A PANEL DISCUSSION OF "BEST PRACTICES" IN THE IT INDUSTRY TO SUPPORT AND RETAIN TECHNICAL WOMEN

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ABSTRACT

The shortage of skilled labor in the information technology (IT) sector has been a subject of major concern for industry during the last couple of years, and shows no signs of abating. While there has been much discussion about the changes in immigration regulations to allow more international workers to address the shortage in the U.S., insufficient attention has focused on how U.S. industry can improve its record in recruiting and retaining women in information technology. Though women represent 46% of the U.S. work force, they are a scant 8.5% of the engineers, and even rarer in fields like electrical engineering and computer science which form the core of the IT industry. Their scarcity represents a loss for industry, as well as a loss for the women who could benefit from strong participation in a fast-growing, rewarding, and influential sector of the economy. What is the role that corporate America can play in supporting and retaining technical women in the information technology industry?

This panel will showcase a sampling of "best practices" in industry for recruiting and retaining technical women. Presenters will address aspects of corporate culture and work environment which are important to providing a climate which supports technical women. Topics to be considered include: leadership, policies, practices, rewards and incentives, targeted programs, and ways in which a diverse work force can contribute to the bottom line.

TALKING POINTS BY CATHLEEN CAMPBELL

Introduction

I have been asked to give an overall view of issues affecting the support and retention of technical women. In so doing I will set the stage for our subsequent speakers. The organization I work for – the Technology Administration – is charged with promoting the competitiveness of U.S. industry. One of the critical "competitiveness" challenges for

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our nation as we enter the 21st century is ensuring a skilled workforce that can meet the demands of the technology-based economy.

- The United States is enjoying a phenomenal period of economic growth. This remarkable performance is directly related to our investments in research and technology, and the work of our scientists and engineers.
- Leading economists identify technical progress as a major, if not the single most important factor, in sustained economic growth, accounting for as much as one half of U.S. economic growth in the past 50 years.
- Our technology-intensive industries – aerospace, chemicals, communications, computers, pharmaceuticals, scientific instruments, semiconductors and software have been growing at about twice the rate of the economy as a whole in the past two decades.
- Information technology's share of the U.S. economy nearly doubled between 1977 and 1998, growing from 4.2 percent to 8.2 percent. Information technology contributed more than one-third of real U.S. economic growth between 1995 and 1997.
- Information technology is having a huge impact on our transformation to a technology-based, knowledge intensive economy.
- Scientists, engineers, and technologists will be at the core of our economic and social endeavors of the next century. It is therefore imperative that women, minorities, and people with disabilities participate fully in the science and technology enterprise that is destined to shape our world and our future.
- This includes traditional roles, such as working at the bench in the laboratory, and a wide variety of other roles where a knowledge of science and technology is important. For example, we need scientists, engineering and technical workers employed as private sector product developers, engineers for the manufacturing line, high-tech entrepreneurs, math and science teachers, science and technology news reporters, patent attorneys, technology-savvy mayors and governors, members of Congress, and Vice President and President.

How are women faring?

- Let's start in the education pipeline. We're seeing more diversity in higher education in science and technology. Women now earn almost half of all natural science degrees at the bachelor's level, up from a quarter in 1975. And they now earn a third of the natural science degrees at the doctoral level.
- Increasing representation in the education pipeline is translating to some gains in the work force. For example, women are well represented in the biological sciences work force at 40 percent, and the mathematics work force at 33 percent.
- The numbers for engineering are not as good. Women who earn bachelor degrees earn them in engineering at a much lower rate than men (19.4 percent for men and 1.7 percent for women).
- Women make up only 9 percent of the engineering work force. Also, the private for-profit sector is the least likely sector of employment for women scientist and

engineers - women represent only 18 percent of the scientists and engineers in private industry.

- Engineering is among the technical fields most closely associated with high technology. Women aren't in engineering – even though women who work in engineering earned the highest median salary for women in the scientific and engineering workforce. And women scientists and engineers aren't in the private sector in near enough numbers.

So, while women increasingly choose to pursue careers in science and technology, they are not choosing the most lucrative areas of endeavor – technology in private industry. And today, the private sector's technical work force is not only the spring board for high-tech executives, but for new high-tech entrepreneurial firms; many high-tech start-ups in the U.S. were founded by individuals who spun out of larger companies where they worked on technical staffs. A study by the International Network of Women in Technology found that women executives comprise about 2 percent of women working in technology companies. Yet, the opportunities or women in the future rest in high-tech fields where women are also underrepresented.

