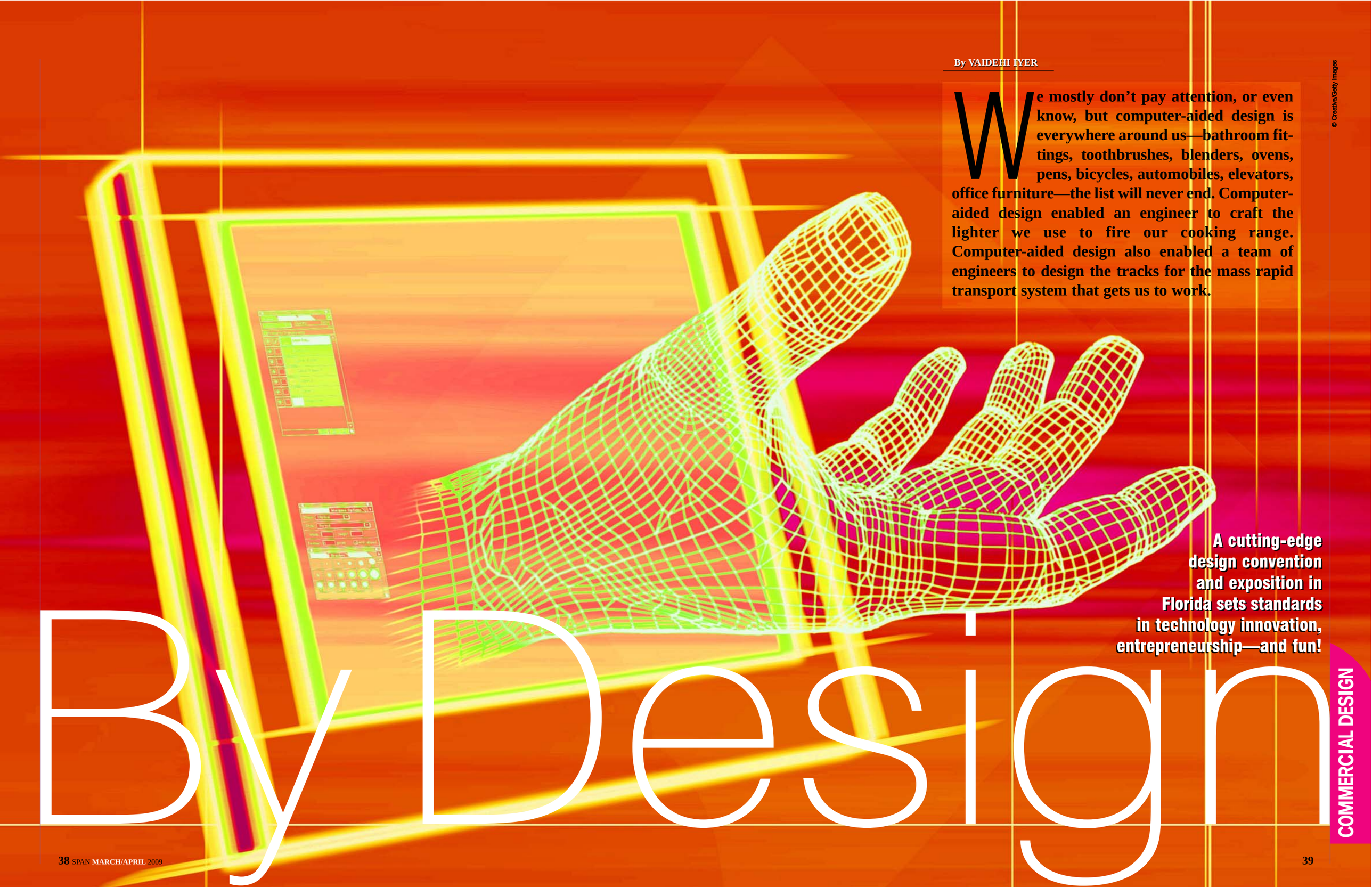


By Design

A cutting-edge design convention and exposition in Florida sets standards in technology innovation, entrepreneurship—and fun!

