

**The European Commission Shadowing
Conference
6 March 2008, Brussels**

**"Move out of the shadow! Seize the
opportunITy!"**

Proceedings



European Commission
Information Society and Media

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 - **Jan Ginneberge**, Vice President Alcatel-Lucent University: *Bridging the ICT skills gap*
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I. Workshop 1: Women in ICT Careers

Chair: **Riitta Vänskä**, Senior Manager, Education & Research Policy, NOKIA

Rapporteur: **Angele Giuliano**, President, Foundation for Women Entrepreneurs

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- **Elisabeth Pollitzer**, Director, Portia-Equalitec: *Increasing Women's Participation in a Digital Future. Maximising Synergy Gains and Holistic Effects through Best Practice*
- **Jackie Kinsey**, People Director, ThoughtWorks UK: *Back to IT*
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II. Workshop 2: Education: The Barriers and how to overcome them

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Rapporteur: **Marina Larios**, President WiTEC

- **Irene Kamberidou**, University of Athens: *Training the Trainers-Educating the Educators. Education-Engagement-Retention: the gender factor in digital illiteracy in Greece*
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- **Mary E. Black**, Co-owner, Implementek: *How to influence the famil*

- **Marina Larios**, President WiTEC: Summary of the presentations: *Education: The Barriers and how to overcome them*

III. Workshop 3: Awareness: Spread the message at national, European and international level

Chair: Rosalie Zobel

Rapporteur: Eva Fabry, Member of the Scientific and Political Advisory Board, WINNET Europe

- **Adelheid Ehmke**, President of the European Platform of Women Scientists (EPWS): *Awareness at EU Level – The European Platform of Women Scientists*
 - **Eva Fabry**, European ICT Center: *Presenting the European Centre for Women and ICT*
 - **Claudia Morell**, Executive Director, University of Maryland: *What is the International Task Force, Participants etc. A Bold, Multi-Stakeholder Agenda for Advancing Global Prosperity through Gender Equity and ICT*
 - **Irina Khomeriki**, Head of Georgian Branch of International Science and Technology Center: *Encouraging women to participate in international projects*
-
- **Rosalie Zobel's closing speech**
 - **Curricula**
 - **List of participants**

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6 March 2008

Agenda

09.30 – 09.50	Registration and Refreshments
10.00 – 11.00	ICT careers – The role of women Viviane REDING , Commissioner, Information Society and Media, European Commission
11.00 – 11.30	Networking break, posters exhibitions, refreshments
11.30 – 11.45	Where Do they all go? Rosalie ZOBEL , Director, DG INFSO, European Commission
11.45 – 12.45	Addressing the Skills Gap: Individual Company and potential collaborative actions
11.45 – 12.05	Jan GINNEBERGE , Vice President, Alcatel-Lucent University
12.05 – 12.25	Marita HELLBERG , Senior Vice President Human Resources and Organisation, ERICSSON
12.25 – 12.45	Dyfed EVANS , Director, Human Resources, MOTOROLA
12.45-13.00	Summary and introduction to Workshops Rosalie ZOBEL
13.00 - 14.00	Lunch
	Workshops on Best Practices (see details next page)
14.00 - 16.00	Workshop 1 Women in ICT Careers Chair: Riitta VÄNSKÄ , Senior Manager, Education & Research Policy, NOKIA Rapporteur: Angele GIULIANO , President, Foundation for Women Entrepreneurs
	Workshop 2 Education: The Barriers and how to overcome them Chair: Enrico TEZZA , International Centre of ILO Rapporteur: Marina LARIOS , President WiTEC
	Workshop 3 Awareness: Spread the message at national, European and international level Chair: Rosalie ZOBEL Rapporteur: Eva FABRY , European ICT Center
16.00 – 16.30	Refreshment break
16:30 – 17:00	Presentation of workshop results and future actions
17:00 – 17:15	The Way Forward Rosalie ZOBEL

Workshop 1: Women in ICT Careers

Chairperson: **Riitta VÄNSKÄ**, Senior Manager, Education & Research Policy, NOKIA
Rapporteur: **Angele GIULIANO**, President, Foundation for Women Entrepreneurs

- 14.00 – 14.10 Introductory remarks by **Riitta VÄNSKÄ** - Chairperson
- 14.10 – 14.25 "*Positive Corporate Culture*", by **Elisabeth POLLITZER**, Director Equalitec: Advancing Women in ITEC, Portia
- 14.25 – 14.40 "*Women Returners*", by **Jackie Kinsey**, HR Director ThoughtWorks Studios
- 14.40 – 14.55 "Addressing the challenges", by **Gloria MILLER**, Vice President Communications at American German Business Club
- 14.55 – 15.10 "*The Challenges and opportunities – for Women in ICT*", by **Claudine SCHMUCK**, Director associé Global Contact
- 15.10 – 15.20 Summary of the presentations by **Angele GIULIANO** - Rapporteur
- 15.20 – 15.50 Discussions
- 15.50 – 16.00 Conclusion by **Riitta VÄNSKÄ** - Chairperson

Workshop 2: Education: The Barriers and how to overcome them

Chairperson: **Enrico TEZZA**, International Centre of ILO
Rapporteur: **Marina LARIOS**, President WITEC

- 14.00 – 14.10 Introductory remarks by **Enrico TEZZA** – Chairperson
- 14.10 – 14.25 "*Training the trainers/educating the educators*", by **Irene KAMPERIDOU**, University of Athens
- 14.25 – 14.40 "*ICT Curricula*" by **Myriam DIOCARETZ**, Professor, Special Chair in Humanism and Digital Society, Maastricht ICT Competence Centre (MICC)
- 14.40 – 14.55 "*How to influence the family*", by **Mary E. Black**, Co-owner, Implementek
- 14.55 – 15.10 "*Microsoft Academies*", by **Thaima SAMMAN**, Director of EMEA Corporate Affairs Microsoft
- 15.10 – 15.20 Summary of the presentations by **Marina LARIOS** – Rapporteur
- 15.20 – 15.50 Discussions
- 15.50 – 16.00 Conclusion by **Enrico TEZZA** – Chairperson

Workshop 3: Awareness: Spread the message at national, European and international level

Chairperson: **Rosalie ZOBEL**
Rapporteur: **Eva FABRY**, Member of the Scientific and Political Advisory Board, WINNET Europe

- 14.00 – 14.10 Introductory remarks by **Rosalie ZOBEL** – Chairperson
- 14.10 – 14.25 "*Awareness at EU level*", **Adelheid EHMKE**, President of the European Platform of Women Scientists (EPWS)
- 14.25 – 14.40 "*European ITC Centre*" by **Eva FABRY**, Center for Women and Information Technology
- 14.40 – 14.55 "*What is the International Task Force, Participants etc.*" by **Claudia MORELL**, Executive Director, University of Maryland, Baltimore County,
- 14.55 – 15.10 "*Participating in International Projects*", by **Irina KHOMERIKI**, Head of Georgian Branch of International Science and Technology Centre
- 15.10 – 15.20 Summary of the presentations by **Eva FABRY** – Rapporteur
- 15.20 – 15.50 Discussions
- 15.50 – 16.00 Conclusion by **Rosalie ZOBEL** – Chairperson

Viviane Reding
Commissioner
Information Society and Media,
European Commission

ICT careers - The role of women

Ladies and Gentlemen,

The transformation of our economies to knowledge-based ones has created a strong demand for workers who are skilled in different Information and Communication Technologies sectors (ICTs). The demand for qualified people, who are able to design, create, apply and use information technology, is not limited to the ICT industry itself, but cuts across other areas such as manufacturing and services, transportation, health care, education and government.

Throughout most of the 20th century, Europe has been a hotbed of innovation, thanks to one of its most valuable resources – its skilled and educated citizens. However, today it faces a shortage of qualified people in the area of Information and Communication Technologies, and more particularly a lack of young women. This is very worrying, since we cannot excel without excellent people.

You may perhaps know that the ICT sector accounts for a quarter of Europe's total growth and it is continuously increasing. At the same time, there is substantial evidence that Europe is having trouble keeping up with market demands for qualified ICT staff. It is expected that there will be a shortage of 300,000 qualified staff by 2010. This is indeed a major challenge for Europe!!

The good news is that the number of graduates in Europe in all areas is growing. The overall number of graduates across the EU-27 grew from 2.5 million in 1998 to 3.5 million graduates in 2004 – a 40% increase. This is excellent, as we all know that education underpins competitiveness and success - both for individuals and for the economy as a whole. The majority of all graduates are women, and this is an increasing trend! The percentage of women graduates in all subjects grew from 55% in 1998 to 58% in 2004.

But looking at Information Technology in particular, women ICT-graduates are still a minority. Moreover, the gender gap between men and women is currently widening

even further: between 1998 and 2004, the share of female computer science graduates decreased on average by around 4%.

Looking at engineering, even though the total number of graduates is rising and the share of female engineering graduates is growing, women still only accounted for 19% of the total number of graduates in this field in 2004.

In summary, Europe is producing more people trained in ICT, but the supply does not meet the demands of industry. Several ICT companies are repeatedly reporting a skills gap, meaning they cannot find the people with the right education and training needed for their companies to improve and grow – or even to maintain current activities. More worryingly, compared with the rest of the world, Europe is actually falling behind.

We need to act and act soon! For me there is one obvious solution: to solve the shortfall of ICT professionals, we need to bring in more women who are currently under-represented in this dynamic sector. We need to use this untapped potential! We need not only to convince more women to choose ICT studies and careers, but also ensure that once they have started on this path, they remain in the ICT professions and achieve their fullest potential.

Ladies and Gentlemen, we have to urge more young women to consider an ICT career, by motivating young girls before they make their final choice of subjects at school. Women need to understand that careers in ICT can be challenging, rewarding, useful but also fun... and yes cool! In doing so, we have to overcome some negative images and stereotypes, and this is where the "Shadowing Day" organised by the Directorate General for which I am responsible, comes in.

What is a "Shadowing day" and what are its aims? On a shadowing day a young girl "shadows" a female engineer for a day as she goes around her daily duties. The girl can thus see all the facets of working in the sector. The Shadowing day aims to spark girls' interest in ICT. In 2006, the European Commission, in cooperation with five industrial leaders in the area launched the first shadowing day exercise. In 2007, shadowing became bigger. More than 50 girls across Europe, aged between 10 and 20 years old, shadowed female engineers and researchers in leading ICT organisations and got an insight of what ICT is all about. I myself was shadowed at the Braga Nanotechnologies conference last November, but unfortunately my two very nice shadows are not here today. We are also happy to see that our initiative was also taken

up in the United States where 16 shadowing events were organised, and other countries such as Australia are also interested.

The organisations which participated in this year's shadowing exercise are: Athens Information Technology, Centro di Biomedicina Molecolare, CERN, Fraunhofer Institut, Fujitsu, Futuretec, Holografica, Ikerlan, IMT – Bucharest, INRIA, INTRACOM, Institute for Reference Materials and Measurements of the Joint Research Centre, Joint Research Center Ispra, L'Oreal, Motorola, NOKIA, Portugal Telecom, Southampton Solent University, ThalesAlenia Space and the European Commission. I would like to thank all these organisations for their valuable support and contribution.

The shadowing days were captured in a video which you are going to see and which is going to be disseminated across Europe, and beyond. A poster and a website are supporting this dissemination exercise. A Golden Book was also created with the impressions of the girls and photographs of the day.

The shadows and the engineers, some of whom are here with us today, are going to act as multipliers and pass on the message; the message that ICT is cool, and needs creative and talented people. In the future, I would like even more schoolgirls to take part before choosing their career. I would like every girl to be fully informed of the opportunities and challenges in ICT professions. Last year's shadowing video was shown in many national and international conferences which encouraged other companies to participate. We received many questions from young girls, university students, young people who wanted to change careers, women returning to work after a career break. We answered all of them and gave information and advice when possible. I am proud of this! It made an impact. The new, improved website has been made trendier. It includes videos of the participant companies with links to their human resources departments, information on how basic ICT products work, job descriptions for ICT careers, statistics, educational requirements and other interesting and relevant links. Have a look! Go to www.ec.europa.eu/itgirls.

Encouraging girls and boys to choose careers in ICT is not enough though. We still need to fight the phenomenon of the "leaky pipeline". We need to keep skilled people in the sector, give them incentives to stay and develop their full potential. This can only be done by providing a good working environment that will offer prospects for professional development allow a good balance between professional and private life

and provide life long training opportunities. For this reason, the Commission, in cooperation with industry, is setting up an Industrial Working Group which will work towards setting up a Code of Best Practices to cover all the points that I have just mentioned. I have with me today representatives from a number of important players who pledged to participate in this group. The working group will look at all existing best practices and bring them together to improve working conditions. It will also aim to promote more women into management positions by helping them to break the "glass ceiling".

In the second part of this conference, there will be three workshops looking at: ICT careers, Education and International cooperation and awareness-raising, focussing on encouraging women to choose careers and stay in the sector. These workshops aim to put the foundations for the Code of Best Practices. I am sure that the many creative ideas stemming from these workshops will be the building blocks for our future work.

Before closing and letting you enjoy the shadowing days' video, I would like to express three wishes. I wish that in 2008, there will be 100 companies and 1000 girls participating in the shadowing exercise. I hope that when we meet again I shall be able to tell you that the Code of Best Practices is ready and that many companies have committed themselves to it. And finally, I wish that we will be ready to discuss another activity, another step forward to bring and retain women in the ICT sector. And this is where you who are here today can help. You can become part of this great effort. You can host shadowing days, you can give your ideas for the Code, and you can pledge to implement it. We have a common goal, so this needs to be a common effort. I am sure we can make it!

Plenary Session

Where did they all go?

Dr. Rosalie Zobel
 Director
 Directorate G: Components and Systems
 DG Information Society and Media
 European Commission

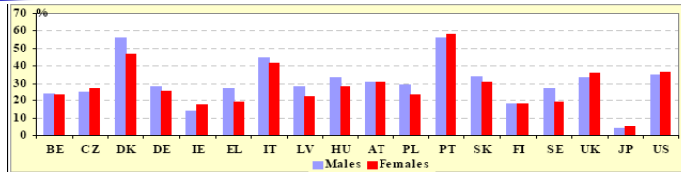


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 Plenary session

1

The beginnings...



(Source: EU-RA from OECD PISA 2003 Study)
 Percentage of male and female 15 years olds (M&F) who use the computer as tool for learning material (2003)

- Gender differences exist in the frequency with which they use the computer, the context in which they learn to do so, the types of activity carried out and their self-assessment of their own abilities. (PISA 2003)
- In general, boys use computers more often than girls to play games, but also to look up information;
- No significant differences between boys and girls in the use of computers for obtaining learning material;
- No overall differences in males' and females' inclination to use science in future studies or jobs (PISA 2006);

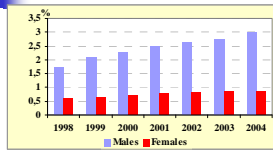


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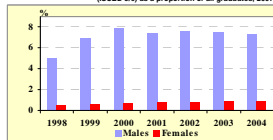
Move out of the Shadow! Seize the Opportunity!
 Plenary session

2

The facts (I)...



(Source: EU-RA from Eurostat)
 Percentage of male and female computer science graduates (ISCED 5/6) as a proportion of all graduates, 2007



(Source: EU-RA from Eurostat)
 Percentage of male and female engineering and engineering trades graduates (ISCED 5/6) as a proportion of all graduates, 2007

- A general increase in the number of highly educated females;
- However**, in specific sectors, such as **computing and engineering and engineering trades** female graduates are significantly outnumbered by male graduates

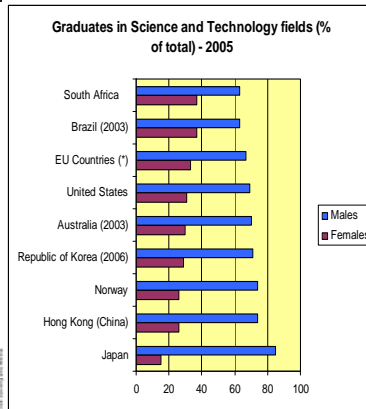


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3

The facts (II)...



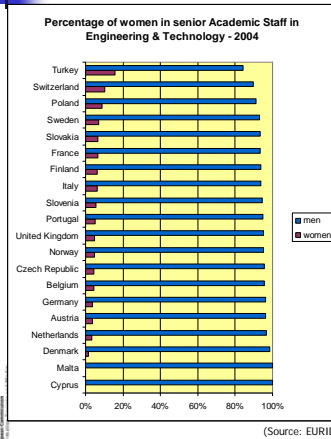
- ✦ The average % of female graduates in S&T in Europe (33%) is the third at global level;
- ✦ South Africa (37%) and Brazil (37%) are in the lead;
- ✦ In US 31% of the graduates in S&T are women;

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4

Who decides in the university...?



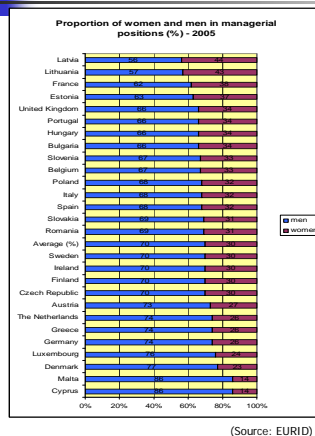
- ✦ In the **engineering and technology** fields only 5.8% of women occupy senior academic positions.
- ✦ In contrast, in natural sciences (11.3%), agricultural sciences (14.9%), medical sciences (15.6%), social sciences (16.6%) or humanities (23.9%) the percentage is higher (EUROSTAT);
- ✦ The apparent male dominance in decision making and leadership - a "glass ceiling" effect;

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Who decides in the private sector...?



