Grid TALK GridBriefings
Grid computing in five minutes

Facing the skills shortage: attracting more women to ICT

Information and communication technology (ICT) is one of Europe's most dynamic and productive sectors, key to Europe's capacity to recover from the global economic crisis. However by 2010, the European Union expects the ICT industry will be short of 300,000 additional qualified staff[1]. Several studies have examined means of addressing this shortage, each drawing the conclusion that Europe must encourage more women into ICT careers if we are to meet the recruitment needs of this growing industry. The grid computing industry is no different, with women representing just 20% of the Enabling Grids for E-sciencE workforce[2], as a typical example.

The proportion of women in ICT

The under-representation of women in ICT is a persisting issue that is unlikely to self-correct in the foreseeable future[3]. Among 15-year-olds, both sexes are equally likely use computers for learning or to be interested in science as a career[4], however this interest does not carry through: the percentage of female graduates in science and technology in Europe varies from just 20% in the Netherlands to 44% in Estonia[5]. And although more women than men hold higher education degrees, the gender gap in ICT continues to grow, with the already small proportion of female computer science graduates dropping a further 4% between 1998 and 2004[6].

Women represent less than 25% of the ICT workforce in most countries, and less than 10% in Luxembourg, Switzerland, the Netherlands and Austria. This share of women among computing professionals has either decreased or stagnated between 1998 and 2004[7].



Why are women staying at home?

Nearly a quarter of European women are inactive in the workforce[12]. Three factors are thought to contribute to this[13]:

1) Family responsibility

More than 40% of all inactive women aged 25-54 are inactive due to family responsibilities, compared with less than 4% of inactive men. In contrast, inactivity due to sickness/disability, education or retirement is relatively equal for men and women.

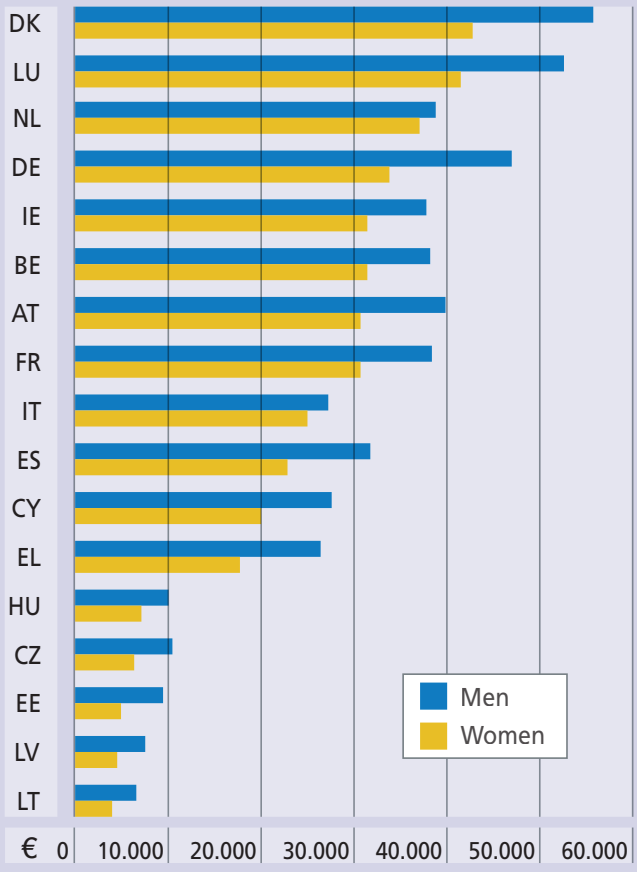
2) 'Equal pay for equal work' imbalance

Women are paid less than men in all ICT sectors and in all EU countries; this difference is particularly marked in Belgium, Denmark, France, Germany and Luxembourg.

3) Glass ceiling

Women have a limited presence in decision making and managerial positions. For example, women represent only 30% of managers in European enterprises; Denmark (23%), Malta (14%) and Cyprus (14%) have the lowest percentages of women managers.

Mean annual earning in EUR per person employed in high-tech knowledge intensive sectors - 2002 (last data available)



source : EUROSTAT 2007

The leaky pipeline; the glass ceiling

Women in the EU hold fewer than 6% of senior engineering and technology positions in academia[8], and generally represent just 10–20% of delegates on scientific boards[9]. According to the EC, this persistent under-representation of women in all areas of decision-making is an important obstacle to the democratic development of the European Union, to its cohesion, and to its global competitiveness[10].

