany). Today he is head of marketing, design, and strategy at HP. Pelzer Group.

Hunt

TO DESIGN SCHOOLS FOR NIMBLE, CREATIVE THINKERS



BRIAN LIO

"I learned how to speak with customers, designers, engineers, marketers, salespeople. I understand their different perspectives.

-Lio graduated from Rochester Institute of Technology and its new Program for Innovation & Entrepreneurship in 2006. He works at Microsoft as a product manager in mobile and embedded devices.



JANNA KIMEL

"My interest was piqued by this left-brain/right-brain combination. You get to be creative, but you have to do it logically.

-Kimel is a 2005 Georgia Tech industrial design grad. She's a design researcher in the Digital Health Group at Intel.

By Jessi Hempel and Aili McConnon

ECH GEEKS LOVE MOZILLA'S FIREFOX BROWSER, which is impervious to most viruses, but mainstream America has yet to embrace it. How does Mozilla move beyond invention (cool browser, neat functions) to an innovation that translates into market success (a Net tool so hot it upends Microsoft's Corp.'s Explorer)? It's a perfect problem for a classroom case study. So last spring, Mozilla's business development team turned to Stanford University. But instead of going to the business school, they headed for the double-wide trailer that housed Stanford's Hasso Plattner Institute of Design, dubbed the "D-school" on campus. The

course was team-taught by Stanford profs and industry professionals. Each student worked in a team that included a B-schooler, a computer science major, and a product designer. And each team used design thinking to shape a business plan for Mozilla.

It made a big difference. A B-school class would have started with a focus on market size and used financial analysis to understand it. This D-school class began with consumers and used ethnography, the latest management tool, to learn about them. Business school students would have developed a single new product to sell. The D-schoolers aimed at creating a prototype with possible features that might appeal to consumers. B-school students would have stopped when they completed the first good product idea. The D-schoolers went back again and again to come up with a panoply of possible winners.

TRUNCING TRADITION

ONE IDEA WAS Firefoxies.com, a social networking site where users submit photographs and vote on the quality of friends' photos. The catch: You have to download Firefox to vote. So far, 30% of the site's visitors have done so. Among marketers, that's huge.

The power of this new approach, called design thinking, to promote innovation and open up business opportunities is attracting the attention of corporations around the globe. Design has evolved from a narrow discipline dealing with the form and function of products

into a major new approach to developing business models.

As business increasingly turns to India and China to provide low-cost, high-quality goods and services, companies have to focus on innovation to be competitive. That driving need makes design thinking the hottest trend in business culture today. If engineering, control, and technology were once the central tenets of business culture, then anthropology, creativity, and an obsession with consumers' unmet needs will inform the future.

This change in focus is leading to a huge corporate talent hunt. To make their business culture more innovative, managers are hiring thousands of new people who can think and act more creatively. More and more, recruiters ask if people with a degree in "administration" are up to the task.

That's why such corporations such as Nike, General Electric, McDonald's, Intel, and many others are looking beyond traditional sources of leadership to a new set of schools and programs to find innovative managers. And that's why Stanford's D-school has earned a place on our inaugural list of Top D-schools, the first-ever survey of design schools and design programs in the U.S., Europe, and Asia that are graduating the innovators companies hunger for. These are the schools that "move away from analyzing existing options and look to the creation of new options that have not yet been considered," explains Roger Martin. He's dean of the Rotman School of Management at the University of Toronto, a leading school in design thinking.

Design schools seek "new opportunities that have not yet been considered"

The Top Design Pr

Arizona State University, College of Design

Art Center College of Design

California College of the Arts

Carnegie Mellon University, School of Design

Case Western's Weatherhead School of Management

The Cleveland Institute of Art

College of Creative Studies

Cooper Union

Georgetown's McDonough School of Business

Georgia Tech College of Architecture

Harvard Business School

Harvey Mudd College

Illinois Institute of Technology Institute of Design

Massachusetts College of Art

MIT Media Lab

MIT Sloan School of Business

NC State College of Management

Northwestern University, Kellogg School of Management

NYU's Interactive Telecommunications Program

Olin College of Engineering

Parsons, The New School

Pratt Institute

Rhode Island School of Design

Ringling School of Art & Design

Rochester Institute of Technology

Stanford's Hasso Plattner Institute of Design

Syracuse University, School of Art & Design

U.C. Berkeley's Haas School of Business

University of Cincinnati College of D.A.A.P.