Information Technology (IT)

- From 1996-2006 employment in science and engineering occupations is expected to increase at more than three times the rate for all occupations.
- Approximately three-fourths of the increase in science and engineering jobs will occur in computer-related occupations – including computer-scientists and engineers and systems analysts. In fact, these occupation categories will be the fastest growing occupations in the country in the next decade (requiring about 1 million new workers by 2006).
- The demand for highly skilled information technology workers is exploding. In addition to the million new jobs for computer scientists and engineers, and systems analysts, the country is projected to need another 300,000 computer programmers to fill newly created jobs and to replace programmers who are exiting the occupations.
- Women are now underrepresented in high-skilled information technology jobs. Only 26.9 percent of computer systems analysts and scientists are women, and only 28.5 percent of computer programmers are women. A representative of Microsoft has noted that only 11 percent of its Microsoft Certified Professionals are women.

The IT revolution is driving a sharp increase in the demand for workers who can create, apply, and use information technologies. This demand, coupled with low unemployment rates all around, has created a very tight IT labor market at best, a skills shortage at worst, and mounting reports of employers having trouble recruiting and retaining enough workers with the skills in demand.

- The unemployment figures released last Friday show unemployment dipping back to 4.2 percent in May, once again the lowest level in 29 years. (Unemployment rate for women fell to 3.6percent -- the lowest in 30 years).

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- The high rate of job growth is expected to continue. How many people might we need? The Department of Commerce did a report – America's New Deficit – combining the categories of computer engineers and scientists, systems analysts, and computer programmers, and projected that the U.S. will require 1.3 million new, highly skilled IT workers between 1996 and 2006.
- That is a happy problem: preparing American workers to fill 1.3 million jobs that pay more than the average private sector wage. That's a problem many countries wish they had.
- Nevertheless, it is a serious challenge, and one we cannot fail to answer. If we cannot meet our IT skill needs, our competitiveness could suffer as our firms miss opportunities for innovation, new business, and productivity improvements. Many Americans would lose opportunities for a better job.

National Solutions

Information Technology Workforce Convocation and Town Meetings

- The private sector brought the IT work force challenge to the attention of the White House. In June 1997 President Clinton committed the Administration to establish a dialogue with industry on the skill requirements of the IT sector. The White House assigned lead responsibility for this dialogue to the U.S. Department of Commerce's Office of Technology Policy (OTP). Let me briefly summarize what we have done these past 18 months.
- The Departments of Commerce, Education and Labor and the Information Technology Association of America co-sponsored the Information Technology Workforce Convocation held in Berkeley, California, in January 1998. The convocation brought together more than 300 representatives of business, government, academia, and employee groups to discuss factors that may be constraining the size of the IT work force and ways to ensure the United States has the skilled computer workers it needs.
- In Berkeley, Secretary Daley announced that the Commerce Department would sponsor town meetings to bring together state and local governments, business leaders, academic institutions, and employee groups in different regions of the country to discuss their IT work force needs and how to meet them. Our office participated in town meetings in ten cities across the nation.
- This past December we sponsored a town meeting in Phoenix which followed previous meetings in Maryland, Mississippi, New York, Nebraska, Chicago and Seattle.

Highlights and Findings of Town Meetings

- Later this month, Secretary Daley will release a new IT report that my colleagues in OTP are writing. IT will update previous report and summarize issues and recommendations emerging from the town meetings. It also highlights examples of

what governments, academia, and business are doing to meet the demand for IT workers.

- Let me offer share with you a few highlights/findings from the report focusing on increasing the number of women in IT fields.
- In terms of education, the recommendations emerging from our town meetings focus on increasing linkages among government and groups representing women and minorities. The purpose of this is to increase the participation of underrepresented groups in technology education and careers.
- Recommendations also call for increased effort to encourage women to seek technical education and technical careers by offering scholarships, improving the image of technical workers, recruiting women faculty members as well as students, and offering mentoring. Also, more formal and informal networks of support and encouragement for women pursuing technology education and careers is needed.
- In terms of employment, women must be part of and benefit from solutions that industry, government and academia are seeking to ensure that IT workers keep their skills up-to-date.
- There is a strong need to focus on upgrading the skills of the current workforce, due to high unemployment rates.
- Yet, rapid pace of technological change means that employers need skills immediately, not 6 -12 months later. In a tight labor market, many firms are reluctant to invest in training employees who may then be lured away by other companies.
- Nevertheless, there are some interesting approaches emerging such as regional skills alliances, telecommuting, and distance learning.
- Industry must take the lead, but as in the area of attracting more people to the IT education pipeline, there should be collaboration among industry, academia and government.