By VAIDEHI IYER

We mostly don't pay attention, or even know, but computer-aided design is everywhere around us—bathroom fittings, toothbrushes, blenders, ovens, pens, bicycles, automobiles, elevators, office furniture—the list will never end. Computer-aided design enabled an engineer to craft the lighter we use to fire our cooking range. Computer-aided design also enabled a team of engineers to design the tracks for the mass rapid transport system that gets us to work.

Photographs courtesy DS SolidWorks Inc.

Delegates attend a presentation at SolidWorks World 2009 in Orlando, Florida.

Computer-aided design (CAD) has been around for more than 30 years, and each stage of its evolution has further simplified engineers' jobs. To begin with, early, simple computers ran on basic UNIX operating systems, which were rather rudimentary when compared to what is available today. Complex two-dimensional designs came next, followed by Windows-based three-dimensional modeling.

In 1993, Jon Hirschtick, a student of engineering at the Massachusetts Institute of Technology, set up SolidWorks Corporation in Concord, Massachusetts. His intention was to develop three-dimensional computer-aided design technology that did not cost much in terms of computer hardware and software, could be run on Windows, and was affordable in itself.

"A lot of people thought that Jon was crazy—we were told that you can't build CAD on Windows," says Austin O'Malley, now SolidWorks' chief technology officer and part of the original core team that debunked the notion. "It was amazing how fast that transition happened. The way we were communicating even a decade ago as opposed to now has changed tremendously."

Today, SolidWorks is used by most engineers in companies that design and manufacture products around the world. Over 14,500 educational institutions use SolidWorks software globally. SolidWorks CAD has been used to design cutting-edge NASA robots that conduct space experiments, superfast Formula One race cars, advanced electric submarine vehicles, and complex industrial machinery that has intricate parts and sub-parts numbering in the thousands.

Presently, SolidWorks training is given to over a million students around the world annually. It has been a preferred 3D computer-aided design software with more than 750,000 users in over 100,000 companies. Globally, SolidWorks computer-aided design is used in some 100 countries. Monster.com, the popular job portal, has consistently ranked SolidWorks as the 3D technology experience most sought by employers. Not only this, the SolidWorks user community worldwide is larger and more active than that of any other mainstream computer-aided design software. All of which has contributed to SolidWorks' considerable success, both as an innovator and as a global enterprise.

SolidWorks India is the second largest R&D (research and development) facility outside the company's Massachusetts headquarters, and is part of a network that has other centers in the United States, United Kingdom, Sweden, China and Ukraine. "It's a lively crowd running to hundreds of personnel, based in Pune," says O' Malley. The Indian engineering industry is a mature one. The country has more than 1,400 engineering colleges from which 350,000 English-speaking engineers graduate annually. Of these, 300 colleges use SolidWorks computer-aided design, says the company.