University of Illinois, Urbana-Champaign

University of Michigan, Ross Business School

University of Pennsylvania, Wharton School

University of Toronto, Rotman School of Management

U.S.C.'s School of Television & Cinema

Programs

Tempe, Ariz.	Business school and engineering school within Arizona State	
Pasadena, Calif.	INSEAD/Jama Art University	Students work in transdisciplinary studios on products, business ideas, and strategies for companies like DaimlerChrysler, Hewlett-Packard, Honda, and Disney.
Oakland, Calif.	U.C. Berkeley's Haas School of Business	Recently partnered with Korean cell-phone manufacturer Pantech to build prototypes with CCA students and 20 Korean students.
Pittsburgh	English Dept.; Mechanical Engineering Dept.; Human-Computer Interaction Institute; B-school	Hosted Emergence, a service design conference, in September, 2006. Course sponsors include Intel, New Balance, and Ford. Award-winning Integrated Product Development Course.
Cleveland	The Cleveland Institute of Art; Technical University of Eindhoven	Held 2002 "Managing as Designing" workshop applying Frank Gehry's design approach to management decisions. Turned workshop into DVD and book. Information Design and Management Course mandatory for all students.
Cleveland	Case Western's Weatherhead School of Management	Industrial Design chair Daniel Cuffaro has revamped curriculum to include business and plans to bring design to Cleveland city planning.
Detroit	University of Michigan, Ann Arbor; Dearborn and Walsh College	Feeder for major auto companies like GM, Ford, DaimlerChrysler, and Toyota. Plans to open a graduate school in 2008 and has recently added more business to undergrad curriculum.
New York	Architecture classes open to engineers	Employs a fine arts faculty, in addition to architecture and engineering.
Washington	None	Developing New Products and Services has been taught for five years by Jeneanne Rae, president of Peer Insight, a service innovation consultancy; brings together business, engineering, and liberal arts students.
Atlanta	Rapid Prototyping & Manufacturing Institute at Georgia Tech; Hong Kong Polytechnic	Industrial design students work with management, computing, engineering, manufacturing, and marketing students on projects for Coca-Cola, Kodak, Dell, and Xerox.
Cambridge, Mass.	None	Professor Stefan Thomke leads courses on innovation and operations management that fold in experience design.
Claremont, Calif.	Claremont College consortium	The Harvey Mudd College Clinic pairs students with companies from Boeing to Google for projects. Interdisciplinary Center for Design Education for engineering design teachers, researchers, and practitioners.
Chicago	IIT's Stuart Graduate School of Business	Started offering dual MDes/MBA degrees in 2006; hosts workshops for managers and executives to examine how business can use design to solve problems and analyse emerging opportunities and markets; Patrick Whitney, director.
Boston	Northeastern's entrepreneurial program; Bentley College (both in 2007)	Companies such as Bose, Reebok, and Dunkin' Donuts have sponsored projects in the industrial design development lab.
Boston	Other departments within MIT	An applied research laboratory where businesses sponsor student research in arts, science, and technology.
Boston	Rhode Island School of Design	Unlike many other B-school programs, students have the freedom to branch out into other MIT departments, such as MIT Media Lab.