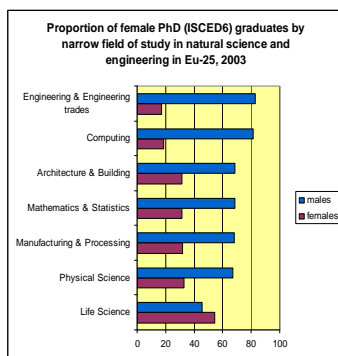
- ✦ On average only 30% women on average work in European enterprises as managers.
- ✦ **Latvia** (44%), **Lithuania** (43%) and **France** (38%) have the highest % of female managers;
- ✦ Denmark (23%), Malta (14%), and Cyprus (14%) have the lowest % of female managers; (EUROSTAT LFS)

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But where did they go...?



OTHER FIELDS OF STUDY

- The largest gap between male and female PhD researchers in Europe is present in the engineering and technology fields (22.3% women)
- The proportion of women PhD researchers (50.4%) slightly exceeds that of men in humanities research



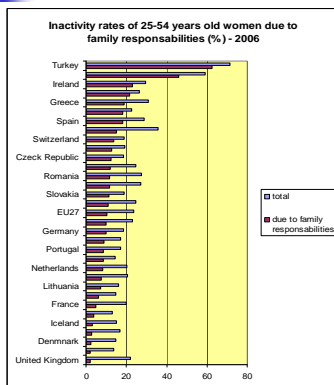
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Plenary session

7

They are still out there...



- ✦ Since 1999 the share of the inactive persons in the labour force as a percentage of the total population aged 15 to 64 has dropped from 31.6% to 29.4% in the EU-25;
- ✦ However, across the sectors, the inactivity rate of women aged between 25 and 54 years in the labour force was 23.6% for **women** in 2006 in the EU27, compared with 8.1% for **men**;
- ✦ Apart from personal or family responsibilities, the differences between the genders are minimal;



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Plenary session

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Conclusions:

- ✦ the gender differences in the ICT professions are so persistent that they will most likely not self-correct in the foreseeable future
- ✦ WE NEED TO:
 - ✦ Stimulate student interest;
 - ✦ Enhance visibility and attractiveness;
 - ✦ Improve equality and integration;
- ✦ WE NEED TO ACT NOW!



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Plenary session

9



Jan Ginneberge
Vice President Alcatel-Lucent University



Statement of Business Principles

The Statement of Business Principles applies to all employees and guides the way they interact with each other, competitors, suppliers, shareowners, business partners and customers. They establish the minimum standards of behaviour and are based not only upon the laws and regulations that affect business but also on the concepts of integrity, respect, fairness, diversity and ethical standards of behaviour.

Principle 8 - Respect for a Diverse Culture

Alcatel-Lucent is one company formed of many diverse and exciting cultures, thus each of us, the Company's employees, must strive to appreciate, benefit from and understand one another's cultures and customs. Alcatel-Lucent's employees must not discriminate against one another, including for reasons of age, disability, ethnic origin, gender, race, religion, or sexual orientation.

Our Commitment to Diversity

Every country will develop its own diversity strategy, aligned with the five global standards ensuring it:

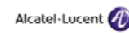
- Supports and respects the protection of internationally proclaimed human rights and ensure they are not complicit in human rights abuses
- Promotes a workplace free from harassment and discrimination.
- Promotes a work environment where all employees feel valued, included and empowered to fully contribute.
- Supports the acquisition, development, retention and promotion of diverse talent.
- Communicates local adaptation of the global diversity standards that is sensitive to the local culture.

I pledge personally to uphold and expand Alcatel-Lucent's commitment to diversity, and I urge you to do the same.

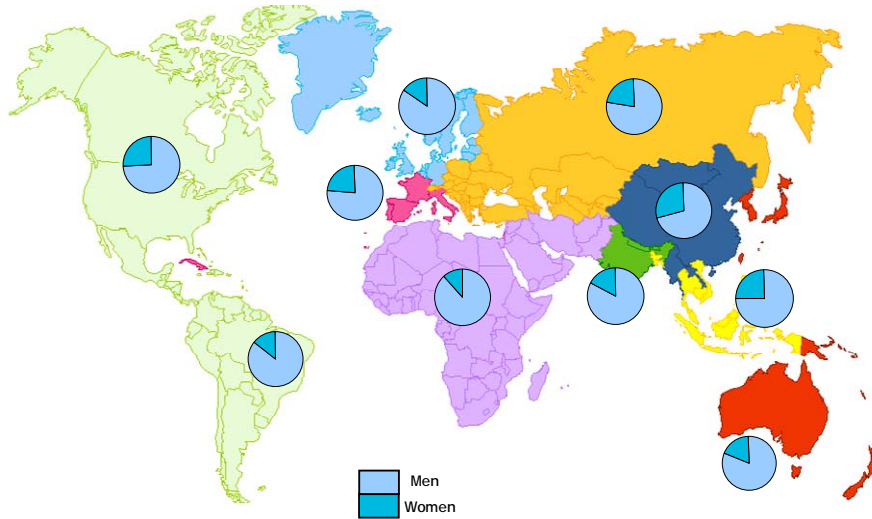
Pat Russo

J. Ginneberge | Mar 6 | P. 4

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Gender by Regional Unit



Based on Total Alcatel-Lucent Headcount December 2007

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Women in Alcatel-Lucent - Demographics

Alcatel-Lucent Executive Leadership Team:



22% of global employee population and European employee population are women

J. Ginneberge | Mar 6 | P. 6

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2 Promoting ICT as a Career Choice



Alcatel-Lucent Local, Multi-partner Initiatives:

Examples of *multi-partner, local initiatives* between industry, education and/or government around *promoting qualifications relevant to the sector* :

- **Secondary Education** : “Computer Clubs 4 Girls” (CC4G) by e-skills UK (Sector skills council for IT & Telecom)
- **Higher Education** : “Cercle Passeport Télécoms” (France-US) :
 - 319 volunteering tutors of 7 companies working with talented students in 42 lycées in disadvantaged areas to get accepted in engineering and commercial/management qualification programs of French ‘grandes ecoles’
 - Alcatel-Lucent added an international component by helping to improve their level of English via conversations with 70 volunteering employees in the US.
- **Post-graduate Education** : Funding of scholarships at business schools (INSEAD, HEC, ...)

3 Developing Leadership Role-Models

Talent Development at Alcatel-Lucent

- Comprehensive *annual talent management* process identifies high potentials at all levels and functions:
 - ✓ Direct involvement of CEO and Senior Management Committee
 - ✓ Best in Class Development programs - tailored to level of potential
 - ✓ Targeted career development opportunities include a substantial number of expatriate assignments

Targeting Executive Careers for Women

"Women in Leadership initiative" (2005-2006) launched to strengthen *executive careers* for women :

- Advantage of *external professional networks* in their local area (e.g. European Professional Women's Network) and build a network of "*Women in Leadership*" *volunteers* on a geographical basis
- Provide *individual career development* interviews to talented women and share success stories and career paths of *executive women (video interviews)*
- Surveys and *gender diversity awareness* sessions with executives, HR, women in international mobility,... and *special leadership training* on key career success factors.

4 Flexible Working Patterns

Because the World is Always On

Flexibilize *place and time* of working activities through *ICT*:

- Continuous growth of *teleworking* (75% of employees in Belgium, 25% in UK, 10% in Spain, project with potential of 25% in France)
- Maximizing *online learning* (32% of time spent in learning, 75% of Alcatel-Lucent University subscriptions)

With mutual benefits :

- Higher productivity, increased job-satisfaction & motivation
- Attraction and retention of experienced employees
- Extended reach (geography as well as niche populations)
- Better work-life balance (flexibility in alternating personal and work time)

Steps Ahead ...

Include benefits of non-tangible issues as job satisfaction and quality of life, in **analysis of cost versus benefits**

My home-experience = my office experience. Broadband connection is mandatory for efficient teleworking and online learning. **Technology is ready** and proven (ADSL, Fibre, WiMAX ...).

On a **voluntary** basis, embedded in global **HR strategy**. Promotion and positive mindset required.

Change in management style needed :

1. From management by presence/control to management by objectives/trust
2. Performance management : very clear & upfront objective setting (SMART)

Change in employee behaviour : more responsibility, more result-oriented

Ultimately means **change in culture benefiting all**



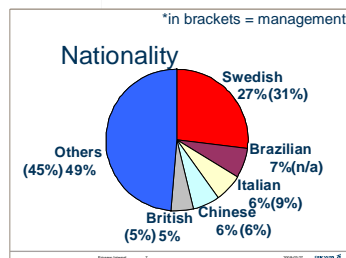
“With diverse teams we will achieve excellence in everything we do.”

Marita Hellberg,
Senior Vice President,
Head of Human Resources & Organization



This is Ericsson

- operations in 175 countries
- more than 70,000 employees



LME-08:000573 Uen Rev A

Ericsson Confidential 2

Ericsson, Competitive advantage through diversity, March 2008, Rev A 2008-02-27



Driving communications evolution

Ericsson's focus areas

- Multimedia
- Government
- Broadband
- Telecom expansion
- Telecom services



Anywhere. Anytime. Any device.

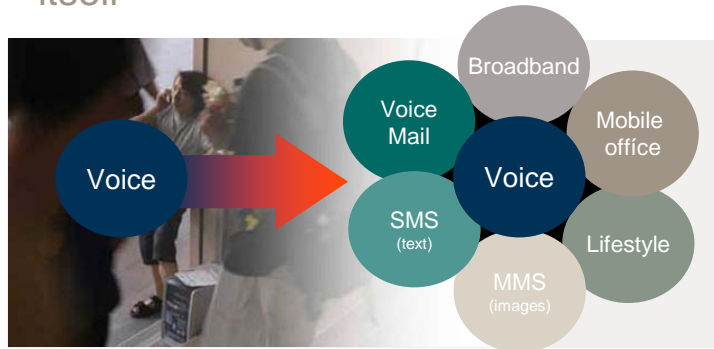
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Ericsson, Competitive advantage through diversity, March 2008, Rev A 2008-02-27



The telecom market is redefining itself



Our employees Digital Natives Doing Things Differently



CEO Statement

"We take pride in being a multicultural and highly diversified company whose employees reflect the scope of our activities. Operating in more than 175 countries, we leverage, respect and value individual differences. Our differences create opportunities to challenge each other to think innovatively. With diverse teams at all levels, we will be better equipped to meet the customers' needs and expectations and ultimately achieve excellence in everything we do."

*Carl-Henric Svanberg,
President & CEO*

Our People Commitment

We believe in the individual and everybody's desire to succeed

We provide

- Global diversity
- An innovative environment
- Investment in competence
- A performance-driven career
- Empowerment
- Clear expectations and goals

We expect

- Living our core values
- Business-minded
- Passion to win
- Responsiveness to customer needs
- Teamwork – one Ericsson
- Accountability

Lead by example – qualify every day – generate energy

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Activities to attract, support and develop - Examples

Female graduates

- Future Female Leader Award
- Sponsorship of "DataTjej"
- Crea Academy (R&D)

Younger target groups

- Prizes, collaboration, co-productions A wide range of local activities
- Networks, societies, scholarships

Ericsson female talent program

Networks, Mentorships, Training, Workshops, Career Planning



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Ericsson, Competitive advantage through diversity, March 2008, Rev A 2008-02-27

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Moving forward

- ICT companies progressing
- Build system/network for innovation, collaboration, meeting of minds from all parts of society
- Drive change, focus on execution

LME-08.000573 Uen Rev A

Ericsson Confidential

9

Ericsson, Competitive advantage through diversity, March 2008, Rev A 2008-02-27

ERIKSSON



Inclusion & Diversity

Dyfed Evans, Director HR
 March 2008



Global Inclusion Vision
 I work for one company with a shared vision,
 where inclusion is embedded in all that we do.

Global Inclusion Goals

- **Marketplace**
 External alliances reflect our commitment to inclusion
- **Workforce**
 Motorola has a globally diverse talent pipeline
- **Workplace**
 Motorola is a great place to work



Experience Inclusion
 Workplace. Marketplace. Workforce

Global Inclusion 3 Year strategy



Global Women's Business Council Focus Areas

Strategic Business Impact:
Focuses on improving Motorola's opportunities to sell-thru to women and build an intellectual property portfolio that is rich with women generated innovation

Community Outreach:
Community initiatives with targeted activities that inspire underserved (female) population to pursue science, technology, engineering, and math ... as a result that will enhance the Motorola Brand



Women's Business Council
Europe, Middle East and Africa

Networking/Mentoring: Developing mentoring programs to expand personal growth and networking opportunities to build stronger relationships

Leadership Development: Provide unique opportunities to WBC members in the form of training, coaching, professional development, and succession planning to enhance the talent pipeline

Proactive Communications:
Bridge all the sites globally through proactive communication of key events, common messages and WBC themes



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Inclusion & Diversity: Marketplace

- Motorola France** has been ranked 19th in the Great Place to Work competition. Motorola Toulouse in France has won an award in relation to male/female salary equity. Award money will be used to organise on-site diversity events.
- Take your child to work events in **Denmark, the UK and Germany**
- Czech Republic** – Women's Business Council Breakfast in Prague organised by Women's Action Team (SWAT), attendees from Motorola and external high-tech companies.
- "The Rural Girl's Right to High School Diploma" initiative in **Morocco** (20k USD Motorola foundation support)
- South Africa** Community Development Initiatives in partnership with Motorola Foundation

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Inclusion & Diversity: Workforce

- 6th annual "Girls day" conducted in **Germany** to attract school girls to careers in the ICT industry; increased female hiring ratio in graduate positions
- Poland** Diversity initiative to attract school girls to ICT careers and technical education
- Book Club in **UK** - focus on leadership and diversity of thought
- Female Global Sales Account Director in **Western Europe**
- Female Country General Manager in **Africa**
- South Africa** Growth Forum
- Girls school briefings on engineering careers in **Greece**
- First female sales manager has joined Motorola in **Middle East** sub region; Hired female Director in **Middle East** as well

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Inclusion & Diversity: Workplace

Global International Woman's Day Celebrations and peer awards - over 50 nominations in EMEA

MOTO4HER event in UK in partnership with Mobile Devices to promote 2-way information sharing

French initiative "Cercle des Telecom": mentoring program in which Telecom companies help young people from underprivileged populations to access higher level education

Israel Diversity initiative to empower women in the high-tech industry

South Africa Black Economic Empowerment initiatives

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A Day @ Motorola in partnership with the EU

Plan
LAN planner – MESH planner

Deploy
Wireless Switch

Manage
Wearable Scanner

2008

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Inclusion & Diversity

Dyfed Evans, Director HR
March 2008






Summary and introduction to the Workshops

Dr. Rosalie Zobel
Director

Directorate G: Components and Systems
DG Information Society and Media
European Commission



Move out of the Shadow! Seize
the OpportunTY!



Expected outcomes of the Workshops:

- ✚ Identify which are the challenges faced;
- ✚ Identify best practices to solve them;
- ✚ Give advice regarding the type of actions to be taken by the different players:
 - ✚ Industry
 - ✚ Academia
 - ✚ The European Commission

Move out of the Shadow! Seize
the OpportunTY!

Workshops on best practices

Workshop 1

Women in ICT Careers


Chair: **Riitta VÄNSKÄ**, Senior Manager, Education & Research Policy, NOKIA
Rapporteur: **Angele GIULIANO**, President, Foundation for Women Entrepreneurs



Workshop 1: Women in ICT Careers

Chairperson: **Riitta VÄNSKÄ**
Rapporteur: **Angele GIULIANO**


6 March 2008



"Positive Corporate Culture", by
Elisabeth POLLITZER

- Gender Equality Hotspots
- Self-efficacy: Believe in yourself
- Clarity of career opportunities
- Vocational exploration
- Positive spillover
- Diversity Policies
- Recruitment & Work practices
- Industry image
- Personal & Professional Development

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"Women Returners", by
Jackie Kinsey

- Values of Corporate Social Responsibility and Ethics, Integrity, Entrepreneurial spirit act as motivation
- Back to IT programme – application, sharing personal stories, training, recruitment process
- No shortage of Women! They are just disillusioned or under-confident.
- The power of friends and word of mouth
- Businesses/Recruitment agencies don't always care
- It's a win-win situation for all women & companies

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"Addressing the challenges", by Gloria MILLER

- University -> ICT Career -> Management
- With companies = Talk about the business case
- How can we keep people engaged whilst they are out having children
- Unintentional bias e.g. late culture of organisation might be a hindrance
- Sponsor Education
- Recruit Women – signalling interest (girls day), flexibility
- Fix the organisation – small wins
- Build a network – commitment

6 March 2008

"The Challenges and opportunities – for Women in ICT", by Claudine SCHMUCK

- Developing country girls more attracted to S&T than European ones.
- Technology more attractive than science
- ICT companies NEED gender diversity to win market shares and maintain competitive edge
- Women convince more. Ideal complementarity
- Inform, educate, recruit and promote women
- Target the professional women, top management and men
- Use intranets, mentoring, coaching

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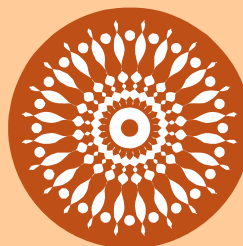
Common Areas

- Appreciation of the problem at hand
- Various approaches that can all be good according to culture and location
- Women can fill the demand – their skills, numbers, passions and abilities
- Some are managing to do it... let's learn from each other's best practices

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Common Points

- Inner to outer circle of changes
 - **Me**
 - **My family** (older / younger generation)
 - **My friends** (male & female)
 - **My company / university**
 - **My contacts** (F2F but also facebook, linkedin, ...)
 - **My government**
 - **My Europe**



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Sharing Best Practices

- Promote women experts.
- Don't re-invent the wheel. Mapping of what is working well in different countries
- Get the media/TVs on board. Stop the fashion/music only trend but include in them more positive values promoting technology
- Make the girls the authors of the videos/other media channels - empowering them
- Motivate women to go for more senior roles
- Use video games to stimulate young people to get into science/ICT
- Start early! Involve primary education and parents. Maybe secondary education is too late

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Actions for Industry

- Make internal Networks more visible
- Create synergies between companies – large multinationals working with SMEs and vice versa. Create neutral fora. Use B2B networks. Develop a business case.
- Take ownership of the issue and do something about it
- Positive campaign on how technology is making life better... not worse
- Have clear objectives / goals – employment? returners
- Communicate with universities to arrange the curricula to form female for top ICT jobs

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Actions for Academia

- Link up with industry, civil society and government networks
- Remove the stereotypes and make the Ph.Ds / professorships more accessible to women
- Learn more about developing countries – why are their girls more motivated?
- Motivate the educational system to make ICTs fashionable
- Align curricula with industry needs
- Modernise teaching methods to reflect more the working patterns in ICTs
- Innovative opportunities for vocational exploration – work with industry

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Actions for European Commission

- Stimulate and being the platform for the sharing of networks.
- Ask the industry about these networks and keep a database
- Ensure that governments have the strategy to include women in ICT
- Promote that Innovations are at the heart of the planet
- Propose a recommendation for having more women board members / management in corporations & authorities in Member States

6 March 2008

Riitta Vänskä
Senior Manager, Education & Research Policy, Nokia Corporation
Introductory remarks

Women and ICT conf. March 2008
Workshop: Women in ICT careers

Riitta Vänskä
Senior Manager, Education & Research Policy
Nokia Corporation



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Situation in Nokia Finland (Women and ICT), some statistics

Nokia Finland

- **Women 35,11 % out of all personnel**
- **R&D, women 20,72 %**
- **In managerial position, women 18,07 %**

R&D in Finland - Education level

- **Doctor degrees in R&D Finland 2.3 % - women's portion out of those doctors 10,8 %**
- **University degrees in R&D Finland 46 % - women's portion out of those university degrees 17,5 %**

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Diversity in Nokia

Nokia aims to evolve its company culture toward a world-class example of an Inclusive working environment. Our goal is to enable men and women of different cultural or ethnic backgrounds, skills and abilities, lifestyles, generations and perspectives to contribute their best to our success.