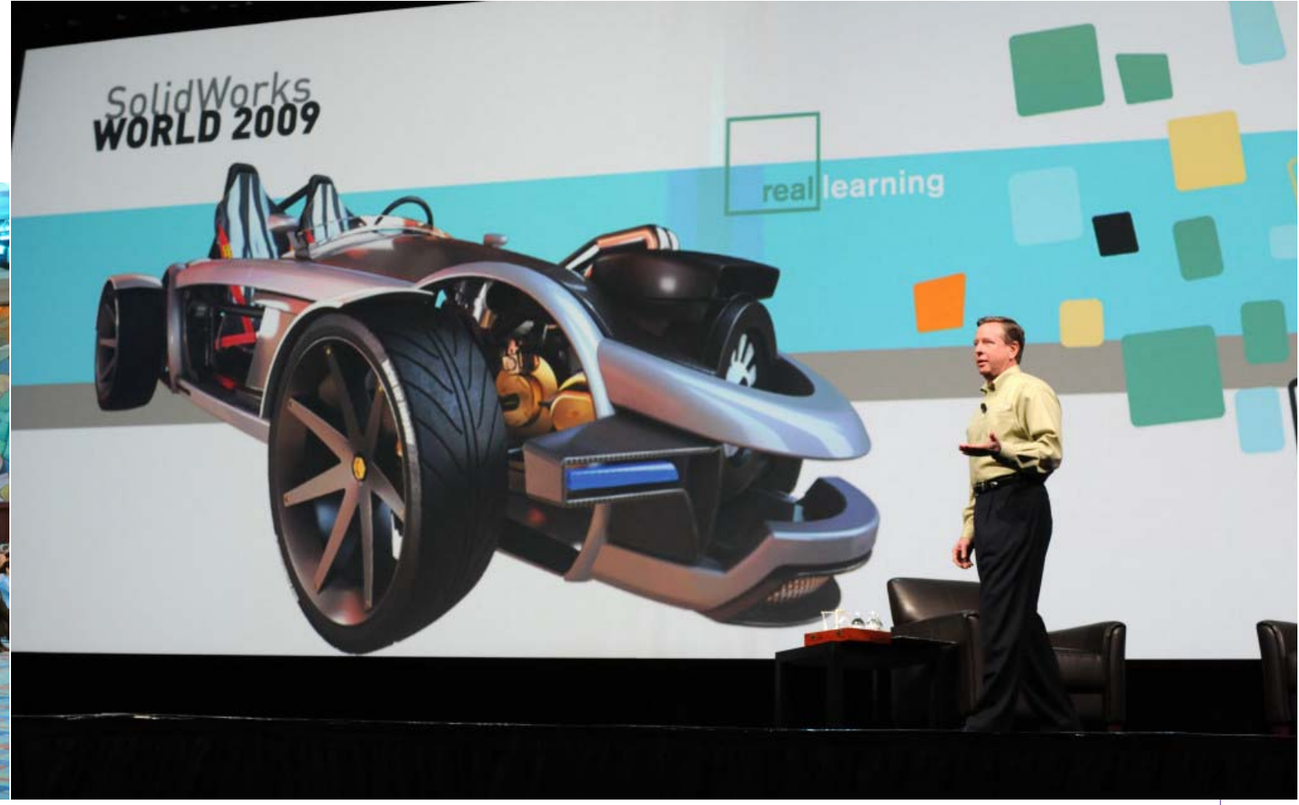
The engineering technology services outsourcing market—where highly qualified design engineers create and test innovations that improve existing and new machines and services and make them more user-friendly for offshore clients—has grown rapidly over the last few years in India. Many believe it may grow to be as vital a sector for India as its IT & BPO (information technology and business process outsourcing) services. This could eventually enable India to become a design engineering hub for the world.

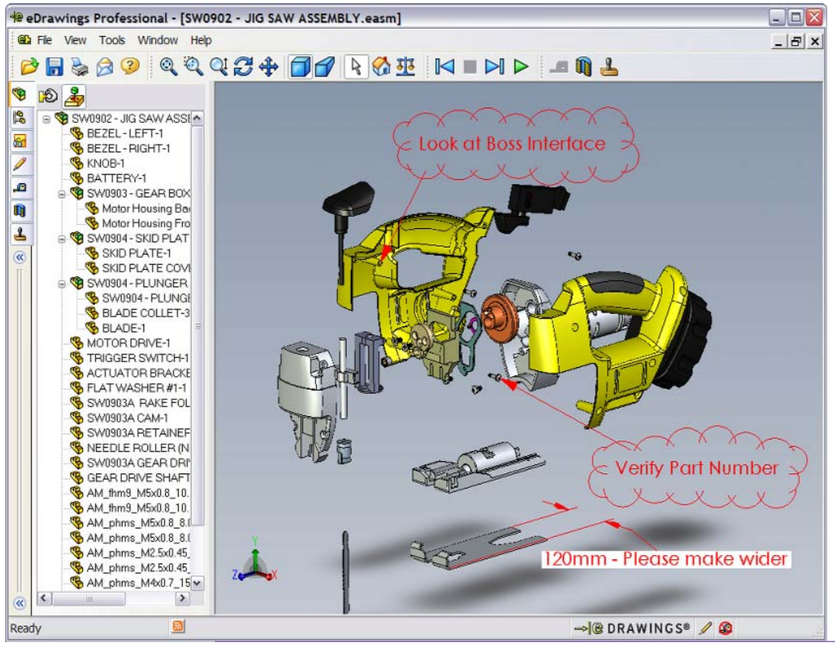
Thanks to computer-aided design, engineers are able to create designs much faster than when they followed the now-outdated method of drafting their designs by hand. This helps reduce the time it takes for companies

For more information:

SolidWorks
http://www.solidworks.com/

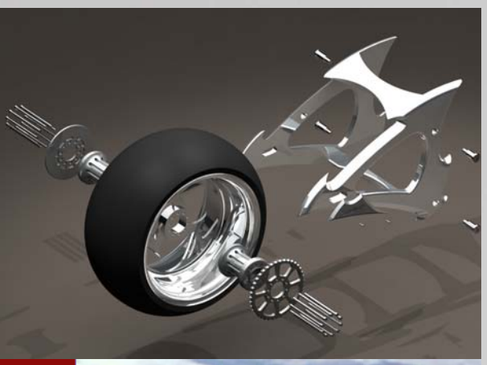
Systems Engineering and Design
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13473&org=NSF

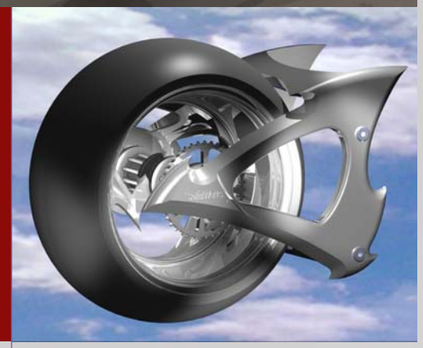




Above: Jeff Ray, chief executive officer of DS SolidWorks, addresses the general assembly at the convention.
Left: SolidWorks' eDrawings Professional software helps users share product designs more effectively and allows an unlimited number of recipients to give feedback by e-mail.

The rapidly growing engineering technology services outsourcing market in India could help it become a design hub for the world.





to get their new and improved products to the market, which in turn increases industrial productivity, turnover and employment generation. “We have focused on making engineers’ jobs easier and faster,” says Hirschtick, who is now a member of the SolidWorks’ board of directors. “Users can typically learn the software in a couple of hours and begin designing complex products in a matter of days.”

“When it is dark enough, you can see the stars.”

At SolidWorks World 2009, its annual convention, held in February in Orlando, Florida, this quote from American historian Charles Austin Beard lit up the silver screen of the enormous ballroom that fairly crackled with purpose.

The ongoing economic downturn is never far away from any business-related discussion in the United States. What is equally evident is the triumph of the human spirit in weathering storms. Fewer than 3,000 delegates were expected at this year’s event, but 4,300 turned up. The convention celebrated its 10th anniversary this year. “I have been coming every year for the last six years. It gives me the chance to update my knowledge and network with my peers. I wouldn’t miss it for anything,” says Joe N. Lance, a principal designer at Texas-based Halliburton.

A model of a motorcycle at a pavilion at SolidWorks World 2009 where about 120 users displayed their three-dimensional computer aided design-enabled products and prototypes.

Marie Planchard, director of worldwide education markets at DS SolidWorks.

O’Malley adds, “In design, things keep evolving with the focus on raising the bar in user experience. Focus is, in fact, crucial. Otherwise we end up doing everything for nobody. Is the chair you are sitting on comfortable? Even if the answer is yes, the next question is: Can it be more comfortable?”

Some of the darkest times in history have resulted in the greatest innovations, chief executive officer Jeff Ray noted in a keynote address. When DuPont launched nylon for parachutes, tents and stockings during the Great Depression, it was not with the expectation that their affordable alternative product would continue to be the world’s best-selling fiber nearly a century later. In 1930, the Galvin brothers, known better as the founders of Motorola, made the world’s first vacuum tube, battery-powered, commercial car radios. “In engineering design, more so than anywhere else, we must keep trying to see things differently,” says Ray.

The award-winning design of a modified Hero Honda CBZ Xtreme motorcycle by students of IIT-Delhi’s industrial design center.

Back to school

With education one of its priorities from both business and corporate citizenship perspectives, the company is “committed to helping develop today’s students into tomorrow’s engineers,” says Marie Planchard, director of world-

Computer-aided design helps engineers work faster, which reduces the time it takes for companies to get their new products to the market.

Photographs courtesy DS SolidWorks Inc.

Work is Fun

It was a convention and exposition determined to defy the economic downturn and talk serious business on taking engineering product design to the next level with a relentless focus on innovation and entrepreneurship. So Orlando's Walt Disney World, a showcase of innovation and "imagineering," was a likely venue for the SolidWorks World 2009 convention.