Raleigh, N.C.	College of Design and engineering departments at North Carolina State University	Business students, industrial designers, and engineers tackle product and service design for IBM and others in the integrated new product development lab.
Evanston, Ill.	McCormick School of Engineering; discussing partnerships with The Art Institute of Chicago	Offers dual MBA and Masters of Engineering Management degrees.
New York	Various	Unites dancers, computer scientists, and financiers to push the frontiers of interactive media under direction of Red Burns.
Needham, Mass.	Babson College; Wellesley College and Brandeis University	Engineering education focuses on a triangular approach that includes business, fine arts, and science.
New York	Columbia Business School	Companies like Samsung, Siemens, and Target provide design challenges for new product lines and processes. Leader in fashion design.
Brooklyn, NY.	Delaware College of Art & Design	Offers Master of Professional Studies in Design Management for executives.
Providence	MIT Sloan School of Business; Brown University School of Engineering	Feeder for Martha Stewart Living; undergrads travel to Cambridge to work in teams with Sloan students; they also build prototypes with Brown engineering students.
Sarasota, Fla.	Various art and design programs	Hosting international summit in October, 2006, on the role of design in the global economy.
Rochester, NY.	Program for Innovation & Entrepreneurship (PIE)	PIE combines business, technology, and art and design students.
Palo Alto, Calif.	B-school; Engineering, et al.	A new design institute of graduate education that offers interdisciplinary programs that include one course each semester. Students completing three courses earn a certificate; David Kelley, co-founder.
Syracuse NY.	Various departments within university	One of the oldest industrial design programs in the U.S. Changed program name to include "Industrial and Interaction Design" to address service design in addition to product design.
Berkeley, Calif.	Berkeley College of Engineering; Berkeley School of Information; California College of the Arts	Starting mini two-day design thinking workshops for business school students in fall, 2006. Managing the New Product Development Process class has combined business, engineering, and arts students for eight years.
Cincinnati	Various	Nationally ranked co-op program in which design students graduate with about 18 months of paid professional experience.
Urbana, Ill.	College of Business; Tech & Entrepreneur Center (TEC)	The TEC offers certificate programs for professional development, as well as an annual business plan competition and a student prize for innovation.
Ann Arbor	University of Michigan College of Engineering	The Integrated Product Development course combines students from business, engineering, and art and design.
Philadelphia	Engineering School; Design School	A new interdisciplinary program between Wharton, the school of engineering, and the school of design; a special program for top executives on design took place in Copenhagen and Milan.
Toronto	University of Toronto's Engineering Dept.; Ontario College of Art & Design	Rotman added a second design course to the curriculum in fall of 2006. Started offering executive workshops in 2006. Roger Martin is the dean.
Los Angeles	Tokyo Institute of Technology	Partners with Hewlett-Packard and Sony; new interactive media program combines technical skills, storytelling, and business, bringing together communications, engineering, fine arts, and game design students.