Federal Agencies

- The Labor Department has committed $8 million to build a electronic job and resume database and $7.5 million in grants for demo projects to train dislocated workers for high-tech jobs
- The Labor & Education Departments have allocated $6 million in grants to expand employer involvement in School-to-Work systems
- The National Science Foundation has received approval to establish a $21 million education fund to provide approximately 8000 one-year scholarships to low-income students who pursue degrees in computer science, engineering or mathematics.
- In July 1998, OTP launched a web site on the IT work force. Through this web site, which lists more than 200 resources, visitors can learn about high-tech work force initiatives across the country, tap valuable information resources, and network with other people who can offer insight and opportunities for collaboration. For example, companies can explore ways that other companies have used to develop a skilled work force. Individuals can get information on scholarships, internships, training, and job banks. State and local agencies can find out what other governments are doing to build a high tech work force (www.ta.doc.gov/go4it).

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- In January 1999, OTP participated in a White House sponsored skills summit to review the challenges and opportunities we face in ensuring a 21st century, skilled workforce. A report is available for distribution that offers examples of various partnerships and strategies.

Conclusion

It is in the national interest that the various stakeholders work together to meet our nation's short and long-term needs. As a nation, we need to fully utilize all our human capital to ensure our competitiveness into the 21st century.

CORPORATE VIEW AND POLICY - IBM
BY LINDA SCHERR

The statistics that Cathy Campbell shared with us today are compelling. From a corporate standpoint, the prevailing message is that in light of the current and impending shortage of technology skills in our country (and in the world), there is today like at no other time in history a business need behind a focus on diversity. With much of the growth in the labor force coming from women and minorities, it behooves us all to ensure that our companies are great places for women and minorities to work for and to do business with. This is driving many corporations to review their stands on equal opportunity, equal pay for equal work, and other equity programs. It is causing others to incorporate and expand programs which make their companies female and family friendly. And it is causing still others to focus specifically on initiatives geared at the attraction and retention of women in the technical pipeline. The skill shorage is a blessing in disguise for those of us who are passionate about diversity.

At IBM we have long had some of the best corporate programs and policies in terms of work/life balance, equal pay for equal work, and other diversity topics and IBM has often been recognized as one of the best companies for women and for working mothers. What is relatively new and again directly attributable to the skill shortage, is the current focus on technical women. The IBM Women in Technology Steering Committee has the following objectives: to support the growth, advancement, and recognition of our current female technical talent pool; to attract qualified technical women to IBM, and to reach out to girls and young women (kindergarten through high school) and encourage them to pursue educations and careers in science and technology.

Over the two and a half years that this focus has been in place. our specific initiatives have included: sending many IBM women to external WIT conferences including SWE, WEPAN, WITI, Grace Hopper, and Women of Color in Technology; hosting an internal conference for technical women in 1998 which was attended by 500 IBMers from 29 countries around the world; reaching out to the next generation of technical women through participation in national initiatives like National Engineer's Week and MentorNet; and partnering with other organizations focused on this issue including WEPAN, the National Academy of Engineering, the Association of Women in Science,

and SWE. The focus and the enthusiastic support of this initiative by IBM senior management and IBM technical women continues to grow. IBM has also kicked off a parallel effort aimed at similar topics and focused on multicultural people in technology.

CORPORATE VIEW AND POLICY - AT&T LABS
BY ELAINE P. LAWS

AT&T Labs provides their women employees with a number of programs and initiatives that support both their individual professional growth and retention as valuable employees to the company. These efforts range from undergraduate as well as graduate internship and fellowship support, student mentoring, employee career advisory support, professional organization sponsorship, women's leadership development and the full complement of work and family benefits needed to ensure that women can engage in productive professional careers. The outline below lists the programs and initiatives utilized at AT&T for its employees.

Support for Women Pursing Technical Studies

- The AT&T Labs Undergraduate Research Program
- The AT&T Labs Fellowship Program
- AT&T Software Engineering Talks Program
- AT&T MentorNet Electronic Mentors

AT&T Support of Technical Curriculum Development Leadership Development

- Employee Career Advisory Program
- Women's Leadership Program
- Catherine B. Cleary Award
- International Women's Forum Leadership Foundation Fellows Program
- Smith College Executive Education Program for Women
- The National Women of AT&T Professional Association

AT&T Work and Family Benefits

AT&T supports a full complement of work and family benefits that help women deal with family and childcare needs. It is significant that over 10 of the last 11 years, AT&T has been named by Working Mother magazine as one of the top 100 companies for working mothers. AT&T's work and family benefits include:

- Family Resource Program
- Educational Assistance
- Elder Care
- Adult Disability
- Adoption Resource and Referral Services
- Leave of Absence for Newborn or Newly Adopted
- Family Care Development
- Employee Assistance Program
- Tuition Assistance Program
- Academic Awards Program

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