

Spring 2006

## Women in IT

### In this issue

*Women in IT* ..... cover

**Government Watch:**  
*Investing in technology* ..... 3

**Consultant Watch:**  
*Ellen Breithaupt* ..... 5

**Company Watch:**  
*ZyQuest announces new services* ..... 7

**On the lighter side** ..... 6

Computers. They're everywhere, from our cars to our kitchens. We use them for shopping, banking, keeping in touch with friends, exchanging opinions and ideas, managing our businesses, conducting research, entertainment. In fact, you'd be hard pressed to find any aspect of modern culture that does not employ computers in one way or another. Computers are here to stay.

So it's no wonder that Information Technology (IT) remains a core industry in the United States and around the world. What is a wonder is the apparent underrepresentation of women in the IT industry.

### A quick look at the numbers

Women make up approximately 51% of the population and earn more than half of the

undergraduate degrees in the United States. But in *America's New Deficit: The Shortage of Information Technology Workers*, the U. S. Office of Technology Policy reported that "women earn about one-quarter of the

graduate level, women earn only about 22 percent of PhDs, according to the Digest of Education Statistics.

The statistics for women IT professionals in the workforce aren't much more encouraging. According to the Bureau of Labor Statistics, in 2004, women accounted for only 20% of network and computer systems administrators, 25% of software engineers, 26.7% of computer programmers, and 29.4% of computer



scientists and systems analysts. Overall, women represent about 25% of the IT workforce in America. That's a decline of 18.5% during the last eight years, according to the Information Technology Association of America.

The numbers are even worse for women in the highest ranks of IT. According to the nonprofit

bachelor-level computer and information sciences degrees awarded by U. S. academic institutions. More disturbing is the trend line: the share of all computer science degrees awarded to women in the United States has fallen steadily from a peak of 35.8 percent in 1984, to only 27.5 percent in 1994—the lowest level since 1979." At the

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~~ U.S. Office of  
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2

advisory group Catalyst, women account for only about 11% of corporate officers in the technology industry.

#### Does it matter?

When asked his impression of women in IT, a male computer programmer was heard to comment, “There aren’t many of them. So?” The comment raises an important question. Does it really matter whether women are well represented in high tech industries?

For industry experts, the answer is a resounding “yes!” The obvious reason is that the IT industry is facing a shortage of computer professionals as aging Boomers leave the workforce. With women comprising the majority of both the general and the college-educated population, tapping into female resources simply makes good sense.

Beyond that, studies have shown that diversity, both in ideas and workforce, lies at the heart of the most robust companies in America. Furthermore, women have been shown to be particularly good at creating the kind of intuitive technologies that are so much in demand as the computer era matures beyond engineering-centered models that focus more on size and speed.

And perhaps most surprising, women-owned businesses are more likely than their male-owned counterparts to embrace the innovative use of technology. According to the Center for Women’s Business Research, 58% of women business owners see technology as integral to their business strategy and 56% are likely to have a website with transaction capability. For men business owners, those numbers are only 35% and 38%.

#### The root causes

The most common cause given for the IT industry’s failure to attract women is that female students perceive the computer world as “geeky”, and girls in particular don’t want to be seen as geeks or nerds. But this answer may be too simple. Other “geeky” scientific fields, such as math, chemistry, and biology, have seen a tremendous growth in female participation over the past few decades.

A far more basic explanation for the relative dearth in women IT professionals is that computer science is perceived by society as a **male** profession. Societal expectations are very difficult for most children to challenge. Claudia Morrell, executive director

of the Center for Women and Information Technology (CWIT) at the University of Maryland-Baltimore explained that when girls enter middle school, their career goals begin to solidify as they form their identities. “At that age, gender issues become important as an expression of personal identity. Too often, a middle-school girl who says she wants to be a computer scientist is treated much like a boy who says he wants to be a nurse – the professions carry gender identities, even if they are outdated. A middle-school girl in a programming class might feel as out of place as a boy in a sewing class,” Morrell said.

#### Closer to home

The news isn’t entirely gloomy. Here in NE Wisconsin, the representation of women in the IT industry appears to be healthier. According to Barb Mueller, HR Director and IT Recruiter for ZyQuest, Inc., women IT professionals comprise about 30% of the company’s workforce. And about 35% of the IT candidates are women.

Connie Hames, Resource Manager at ZyQuest and IT educator at Lakeland College agrees that Wisconsin women seem to be entering the IT world in

Continued on page 4...

# government watch

## investing in technology

Staying competitive in a global economy is fast becoming the goal of American Information Technology (IT) and the focus of several recent government initiatives.

Key among those drives is President Bush's American Competitiveness Initiative. With a \$5.9 billion commitment in FY 2007 "to increase investments in research and development, strengthen education, and encourage entrepreneurship," the President's initiative earmarks \$50 billion to increase funding for research and \$86 billion for research and development tax incentives over 10 years.