Since so few women reach leadership positions in ICT, the industry has acquired an apparent male dominance in decision-making and management that further diminishes women's interest in the area. The lack of female leaders and role models in ICT is one of the key reasons that women enter the ICT sector in lower numbers, and tend to leave it more regularly: the so-called "leaky pipeline."

Other key issues identified as barriers preventing women from choosing ICT as a career include the perceptions that:

- ICT jobs are not conducive to achieving work-life balance
- Discriminatory progression and promotion practices are still at work in ICT
- Women are still perceived as "technically incompetent" and must work harder to prove themselves

Ways forward

The ICT sector has tremendous potential to achieve gender equality: it is a rapidly emerging, non-traditional sector where labour relations are still developing, and it has an urgent need to recruit highly qualified staff.

Best practice in gender equality is dependent on different cultural and socio-economic factors; however, the EC has suggested a series of policy initiatives that aim to stimulate the involvement of women in ICT across Europe[11]. These include:

Improving equality and integration

- Supporting the implementation of coherent equality and diversity policies
- Addressing any persistent culture of discrimination and sexism in the ICT sector
- Actively encouraging flexible working arrangements that support parents
- Offering mothers returning to work after maternity leave appropriate training to update their skills and competencies

Enhancing the visibility and attractiveness of ICT

- Clarifying and promoting the entry routes, job functions and progression pathways in ICT
- Supporting and encouraging awareness campaigns about the social value of ICT professions
- Launching campaigns to improve the image of ICT through role-models and targeted career counselling amongst high school students
- Developing stronger mechanisms for the recognition and financial reward of new talent

Stimulating student interest

- Ensuring high school students are familiar with new ICT applications and technologies
- Promoting student participation in ICT research and development activities, student competitions and fairs
- Better acknowledging, protecting and rewarding the intellectual property of junior researchers.



References

1 IT Girls: http://ec.europa.eu/information_society/activities/itgirls/info/index_en.htm
2 EGEE GAP statistics, 2008: http://egee-technical.web.cern.ch/egee-technical/NA1/GENDER/statistics/statistics.htm
3, 5, 9, 10, 11, 13 Women in ICT, 2008: http://ec.europa.eu/information_society/activities/itgirls/doc/women_ict_report.pdf
4 PISA Science Competencies for Tomorrow's World, 2006: http://www.oecd.org/document/2/0,3343,en_32252351_32236191_39718850_1_1_1_1,00.html
6, 8 EC Shadowing Conference, 2008: http://ec.europa.eu/information_society/activities/itgirls/doc/proceedings.pdf
7 ICTs and Gender, 2007: http://www.oecd.org/dataoecd/16/33/38332121.pdf
12 People outside the labour force, 2007: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-07-122/EN/KS-SF-07-122-EN.PDF



"It's great to see that the Enabling Grids for E-sciencE (EGEE) project has made such systematic efforts towards changing the present trend of under representation of women in technology! EGEE's Gender Action Plan, awareness-raising activities and Grids for Kids Days are good examples of a proactive strategy. We look forward to seeing more girls and women in grid computing and increased collaboration between our communities." *Eva Fabry, European Centre for Women and Technology (ECWT).*



"To put the IT gender imbalance into perspective, please remember it was only some 115 years ago in Europe that the first female student was admitted in a university of medicine. Nowadays, the female student population is about 60%, not only in Europe, but worldwide. Simply, female students have not yet discovered the attraction and benefits of IT studies and jobs. But it is only a question of time, perhaps another generation, and boys be careful: girls will take over in IT as well." *Hugo Leiding, Senior Director CompTIA and Secretary e-Skills ILB.*



"There is no question that having women at the table, creating the technology of the future, is important to the future of ICT and innovation. The EC Shadowing initiative provides an opportunity for aspiring scientists to see what is possible in technology. Grid computing can provide inspiring technology ideas to these young women: it brings together state-of-the-art computing architectures with applications that clearly impact our world. Interdisciplinary programs such as these have the potential for being attractive to the next generation of ICT professionals." *Telle Whitney, CEO, Anita Borg Institute for Women and Technology.*



"The low salary, promotion rate and population of women in ICT and sciences is just one of the aspects of the patriarchal society in which we live. Despite working more than some of my male colleagues in addition to child-raising, I find our situation infinitely better compared to women with modest financial means in the 19th century, for instance. Studies and professional activities, especially in fields involving thinking in abstract terms and manipulating large numbers, help to develop a critical and hopefully open mind, and create examples for the coming generations." *Maria Dimou, Grid Deployment, LHC Experiment User Support and IT Training Officer, CERN.*