We are also presenting individual stories of success in this talent hunt. These include a graduate of the Illinois Institute of Technology's (IIT) Institute of Design in Chicago who is working as senior director of innovation advanced concepts at McDonald's Corp. A graduate from Carnegie Mellon University is a design researcher at the Mayo Clinic's SPARC Innovation Program. A graduate of INSEAD's product development course with Art Center College of Design students is a member of GE's Experienced Commercial Leadership Program. Northwestern and Germany's Zollverein School of Management & Design grads are leading marketing teams at Johnson & Johnson and H.P. Pelzer Group. A grad from Massachusetts College of Art is the director of global design resources for the Gillette Co. worldwide.

HYBRID GRADS

WHAT CHARACTERIZES the best D-schools and design programs? First, they are multidisciplinary. They combine engineering, business, design, and social sciences. They team-teach using groups of professors and outside professionals. And they teach students who are organized in groups to operate as teams.

Second, they can be found in both D-schools and B-schools, plus the growing number of joint ventures between the two. B-schools are adding design course tracks. Engineering schools are opening innovation centers. Classical design schools are adding business components.

Third, D-school grads are special. Call them hybrids or polymaths, they are people with both extraordinary depth in a field and the breadth of knowledge to apply it. "A lot of companies have multidisciplinary teams—marketing people, engineers, designers, strategists. But having all those parts embedded in one person's brain—that really puts you over the edge

AS TOLD TO JESSI HEMPEL

INSIDE THE VOLCANO

•**AT CARNEGIE MELLON,** I took a first year seminar with Dick Buchanan. He used to liken [design thinking] to climbing into a volcano: It's messy and it's risky and it's dangerous. To tap into unique insights, you have to follow tangents and lose yourself in them. The trick was to learn when and how to climb out of the

volcano. People from all disciplines want to tackle complex problems. Designers can make something that allows a much richer conversation about the problem you want to solve.

At Mayo Clinic's SPARC Innovation Program, our program space is right in the middle of the clinical space. There are patients across the hallway. The conversation that happens in the doctors' offices is so loaded with history that allowing [patients] to have an equal conversation is incredibly hard. Our challenge was, can we change that conversation that patients and physicians are having?

Our director of research is an endocrinologist and does work with people with type 2 diabetes. We decided to investigate: How do we help them make better decisions about their medications? When we first started, I didn't know anything about diabetes. He explained it, and I made a card up for each of the five medications, like baseball cards. We gave them out to patients. They were

intrigued, but it didn't really change the conversation at all.

People wanted to be able to make comparisons. So we divided issues into categories-side effects, weight issues, daily routine. We cut them up and created a matrix: medication across the top and across the left side, different issues. We tried this. We gave patients the issues and asked them to order them. We attached them with Velcro. As they would talk about each medication, the physician would lay out categories. In this version, we noticed the patient would talk more.

The form of this prototype we tried was all wrong. There was too much text. It would be hard to work in the exam room. We went back to the card idea, but now the cards were about the issues. The physician would say, "Which is more important to you?" As the patient and doctor spoke, the patient would take more and more of the cards. You would hear patients begin to make their own plans. That was what we wanted.

Maggie Breslin
Education BS from Miami University in Oxford, Ohio, in mass communications, film, and television, 1994; Master of Design, Interaction Design, Carnegie Mellon, 2004.
Job Designer/Researcher, The SPARC Innovation Program at Mayo Clinic, Rochester, Minn.

AS TOLD TO JESSI HEMPEL

WHEN MBA MEETS DESIGNER

I TOOK MANUEL SOSA'S CLASS at INSEAD in the spring of 2005. It was called Strategy for Product and Service Development. An interesting aspect was bringing in design students from the Art Center in Pasadena—it was a new experiment. I was interested in finding out about team dynamics when you put a creative person

in the midst of things.

My perception about designers was, "Here's my product, make it look sexy. You could see the difference. MBA pitches dwelt on the market: how big it was, how little it had been served. Most designers said: "Here is how I use the product today. Here is why it sucks and how it can be better. Here's how I want to do it."

At the start of the class we had to decide what to work on. Each of

us had a minute to pitch an idea to develop. You could see the difference. MBA pitches dwelt on the market: how big it was, how little it had been served. Most designers said: "Here is how I use the product today. Here is why it sucks and how it can be better. Here's how I want to do it."

Now I'm part of the Experienced Commercial Leadership Program, a two-year program of six-month assignments. I'm on my third assignment. Has the course helped me? Definitely, from a group

in terms of being able to innovate," says Colleen Murray, an IIT Institute of Design graduate at innovation strategy firm Jump Associates.

To gather our list, we created a 24-person advisory board. They include people from corporations such as Whirlpool, Siemens, and BMW who hire the new design thinking talent; faculty at both D-schools and B-schools such as Art Center, IIT, Northwestern, and Stanford; recruiters such as RitaSue Siegel; and design and innovation consultants such as Yves Behar at fuseproject and Tamara Giltsoff at London-based Live/Work. They recommended programs from which they hire and where they referred students. We then conducted 200-plus interviews to narrow our picks to the best 60 global programs.

Our list is eclectic. It includes HT's Institute of Design, a pioneer in fusing de-

Sameer Agrawal

Education Engineering degree from Victoria Jubilee Technical Institute in Bombay, 1997; MBA, INSEAD, Fontainebleau, France, 2005.