The President's Initiative lists these goals:

1. 300 grants for schools to implement research-based math curricula and interventions.
2. 10,000 more scientists, students, post-doctoral fellows, and technicians provided opportunities to contribute to the innovation enterprise.
3. 100,000 highly qualified math and science teachers by 2015.
4. 700,000 advanced

placement tests passed by low-income students.  
5. 800,000 workers getting the skills they need for the jobs of the 21st century.

Given the growing shortage of IT workers, both men and women, in the United States, the President's Initiative is a welcome boost for the technology industry. Commenting on Bush's plan, Dave Patterson, president of the Association for Computing Machinery (ACM), stated that "the White House's commitment to increased investment in education and basic research is the key to sustaining innovation."

In the meantime, Congress has been busy with its own technology initiatives, most notably a package of three Senate bills aimed at helping America maintain its leading edge in science and technology. Collectively titled Protecting America's Competitive Edge (PACE) Act, the bills (S. 2197, S. 2198, S. 2199) implement 20 recommendations contained in a recent report by the National Academy of Science titled "Rising Above the Gathering

Storm". The major sponsors of the bipartisan bills are Senators Pete Domenici (R-NM), Jeff Bingaman (D-NM), Lamar Alexander (R-TN), Barbara Mikulski (D-MD), and Craig Thomas (R-WY).

The key provisions of the PACE Act are:

1. Strengthening the nation's traditional commitment to research;
2. Improving K-12 Science/Math Education;
3. Increasing the Talent Pool by Improving Higher Education; and
4. Growing our Economy by Providing Incentives for Innovation.

Other current legislation aimed at honing America's competitive technology edge includes S. 2109, H.R. 4596, and H.R. 4654. To learn more about these and other bills of importance to the IT community, visit the government news page of the ZyQuest website, [www.zyquest.com](http://www.zyquest.com). For the complete text of the President's American Competitive Initiative, go to: <http://www.whitehouse.gov/stateoftheunion/2006/aci/index.html>.



“A middle-school girl in a programming class might feel as out of place as a boy in a sewing class.”

~~ Claudia Morrell

respectable numbers. Hames commented, “There seems to be more of a trend for women going into IT. When I first started in the IT field, there were very few women, and I’m beginning to see more and more women. Even in my classes, there are more women than there used to be. In fact, one of my classes was all female. That was unheard of a couple of years ago.”

The higher numbers at ZyQuest, Mueller suggested, may have something to do with the nature of consultancy. Mueller commented that women are drawn to consulting “because women really care about flexibility. In many cases, they are the sole provider for a family and they need the flexibility. Consulting gives them that. It’s also one avenue for them to even start their own business. Over the last four months, I’ve talked to two women who were looking to start their own business or become independent consultants. They’re seeing the flexibility. They’re seeing they can be successful in what has always been more of man’s field and then transition into their own business.”

Mueller also admitted that when you look at length of experience, you still see more men with 25+ years

in IT. But women are very competitive when you look at project management positions. “I think women are more people oriented. Their communication is very different from a male’s communication. I think that puts them more into project management or handling multiple priorities differently than the hands-on technical focus that the men generally have. You look at some of the skill sets, you see more women moving toward IT management and project management focus – not that they don’t like to get their hands dirty. But a lot more, with time, have been rising to the management jobs,” she said.

ZyQuest IT consultant Ellen Breithaupt is a good example. While Breithaupt has “done it all” in her nearly thirty-year career, she prefers project management to writing code. And with more low-level programming being outsourced overseas, Breithaupt believes it important that IT professionals be skilled in higher level business activities.

#### Possible solutions

Most experts agree that the most important step in bringing more women into IT involves a concerted effort to change gender stereotypes about technology careers.

Providing female role models, mentoring, support programs for college women majoring in computer science are all avenues that should be pursued to eliminate the male stereotypes surrounding IT.

According to Claudia Morrell, “Parents are students’ number one source for decisions in career making.” Because daughters tend to identify with mothers, it is important that women become more comfortable with technology so that their daughters will see it as a viable career choice. Barb Mueller agrees. The mother of a teenaged daughter, Mueller commented, “I’m pushing my daughter to a tech field. Courtney looks at it as a career. She knows I started my career in IT. You work hard and can change your focus throughout life. You don’t have to stay in it forever. You may move into an extension of IT, whether it’s supporting it from an HR perspective or financial perspective, you can still have ties to your main education or training. So she looks at it that way.”

Businesses can play a major role by communicating to students what a career in IT is really like. Ellen Breithaupt noted, “When I

*Continued on back cover...*

# consultant watch

## Ellen Breithaupt

Ask Ellen Breithaupt for a single word to describe her approach to her career and she'll say "balance". It was Ellen's emphasis on balance that led her to a career in consulting.

