

# Technology

## Are U.S. Enrollments in IT Shrinking?

The technology sector has taken a beating in the last decade, from the dot-com bust to the more recent stock market tumble. As a result, students may view information technology as an industry on the decline. This may be discouraging students from pursuing IT degrees, reasons Robert Baskerville, professor and chair of computer information systems at the Robinson College of Business at Georgia State University in Atlanta.

Baskerville points to decreasing enrollments in many university information systems programs—some have plummeted by as much as 50 percent over the past three years. He predicts students' wariness of the slumping IT market, combined with recent offshore outsourcing of IT jobs, may result in a worker shortage in IT as early as this fall. "The decrease in enrollments in the late 1980s was one of the reasons we saw a nationwide shortage of IT workers by the mid-1990s," says Baskerville. "Today's decreasing enrollments could have a similar effect."

Recent data from the U.S. Bureau of Labor Statistics tell the story. Even accounting for an increase in overseas outsourcing of IT jobs, the Bureau predicts that, by 2012, 1.1 million jobs will be added in the computer field, a 35 percent increase; and more than 330,000 jobs will be created in systems design, a 50 percent increase. Plus, with the economy currently on the rebound, specific tech companies are currently hiring: IBM recently announced that it would be hiring 4,500 workers in the U.S.

Even with these growth predictions, the Computer Research Asso-

ciation measured a 23 percent drop in new undergraduate computer science majors at universities nationwide in 2003. Even Robinson College, says Baskerville, has seen its undergraduate enrollments decline 26 percent over the same period, with its graduate enrollments also down significantly.

"I worry this may be a cyclical process in the information systems job market," Baskerville says. "As the economy comes back and demand for IT workers

resumes, businesses will find a significant shortfall in skilled workers. This could ultimately impact our country's ability to compete globally."

Baskerville fears that this may be a global trend, as business schools worldwide have not worked quickly enough to prevent students from making long-term career decisions based on short-term realities. A change in business schools' career

### TOOLS OF THE TRADE

## The Wharton Research Data Service Signs Its 100th Subscriber

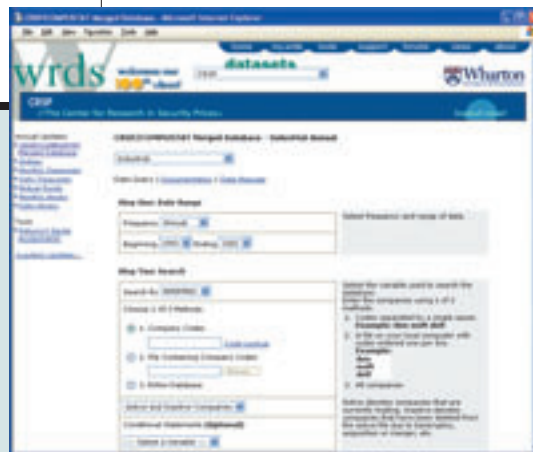
This spring, the Wharton Research Data Service (WRDS), a product of The Wharton School in Philadelphia, Pennsylvania, obtained its 100th institutional subscriber—Vanderbilt University in Nashville, Tennessee.

WRDS is a Web-based data management system that delivers approximately 1.5 terabytes of data from 19 vendor partners, including Compustat, comScore, and Thomason Financial Services. It provides a resource to faculty, students, and researchers for financial, economic, and marketing information.

WRDS was originally developed in 1993 as an internal resource for Wharton faculty but has been available to other schools and nonprofit research organizations since 1997. The school began offering its database to institutional subscribers as a way to provide a centralized source of business information to the larger research community. In addition, the school is able to recover some of its technological costs. Current subscribers include, among others, Stanford University, University of Chicago, MIT, Northwestern University, Harvard University, London Business School, the Federal Reserve Bank of New York, and the U.S. Securities and Exchange Commission.

In 2001, WRDS received a patent on technology for its method of managing user accounts and data access privileges. In 2003, WRDS received the Enterprise Value Award from *CIO* magazine and the *Computerworld* Honors Laureate Award for its use of information technology. Eventually, the school hopes to expand WRDS' database to new disciplines, including corporate governance, mutual funds, and corporate social awareness, says its director Michael Boldin. The service provides "quick, comprehensive access to economic, financial, and marketing data," says Boldin. Because of the breadth of data available, such access would be difficult for researchers to replicate, he adds.

WRDS is one of many informational resources that Wharton offers to the larger research community, including its biweekly e-zine, *Knowledge@Wharton*, and its Online Trading and Investment Simulator (OTIS) offered through Pearson Addison-Wesley, which allows students to buy and sell equities using real-world market data.

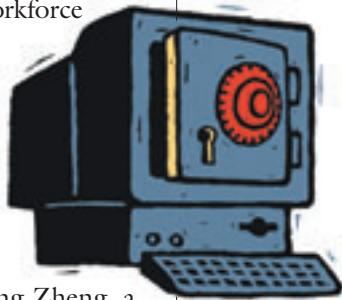


counseling methods is needed quickly, he emphasizes. "We should be doing better in career counseling for our students," he says. "Students aren't getting the message."

In addition, the media may play a large role in getting the message to students about the growing number of jobs in IT. "It appears that the enrollment trends are driven by popular press reports and not by long-term analysis," Baskerville remarks. "The correction will probably have to wait for the press to discover the building shortage of workforce IT business skills."