Job Strategic marketing manager, member of Experienced Commercial Leadership Program, GE.

sign and business. Its graduates have gone on to jobs in strategy and marketing in Microsoft, Conde Nast Publications, Google, and Motorola. IIT began awarding dual MBA and master of design degrees in 2006.

dynamics perspective. It helped me also with the "whole product concept." There is the product you are contractually obligated to deliver, but there are also the elements that go beyond the product to help the customer.

What you do with

the product is as important as what it does. To me, that was the upshot of the experience. You can apply it anywhere.

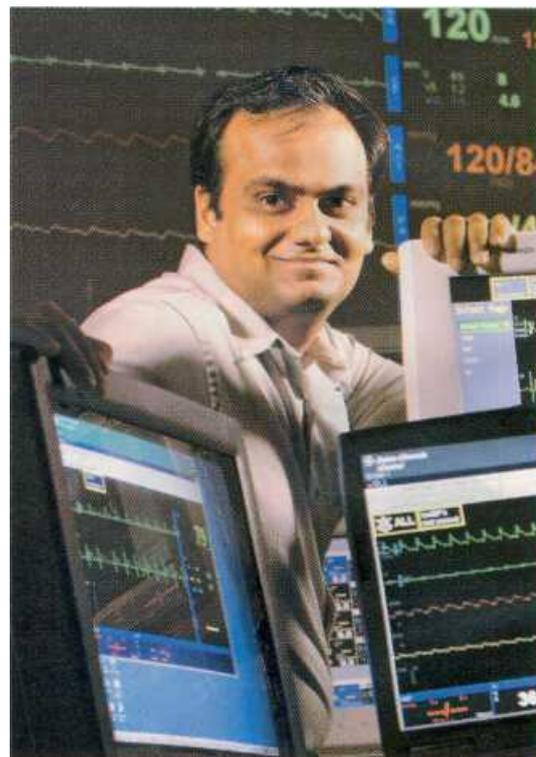
At GE, I've seen that what the user does with your product is as important as, if not more important than, what the product does itself. Aviation sells different products for an airplane. One thing we sell is an engine. There's a multibillion-dollar business for private jets. [As part of my second six-month

sign and business. Its graduates have gone on to jobs in strategy and marketing in Microsoft, Conde Nast Publications, Google, and Motorola. IIT began awarding dual MBA and master of design degrees in 2006.

JOINT EFFORTS

FORWARD-THINKING business schools on the list, such as Rotman and the McDonough School of Business at Georgetown University, have coursework championed by leading design thinkers such as Roger Martin and Jeneanne Rae. In fact, Martin, IIT's Patrick Whitney, and David Kelley, co-founder of IDEO and Stanford's D-school, have joined together on a project with Claudia Kotchka, the innovation champion for Procter & Gamble Co. The four created a three-day program teaching design thinking's

stint,] we were designing the service option of an engine. We said, how do people use this product? One thing became clear: The person receiving the plane as a gift [for personal use] is out there having fun with it, and he doesn't care as long as it meets FAA regulations and it's available when he wants it. The guy who is using it for revenue-generating options, say, an air taxi, will have much different needs, like making sure costs are under control. We can design new services, like the managing of airline logs, vs. doing just the traditional services of managing the engine for the managing-the-engine guy. If we didn't understand those different needs, we'd be leaving money on the table. I see design as a philosophy that people learn in order to understand how products are used...all those aspects of the customer experience.



three components to the hairstyling products group: deep consumer understanding, the ability to test product variations rapidly, and business strategy formulation. This research laid the groundwork for executive workshops, a summer academy, and a new design elective at Rotman this fall.

Partnerships between D-schools and B-schools are becoming increasingly common. In 2006, for example, France's INSEAD and Art Center in Pasadena, Calif., embarked on a partnership that brings design students to Fontaine-

bleau, just south of Paris, for a product development class. Students worked in teams to pitch and develop business ideas. The class is oversubscribed, and INSEAD will soon launch the partnership in Singapore.