As is the case for many computer professionals, Ellen's road to consulting started with the practical need to make a living. Ellen had taken her four-year degree at Marquette, majoring in English and History. Describing those days, Ellen said, "When I started college, a degree meant you could pretty much write your own ticket. When I graduated, things had changed considerably. We were in the midst of the first of the OPEC-induced recessions of the early 1970s, and I needed to get skills that were immediately applicable. I took a look at the market and went into both accounting and data processing, which it was called back then. I was drawn more to the data processing. It just seemed to be a better fit."

Very early in her career, Ellen realized that what intrigued her most about the computer world was systems analysis. "I spent

very little time, maybe a couple of years, programming when I started," she said. "Even back then – the late 1970s and early 1980s – you could choose to stay technical, to continue in the programming family and eventually into a technical support kind of role, or to go into the analysis route. And I was interested in the latter. It was more of a fit with my wanting to apply logic and solve business problems."

Ellen added, "I was fortunate enough to be in the business at a time when a lot of systems were being created from scratch by in-house developers. Being able to go and meet with folks in a particular area of business, listen to their problems, understand the type of applications they were looking for, then designing a solution that would solve a business problem was very satisfying."

During those early days of her career, Ellen was working at Fortune 500 companies in Milwaukee. But when she and her husband, Chuck, had their first child, Ellen realized she needed to find a balance between career

and family life. "I was torn between wanting to be a stay-at-home Mom or continue in some capacity in my profession," Ellen recalled. After their second child arrived, Ellen found the solution. Consulting. She called a couple of consulting companies and found one that agreed to her request to take summers off to spend time with her children.

In addition to providing the balance that Ellen required, consulting proved to be a good fit in other ways. A good consultant, Ellen explained, is "someone with a broad range of experience in different technologies, definitely the ability to communicate, the ability to fit in with a group." Ellen's educational background and her years as a systems analyst had allowed her to develop all those skills.

Like most successful consultants, Ellen has an active life away from her career in Information Technology. Ellen coaches "mock trial" at Xavier High School in Appleton and teaches religious education in her local



*Ellen Breithaupt  
photo by Matt Perkins*

Ellen Breithaupt ...Continued from page 5

parish. This experience has convinced Ellen that if she were to change careers, she would like to enter the teaching profession. "What I would love to do is to teach either middle school or high school. I think it is so important for young people to know about their government. I would teach civics, government, social studies, mock trial, and history. It's been said that if we don't 'learn the lessons of history we are doomed to repeat them,' and I believe that. It is vital for the next generation to have an awareness of our culture,

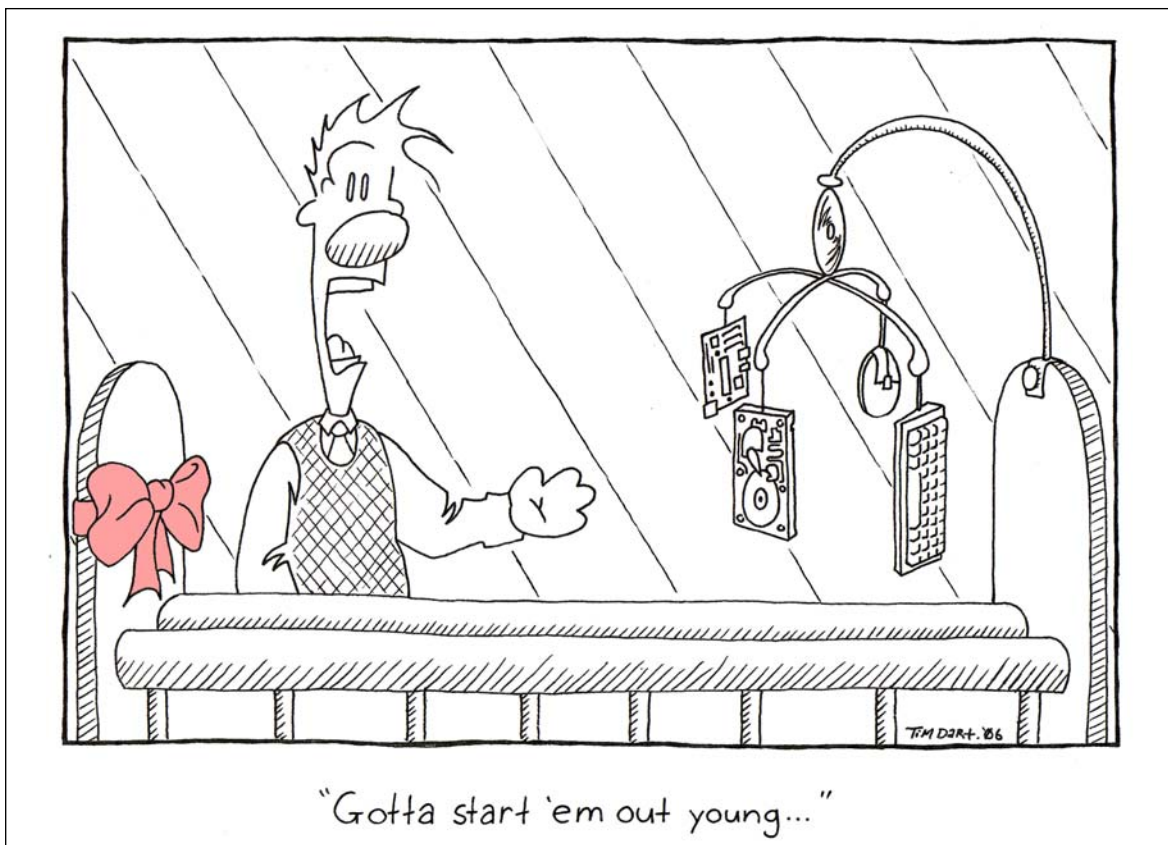
where we come from and where we're going. It is equally important to learn the foundations of the legal system. I could design a curriculum and do a pretty good job teaching it."