Delegates (many of whom should have been jet-lagged but appeared too cheerful to remind anyone of it) rushed through an early breakfast to reach a dizzying number of general and technical sessions, expert presentations and interactions, product launches, competitions, a user summit, audio-visual theater events and boot camps, in venues that ranged from intimate conference settings to stadium-sized ballrooms with thumping rock music and giant screens. Then they paused to network over color-coded, industry-specific lunch tables.

In the meantime, many succumbed to the temptation of Walt Disney World's theme parks and marketplace during breaks, catching rides in one of the free shuttle services plying to and from the convention's Disney World resort venue. As if these were not enough to thrill the adventurer in every guest, off-site events at Disney World's Epcot Theme Park and Animal Kingdom featured a variety of food and drink, live bands, astonishing games, performances and rides, and the most splendid music-and-laser enhanced fireworks display, all of which blurred professional lines into friendships over an ice cream cone or a heart-stopping ride or a burst of fire-lit color.

As a first-time visitor, I could not help thinking, work can be this much fun only in the United States of America. —V.I

Delegates enter the convention hall on the first day of SolidWorks 2009 at Walt Disney World in Orlando, Florida.

Courtesy DS SolidWorks Inc.

Ambar Bandi, a winner of the SolidWorks' Passion for Design Contest 2007, for his model of a steam iron.

Photographs courtesy Ambar Bandi

wide education markets at SolidWorks. She has visited several engineering colleges in India and admires the students. "At IIT-Delhi…a student showed me a prototype he was working on from this big heap of discarded air-conditioning parts. The enthusiasm I saw in that group was amazing. In colleges, the software tools are not the focus—professors teach concepts, as they must. We, on the other hand, work toward demystifying their application."

Engineering design is one of the most rapidly emerging professions in India, with increasing demand for a high-caliber workforce. Planchard would also like to "see more women in design. Women design with a natural empathy that is a great asset."

An award-winning Hero Honda CBZ Xtreme motorcycle design featured prominently in displays at SolidWorks World 2009, and is on the cover of all the company's training manuals this year. The original was taken apart and reconstructed into an improved version by the students of IIT-Delhi's industrial design center.

Recently, IIT Delhi had a course on SolidWorks for the toy industry in collaboration with the Government of India, the company says. "Until now, 2D CAD dominated the Indian market, but now a definite shift toward 3D is evident," says P.M. Ravikumar, education manager for South Asia.

"An industrial designer speaks through the language of sketches," says Ambar Bandi, industrial designer at the General Motors Design Center in Bangalore. He was the winner of the SolidWorks' Passion for Design Contest 2007 for his model of a steam iron as a student of IIT-Delhi. "Good visualization in 3D is a natural gift to all designers: 3D software programs help in translating the designer's vision so that they can be easily comprehended by others in related fields—engineers, marketing people, top management, customers. Any good software should help in quick conceptual ability—this would mean the software should not be too fussy—at the same time, mainstream detailing and downstream manufacturing ability should not be compromised."

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STATEMENT FORM IV

The following is a statement of ownership and other particulars about SPAN magazine as required under Section 19D(b) of the Press & Registration of Books Act, 1867, and under Rule 8 of the Registration of Newspaper (Central) Rules, 1956.

1.	Place of Publication:	Public Affairs Section, American Embassy American Center, 24, Kasturba Gandhi Marg New Delhi 110001
2.	Periodicity of Publication:	Bi-monthly
3.	Printer's Name:	Aroon Purie
	Nationality	Indian
	Address	Thomson Press India Ltd., 18/35, Delhi Mathura Road, Faridabad, Haryana 121007
4.	Publisher's Name:	Larry Schwartz
	Nationality	American
	Address	24, Kasturba Gandhi Marg New Delhi 110001
5.	Editor's Name:	Laurinda Keys Long
	Nationality	American
	Address	24, Kasturba Gandhi Marg New Delhi 110001
6.	Name and address of individuals who own the newspaper and partners or shareholders holding more than one percent of the total capital	The Government of the United States of America

I, Larry Schwartz, hereby declare that the particulars given above are true to the best of my knowledge and belief.
Date: February 27, 2009