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Nokia's internal activities in Finland on the area of Women and ICT

- Yearly follow up for women's salary, job grade, career development
- Yearly follow up for graduate students in Finland – how many female graduates
- Yearly follow up for recruited females

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NOKIA

Women in ICT careers

- ICT related work has changed e.g. in telecommunication area convergence and internet has changed dramatically the nature of ICT related work
 - E.g. our engineers are conceiving business models for green area
- Strong aim is that
 - Technology will bring welfare for the sake of people and environment
- Ethical issues and global social responsibility are important areas of ICT now and even more in future
- Multidisciplinary skills are urgently needed
- Networking skills are crucial
- Service Science skills are needed
- Why do we not call ICT area as 'creative industries'????

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NOKIA

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- Why do we not call ICT area as 'creative industries'????

Question:
Isn't this something
that women are good
at?

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Recruitment needs

What type of people innovative companies need

- Employees with educated mind set
- Employees with networking skills
- Employees with problem solving skills
- Employees with global view, cultural understanding
- Employees with tolerance for uncertainty
- Employees who have courage to look beyond their own comfort zone
- Employees who are open for different views
- Employees with open mind and flexibility for the change
- Employees with passion to work
- Employees with language skills
- *Employees need to think beyond the routine, and need to have the ability not just to adapt to change, but to help create it*

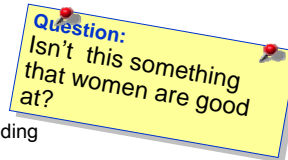
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NOKIA

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Outcomes of this workshop

What are the challenges faced by everyone?
Strategies/best practices that are working? How can we share?

Actions to be done

- * industry
- * government
- * EU

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Nokia's latest activities in Women and ICT area outside Nokia

Nokia contribution to women and ICT

- Shadowing project 2007 and 2008
- Supporting for a three year program by the Helsinki University of Technology aimed at promoting women's' careers in engineering, in particular, ICT. The program was providing examples and learnings from successful careers for women in industry and academia.
- Support for an innovative institution – Teknokas – in northern Finland which has developed a unique new method of teaching technology through doing and experimenting. The institution has developed a modular learning program from elementary levels to universities and teacher training. The Ministry of Education and the Federation of the Technology industries are now supporting the initiative extensively trying to make a national program.
- a number of public campaigns in press and other media which address the Women and ICT issue
- ERT and Eicta activities relating to eSkills and studies on mathematics and engineering.

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NOKIA

Elisabeth Pollitzer
 Director, Portia-Equalitec
*Increasing Women's Participation in a Digital Future.
 Maximising Synergy Gains
 and Holistic Effects through Best Practice*

Increasing Women's Participation in a Digital Future

Maximising Synergy Gains and Holistic Effects through Best Practice

Elizabeth Pollitzer, Director, Portia-Equalitec
 Elizabeth@equalitec.org.uk

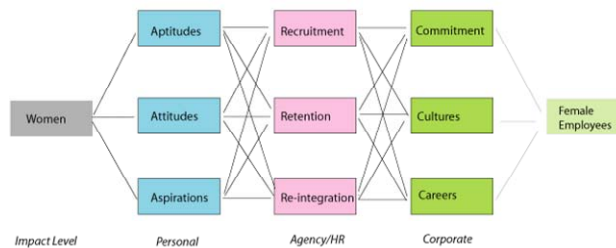


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 Brussels 6th March 2008



Gender Equality 'Hot Spots'

Unlocking the Synergy Gains



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The Aptitudes 'Hot Spot': Cost Effective Access to High-level ICT Skills

Best Practice Example 1: e-Security

- Careers awareness workshop:** women, training providers, researchers, innovators, professional accreditation body
- Portsmouth University:** 5-day intensive course (first and necessary step towards gaining professional accreditation)
- Participants:** 50% students, 50% women returners
- Cost:** approximately 520 Euros/woman (1/10 of a commercial course)



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The Attitudes 'Hot Spot': Interventions Fostering Self-Efficacy

Best Practice Example 2: **Mentoring Circles™**

- **Group support**
- **Action learning**
- **Personal growth**
- **Cost:** approximately 600 Euros/woman

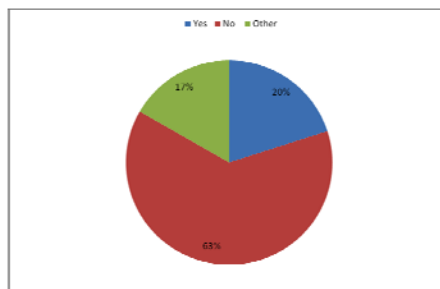


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The Aspirations 'Hot Spot': Raising Awareness about Diversity of Opportunities in ICT

Are you aware of the many wide ranging areas and job roles that understanding of digital technologies can open up for you?

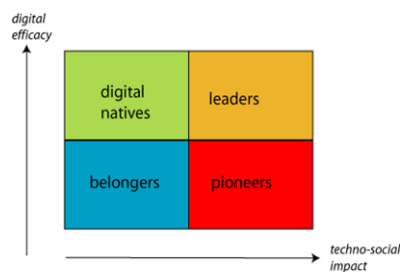


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The Recruitment 'Hot Spot': Diversity of ICT-cultures & Opportunities

The emergence of Digital Natives

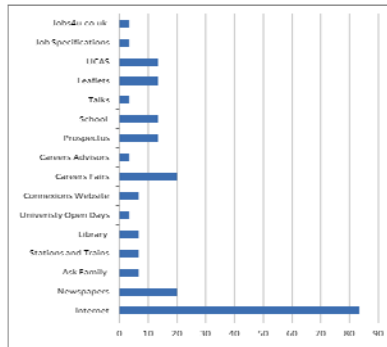


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The Recruitment 'Hot Spot': Internet the Preferred Information Source for the Young

Where do you look for information when exploring jobs you may want to do in the future



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RESOURCES WOMEN

The Recruitment 'Hot Spot': Vocational Exploration

Would you be interested in career advice materials and services explaining employment opportunities in a Digital Future? YES!



Career-related self-efficacy interventions can improve career decision-making, vocational explorations and commitment. (Equalitec experience, also F.K. Roy Sullivan, *Increasing Career Self-efficacy for Women*, PhD Thesis, 1996)

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The Retention 'Hot Spot': Work-life Balance (for Men and Women)

In the UK, 70% of women with children aged 5-10 are employed



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The Culture 'Hot Spot': the 'Spillover' Effect

Best Practice Example 4: **Better team performance through optimal, 50:50 gender mix, and avoiding long working-hours**

"Innovative Potential: Men and Women in Teams", (LBS, Nov 2007)

- Study of 100 teams in 17 countries - 1400 team members and leaders
- 96% of male leaders had children, mostly in pre-school age
- 48% of female team leaders had children
- Both men and women **team members** consider home domain more important than work
- Both men and women **leaders** consider work more important
- Team members (men and women) report **positive** experience of Spillover
- Team leaders report negative experience of the Spillover
- "Enriching" (team members) vs "Depleting Cycle" (male team leaders)
- Optimal gender F:M mix factor is 50:50, for general efficiency
- Best gender F:M mix factor for team self-confidence is 60:50



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The Careers 'Hot Spot': Diversity of Talent and Approaches to Career Choices



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Conclusions 1: Unlocking the Synergies for Greater Participation of Women in ICT

- **Self-efficacy** (improved belief in one's capability to achieve career goals)
- **Clarity of ICT career** opportunities and pathways (improved awareness of career-choices and professional development)
- **Vocational** exploration (improved commitment to career direction)
- **Positive Spillover** effects (improved work-life balance)



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Conclusions 2: Maximising Holistic Effects

- **Diversity Policies** that have been mainstreamed across government, industry, and employer organisations
- **Recruitment & Work Practices** that are transparent, supportive and promote long-term career planning
- **Industry Image** that celebrates ICT successes and promotes diversity of career opportunities
- **Personal & Professional Development** that foster ownership and commitment to career choices and “enriching” relationships between work and home



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Brussels 6th March 2008





ThoughtWorks®

Back to IT

6 March 2008

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ThoughtWorks®

Who are we?

- We are a truly global software consultancy and product company
 - Pioneers in agile and different ways of thinking and working
 - 1,000 people across 6 different countries
 - Induction held in India for all employees globally to ensure connectedness
 - > 20% of staff on international transfer assignments at any given time
- Our mission is to Revolutionize the IT Industry
 - By what we do and who we are
- As a part of this, we aim to be 50% women in IT roles by 2012
- Fortunately, our culture is set up to do things differently...

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2

Our values	We strive to...
Customer Commitment <i>Delighting Our Customers</i>	<ul style="list-style-type: none"> • Be relentless in our devotion to our customers success and delivery • Be flexible and easy to do business with • Deliver exceptional value to our clients, as defined and measured by them
<p>...our values require us to act...</p>	
Social Responsibility <i>Creating a Better World</i>	<ul style="list-style-type: none"> • Support change in our professions and communities • Create a better world as individuals and as a company by opposing inequalities and injustice • Actively promote the inclusion of diverse individuals on all teams • Redress historic discrimination, including that of race, gender and sexual orientation
Integrity <i>Uncompromising Principles</i>	<ul style="list-style-type: none"> • Act with respect, integrity, and honesty – doing the right thing over the easy thing • Communicate transparently, trusting others • Act with humility as individuals but with pride in ThoughtWorks • Improve our company for the future generations of ThoughtWorkers
Best People <i>An Exceptional Team</i>	<ul style="list-style-type: none"> • Rely on Attitude, Aptitude, Integrity in all our people, valuing talent over experience • Seek out truly excellent people who share our passion and values • Demonstrate a can-do attitude and a strong work ethic • Fight above our weight individually and collectively • Learn from our colleagues and from external communities about our work and the world • Develop our people and our leaders
Fun <i>Have Fun. Be Passionate.</i>	<ul style="list-style-type: none"> • Create a passionate, zestful, and committed environment • Encourage initiative and avoid resting on our laurels or playing it safe
<p>...and give us the freedom to try, fail, and try again...</p>	
Entrepreneurialism <i>Imagine and Pursue</i>	<ul style="list-style-type: none"> • Be fearless, courageous, open-minded, self-motivated and eager to learn • Accept risks intelligently, viewing them as a positive feature of our business where others may not • Make mistakes fast and learn from them, including stretch our people and support them if they fail • Act with an entrepreneurial spirit, with each employee acting as an owner
Global <i>Transnational Team</i>	<ul style="list-style-type: none"> • Drive primarily global success while ensuring sustainability of local business • Provide our people opportunities to experience and work in different countries • Have transnational representation on all our offices and leadership teams • Have global company culture and values with awareness of local cultures • Serving the global market with a delivery model that uses the power of our global resources

ThoughtWorks®

Where are all the women?

- Less than 1 in 5 five of all IT professionals are women
 - We want to get to 50%
- Only 17% of all Computer Science Graduates are women
 - All employers seem to be chasing the same girl geeks – who don't join IT!!!
- But, in the UK:
 - 52% of women with children under the age of 5 are in paid work
 - This increases to 70% when children reach 5-10 years of age
- So why aren't these women coming back to IT?
- We wanted to try a different approach

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4

ThoughtWorks®

We invited them Back to IT

ThoughtWorks®

Getting you back into IT

At ThoughtWorks we want to encourage more women to join and regain the IT industry. We recognise that getting back into IT can be a daunting prospect. We are offering an intensive technical training course to help you bring your IT career back on track - whether that means learning new technical or commercial skills or just offering you a helping hand to regain your confidence in this fast-moving industry.

Sound interesting?
Then take a look at www.thoughtworks.com/backtoIT
This might just be the opportunity you have been waiting for.

ThoughtWorks is an equal opportunity employer. If you see a job listing, we would love to hear from you!

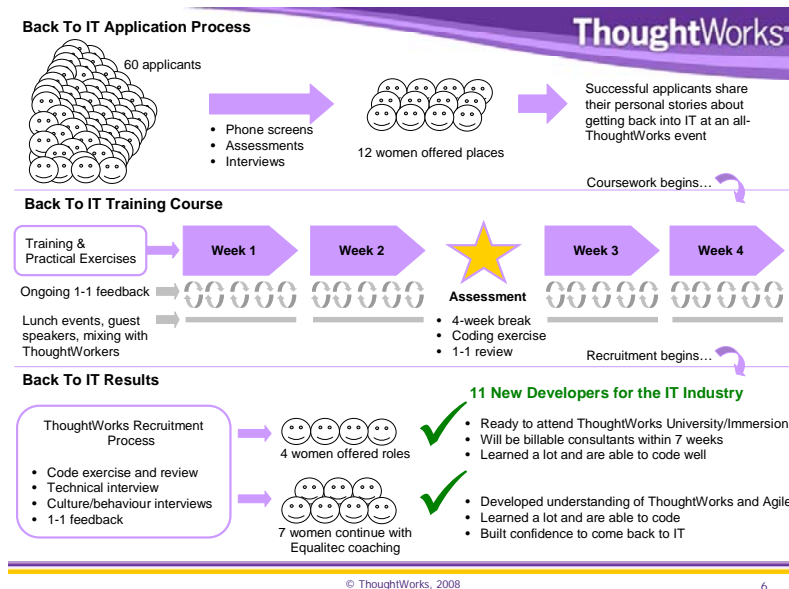
Microsoft's partner of choice

ThoughtWorks is a UK leader in ThoughtWorks

ThoughtWorks is a UK leader in ThoughtWorks

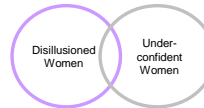
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5



We learned there is no shortage of women

- Two often overlapping categories of technically competent applicants:
 - Women disillusioned with IT due to having been passed over, made redundant, fired or just made to feel unwelcome
 - Women with little confidence in their competence or their skills (often due to obsolescence)
- There is no “women-returners” list
 - Most initial applicants were referred by partners who saw the ad in the newspaper
 - Word of the programme spread informally through different groups and populations
- Training available to these women is not pragmatic, or not as highly valued by employers as recent employment skills
- Recruitment agencies and employers do not see value in the competence of this resource pool, favouring recent application experience above all else



This is a large untapped pool of skilled, competent individuals – all they need is some investment in current technical skills and a break!

Learn more about Back To IT...

contact:

Jackie Kinsey
People Director, ThoughtWorks UK

jkinsey@thoughtworks.com



Addressing the challenge

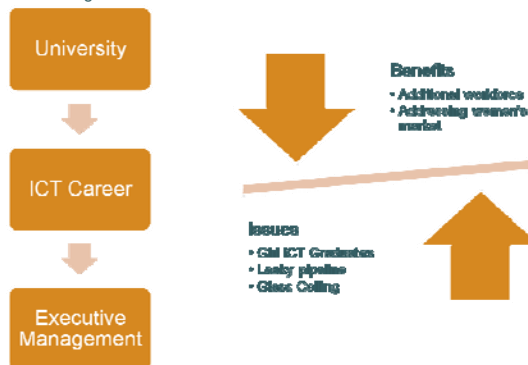
Gloria J. Miller
 MaxMetrics GmbH

1



Introduction

Career Progression

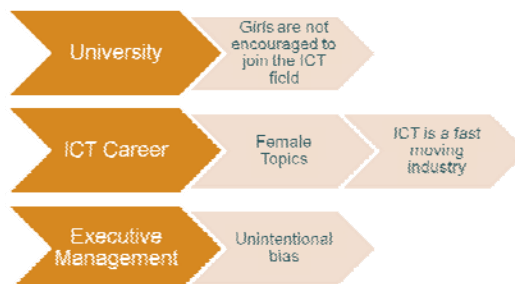


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Challenges



3

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Best Practices



4

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Example Programs

- Only a few public examples of potential sources
- Most require collaboration between private industry, academia, government



5

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What else can we do?

- Private industry
- Academia
- European Commission
- Get started, make „Small wins“ to start the evolution of change.

6

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Thank you!