Much of the impetus to work across disciplines comes directly from businesses. GE Healthcare is currently sponsoring a class at Art Center to develop inexpensive mobile diagnostic imaging devices for India, Africa, and China. Eastman Kodak Co. has gone to Georgia Tech to match industrial designers with students of management and human-computer interaction for projects that focus on photography. Why? Because that's how corporate teams innovate. Sponsoring such a project lets the company motivate students to think in this way and gives it a head start in snapping up tomorrow's superstars.

TRANSLATORS NEEDED

INTEL CORP. IS spending \$30,000 on student teams at Arizona State's InnovationSpace program, uniting undergraduates from B-school, engineering, and industrial and visual communication design programs to work on new products for aging baby boomers' future homes. The students will spend time hanging out with elderly folks as they cook, sink into living room lounge chairs, and brush their teeth. They'll develop prototypes for new products and related services. And they'll have their subjects try them out, fixing and adjusting quickly to hit a perfect formula. By year's end, each team will develop a proposal for a new business venture. Professors from all four disciplines will teach the class, which is led by noted design professor Prasad Boradkar.

Intel is making big financial bets that design school programs like those at ASU, Carnegie Mellon, and Georgia Tech will provide fresh ideas. Intel made its name as an engineering company in high tech, says Jay Lundell, Intel's director of user experience design in health research innovations. But, he adds, "there's an increasing realiza-

The Top European & Asian Design Programs

Bocconi University	Milan
Central Saint Martins College of Art & Design	London
Delft University of Technology Design Institute	Delft, The Netherlands
Design Academy Eindhoven	Eindhoven, The Netherlands
Domus Academy	Milan
FH Joanneum University of Applied Sciences	Graz, Austria
HKU Utrecht School of the Arts	Utrecht, The Netherlands
Hongik University School of Design	Seoul
Hong Kong Polytechnic	HongKong
Hunan University School of Design	Changsha, Hunan Province, China
Indian institute of Technology Industrial Design Center	Bombay
International Design Business Mgmt. Program (IDBM)	Helsinki
KSCn International School of Design	Cologne, Germany
Korea Advanced Inst. of Science & Technology (KAIST)	Daejeon, Korea
Kyoto institute of Technology	Kyoto, Japan
National Institute of Design	Ahmedabad, India
Northumbria University Design School	Newcastle, England
Polytechnic University of Milan Design School	Milan
Royal College of Art	London
Tama Art University	Tokyo
Tongji University School of Design	Shanghai
Tsinghua University Academy of Arts & Design	Beijing
UMEA Institute of Design	Umea, Sweden
University of Art & Design Lausanne	Lausanne, Switzerland
sity of Oxford Said School of Business	Oxford, England
Zollverein School of Management & Design	Essen, Germany

tion that to be successful as a technology company, you need the people who can do that translation from engineering to users' needs and back again."

BusinessWeek's Top D-schools include European and Asian programs as well. British corporations are leaders in using design thinking, and they hire graduates from the Royal College of Art and Northumbria University Design School. The new Zollverein School of Management & Design in Essen, which opened its doors to executive students in 2005 and

full-time students in 2006, is the buzz of the Continent. Meanwhile, the Chinese government has listed innovation as a national five-year priority and is putting up \$15 billion to promote it. There are some 400 design schools in China graduating thousands of students. Most focus on traditional industrial and graphic design, but a few, such as Tsinghua University in Beijing, are starting to teach design thinking. And in Korea, D-school students are partnering with their U.S. counterparts.

D-schools are racing to meet the demand for new innovative talent. Some are doing a good job. Others are not. We ask corporate recruiters, students, and others to report back to us. •

D-schools by Design

Top Global D-schools: An extended interactive table.

The Rise of Asian D-schools: As China focuses on innovation, programs pop up across the mainland.

Inside Stories: Intel's Janna Kimel and J&J's Justine Dube Donnelly tell their personal stories.

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