## New Tech Blocks Cyberattacks

There is another line of defense between computers and malicious viruses, thanks to Yuliang Zheng, a professor of information technology, and Lawrence Teo, an IT doctoral student, at the Belk College of Busi-



ness Administration at the University of North Carolina at Charlotte. Zheng and Teo have written a computer program, the "Access Enforcer," designed to stop both known and unknown cyberattacks by viruses, worms, and hackers. Zheng is a cybersecurity expert with experience in efficient cryptographic techniques and applications, intrusion prevention and detection, privacy enhancing technology, message encryption, authentication technology, and wireless security.

The new technology is housed in a small plug-and-play appliance that plugs into an existing computer network through an Ethernet cable. No special download or installation is required. To explain how the device works, Zheng compares it to watching a highway with different vans, cars, and trucks passing by. There's

no way to distinguish a pattern of behavior by watching just one vehicle. But after watching many vehicles—or, in this case, data—the device learns which don't belong by their appearance, behavior, and content.

Unlike current security products like firewalls and intrusion detection systems, the Access Enforcer uses a simple set of rules to apply to the patterns of data traffic it monitors. Those rules might differ from user to user—a Web service company would require different tracking rules than a bank, for instance. After its program has been exposed to a company's network traffic in real time, the device can detect abnormal data and shut it down while allowing

### DATABIT

A new study from comScore Networks of Reston, Virginia, notes that the number of Internet users is now more than **150 million**, seven times the number the company found in its 1996 study. In 2004, the study predicts online spending will surpass **\$100 billion**.

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legitimate traffic to go through.

“Firewalls are basically static. They can detect only what they have been programmed to detect beforehand. If anything new comes up, which happens every week or month or so, they have difficulty. Sometimes they catch one, but that’s pure accident,” says Zheng. “Our device doesn’t have a database—we don’t tell it specific data to block. Instead, we provide it with

a number of rules to apply to data traffic.” Using those rules, Access Enforcer “learns” to distinguish the good traffic from the bad.

Zheng and Teo plan to release the beta version of the software this spring and are working to prepare the product for sale by mid-year through their company Calyptix Security ([www.calyptix.com](http://www.calyptix.com)), a winner of UNC Charlotte’s Five Ventures Business Competition last year.

## E-Cases for Sustainable Development

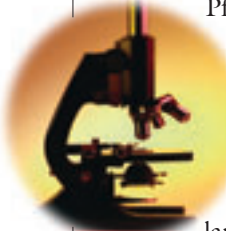
**The sustainable energy biz just got a new online training boost.** This spring, Chronos, a new e-learning tutorial of business cases for sustainable development, was launched by the World Business Council for Sustainable Development (WBCSD) and the University of Cambridge Programme for Industry (CPI).

Chronos is designed to make sustainable development real and relevant to all employees involved in corporate decision making, says Björn Stigson, president of WBCSD. “Chronos provides companies with a unique opportunity to make sustainable development relevant to individual employees and close the gap between policy and practice.”

With case studies accessible through its Web site at [www.sdchronos.org](http://www.sdchronos.org), Chronos already is finding a home in b-school courses that emphasize sustainable development, including a

## NEWSBYTES

### ■ BIG STEP FOR BIOTECHNOLOGY



San Diego State University (SDSU) has partnered with biotechnology companies Invitrogen Corporation, Pfizer, and CardioDynamics to establish the first degree program in the nation that combines an MBA with a biotechnology focus and a Ph.D. in molecular and cell biology. SDSU offers the program in conjunction with the University of California in San Diego. SDSU started a pilot program for two students last September and plans to expand the program this year. Participating biotechnology companies hope that the Ph.D.-MBA program will produce “home-grown” leaders for the industry—who know biotechnology *and* have the specialized training in the research, product development, promotion, and financing involved in getting new drugs and biodevices successfully to the market.

### ■ NEW GROUP FOR IT

A new Technology Leaders Affinity Group has formed through AACSB International. The group was con-

ceived by Don Krueger, the technology program director at the Labovitz School of Business and Economics at the University of Minnesota in Duluth, and Maggie Jesse, Director of the Stead Technology Services Group at the Tippie College of Business at the University of Iowa in Iowa City. Charter members include IT directors from nearly 120 business schools. In addition to creating a forum to discuss the role of IT on business school campuses, the group also hopes to extend its membership to schools outside the U.S. For more information, contact Don Krueger at 218-726-7319 or [dkrueger@d.umn.edu](mailto:dkrueger@d.umn.edu).

### ■ NETPLUS! AT UMICH

The School of Management at University of Michigan, Flint, launched its flagship online MBA program, NetPlus!, this spring. The two-year program comprises eight three-month terms, each beginning with one day in the classroom followed by six weeks of work and collaboration online.

### DATA BIT

According to the UN Conference on Trade Development’s annual “E-Commerce and Development Report,” **592 million** people worldwide had Internet access in 2002, a 20 percent increase from 2001. In developed countries, **401.7 million** people can access the ‘Net, up 12 percent from 2001. In developing countries, **189.9 million** people have access, a 40 percent increase. Still, just under 10 percent of the world’s total population currently has Internet access.

new course at the Jones Graduate School of Management at Rice University in Houston, Texas. Students enrolled in “Sustainable Development in the Energy Business,” a one-day course conducted as part of the Jones School’s Certificate of Management in Energy program, used the tutorial to learn how sustainable development can improve the financial, social, and environmental performance of their corporations. **Z**