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 +49 6221 825 740

7

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**Move out of the Shadow!
 Seize the Opportunity!**
 DG Information Society conference

Challenges and opportunities for women in IT

6th of march 2008
 Claudine Schmuck
 Global Contact

1



The challenge :
 Young girls and women are not attracted by
 careers in ICT

✓ **Situation analysis**

- Comparison between industrialised and developing countries
- Situation in Europe

✓ **Driving factors**

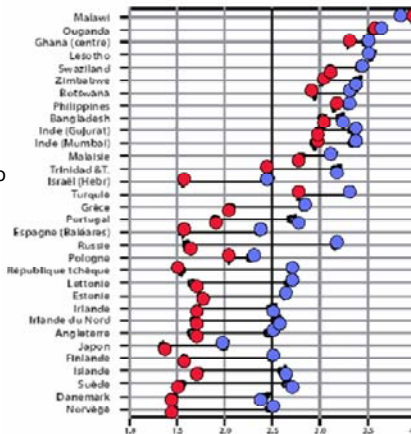
- Economics
- Social
- Cultural

2



**« I would like to become a scientist»
 International Comparison between 15 years old
 boys and girls**

- ✓ Larger proportion of girls attracted by sciences in developing countries than in industrialised countries
- ✓ In all countries share of girls willing to become scientist is inferior to average
- ✓ Significant gap between girls and boys motivation.

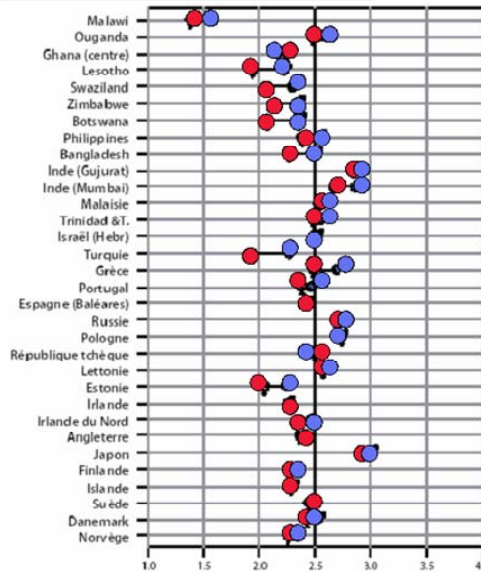


Source : Rose Survey - 2007

3

« I would like to get a job in technologies »
International Comparison between 15 years old boys and girls

- ✓ Jobs in technologies are more attractive than science
- ✓ In 2/3 of surveyed countries girls are not attracted by technologies
- ✓ With the exception of Japan, majority of girls are not attracted by technologies in developed countries



Source : Rose Survey - 2007

4

The proportion of women PhD in ICT is among the lowest

Proportion of female PhD graduates by field of study - 2003

	Science, Mathematics & Computing				Engineering, Manufacturing & Construction		
	LIFE SCIENCE	PHYSICAL SCIENCE	MATHEMATICS & STATISTICS	COMPUTING	ENGINEERING & ENGINEERING TRADES	MANUFACTURING & PROCESSING	ARCHITECTURE & BUILDING
EU-25	54.4	33.0	31.6	18.6	17.1	32.0	31.3
Austria	50.3	21.8	24.4	9.5	16.1	36.4	20.0
Belgium	40.3	29.8	35.4	3.2	13.4	0.0	21.4
Cyprus	100.0	-	-	-	-	-	-
Czech Republic	50.9	28.6	31.7	10.3	19.9	47.6	25.8
Denmark	33.6	-	-	-	23.8	-	-
Estonia	28.6	18.2	0.0	100.0	15.4	100.0	0.0
Finland	62.0	39.3	34.3	13.9	23.6	42.9	34.4
France	53.4	34.3	24.3	18.8	22.8	37.7	27.8
Germany	46.7	22.8	27.9	11.9	6.8	24.2	22.3
Hungary	43.0	37.4	25.0	30.0	33.3	32.1	16.7
Ireland	60.2	52.4	0.0	21.4	24.1	58.8	0.0
Italy	72.4	45.2	42.4	25.0	13.5	25.6	48.9
Latvia	66.7	0.0	-	66.7	41.7	33.3	0.0
Lithuania	88.9	28.6	75.0	0.0	44.1	-	42.9
Netherlands	-	39.9	-	-	18.0	-	-
Portugal	73.0	56.7	58.3	28.0	28.0	51.6	42.6
Slovakia	71.4	48.9	46.2	20.0	23.9	26.9	33.3
Slovenia	65.0	34.5	20.0	15.4	10.4	28.6	57.1
Spain	54.5	46.8	40.4	22.8	16.0	62.9	24.0
Sweden	51.7	32.4	16.0	21.6	24.1	32.7	39.3
United Kingdom	56.6	32.6	24.1	23.3	16.2	33.4	21.3
Bulgaria	77.8	49.2	30.0	-	33.3	42.9	0.0
Norway	-	0.0	-	-	13.3	-	20.0
Romania	57.6	-	-	-	37.5	-	42.9
Switzerland	42.6	23.3	22.2	7.5	16.9	-	5.0
Turkey	54.1	31.7	28.6	28.6	14.7	42.5	39.8
United States	45.7	27.7	27.0	21.0	17.2	-	45.7

Source : Eurostat Education statistics, DG Recherche, 2006.

5

The opportunity :
ICT companies have to care about
gender diversity

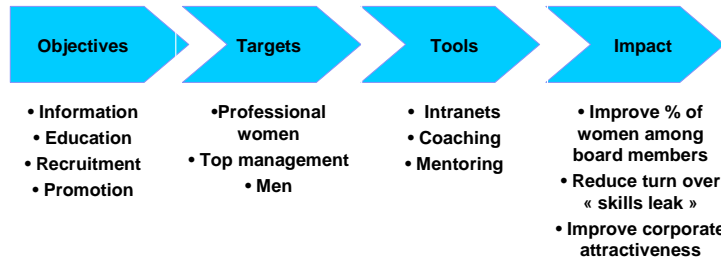
ICT companies are compelled to improve gender diversity management

- ✓ To maintain/win market shares
 - New trends on mass consumer markets
 - Shift in buying decision process on industrial markets

- ✓ To maintain competitive edge
 - Implement extended value chains
 - Innovation focus

6

Professional women can lead corporate change
by developing and leveraging
internal networks



7

Workshop 2

Education: The Barriers and how to overcome them

Chair: **Enrico TEZZA**, International Centre of ILO
Rapporteur: **Marina LARIOS**, President WiTEC

Irene Kamberidou

University of Athens

*Training the Trainers-Educating the Educators.
Education-Engagement-Retention:
the gender factor in digital illiteracy in Greece*



**'TRAINING THE TRAINERS-EDUCATING THE EDUCATORS'
EDUCATION-ENGAGEMENT-RETENTION:
THE GENDER FACTOR IN DIGITAL ILLITERACY IN GREECE**

Dr. Irene Kamberidou
The University of Athens

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Brussels, March 6, 2008
"Move out of the Shadow! Seize the Opportunity!"

- *"The pipeline, which makes women leak out of the scientific and technological world, already starts to leak in primary school. This means that the decision against science and technology is in many cases already made a long time before the choice of study and career [...]" (Hubert Gorbach, 2006)*

[1] The Austrian Minister of Transport, Innovation and Technology speaking at the opening session of the EU-Gender Mainstreaming Conference 'Re-searching Women in Science and Technology', held in the Vienna Museumquartier, 15-16 May 2006.

THE GENDER FACTOR IN DIGITAL ILLITERACY IN GREECE

The Computer Attitude Scale (CAS):

1. Teachers' computer attitudes do not seem to be influenced by their specific field of study or specialization.
2. Female teachers. Greater 'anxiety' levels, and negative attitudes as opposed to male
3. Geographic/Demographic district of residence and employment did not differentiate or influence attitudes.
4. Positive attitudes only by the teachers who had previous experience in an out of school context.
5. Female teachers, in particular, expressed '**insecurity**', namely **technophobia** when working with computers (60% no previous experience).

Gender is a factor that influences attitudes towards computer use and new technologies.

- Even female students in the science department, who followed a science orientation, claimed they felt 'insecure' or 'uneasy' when they had to use a computer. Regardless of their scientific orientation and background, women displayed negative attitudes towards computers and a lack of familiarization with ICTs or information technology (IT) in general. They displayed technophobia and repeatedly maintained they had 'low' levels in computer skills, competency and knowledge

GENDER DISTRIBUTION IN THE GREEK ACADEMIA

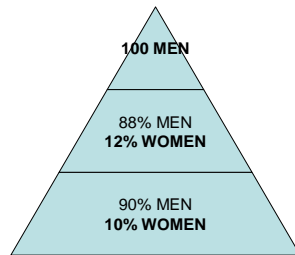


- 27% Women: 2369

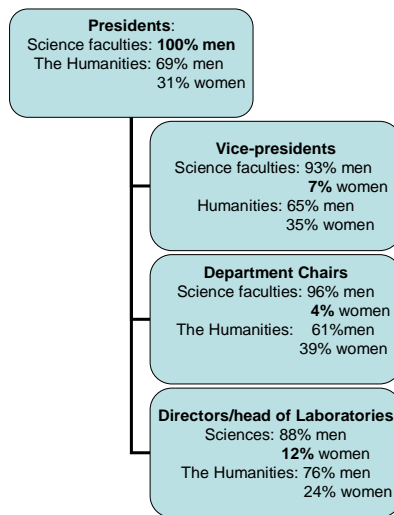


- 73% Men: 6367

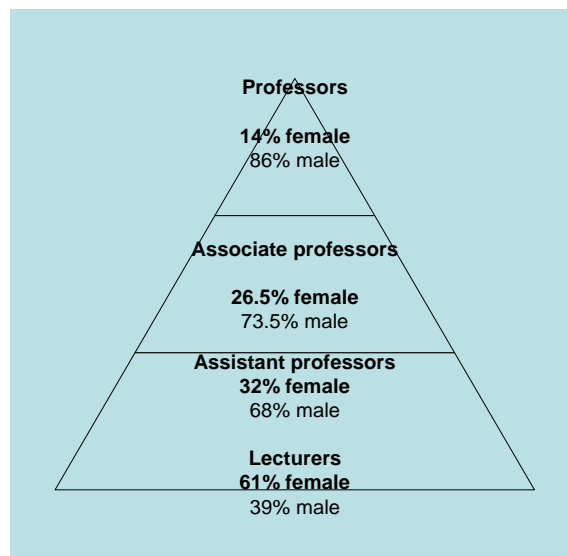
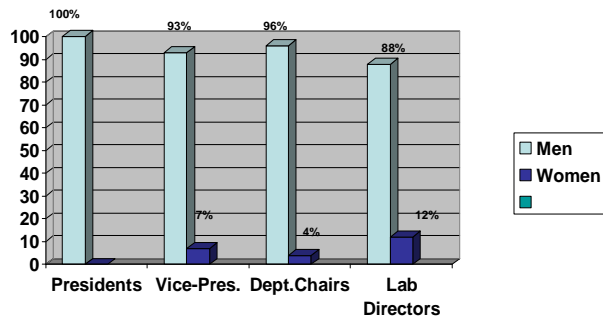
**RECTORS,
VICE-RECTORS,
DEANS**



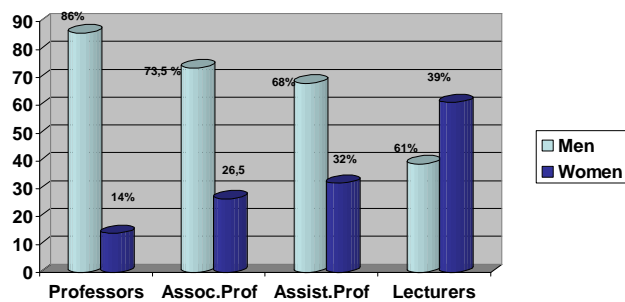
Administrative positions in the Science Faculties and in the Humanities



Administrative positions in the Science Faculties



Women in the Academia



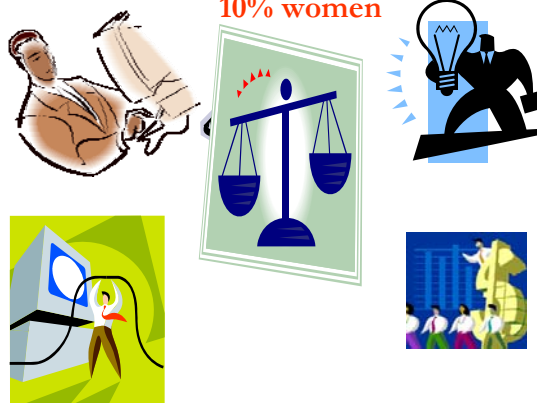
•Presidents/Chairs of University Research Committees:

100% Men

* research committee members:

90% men

10% women



**Recommendations:
Education, Engagement and Retention:**

- The institutionalization of mandatory techno-education beginning in kindergarten and extending to vocational training.
- Computers in all classrooms, equitable and non-discriminatory distribution of technological infrastructures, appropriate policies, international educational benchmarking and collaboration with the ICT industry.
- A widespread campaign to change attitudes about science and technology: to inform, introduce and familiarize citizens with technologies, technological tools, services, best practices, etc.
- An '**Education-Engagement-Retention Action Plan**' that entails: Learning, continued training and participation in areas of planning, management, assessment and organisation.
- Development of new curriculum and literacy materials for pre-school, kindergarten, and first grade students, including after-school tutoring and adult technology education courses.

- A teacher preparation-training program—technology-friendly teachers and computer-friendly age-appropriate classrooms. Educating the educators/ teachers training other teachers using a gender-sensitive approach focused on the participation process and the development of an age appropriate curriculum. Teachers ‘shadowing’ trained teachers.
- A **‘Big Sister’ campaign**, focusing on the grassroots, “bottom-up” aspects. Specifically, girls trained by girls, girls trained by women (new role models).
- Recruit female volunteers with a science background from high schools to (‘coach’ female elementary school pupils). Recruit female university students, offering them course credits or other incentives— in order to transform stereotypes.
- Recruit retired/pensioned women, experienced women who have left the science and technology fields, or those who have left due to the incompatibility of private life and career, etc.

- A ***Shared Vision- a Multidimensional Mission and Code*** that entails the strengthening of collaborative-communication skills
- Innovative educational approaches should include multi-age classrooms, curricular integration, cooperative groups, curricular revision processes to ensure that all students use information technology to enhance and direct their own learning and educational technology:
 - The use of games as teaching strategies: (a) Create appropriate games to develop mathematical and technological concepts, etc. b) Develop educational communication tools for elementary and middle school students, etc.
 - A pilot study: laboratory schools-pilot schools with educational-friendly technology to alleviate technophobia.



EDUCATION-ENGAGEMENT-RETENTION: THE GENDER FACTOR IN DIGITAL ILLITERACY IN GREECE

Dr. Irene Kamberidou¹

The University of Athens

“The pipeline, which makes women leak out of the scientific and technological world, already starts to leak in primary school. This means that the decision against science and technology is in many cases already made a long time before the choice of study and career [...] How could work life be managed, so that both genders find ideal conditions for their development?”² (Hubert Gorbach, 2006)

Abstract

Gender-constrained educational choices, traditional-anachronistic perspectives, the life-work balance or rather imbalance, the lack of affordable child care facilities, the glass ceiling, the leaky pipeline, among other things, have contributed to the declining interest of Greek women in science and technology. This paper focuses on the factors that contribute to Greek women’s non-engagement or under-representation in ICT related fields, such as computing. It examines the gender-constrained institutions in Greece while providing an overview of the gender distribution in scientific research and in the Greek academia, where only about one third (27%) of the teaching staff in universities are women. Digital illiteracy has been detected amongst university students in Greece, over half of which are women, as well as amongst primary and secondary school teachers throughout the country who explicitly express a technophobic unwillingness to use computers in their classrooms, although they claim to agree on their significant educational value and usefulness. Although the Greek Ministry of Education had implemented the training of 76,000 teachers in ICTs, it seems to have failed to reach the aspired levels of effectiveness, in a society where the participation of women in the teaching profession—primary and secondary education—is over 50%. The majority of the respondents from rural, agricultural, urban areas of Greece claim that they have not benefited by the technology classes or computer lessons they had received in high school, and not only. The gender variable plays a decisive role in the development of attitudes, i.e. the use of computers or the internet as a tool may be *gender-neutral*, however access to and motivation of use is *gender-constrained*. The Greek public school system’s inadequate technological infrastructures, deficiencies in the vocational orientation of students and the continuous techno-education of teachers, the lack of collaboration of the education system with the employment sector and the ICT industry— along with the family-career imbalance, namely the incompatibility of private life and career which is essentially a female problem— have made it impossible for the gender subject to keep up with the accelerated speed of technological developments. An ‘*Education-Engagement-Retention Action Plan*’ is required to change attitudes and promote women in science and technology, in the academia, etc.: (1) Child care facilities, flexi-hours, family support programmes, and a family-friendly working environment. (2) The establishment of an attractive open labour market that recruits and retains women in science and technology.

Methodology-Introduction

The first unity confirms the gender impact factor on digital illiteracy according to the results of qualitative research—based on questionnaires, group interviews and discourse analyses—with specific focus groups in areas representative of Greece since they include urban, industrial and agricultural populations: (1) primary and secondary male and female school teachers.³ (2) ‘Freshmen’ or rather one should say first-year female and male university students of the Aristotle University of Thessalonica, and (3) female students of the Aristotle University of Thessalonica. (Kamberdiou, Patsantaras, Pantouli 2007: 138-151) The qualitative method used to evaluate the material that arose from the questionnaires, group interviews and discourses with these focus groups in Greek society was the interpretative phenomenological analysis (Smith, 1999). The statistical analysis program SPSS for Windows Release 10 was used to analyze the data. The second unity reviews the results of recent studies concerning: (1) the academic hierarchy in Greece, (2) how women perceive strategies of promotion (excellence vs. academic politics) through the ‘career narratives’ of female associate professors and full professors of the University of Athens (Vlahoutsikou & Abatzi, 2007: 155-160), and (3) the participation of Greek women in Scientific Research (Alipranti-Maratou, Kalliroi, et al. 2004).