Gender Action Plan to reduce the GAP

The Enabling Grids for E-sciencE (EGEE) project shares the European Commission's commitment to reducing the gender gap in the scientific workplace. Volunteers in EGEE's Gender Action Plan have worked to raise awareness about and be proactive on gender issues since the project's launch in 2004. In addition to promoting best practices (based on Equal Opportunity Policies gathered from its 150+ participating institutes), the EGEE GAP team has worked with local communities to promote grid computing careers. "We've held Grids for Kids Days to introduce primary school children to grids and e-science, encouraging them to see computing as an exciting and valuable career choice," explained GAP team leader Anna Cook. "We've also worked with the EC to host a Shadowing Day, where young women worked alongside female IT professionals to get a feel for what computing careers might hold."



The EC's Shadowing Day initiative aims to introduce young women to the reality of a career in the ICT sector. "I had never really thought about IT until today," explained EGEE shadower Adriana. "I was interested in IT, but had never really thought about a career in it." Classmate Qihui agreed: "Even though we use IT in daily life, we don't know so much about it. I learned that IT is a really interesting field, and the people working on IT are great."





"EGEE shadowers Qihui (left) and Adriana.

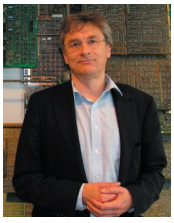
Cyberellas are IT!

On 3 March, the European Commission will receive a Code for Best Practices for Women in ICT signed by some of the major actors in the ICT sector. The Code provides for practices which aim not only to attract women in ICT, but also to keep them in the sector and help them reach their full potential.

The signing of the Code for Best Practices is embedded in a much broader initiative to raise awareness about the ICT sector and make visible job opportunities. The event is part of a one-day conference called "Cyberellas are IT!" that will take place on 3 March 2009, International Women's Day.



The conference will also include a presentation of the Shadowing 2008 initiative. At the same time, the first version of the Code will be open for a wider consultation.



"In higher computer science education, women constitute only around 10–20% of the students, while they represent 59% of total university graduates in Europe. It is easy to make the conclusion that computer science education is completely missing the target: too many of the best talents are simply just passing by. If computer science is going to improve and grow, at least the statistical share of the talents need to be there." *Per Oster*, *Director, Application Services, CSC — IT Center for Science Ltd.*



"Women doing ICT research often perform well at the beginning of their career, but not many of them are found in the higher levels. It seems that middle-aged men have a stronger motivation to get into 'powerful' positions, than their women colleagues. But one also has to take into account the difficulties women with children face in reaching such positions after having interrupted their career for parental leave." *Laura Perini, EGI_DS WP3 (EGI Functionality Definition) Leader, INFN.*



"Whenever a group of people construct anything, they do so in their own image. Assumptions are made, not necessarily through ignorance or uncaring, but because they fail to question the seemingly 'obvious' or 'irrelevant'. When the group is unrepresentative of society as a whole, problems occur. Each time we male, western, middle-class IT workers fail to think about other groups, we are in a small way guilty of discrimination." *Will Venters*, *Lecturer in Information Systems and Innovation, London School of Economics.*



"'*The limits of my language mean the limits of my world. Ludwig Wittgenstein*'. Having studied the development of grid computing since 2004 through a socio-linguistic lens, we found its future users being 'anticipated' in talk and text of the grid community. These users were mainly portrayed as being authoritative, heroic, decisive, professional, risk taking: i.e., through an assortment of male stereotypes. Anyone surprised about slow grid take-up by women?" *Claus D. Jacobs*, *Swiss NSF Professor of Strategy, University of St. Gallen.*

For more information:

Enabling Grids for E-sciencE Gender Action Plan pages
project.eu-egee.org/index.php?id=112

European Centre for Women in Technology (ECWT)
www.womenandtechnology.eu

Anita Borg institute
www.anitaborg.org/

European Network of Women Resource Centres
www.winneteurope.eu/

Euractiv: Women in Science
www.euractiv.com/en/science/women-science/article-143887

SET routes – Highways into science
www.set-routes.org/

The EC's Shadowing Days
ec.europa.eu/information_society/activities/itgirls/shadowing/index_en.htm

International Science Grid This Week
www.isgtw.org

GridTalk
www.gridtalk-project.eu

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