But until Ellen decides to embrace a new career, she's happy to stay at ZyQuest. "Working for ZyQuest has been great. It's a really good fit for me at this stage of my career. It's challenging but not overwhelming. The people are fantastic. And of course, a career in consulting is probably the closest to true equal

opportunity of any career for women," she said.

Asked about her most significant accomplishment, Ellen doesn't hesitate. "It's being able to find a balance between the professional and the personal. The career side pales in comparison to your family and the really important things in life. It's virtually impossible in a family setting with children to have two career-driven individuals. The kids have to come first."

*On the lighter side:  
Solving the problem of women in IT*



# company watch

## ZyQuest announces new services

ZyQuest is pleased to announce the addition of two new services – **strategic business systems planning** and **strategic technology planning** – to our list of IT and business specialties.

These services are aimed at helping our clients plan and implement new business systems and technologies, improve the effectiveness of their current IT infrastructure, or make critical decisions about outsourcing any or all of their IT programs.

The new services will be spearheaded by Len Janke, ZyQuest Senior Consultant, out of the ZyQuest offices in Milwaukee.

ZyQuest, with solid industry expertise and a portfolio of consulting, infrastructure, and managed services, blends proven methodologies with timely deliveries to improve or create technology infrastructures that can maximize the client's return on technology investments. Through solid planning and collaboration, ZyQuest can help contribute to our clients' long-term competitive advantage, growth, and profit.

Watch for more information about ZyQuest's newest services in the next issue of *Innovention*. Or contact Len at [Len.Janke@zyquest.com](mailto:Len.Janke@zyquest.com) or 262-789-1005. To learn more about ZyQuest, visit our website, [www.zyquest.com](http://www.zyquest.com).



For the latest on ZyQuest services, technology information, and IT-related Federal Government activities, visit the ZyQuest website at [www.zyquest.com](http://www.zyquest.com).



*Women in IT ...Continued from page 4*

was working in Milwaukee, we would have career nights at Marquette University where we would work one-on-one with undergrads. In Green Bay, I participated in round-robin interview sessions at St. Norbert's with undergrads. I think it's a matter of connecting to students through alumni organizations. I know that engineers and CPAs do a good job of networking with their schools and undergrads, and I think that those in our career could do more of that. And we should be working with high schools too. There are business and computer clubs and so forth. That would be a good avenue to pursue, show what the

career is really like, get rid of some of those preconceived notions and maybe get some people excited about it at a young age."

Certainly colleges and universities are doing more to attract women to IT. Barb Mueller observed, "I really think the great schools have been focusing on trying to attract females to computer science. There's really been a push in scholarships. My daughter, who's only a high school freshman, is already getting things in the mail now to attract her to some of the computer, science, math-type professions. I never received things like that

when I was growing up. So I think the focus is really to try to attract females. I think that, in addition to schools, companies have a responsibility to try to attract women to IT, too. They need to show that you can get a great job in a company like this, in this field, and it doesn't matter what gender you are. So I think the schools have been taking the lead in this, but industry needs to become involved."

In addition to efforts by schools and businesses, several professional organizations have focused efforts on attracting more women to IT. Among the most visible are the ACM

(Association for Computing Machinery) and Women in Technology. Information about the ACM's Committee on Women in Computing can be found at <http://acm.org/women/>. The Women in Technology website can be found at <http://womenintech.org/>. The University of Maryland-Baltimore Campus also maintains a Center for Women & Information Technology. Their Web url is <http://www.umbc.edu/cwit/index.html>. ZyQuest encourages you to visit those sites to learn how you can help promote careers for women in IT.