Although the public school system in Greece, in its aim to counter digital illiteracy and technophobia, namely exclusion from participation in the information society (IS), has been focusing on the continuous training of teachers and students in new technologies⁴ and on an equal distribution of technological infrastructures in high schools, it seems to have failed to reach the aspired levels of effectiveness, (Kamberidou, Patsantaras, Pantouli 2007) Gender-constrained choices, gendered processes that reproduce inequalities in seemingly gender-neutral institutions, including anachronistic perspectives, the glass ceiling, the leaky pipeline, the life/work imbalance, the lack of affordable child care facilities, among other things, have contributed to the declining interest of women in science and technology, in research, etc. What is required in Greece, and not only⁵ is (1) ‘sensitivity’ training to raise gender awareness, (2) the promotion of new pedagogical applications and models, (3) recognizing and recruiting the *large untapped pool of talent*⁶ amongst women, along with (3) the establishment of nurturing, socially inclusive and supportive workplace cultures/working environments that allow women to function at their full potential for the benefit of their organization or institution. The compatibility of private life and career is essentially a female problem, a factor that is clearly evident in the latest EU average employment quota for women which is marked by a decrease of 14.3 percent, in contrast to the 5.6 percent increase in the employment quota for men. (EU-Council Presidency, 2006b) The situation is even worse in the science and technology fields. (EU-Council Presidency, 2006a)

Technophobia: the gender factor in digital illiteracy

Primary and secondary school teachers, who were undertaking a training course on computers in regions that are considered representative of Greece since they include urban, industrial and agricultural populations, took part in a study to examine teachers' attitudes. The Computer Attitude Scale (CAS), designed and developed by Gressard & Loyd (1986), formulated through views of teachers who received continued training in ICTs, was applied in order to examine computer competency, attitudes and views. (Pantouli, 2005) The Computer Attitude Scale (CAS) was given

to 135 teachers, 54.1% female and 45.9% male. The majority (54.8%) were between the ages of 35-45: 76 secondary school teachers (high school) of science fields, theoretical studies, foreign languages, physical education, as well as 58 primary school teachers. According to the findings, despite the evolving and transformative process of gender perceptions, stereotypes, and identities, women in particular continue to display technophobia. Female teachers, regardless of their scientific or theoretical orientations, (namely even if they came from a scientific background) displayed 'less positive attitudes' towards computers than their male counterparts. Greater 'anxiety' levels, and negative attitudes in general, were displayed by female teachers as opposed to male, a factor which we believe makes them unwilling to get involved in the process of computer use as a tool for their work in the classroom.

The majority of the female teachers (60%) displayed technophobia. They claimed they felt 'uncomfortable' and 'insecure' using computers. Nevertheless, an overwhelming majority (85%)—male and female—acknowledged computer usefulness and expressed a desire for further computer training and techno-education. They also acknowledged the fact that techno-education today is an absolute necessity in order to avoid marginalization and social exclusion. Specifically, our findings reveal that firstly, teachers' computer attitudes (levels of anxiety/confidence/liking/usefulness) do not seem to be influenced by their specific field of study or specialization, in other words, if they come from a science background instead of a theoretical one. Secondly, a teacher's geographical or demographic district of residence and employment was not a factor that differentiated or influenced attitudes about computers and technology. Thirdly, positive attitudes were shown only by the teachers who had previous experience, familiarization or contact with computers in an out of school context, regardless of gender. Additionally, the 'anxiety' rate for teachers who had previous experience with computers was lower, regardless of gender. Fourthly, female teachers, in particular, expressed 'insecurity', namely technophobia when they had to work with computers (60 percent of the sample responded not to have had previous experience). Fifthly, The results confirm that gender is a factor that influences attitudes towards computer use and new technologies.⁷

Subsequently, the deficiencies in the techno-education programs in Greek high schools were confirmed following the study—with male and female first-year students in three departments/faculties of the Aristotle University of Thessalonica—the Mathematics Department, the Department of Philosophy and Education and the Department of Psychology. (Kamberidou, Patsantaras, Pantouli, 2007:138-151) The study was based on questionnaires, group interviews and discourse analysis. Male and female first-year students were interviewed and responded to questionnaires.⁸ The results obtained amongst the students of the Mathematics Department, who had followed a science orientation/namely a science background in high school, served as a baseline for the comparison of primary research data obtained in the Department of Philosophy and Education and in the Department of Psychology. The questionnaire had been formulated on the basis of bibliographical sources related to the subject (Schlager & Fusco 2003, Webster 2002, Erwin & Maurutto1998) as well as the observations and comments of the female university students who had initially been invited to participate in a pilot-test or pre-test session, namely to answer the first questionnaire and subsequently discuss three topics: (1) gender as an analytical category in Greek society, (2) the computer skills they acquired in the school

framework or in the out of school context, (3) their academic experiences, etc. (Pantouli, 2006)

With regard to this pilot study, female students in the Department of Philosophy and Education were interviewed and took part in group discussions to examine women's computer skills, computer competency, attitudes, interest or lack of interest in ICTs. In other words, how women evaluate themselves, (and not how others evaluate them). How women evaluate their abilities, their experiences, their achievements, their social environment, and in particular their school and academic experiences, including teacher's attitudes, the influence and support (or non-support) of their families and peer groups, the personal and social factors influencing their professional choices, etc. Again, the qualitative method used to analyze the material that arose from the interviews (with 7 groups/40 students similar in gender, age and major/specialization) was the interpretative phenomenological analysis (Smith, 1999). According to the findings the female students did not view their computer competency or incompetence as a matter of capability or aptitude, but perceived it as an issue of interest or lack of interest, especially in regard to the family-children-career balance. Firstly, they claimed that computers conflicted with their interests. They would rather specialize in a field that will satisfy them personally and facilitate their female roles, etc. Secondly, some female students maintained that this was a matter of 'nature', and others a result of socialization. They claimed, among other things, that boys are 'by nature' more involved with machinery and computers. Thirdly, the female students associated the professional use of computers with gender-based employment distribution. On the other hand, they did not question or doubt their intellectual abilities, capabilities, potential or aptitudes.

The female interpretation of technology perceives the use of computers in the service of society, in other words in the service of societal operations and functions in contrast to the male perspective which focuses on the machine itself. Women seem to display more altruism in their professional targets, and according to their gender attitudes, stereotypes and perceptions, prefer professions that offer personal satisfaction, greater humanistic prospects and horizons with emphasis and priority first on children and family, and then on work. Unquestionably, a more family-friendly oriented working environment is needed to change attitudes, including an attractive open labour market that recruits and retains women.

Subsequently, with regard to the study that followed in the three departments/faculties— Mathematics, Philosophy and Education, and Psychology— of the Aristotle University of Thessalonica, the findings reveal that the university students' experience with computers in high school, for both genders, did not assist them in the out-of-school context or in their undergraduate studies— even though the majority of the students participating in the study had been taught 'computer technology' in high school, sometimes under the best of conditions: adequate equipment and computer rooms, one or two students per computer, etc. The data reveals that these high school computer classes were unsuccessful, namely the students lacked needed skills such as text editing, calculation via spreadsheets, connecting to the internet, essentials of web design, use of search engines, etc.

Of particular interest are the results concerning the geographical area of study. The hypothesis that the level of computer competency or knowledge in ICTs is higher for male and female students who come from urban areas could not be confirmed in this

study. In other words, the district, region or residential area of the respondents (agricultural, rural, urban or suburban) did not play a significant role in influencing attitudes and opportunities, or appear as a factor that determines the gender subject's relationship with computers and ICTs in general. The majority of the students claimed that they had not benefited by the technology classes or computer lessons they had received in high school. Irrespective of the area of residence, female and male students claimed to have a 'low' level in computer skills and consistently displayed technophobia or acknowledged they felt 'insecure' when they had to work with computers.

A factor that seemed to play a decisive role was the gender subject's access to a computer at home. Specifically, the impact factors that determine the degree of digital literacy, according to the findings, are: firstly the male or female student's familiarization with a computer prior to high school or access to a computer at home, and secondly, the educational level of his or her father. Students with fathers who had high educational backgrounds displayed positive attitudes towards ICT as well as greater computer skills, in comparison to those with fathers of a medium or lower educational level. Additionally, the gender variable seems to play a decisive role in the development of attitudes about computers and ICTs. According to the results, as was the case with the female teachers, not only the female students enrolled in the theoretical sciences or departments of theoretical studies, but those in the science department as well, who in high school had followed a science orientation, claimed they felt 'insecure' or 'uneasy' when they had to use a computer. In other words, regardless of their scientific orientation and background, women displayed negative attitudes towards computers and a lack of familiarization with ICTs or information technology (IT) in general. They displayed technophobia and repeatedly maintained they had 'low' levels in computer skills, competency and knowledge.

Women in the Academia: excellence or university politics?

Women in the academia seem to display more altruism in their professional targets, and place emphasis on personal satisfaction— as in the case of the female students in the pilot study conducted at of the Aristotle University of Thessalonica.⁹ In order to examine how women perceive strategies of promotion, interviews (career narratives) were conducted with nine female associate professors and full professors in the University of Athens. (Vlahoutsikou & Abatzi, 2007: 155-160). Clearly distinguished were two routes or two paths for career advancement. One leads to the top through involvement in university politics and the other through 'excellence'. Involvement in university politics meant compromising on excellence and excellence meant distancing from university politics. In other words the two choices were perceived in bi-polar terms, in an either/or context. The respondents associated promotion strategies and university politics with behaviours that transgress the precepts of female identity, namely behaviours perceived to be profoundly "demeaning" to their self esteem. However, they emphatically denied that women tend to choose the excellence route while men were more likely to prefer the political one. The men and women who follow the political academic game are perceived as entirely self-serving individuals, servile towards their superiors, authoritarian and exploitative towards inferiors. As in the case of the female students of the University of Thessalonica, they attributed their own distaste and distancing from university politics to their "nature", "the way I am", "my personality", etc. They claimed that if they took the political

route and engaged in politically motivated behaviours they would “betray” their values and their “dignity”. They did not perceive these qualities as characteristics which are culturally cultivated and associated with femininity.

For instance, in the discussions on teaching, conveying knowledge was associated with personal care, that is to say, in a context of personal and emotional investment in the students’ progress and welfare, in preparing lectures that stimulate student interest, keeping the material up to date, showing and receiving ‘love’ and respect for their work and for their students, etc. Undeniably, the ‘excellence’ course involves not only dedication to duty but also complete devotion to research, scholarly writing and making a real contribution to knowledge—as opposed to ‘publish or perish’, in other words writing only for the sake of publishing. Accordingly, in this discourse scientific research and scholarly writing acquire ‘feminine’ qualities. Specifically, these women conceptualized devotion to professional work in terms which harmonize it with the socio-cultural construction of femininity, and they seemed reluctant to adopt a gender perspective with regard to their choices. Does overlooking or ignoring female identity constitute a ‘survival strategy’ in the university environment? Could emphasis on female identity harm career prospects? Is this a discourse of transgression? This does not, however, mean that women who have earned their place in the hierarchy through the quality of their work have kept out of the political game entirely. What it does mean is that they feel uneasy or uncomfortable about doing so. Although the respondents tended to marginalize the gender impact factor on their career-related choices, and exonerate or absolve the university’s structural inequities in the treatment of men and women faculty, they acknowledged that the way up the career ladder was more difficult for women than it was for men. They attributed the difficulties of career advancement to the responsibilities which society assigns to women in the domestic sphere, and particularly motherhood. (Vlahoutsikou & Abatzi, 2007: 155-160)

A gendered understanding of one’s place in the institution—gender exclusion—is perceived and explained as one’s personal choice. Subtle, hidden or even covert forms of discrimination, namely unequal treatment that is visible but not often noticed because we have internalised sexist behaviours as “normal”, “natural” or “acceptable”, is difficult to document, as opposed to the open and obvious discrimination (under-representation) of women in the institutional hierarchies, in decision-making positions, on research committees, etc. Although equal opportunities were an integral part of the EU employment strategy and the Structural Funds covering the years 2000-2006, equal opportunities have rarely been perceived as a strategy by university management due to the gendered processes that reproduce inequalities in our seemingly gender-neutral universities.

The academic hierarchy in Greece

*“ [...] 60 percent of university graduates in the European Union are women [...] and only 15 percent of full professors are women [...] If we do not create a system, which allows everybody to contribute in the same way, we throw away potential, which in truth we cannot afford to simply abandon [...] This gender imbalance and discrimination will not disappear overnight [...] it took Italy 200 years to achieve the same percentage, an equivalent percentage, of female and male professors that it has today.”*¹⁰ (Janez Potočnik, 2006)

Although women comprise over half of the student body in Greece, only about one third (27%) of the teaching staff in universities are women (2,369) as opposed to 73%

men (6,367), and not only. The higher the position in the academic hierarchy, the lower the percentage of women. Namely, there is a gradual reduction of women as they go up the academic ladder, as is the case internationally. According to a study, conducted by Prof. Stella Vosniadou and Lydia Vaiou, covering all Greek universities for the academic year 2003-2004: (1) the percentage of women decreases every step up the academic ladder. This decrease is particularly sharp between the middle and the high ranks of the academic hierarchy, (i.e. Professors: 14% female, 86% male; Associate professors: 26.5% female, 73.5% Male; Assistant professors: 32% female, 68% male, and Lecturers: 61% female, 39% male.) (2) The percentage of women drops sharply in the administrative positions and power structures of the university. (Faculty Presidents in the Sciences: 100% men and in the Humanities: 69% men and only 31% women. Vice-presidents in Science faculties: 93% men, 7% women and in the Humanities: 65% men, 35% women. Department Chairs in the science faculties: 96% men, 4% women and in the Humanities: 61% men, 39% women. Directors/head of Laboratories in the Sciences: 88% men, 12% women and in the Humanities: 76% men, 24% women.) Moreover, women teach more hours and engage in less research in contrast to their male counterparts, have limited access to male-dominated scientific networks that provide sources and funds for research, and subsequently limited opportunities for publications and advancement. Women constitute an 'invisible minority' in decision-making committees (Presidents/Chairs of University Research Committees: 100% Men. Research committee members: (90% men and only 10% women.). Their male colleagues, over the age of 50, dominate in decision-making positions or on scientific committees that grant funds, scholarships, distinctions, and influence the orientation of scientific programs and projects. (Vosniadou, 2004)

In the 2001-2002 academic year women in Greece represented 58.7% of the university student population as opposed to only 31.43% in 1969-1970. They constituted over half the student population in the Technological Institutions of Greece: 52.9% in 1998 as opposed to 49.9% in 1994. With regard to the overall picture for tertiary education in 1997-1998 (universities and technological institutions in Greece) from a total of 135.369 students, 44, 3% were male and 55, 7 were female. In the field of engineering, during this period, women's participation increased from 5.99% to 24.73%. Although during the last three decades gender based difference in participation has been reduced in various scientific fields, the gender factor among the sciences still exists.¹¹

At the University of Athens¹²—one of the oldest state institution of higher education in Greece, founded in 1837, and among the largest universities in the European Union today with a student's body of about 92,000 undergraduate students, over 2,000 members of academic staff and 1,000 administrative, secretarial and specialised personnel— 46% of Lecturers and 40% of Assistant Professors are women. This percentage drops sharply to 27% in the higher university hierarchy, namely only 27% of the Associate Professors and Full Professors are women. Moreover, women are a minority in administrative power positions and if you disregard the highest positions and look only at departmental chairs and assistant chair posts, one finds only 17% occupied by women. (Vlahoutsikou & Abatzi, 2007) In spite of the fact that the percentage of women full-professors has increased (from 1.36% in 1971 to 9.94% in 1998), it is still very low since women seem to be promoted at a much slower pace than men, especially when they have family obligations.¹³

Greek Women in Scientific Research

*“Excellence requires diversity [...] the anachronistic gender science imbalance must be removed [...] If Europe is to become a real knowledge-based society, then it needs more researchers. We know that women are underrepresented in research and this is particularly true in the business sector: the industry average is about 18 percent despite the growing number of female university graduates.”*¹⁴ (Janez Potočnik, 2006)

In order to investigate the position of women in scientific research, the General Secretariat for Research and Technology (GSRT) commissioned the National Centre for Social Research (EKKE) to conduct a study entitled “the enhancement of the participation of Greek women in scientific research”.¹⁵ Quantitative data coming from 50 public research institutions and research university institutes was included in the first database, according to which women’s participation in scientific research is relatively limited: only 34, 7% out of the registered 3.221 researchers are women. Additionally, women represent only 14, 4% of the permanent (tenured) university teaching staff, even though 45.7% of the staff holds contracts and 38% of the staff under project contracts are women. With regard to the distribution of researchers according to field of study, the percentages of women researchers is lower in the traditionally male-dominated fields such as Engineering (20%), Agricultural Sciences (23%), Natural Sciences (32%) and Medical Sciences (23%,4%), contrary to the female-dominated field of the Humanities where the proportion of women is higher (52,5%). In relation to academic qualifications, male researchers more often hold a PhD (75% men, 25% women), while women mainly an undergraduate degree (37% women, 63% men) or a postgraduate degree (MA, M.Sc.; 43% women, 57 men).

Moreover, in 18 research Centres under the auspices of GSRT, from a total of 835 researchers of all academic ranks (A-D), the percentage of women is lower in the higher ranks (academic hierarchy). For instance, in rank A-equivalent to Professor, only 16,1% are women as opposed to 83,9% men. The percentage of women is higher in the lower academic ranks: in rank B-equivalent to Associate Professor women represent 28,6% of the total, in rank C-equivalent to Assistant Professor 31,4% and in rank D-equivalent to Lecturer 29,8%. A survey was also carried out on a sample of about 300 researchers, primarily women, working in research centres and organizations in order to provide a qualitative analysis on the difficulties women scientists confront, according to which acknowledged was the compatibility of private life and career (Alipranti-Maratou, Kalliroi, et al. 2004)

Conclusion-recommendations: Education, Engagement and Retention

1. Education is the place to start. The institutionalization of mandatory techno-education as an integral part of the curricula in public schools, beginning in kindergarten and extending to vocational training. Additionally required are computers in all classrooms, equitable and non-discriminatory distribution of technological infrastructures, appropriate policies, international educational benchmarking and collaboration with the ICT industry.

2. A widespread campaign to change attitudes about science and technology: to inform, introduce and familiarize citizens with technologies, technological tools, services, best practices, etc.
3. The continued development of a wide-ranging network of public internet access points, free of charge and easily accessible to the public, in every prefecture or municipality, staffed with employees to assist users, and with hours that accommodate women's schedules. Many international studies confirm that awareness, familiarity and a change in attitudes have been achieved through regular use, rather than only formal training. (Warrington & Younger, 2000; Kamberidou, Patsantaras, Pantouli 2008)
4. The establishment of a multicultural interdisciplinary network of researchers from the social sciences, the humanities, gender studies, the sciences, government, industry, and technological research and development, and in particular support of research in the social sciences and the humanities to provide a clearer picture in reference to the topography of the excluded social groups in the EU. Research on information society related technophobia, today's 'digital exiles', is very scarce in Greece, as is the case internationally. Studies have been focusing on socio-economic research, consumer-related issues, market analyses, the user-friendliness and diversity of technologies and designs, etc. However, very little is known about today's social groups that are progressively becoming excluded from this sphere of economic activity as well as the factors that lie behind human 'digital rights' or the disrespect and exploitation of the electronic personality. (Kamberidou & Patsantaras, 2006) A *technoethos* must be established to combat the exploitation of the digital personality: domination of the imaginary (fantasy), electronic conspiracy networks, electronic surveillance, the explosion of pornography, the slave-trafficking of women and children, etc. A techno-ethical code is needed to ensure that Europe's social achievements in the past are transposed into the information society and the virtual environment. (Patsantaras & Kamberidou, 2004)
5. What is also vital is *retention*. Eliminating the glass-ceiling and the leaky-pipeline, retaining women in their careers in science and technology, in the academia, in R&D by increasing their participation in leadership—from decision-making to execution phases—thereby reproducing female engagement and consequently enhancing and supporting conditions for the establishment of inclusive organizational cultures that allow women to function at their full potential for the benefit of their organization/institution.
6. The promotion and support of multicultural interdisciplinary gender research by women in order to influence mainstream ICT development from a gender perspective. Gender equality in the information society, in science and technology, may be achieved through a better balance of gendered content to change attitudes, perceptions and stereotypes. Closing the gender gap in science and technology education requires new ways of educating girls in the computer age. New teaching methods are needed to eliminate technophobia and ensure that girls and women change their attitudes concerning science and technology. Specifically, methods that are developed by teachers and for teachers through school programs, extra-curricula and intergenerational

activities, as well as teachers and mentors in new roles. International data shows that teachers, who ensure equal opportunities, can be effective in reducing the technological gender gap. (Jenson & Brushwood 2003, Schlager & Fusco 2003)

7. Interdisciplinarity in Education in order to formulate new pedagogical methods and approaches. Education and Engagement for teachers and for children means extra-curricula approaches, new classroom examples and best practice models, examining the role of 'visual literacy, of literature and text, namely traditional literacies and how they fit into the Visual age (the visual media, television, entertainment, abusive media, violation of the electronic personality, etc.). It involves engaging in intercultural and human development education with children, parents and teachers, 'natural' learning, the role of play and creative engagement, the role and participation of parents in developing engagement and life skills, etc.
8. An 'Education-Engagement-Retention Action Plan' that entails: (1) Learning, continued training and participation in areas of planning, management, assessment and organisation. (2) Family support programmes, flexi-hours, a family-friendly working environment, child care facilities. (3) The establishment of an attractive open labour market that recruits and retains women in science and technology. (3) Alliances with women, gender networking, sharing, mentoring and supporting younger female colleagues. The support of enterprises run by women, encouraging female users to take a more active role, to keep up with developments, to share information, etc. (4) Social mobility in the structure, i.e. learning the system and how to use it in order to make changes. (5) Best-practice models and mentoring projects: the involvement of professional women already employed in the science and technology sectors. (6) Indiscriminate cooperation between all stakeholders, researchers, citizens, policy makers and industry.

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² The Austrian Minister of Transport, Innovation and Technology speaking at the opening session of the EU-Gender Mainstreaming Conference ‘Re-searching Women in Science and Technology’, held in the Vienna Museumquartier, 15-16 May 2006.

³ Specifically, at the 1st and 2nd Regional Training Centers (15.6% and 39.4%, respectively) in Thessaloniki, at the Support Training Center in Katerini (43%) and at the Support Training Center in Aliveri (9.6%). (Pantouli, 2005)

⁴ In the 3rd Community Framework Support Programme for Structural Development in Greece

⁵ In the EU-27, the share of women graduates is higher in all fields of education with the exception of science, maths, computing, engineering, manufacturing and construction. See: ISCED 5/6, EU-27. (Source: Eurostat)

⁶ In recent years, the number of females and males graduating from higher education has increased in all fields of education, including ICT related fields, for example computing, and telecommunications, electronic engineering, etc. The number of computing graduates increased by 133 percent from 1998-2004. The number of females graduating in computing slightly more than doubled in this period (109 percent), whilst the number of male graduates increased by 142 percent, however despite the encouraging increase in female computing graduates, computing is still male dominated. As a percentage of all computing graduates, the share of female computing graduates has slightly decreased in recent years from 25 percent in 1998 to 22 percent in 2004. Additionally, the gender gap between the number of males and females increased from more than 29,000 in 1998 to nearly 76,000 in 2004. (source: Eurostat)

⁷ As was the case in a study conducted with male and female high school students in 1995. In 1995 the Greek National Center (IEA) completed a study on performance/capabilities and attitudes of male and female high school students with regard to computers and the role of the family in the development of attitudes. According to the results, family support/encouragement in new technologies was greater for boys in comparison to girls, and female students displayed less aptitude in comparison to their male counterparts, as is the case internationally. (Georgakakos, 1995)

⁸ The qualitative method used to evaluate the material that arose from the questionnaires, group interviews and discourses with these focus groups in Greek society was the interpretative phenomenological analysis (Smith, 1999). The statistical analysis program SPSS for Windows Release 10 was used to analyze the data.

⁹ The compatibility of private life and career is essentially a female problem, a factor that is clearly evident in the latest EU average employment quota for women which is marked by a decrease of 14.3 percent, in contrast to the 5.6 percent increase in the employment quota for men. (EU-Council Presidency, 2006b) The situation is even worse in the science and technology fields. (EU-Council Presidency, 2006a)

¹⁰ The European Science and Research Commissioner speaking at the opening session of the EU conference on ‘Re-searching Women in Science and Technology’, jointly organized by the Austrian Presidency and the European Commission. (author Dr. Irene Kamberidou participated in this EU-Gender Mainstreaming Conference in Vienna on 15-16 May, 2006).

¹¹ Women’s participation in the Natural Sciences has also increased significantly, namely it went from 20,4% in 1971 to 42,64% in 1997. (Alipranti-Maratou, Kalliroi, et al. 2004).

¹² The National and Kapodistrian University of Athens (www.uoa.gr)

¹³ As is the case internationally, women in higher education posts also tend to be better represented in the humanities, the social sciences, law and economics. See: Alipranti-Maratou, L; Kalliroi, D. et al. (2004). “Women and Science: Review of the Situation in Greece . Greek National Report of the National Centre for Social Research (EKKE). (www.gsrt.gr/Women&Science) [Laura Maratou-Alipranti, National Centre for Social Research (EKKE) and Kalliroi Dafna, GSRT (General Secretariat for Research and Technology (GSRT).] ¹⁴ The European Science and Research Commissioner speaking at the opening session of the EU conference on

‘Re-searching Women in Science and Technology’, jointly organized by the Austrian Presidency and the European Commission., 15-16 May, 2006. ¹⁵ A. Teperfoglou (Research Team leader), L. Alipranti-Maratou, I. Tsiganou, M. Ketsetzopoulou and B. Papiiakou. (See: Alipranti-Maratou, Kalliroi, et al. 2004)

"ICT Curricula: Streaming a Life Cycle Cluster of Best Practices"

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Abstract: After an overview of five systemic barriers, a gender-sensitive approach is proposed to promote ICT among girls from an early age. Two aims are combined: a) to promote gender and equality in the ICT sector; b) the need to focus on how to promote ICT among women. These two frameworks can work effectively if intertwined through collaboration between the ICT sector, the educational authorities, the Member States, the academia, and the girls and young students themselves. *ICT awareness* and *ICT readiness* will be suggested through systematic ICT curricula from the early school years; however, to initiate this plan first it is necessary to map the curricula related to *ICT subjects* in schools in the EU27. Awareness raising and motivation through ICT curricula are important to develop self-consciousness about the girls' relationships to ICT and technology, and to stimulate their self-reflection. It is equally important to acquire ICT skills from an early age *as playful and/or joyful learning* in order to go beyond ICT literacy and to enable the young learners' potential to become "*advanced users*." In this context, a combination of ICT curricula + ICT Club + Mentoring + Leadership Programme [ICT CML+] will be proposed for discussion, which would need to be designed as an evolving educational programme nourishing and encouraging independent thinking, creativity, beliefs in self achievement, and trust in self-accomplishment. The final section addresses the phenomenon of convergence and ICT in trans-disciplinary programmes, and the need for gender awareness in R&D. Finally, the vision provided calls attention to the importance of making the best of the new paradigm and of addressing ICT in the new context of *a post-PC era* for future ICT curricula.

The present proposal takes into account the recommendations in the recent **Study/Final Report: Best Practices in Even Gender Distribution in the 25 MS in the Domain of Information Society**, Commissioned by the Information Society and Media DG, December 2006.¹ Given the demonstrated gender imbalance, the challenges are complex, especially if, not surprisingly, the comparisons show differences in practices from one country to another. From another perspective, the statistical analysis and main findings in the EUROSTAT figures of "Gender Differences in the Use of Computers and the Internet,"² will also be considered because they show useful data; namely, that the proportion of young women (62%) and young men (67%) using the computer on a daily basis in the EU-25 is relatively close, while the gaps or difference in frequency of use are more pronounced between women and men in the age-groups 25-54 and 55-74. The findings also indicate that —with the exception of Cyprus where more women than men use the computer— in Bulgaria, Estonia and Lithuania the use is almost the same; however, all other countries show a negative difference for women in average daily use. The growing disparity as the age range increases is a warning sign so that we address the challenges faced by young female students and by women before these groups reach the age when the gap becomes more pronounced. Beyond daily use of the computer and the Internet, in the career track, women score lower among young people when measuring employment in computing jobs. In general, women also score lower in Internet and computer skills. Through the previously mentioned report and similar findings we are made aware of the many obstacles, which can be systemic, structural, contextual or personal, such as low self-esteem, multi-level stereotyping, discouragement from the family or from one's own teachers or peers, or may be due to the missed opportunity to get skills because of lack of resources or of interest at school and outside; to these factors we must add the fear of technology, the

¹ http://ec.europa.eu/information_society/activities/itgirls/info/index_en.htm

² Heidi Seybert, *Statistics in Focus*, 119/2007, EUROSTAT, 23.10.2007, ISSN: 1977-0316.

lack of motivation, and most importantly, the lack of inspiration and lack of belief in ICT and in her professional future in IT. I propose to tackle this cumulative disadvantage through an approach from the roots of our formative educational dimensions. Thus, in the first part I shall deal with a gender-sensitive approach to promote ICT among girls from an early age.

Working with and through Information and Communication Technologies (ICT) has become a necessity in our daily lives, at work and in business, especially in an age of globalisation and constant development from an offer of technology which is both *disruptive* and *enabling*. By now we know that ICT are here to stay, and that the ways in which we interact, receive, produce, share knowledge, and communicate have changed and are changing us as we are increasingly driven by them. Parallel to this phenomenon, trends determined by technology development and by the industry have created, as a consequence, tasks and activities which have resulted in new jobs and professions.

When dealing with ICT barriers and enablers, the first indicator in most international reports is the one of access, but new aims such as e-inclusion require much more. It is important to keep in mind that women as *users of ICT* and women as *engineers*, and as *professional designers, producers/creators within the ICT sector*, are two very different domains. However, access and the use of ICT are fundamental as the basic steps to achieve further aims along the career path as professional ICT specialists. In the light of the situation in the job market the report “Widening Women’s Work in Information and Communication Technology. Conceptual Framework and State of the Art”³ drew a useful outline of ICT professions by considering not only the ‘classical professions’ but also the “new professions of the Internet, multimedia and e-business” (16-17) through four main professional categories:

1. **Core professionals:** ICT specialists in the areas of networks, software and services; products and systems.
2. **Internet and Multimedia professionals:** ICT specialists combining graphic, artistic, or publishing skills, involved in design, implementation and maintenance of on-line or multimedia products and services.
3. **Applicative occupations:** ICT specialists combining applied business skills [i.e. e-commerce].
4. **Advanced, specialised users:** help desk consultants, librarians, etc. which should be considered “information workers.”

However, engineers as such were not considered in the above list of ICT professions. Instead, the authors distinguish between core computer professions (18) and the rest; yet it is important to underline that, as in the EC study in the EU27, there is a consensus in making a twofold distinction for ICT occupations between (18): 1) *computing professionals*, and 2) *Computer associate professionals*. The chart of the four categories quoted above is valuable because it recognises that ICT graduates “can get occupations in the peripheral group or develop their career towards these groups” (17). Beyond this fact, in the knowledge-based economy the constant proliferation of a large variety of job descriptions in the ICT field has become a characteristic as well as an opportunity. From this we can deduce that the number of potential occupations is wider than the number of types of diplomas offered by higher education. Often the ICT women professionals have studied a traditional, non-IT career and then have become specialists through on-the-job trainings in the ICT sector, or have self-learned ICT, or have taken part in a life-long learning programme, or have done a combination of these, often with much sacrifice. These cases tend to be an exception rather than the rule.

³ Patricia Vendramin et. al, “Conceptual Framework and State of the Art,” September 2002/April 2003, EU IST project WWW-ICT IST-2001-34520 <http://www.ftu-namur.org/www-ict>. See also G. Valenduc, P. Vendramin, C. Guffens (FTU), A. M. Ponzellini, A. Lebano (FRPS), L. D’Ouville, I. Collet (ANACT), I. Wagner, A. Birbaumer, M. Tolar (TUW), J. Webster (RCWE), “Widening Women’s Work in Information and Communication Technologies,” final synthesis report, European Commission (IST-2001-34520), July 2004 (148 pp.)

Two different and necessary frameworks unfold from the overall situation: One important aim is **to promote gender and equality in the ICT sector**, the other is **the need to focus on how to promote ICT among women**. My proposal is that these two frameworks can work effectively if intertwined through collaboration between the ICT sector, the educational authorities, the Member States, the academia, and the girls and young students themselves.

The EC study mentioned previously confirms that the **main barriers** are: stereotypes, lack of role models and lack of the mentoring schemes, as well as the image of “harsh working conditions” in the ICT sector.⁴ The negative stereotyping is twofold and mutual: from the ICT sector towards women and from the women’s themselves towards the field. The key challenges, then, lie in the basis of the educational life cycle preparing women from primary and secondary school; they unfold to widen in the later stages of becoming an ICT expert/professional, facing up to continued efforts to *stay* in the profession. If such a pathway were smooth and not an ongoing trial, the educational development should provide the options for an ascendant career. One of the questions is how to make ICT *attractive* for women, how to *motivate* them. The challenge is even greater if we read the EC report’s conclusions revealing that even in countries of high connectivity and access such as Finland, there is also a low number of female ICT experts or engineers.

Changing the negative stereotypes or the fear or rejection of the thought of a future profession in ICT demands more than capacity-building done *in medias res* to improve the young women’s technical ability. A select number of mentoring and role modeling initiatives⁵ have proven to be an excellent way to stimulate their aspirations; the shadowing exercises, for instance, supported by special or occasional related activities such as seminars and information and lab days [5.1.3.] at school and the university are valuable as they may lead to a lasting positive image; however, they may not be enough. It is necessary to build up a long-term engagement through a continuity of regular or systematic actions which will work as a *change agency* and which can be an effective complement to role modeling. If these activities are linked to some of their daily (and school) lives, they may be eventually more constructive to the girls and young students.

The approach I suggest is different from the one addressing the ICT sector; rather than gender awareness, I propose first *ICT awareness* and *ICT readiness* which must by necessity begin through systematic ICT curricula from the early school years. However, we need to gather information on this at EU level. There is no mapping of curricula related to *ICT subjects* in schools in the EU27. It would be useful to have a mapping of best practices (and of gaps) of curricula and extra-curricular initiatives related to girls in ICT. Although integrating ICT in the general curricula for all is gradually being implemented, to correct the imbalance it is not the best solution. Additionally, for the learners that which is compulsory is also, in principle, less attractive.

There are five pre-conditions that are frequently mentioned by government representatives as respective obstacles or as an explanation for not going ahead with ICT skills at specific schools, which can no longer be seen as barriers. These are: 1) no access to Internet and/or to computers; 2) the lack of importance of ICT skills; 3) low connectivity in EU schools; 4) the (doubtful) value of ICT to improve learning or teaching; and 5) leaving ICT for later. I shall now think dialogically with an opposing view that a priori gives me these five pre-conditions as barriers, used to hinder or dismiss the proposal of ICT curricula.

⁴ See similar conclusions in Diana Bischof, and Veronica Hornung-Prähauser, “Gender-sensitive e-Learning Didactics in Information and Communication Technology Courses and Career Counselling: Case Study of an Online Gender-Sensitivity Training for Teachers and Career Counsellors”, in: Sabine Zauchner, Karin Siebenhandl, Michael Wagner, Gender in E-learning and Educational Games. StudienVerlag, Vienna, 2006.

⁵ A good example is the European Commission’s “Shadowing exercise” in collaboration with some IT companies in Europe to motivate young women to think about an ICT job.
http://ec.europa.eu/information_society/activities/itgirls/index_en.htm

Reports at national level as well as statistics indicate that the access to a computer and Internet use in schools is high.⁶ Moreover, if we follow the results of a recent study on “Benchmarking Access and Use of ICT in European Schools 2006” we find that “the use of computers in schools in Europe has reached almost 100% in every Member State, with hardly any deviations between different types of school.”⁷ Therefore, the first pre-condition referring to the unavailability of infrastructure can be generally dismissed as a barrier. Equally important, ICT skills have been recognized as one of the key competences among young people⁸ for “personal fulfillment and development, active citizenship, social inclusion and employment.” The reference framework of the eight competences⁹ presented in the Staff Working Document, “Progress towards the Lisbon Objectives in Education and Training. Indicators and Benchmarks,” includes “Digital competence”, defined as “confident and critical use of information society technology (IST) for work, leisure, and communication” (94). Consequently, this definition has paved the way for the second pre-condition to be dismantled: considering the policy perspective above, it would be redundant to have to justify the importance of ICT skills to the MS authorities and decision-makers. The third pre-condition, which assumes that there is insufficient connectivity in EU schools can also be set aside, given that computer and internet access has also been recorded as covering 96% of the schools in EU and 67% with broadband access.¹⁰ The fourth pre-condition is the disbelief or the doubt whether ICT has a positive impact on the pupils’ learning, on their subject-related performance and their basic skills in primary schools; the answer so far, if we believe in the experts’ reports, is yes, ICT have a proven positive impact.¹¹ For the fifth pre-condition suffice it to quote the dictum that no school may be left behind or may choose to lag behind; it concerns the recommended implementation of ICT basic skills in *all* schools:

“The Lisbon European Council stressed that every citizen should be equipped with the skills needed to live and work in the information society. Member States should ensure that all schools have access to the Internet and multimedia resources and that all the teachers needed are skilled in the use of multimedia resources.”¹²

Therefore, these five fundamental pre-conditions can no longer be seen as barriers.

Awareness Raising and Motivation through ICT Curricula

One step to motivate girls can be to help them to develop a self-consciousness about their relationship to ICT and technology in general in a positive way, so that they do not take this instrumental

⁶ “The OECD PISA survey shows that in the 14 EU countries for which data are available over 90% of 15-year-old pupils have access to a computer at school; however, fewer than half of them use a computer at school frequently. For pupils older than 15 the Eurostat ICT household survey shows that, in 2005, 70% of pupils (16 years and older) used a computer at their place of education and over 60% used the Internet at the same place.” The indicators of use and teachers’ attitudes to ICT have also been measured. See the Staff Working Document, “Progress towards the Lisbon Objectives in Education and Training. Indicators and Benchmarks,” p. 95

⁷ Ibid. p.95.

⁸ Staff Working Document, “Progress towards the Lisbon Objectives in Education and Training. Indicators and Benchmarks

⁹ “The reference framework consists of eight competences: Communication in the mother tongue, communication in foreign languages mathematical competence and basic competence in science and technology, digital competence, learning to learn, social and civic knowledge, sense of initiative and entrepreneurship, cultural awareness and expression. The eight competences are considered as equally important.”(p.90)

¹⁰ Commission Staff Working Document, “Progress towards the Lisbon Objectives in Education and Training. Indicators and Benchmarks,” 2007. This publication is based on Document SEC (2007) 1284, p.89. These data does not include the non EU Member States.

¹¹ See “The ICT Impact Report. A Review of Studies of ICT Impact on Schools in Europe” (2006). European Schoolnet. <http://ec.europa.eu/education/doc/reports/doc/ictimpact.pdf>.

¹² Staff Working Document, “Progress towards the Lisbon Objectives in Education and Training. Indicators and Benchmarks,” p.94

technology for granted; whether it is through the Internet or their mobile phone, their iPod or MP3, it is important to stimulate self-reflection on how these instruments for communication and entertainment are a very important part of their daily lives and that of others. Equally important is to stimulate their thinking about ICT in society while offering them ICT skills from an early age *as playful and/or joyful learning*. This not only provides ICT literacy but also enables them to be potentially “*advanced users*” in the near future. Many children and the young, including girls, are actively spending part of their daily leisure time gaming, playing with digital images, or digital video, writing SMS messages, even podcasting. Some schools still follow the traditional programmes and have not acknowledged the digital age or cannot because they lack the resources.¹³ The new curricula need to incorporate these activities as explicit subjects, just as the environmental issues are entering the teaching plans. It would be important to enhance activities through an awareness of e-learning methods, at the same time that schools may incorporate programmes that use, for example, mathematics in games-based-learning¹⁴ or methods that stimulate creativity.

The learners of the 21st century prefer to have a teacher as a guide as opposed to the all-knowing master; they are more attentive when they *learn by doing*, at a time when they are building their own models, finding their own styles rather than passively receiving information.¹⁵ The *personal* and *societal desire*, aspiration or ambition for an ICT career can begin by a gradual motivation at an individual level, and this can be offered as a horizon through the adoption and use ICT from an early age. Progressively, if used appropriately, under supervision, monitoring, and with quality assurance in the curriculum, ICT skills may contribute to build confidence not only in the technology but on the girls’ own capacities, as groundwork for their career choices. It would be effective in this context to build an *evolving educational programme nourishing and encouraging independent thinking, creativity, beliefs in self achievement and self-accomplishment* (already existing practices such as creating their own websites can be motivating). Along their primary and secondary educational path, with ICT they will have learned how to use the Internet, and how to determine better whether the information is accurate or reliable, how to work and communicate within a safe Internet, sharing knowledge and information with their friends, classmates, and societal groups; they will have learned about their community, their country, and perhaps they will have engaged in intercultural dialogue, and the roads to citizenship.

It is common nowadays to see that pupils and young students often take the ICT activities at school for granted as these are perceived as one more task to be performed. Furthermore, research “show[s] that teachers mainly focus on the development of technical ICT skills, whereas the ICT curriculum centres on the integrated use of ICT within the learning and teaching process.”¹⁶ Many schools even use video-conferencing, but ICT as such are not necessarily part of the curriculum. However, there are projects such as a *Girls’ Club using ICT*,¹⁷ which can serve as good initiatives from which to go further. A selected number of curriculum-based best practices will also be useful, such as the early model known as the UNESCO/IFIP Curriculum, “Information and Communication Technology in Secondary Education: A Curriculum for Schools.”¹⁸ Although developed in 2000, the approach to the curriculum structure is still valid, and in line with my proposal. It consisted of a design with four stages for teaching and learning:¹⁹

¹³ There are abundant statistics available that compare the computer availability in schools in the EU and other indicators, which I leave for discussion in another context.

¹⁴ See Case Study 2 ICT Education in Scotland in the last section of this paper.

¹⁵ Ibid.

¹⁶ Jo Tondeur, Johan van Braak, Martin Valcke, “Curricula and the use of ICT in education: Two worlds apart?”, **British Journal of Educational Technology** 38 (6) , 962–976 November 2007, doi:10.1111/j.1467-8535.2006.00680.x

¹⁷ See Case Study 1.

¹⁸ <http://www.edu.ge.ch/cptic/prospective/projects/unesco/en/welcome.html> (The original version is from 1994; the updated version from 2000).

¹⁹ I am aware of the barriers to the uptake of ICT by teachers, the gender factor and computer anxiety. Overcoming such barriers is the theme of another presentation in workshop 2; therefore, I refer the reader to the

- A. ICT Literacy;
- B. Applications of ICT in subject areas;
- C. Integration of ICT across the curriculum; and
- D. ICT specialisation: ICT as profession.

The Proposal: ICT curricula + ICT Club + Mentoring + Leadership Programme [ICT CML+]

Possible stakeholders:

The educational sector (schools, colleges, universities), the private sector, learned/professional societies, governments, Member States and a Member States ICT Expert Group (perhaps similar to the MS Expert Group on digital Libraries), ICT and e-learning experts, mentors, a network linking formal and informal learning organisations.

The **ICT CML+** plan could be a combination between available ICT curricula at school with the voluntary participation of girls in an ICT Club with its relevant community, which could be also a Second Life community, continued with an ICT leadership programme where the (virtual or real-time) mentoring and role modeling would start, both during secondary education (as the formative stage for career choice) and continued at a higher educational level and beyond to another stage which would cover the career path. Subsequently, selected participants in such a programme could themselves become the leaders for the next generations. This is one of the successful models applied in the City of Knowledge in Sao Paulo, Brazil.²⁰ The basic assumption underlying the ICT CML+ proposal is that once ICT technologies become a dynamic component which is acknowledged as a personal asset by the girls themselves, the moment to choose a career in ICT can be smoother and easier and in any case it will be a more informed choice. ICT needs to be part of their intrinsic development through the acquisition of behavioral, conceptual, creative, technical skills rather than something that they may ‘suddenly’ choose as a career when the crucial moment comes.

It is understandable that due to funding or administrative formalities, ICT curricula perhaps can not be easily implemented, in the first place because the curriculum as such does not exist. The majority of the schools which have been implemented ICT curricula are doing it without a gender specific approach, with the consequences that we, as participants in this conference, know very well. The existing curricula are quite dispersed and are often country, language or culture-specific; in view of this situation, a EU project could specifically aim at gathering and even creating ICT curricula for primary and secondary levels, with the support of the MS, and with the objective of looking into gender specific factors to support girls/young women and to correct the present imbalance. Alternatively, as part of an initial pilot, Second Life could be also be an interesting space to create an ICT club or community and also a separate network of curriculum support and for content creation.

Convergence and ICT in Trans-disciplinary Programmes and the Need for Gender Awareness in R&D: Making the Best of the New Paradigm.

The second theme I will briefly address concerns the university or higher education changing environment due to the crossings of disciplines and the resulting new careers within a new hybrid expansion from the *technological sciences*, and between science and technology, in which ICT is an all-encompassing component. New degrees in areas such as *knowledge engineering* are a product of

relevant essay on “training the trainer.” For additional reading, see the report in: www.becta.org.uk/page_documents/research/barriers.pdf

²⁰ *Cidade do Conhecimento* started in 2001 with educational projects in Information Society, linking the ICT companies, through mentors working with children in schools, and forming community leaders in different parts of the city. One of their gender-specific projects included “Meninas Cientistas” (2001-2002) a project for ‘science girls’ consisting of high-school students working on science and technology, and working with women researchers, sponsored by the UNESCO Chair on Women Studies, coordinated by Prof. Regina Festa. <http://www.cidade.usp.br>

this increasing technical and conceptual convergence. Some of the areas crossing borders include Artificial Intelligence, Ambient Intelligence, Assisted Ambient Intelligence, nanotechnology to name just a few. For example, the different fields of robotics, Artificial Intelligence, computer games, adaptive behaviour, neural networks, bio-technology, and bio-ICT fields;²¹ not to forget the latest developments in bio-informatics for genomics analysis, all fields with the potential for women to focus on and contribute with gender issues. On the whole, intriguing converging technology questions are emerging, which require innovative ways of understanding what constitutes “being human”; how the mind (i.e. through cognition or perception) and the body work in relation to technology. The changing curricula at the academic level also needs a mapping to create awareness about potential subjects so that we can encourage more women to have a more participatory role in the current and emerging technologies, and in the research roadmaps of 2013, 2020, and the future.

Beyond the Computer: Entering the Post-PC Era

The changing perspectives of ICT’s role in the emerging professions in new disciplines need to be approached also within the new paradigm that takes us beyond the computer, as we, and especially the younger generations, enter what I have called the **Post-PC era**.²² In this context, I suggest that we approach ICT as a pervasive technology that happens not only in the field of Computer Science; the new fields for ICT curricula are a crossroads between ICT and *emerging cross-disciplines* which in turn are leading to new professions. Next to this are the new Telecommunications practices through the mobile phones, PDAs and the like.²³ In some countries, such as Finland, not only most of the households are “connected” but all members of a family, including the children, own at least one mobile phone. The ICT developments in Helsinki show that the inhabitants increasingly have been making use of the mobile phones to make reservations and perform many of their daily scheduling activities, such as concert bookings, etc.²⁴ In Europe, many among the new generations, the future citizens of the EU, are skipping dependence on computers as they prefer to communicate by SMS; in some countries, as in the Netherlands, in courses in a professional college, many students do not take handwritten notes during the lessons, but simply take photos with their mobile telephone camera to capture the PowerPoint slides on the screen and then share it with classmates and consult the virtual blackboard in their school. In conclusion, in the 21st century, a vision of research models for the next decade has been proposed in policy as “Converging Technologies” (CTs) in the Knowledge Society.²⁵ Considered “a new technological revolution”, CTs are about to become a crucial factor of economic and competitive advantages but the implications for the human condition remain less explored. The new ICT related curricula would benefit from addressing this phenomenon.

Case Study 1

Computer Clubs for Girls

“Computer Clubs for Girls (CC4G) is an innovative, award-winning initiative created by e-skills UK and funded by DfES. CC4G raises the standard of girls' ICT skills while transforming girls' attitudes to careers in IT. Popular interests such as music, fashion, dance and celebrity have been combined with elements of Key Stage 2 and 3 ICT curricula, to deliver an engaging and fun approach for girls aged 10 to 14.”

“The Girls' experience of technology outside of school is exciting - consider the uptake of computer

²¹ These are examples of fields or ‘subjects’ at Maastricht University.

²² Diocaretz, Myriam, “Interactivity and the Information Society Technological Imaginary” **ACTA POETICA**, 27 (1) Primavera 2006: 113-135.

²³ The number of mobile subscriptions per 100 inhabitants (units) increased in all MS between 2004 and 2005 and continues to grow.

²⁴ My research on broadband innovation and ICT innovation for citizens in Finland is included in P. Ballon, S. Delaere, J. Pierson, M. Poel, M. Slot, J. Bierhoff, M. Diocaretz (2005), “Test & Experimentation Platforms for Broadband Innovation: Conceptualizing and Benchmarking International Best Practice,” IBBT / VUB-SMIT Report. <http://smit.vub.ac.be/st/default.aspx?ptabindex=3&ptabid=79&tabindex=5&tabid=388>

²⁵ See note 22.

games, the Internet and mobile phones amongst young people. However, they do not typically make the link between the appeal of these technologies and the concept of rewarding careers in IT. In this day and age, girls must become proficient in IT; it is fundamental to the efficient operation of the large majority of organisations. Therefore, to attract girls' attention to IT activities, it is necessary to tackle the issue from another stance.”

For more information visit: www.cc4g.net http://www.skillset.org/games/at_school/article_4388_1.asp
Demo
<http://www.cc4g.net/demo/coursewaredemoflash.html>

Case Study 2

<http://www.ltscotland.org.uk/ICTineducation/index.asp>

ICT Education, in Scotland

ICT and Curriculum for Excellence

“Curriculum for Excellence has unified a set of purposes and principles for the whole curriculum to enable young people to become successful learners, confident individuals, responsible citizens and effective contributors. Developing these four capacities will depend on the environment in which children learn, their choice of learning and teaching approaches and how their learning is organised.

Pupils start at an early age by sharing colours, creating images, later learning ICT use for digital and standard literacy and numeracy skills, learning fractions, percentages and decimals challenges. They get a full range of skills and abilities through the use of ICT including animation.



Overview

- Background
- Challenges
- Best practices
- What actions should be taken
 - Industry
 - Academia
 - Commission
 - Member states



Background

- Gender differences in aspiration and expectations
- Lack of role models
- We do not even know what the jobs will be in future...
- The “haves” & the “have-nots”, and the new poverty - lack of IT
- Differences across Europe
- Changing nature of the family



Best Practices

- Building bridges between family and work
- Teleworking - when done well
- Industry representatives working on school committees with parents
- Parent friendly work practices
- Mentoring
- Diversity as a mainstream issue



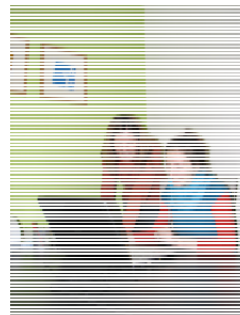
A teacher, a student...

Branislava

- Maths teacher now a programmer

Nevena

- Programmed part-time while studying



Technology world - an interesting challenge for families



Kate Ackerman
Green Tea Creative



Actions for industry

- Sponsorship and support for IT access at home
- Take a wider view of what are IT workers
- Diversity not just on paper but in practice
- Research and training partnerships



Actions for Academia

- Ensure that ethnicity, socio economic status and diversity are included in research into IT workforce issues
- Early IT enrichment of school criteria that suits girls
- Reduce stereo typing in career days and with parent groups at school



Actions for Commission

- Continue with leadership role on this issue backed by real funds
- Gather and disseminate real life examples
- Mainstream gender throughout IT programme (speaker panels, consultant lists, grants awarded)
- Be fair



Actions for Member states

- Mainstream gender issues into IT support and development programmes
- Monitor, report and act
- Remember, we are looking at children now who will be living and working in an IT world we can barely conceive...



Last word....

From...

“Mum when are you coming home?”

To...

“Mum when are you getting off that computer?”



IMPLEMENTEK
INTERNET CONSULTING GROUP

Thanks!

www.implementek.org

The Family role

Family influence is an important force in preparing youth for their roles as workers. Young people form many of their attitudes about work and careers as a result of interactions with the family. Family background provides the basis from which their career planning and decision making evolve. However, within each family, the level of involvement can vary, offering both positive and negative influences.

The variable that has the most effect on adolescent's educational plans and occupational aspirations is parental education; we have an intergenerational effect on this. There are also significant differences in parental and family impact and styles between different countries and cultures. Finally, the family structure itself is evolving, with a wider range of family models in Europe, reflecting intermarriage between people of different traditions, blended families, single-parent families, adoptive and foster families, same sex partnership and significant numbers of children in residential or sheltered care. And to all, penetration of the IT sector into family life is increasing rapidly and having it's own particular impact.

1. What are the challenges?

- Gender differences in aspirations and expectations of adolescents and of their extended family, with patterning starting early in life and the most significant impact within the family.
- Lack of role models in parents and others such as teachers. This is important in bringing about change; in some countries or groups IT careers are commoner in women than in others and this directly influences the next generation follows.
- A divide between the "haves and the have-nots", with lack of internet or advanced mobile phones systems access in poor families. Access to the internet and computer based technology let alone training in it is directly related to socio economic status. In any country the poorest groups have less access. In accession and candidate countries where overall access is much poorer, the poorest people have often no access at all. This may soon be included in our definitions of poverty in middle income and rich countries.
- Differences between different countries in Europe. Schools in accession and candidate countries have limited IT resources. (On average schools in Serbia, for example, have two computers for the entire school community); patterns also differ greatly for technology access at home.
- There is an issue of retraining older women, who in turn as mothers will greatly influence their daughters choices. Most development assistance training to this group focuses on traditional skills, which are in decreasing demand. Linking training courses to future jobs and designing them in partnership with industry is essential.

2. What are the best practices?

- Building bridges between family and work. Take our daughters to work days, founded by Ms Foundation in the US in 1993, included boys from 2008. Targetted pre-teens. Has spread in Europe.
- Tele-working, when done well
- Industry representatives working with parents on school committees, as school governors and with parent associations

3. What actions should be taken?

Industry

- Sponsorship and support for IT access and industry familiarization programmes should start early, waiting till older teenage years may be too late.
- Having girls visit companies for a day might be interesting but it is often too short a contact and there is little evidence yet that it may make a difference.
- Pay attention to ethnic, cultural and other diversities in sponsorship programmes. It is easy to attract and interest the best and the brightest children, but average children will be the main source of workforce growth in the future
- Responsible tele-working can offer great benefits for families in both maintaining a diverse workforce and in increasing awareness of IT careers via home contact
- The IT sector will not need just the very specialized and technically competent programmers and designers, it will also need it literate managers, sales people, business consultants, administrators and social scientists. This discussion still needs to be had in the context of this conference, which has assumed that the IT careers we should be focusing on are the “hard core” programming and engineering functions - I do not believe this should be so.
- IT careers are still seen in the narrowest sense and this puts some girls off. The majority of careers for girls in the IT sector will be in these areas. And while opening the doors of the specialized technical areas for girls we should also widen their perception of what careers in the IT sector can be. This message should be brought to the attention of parents as well as children.

Academia

- Ensure that ethnicity, socio-economic status and other aspects of diversity are included in research into IT sector career choice; it usually is not.
- Early IT enrichment of the school curricula is important, and taking care not to use stereo types in educational materials (this is still common in Eastern Europe and transition countries).
- Ensure career advice to both boys and girls in schools is not biased (evidence is that it is biased) and working with both students and with parent groups to reduce stereo-typing in career placements and career days.
- Look much further ahead - the technology and possibilities are changing so fast that research is rapidly out of date and so we should focus research with as much vision for the future as possible.

Commission

- Continue with leadership role through conferences such as this one. Having a separate women in IT focus highlights the issues, and will bring the converted together, which is very useful in terms of support and networking.
- It should be backed up with mainstreaming throughout the Commission IT programme. For example - the Commission should conduct gender analysis of where it's support being distributed, what the results are for women, gender balance in consultants hired, private sector firms and SMEs supported etc.
- Dissemination of best practice models with follow up to see if they are actually adopted elsewhere would be useful, as would a really good IT portal with good links to related resources.

Member states

- Mainstreaming gender issues into IT support programmes, monitoring and reporting on them and introducing incentives for change. Some countries have started on this, others could learn from them.
- Learning from other countries experience would help - the UK for example has 2 weeks of work experience for each school child, this could be focused to see if girls are getting adequate exposure to the IT industry, and also shared with other countries.

Case example: Kate Ackerman, IT Entrepreneur and mother of two.

<http://www.greenteaconsulting.com>

For certain the IT environment is still male-dominant and while there is a steady growth of women in IT, I don't think it is the first thing that is in a girl/woman's mind as they go through college/university.

The success of Green Tea Creative has been greatly attributed to our ability to award quality work to small to mid-sized businesses at a fraction of the cost of larger agencies... we have a model that works and that utilizes the strengths and assets of individuals (who work collectively under the Green Tea Creative structure) who might otherwise not be available for any work. For example... many women I know (myself included) knew that family was a priority and wanted to have children without sacrificing career... but also wanted career without sacrificing family. There are many, many areas of technology that can support a woman's endeavor to stay career oriented but with flexibility to support a family. It is just important to understand options and to educate yourself and your peers to know how best to leverage expertise.

With respect to the family role as it relates to technology and the introduction to technology... I also think a huge area of importance is the respect of and understanding of various technologies. Our real-time and ready-access technology world presents an interesting challenge for families as access to information is more immediate than ever. While this has tremendous benefit, it is also vital that parents teach their children to respect technology and understand the implications of how they use it (internet being an easy example... but there are so many... technology can be a huge asset when used correctly; but it can be a tremendous liability and danger if used incorrectly.

Education: The barriers and how to overcome them

Workshop 2

Recommendations 1

- Teaching of technology at early age & making technology fun! For example the use of games as teaching strategies
- The need to do a mapping of curricula related to ICT with current and emerging technology in schools in the EU27
- A widespread campaign to change attitudes about science and technology

Recommendations 2

- Training the trainers programme
- An Education-Engagement-Retention Action Plan (learning, training, management, assessment)
- To stimulate self-reflection on the impact of technology on our daily lives- change perceptions

Recommendations 4

- Develop and improve Gender Monitoring in EC ICT programmes, grants, consultants and panels
- Industry: should sponsor more basic research on gender and ICT issues
- Stronger partnership with parents (partnership with schools & industry)

Recommendations 5

- New Poverty in Europe: lack of access to IT need to look at Inclusion & ICT
- Post PC era- crossroad between ICT and emerging cross disciplines which are leading to new professions

Workshop 3

*Awareness:
Spread the message at national, European
and international level*

Chair: **Rosalie ZOBEL**

Rapporteur: **Eva FABRY**, Member of the Scientific and Political Advisory Board, WINNET Europe

Rosalie Zobel

Director, DG INFSO, European Commission

Awareness: spread the message

Awareness: Spread the message

Introduction from the Chairman

Dr. Rosalie Zobel

Director

Directorate G: Components and Systems

DG Information Society and Media

European Commission

Move out of the Shadow! Seize the opportunity! Workshop 3

The challenges today...

- ✚ To attract and retain qualified staff in ICT (men and women);
- ✚ To give opportunities to balance work and family;
 - ✚ Performance appraisal and reward systems must reinforce the importance of effective diversity management;
- ✚ To ensure that **best practice models** are disseminated and followed;
- ✚ To **role models** are identified and rewarded;

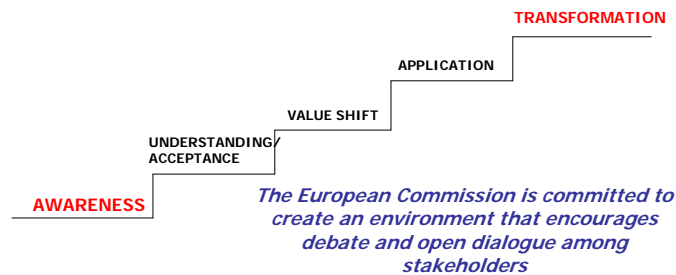
Move out of the Shadow! Seize the opportunity! Workshop 3

Awareness...

- ...about the existing Stereotypes
- ...about the crucial role played by the workplace in the **dynamic** of the family
- ...that the **Companies** are not only producers of commodities and services – but also **social institutions** producing time structures, social networks and meaningful relations

Move out of the Shadow! Seize the opportunity! Workshop 3

The transformation...



Move out of the Shadow! Seize the opportunity! Workshop 3

The goal:

- **Elaborate an industry Code of Best Practice addressing at least the following issues:**
 - Create awareness in young people between the ages of 11-16, especially girls, about the exciting possibilities of a career in ICT
 - Increasing the attractiveness of the engineering profession (ICT in particular) for women;
 - Providing solutions for a better work-life balance of the employees;
 - Creating a reward and acknowledgement mechanism for companies which implement an effective diversity management strategy.

Move out of the Shadow! Seize the opportunity! Workshop 3

Awareness: Spread the Message



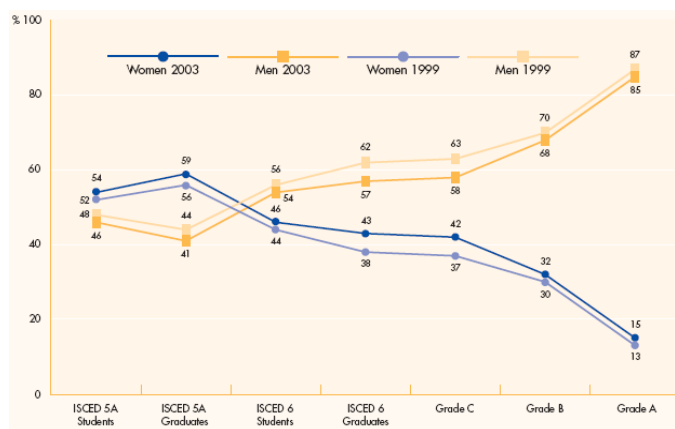
European Platform of Women Scientists

Awareness at EU Level – The European Platform of Women Scientists

Brussels, 6 March 2008
Adelheid Ehmke

1

Proportion of women and men in a typical academic career, students and academic staff, EU25, 1999-2003



Source: European Commission, *Women & Science: Latest Statistics and Indicators – She Figures 2006*, p. 55

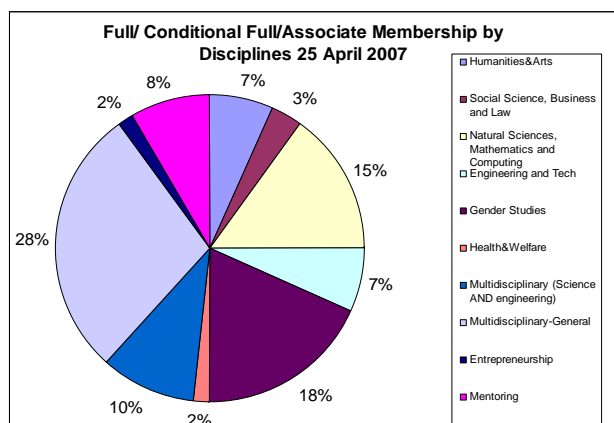
Definition of grades: A: The single highest grade/post at which research is normally conducted; B: Researchers working in positions not as senior as top position (A) but more senior than newly qualified PhD holders; C: The first grade/post into which a newly qualified PhD graduate would normally be recruited; ISCED 5A: Tertiary programmes to provide sufficient qualifications to enter into advanced research programmes & 2 professions with high skills requirements; ISCED 6: Tertiary programmes which lead to an advanced research qualification (PhD)

Establishing the Platform

- November 2005: EPWS legally established in Brussels (AISBL)
- March/October 2006: Launch event and Network Event in Brussels
- April 2007: First General Assembly
- The Platform currently represents more than 10 000 women scientists from all disciplines and from 30 countries

3

Membership by Disciplines

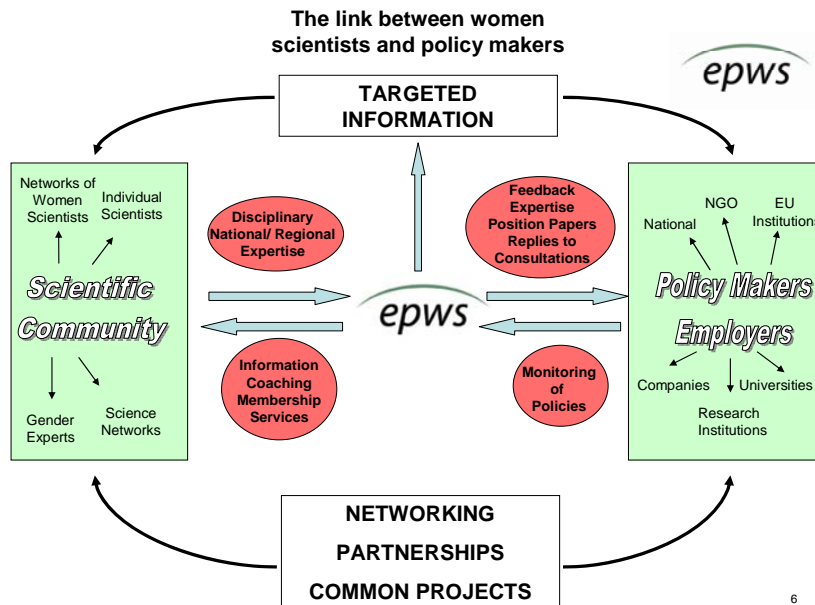


4

Main Goals of EPWS

- Represent the interests and aspirations of women scientists in EU research policy
- Promote the understanding and the inclusion of the gender issue in science and research
- Strengthen contacts and collaboration among women scientists
- Provide contacts to high profile women scientists of all disciplines as keynote speakers, panel members and evaluators
- Identify funding and support opportunities

5



Support to the Science Community



- *solid expert advice on gender related issues as well as examples of good practices*
- *facilitate cross-disciplinary and cross-national contacts between women scientists and gender researchers*
- *help to embed women scientists in networks to encourage them to pursue their scientific career and participate in the policy debate*
- *experts to boards and panels*

7

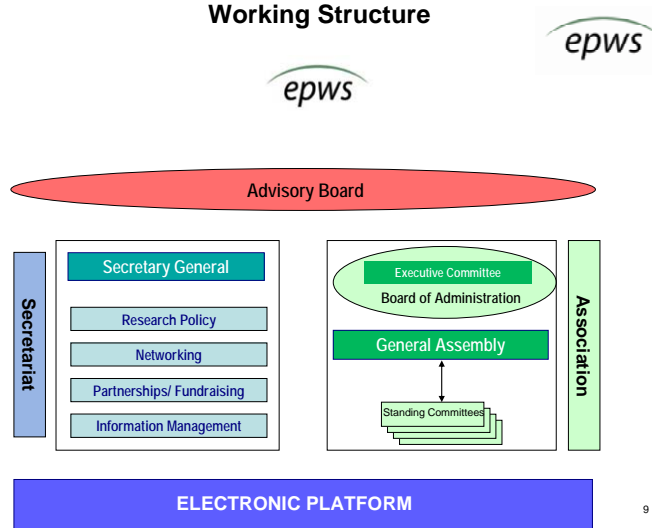
Research Policy Making



- *Participation in public consultations and stakeholder meetings*
- *EPWS Position Papers on Research Policy Issues: FP7, Lisbon Agenda, ERC and EIT, excellence and innovation*
- *Online survey and discussion on excellence on EPWS website*

8

Working Structure



9

Public Relations and Information



- *Over 1.200 subscribers to EPWS newsletter*
- *More than 100 articles Europe-wide on EPWS activities*
- *Expansion of Web Site with new sections*
- *Start of pilot phase of closed areas of the Electronic Platform with the participants of the EPWS Network Event*

10



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11



European Center for Women and Technology















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Why set-up ECWT ?

- Women boost ICT sector in Europe
- Creating a virtuous cycle between ICT, research, innovation and socio-economic benefits



International Taskforce on Women and ICTs





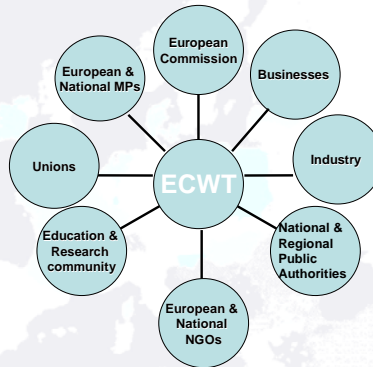
What does ECWT do?

A sustainable European Multi-Stakeholder Partnership representing high-level expertise in women and technology development from business, government, academia and non-profit sectors, **supporting regional innovation** through leveraging resources, research, progress and impact and **contributing to the global efforts** to ensure women's full participation in and contribution to the Knowledge- based Economy

- ✓ The **first** of Ten Regional Centers
- ✓ Regional Point of Contact (POC)
- ✓ Blue Print for Impact: programmes, products and services – developed and implemented

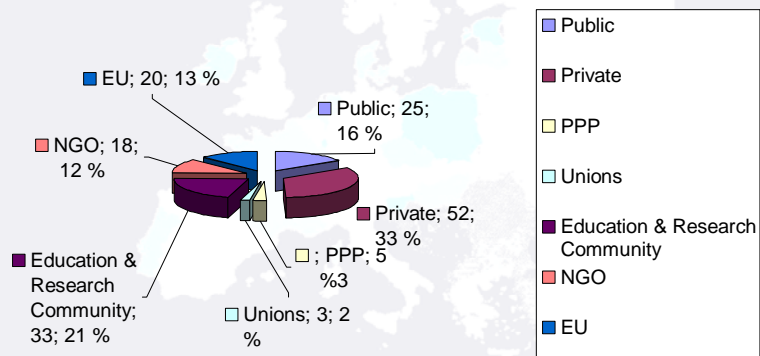


Strategic partners



Strategic partners

MSP division mapped ECWT partners

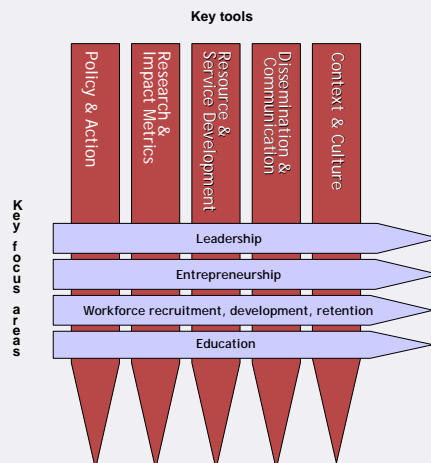


Organisation





Customized Global Framework



What does ECWT offer ?

Common Transparent IT stakeholder platform for key stakeholders in Women and Technology in wider Europe (48)

- Focus on engineering and ICT in all 4 focus areas
- Regional Map of Resources
- Blue Print for Impact
- Education based on the European e-competence framework
- Demand-based, locally relevant, customized e-services
- Integration across regions for global impact

Services and support to Industry

- Support in the recruitment of women in IT on a global scale
- European network of universities and colleges
- Recruitment events worldwide
- European database of women experts in IT
- Industry benchmarking
- European Impact measurement
- Awards scheme for " the best company to work for "



What does ECWT offer ?

Information

- Regional and national **state of the art** reporting
- Regional / global roll-out of **good examples**
- Regular **bulletins** of progress and challenges
- Coherent **multilingual** communication

Scientific communication

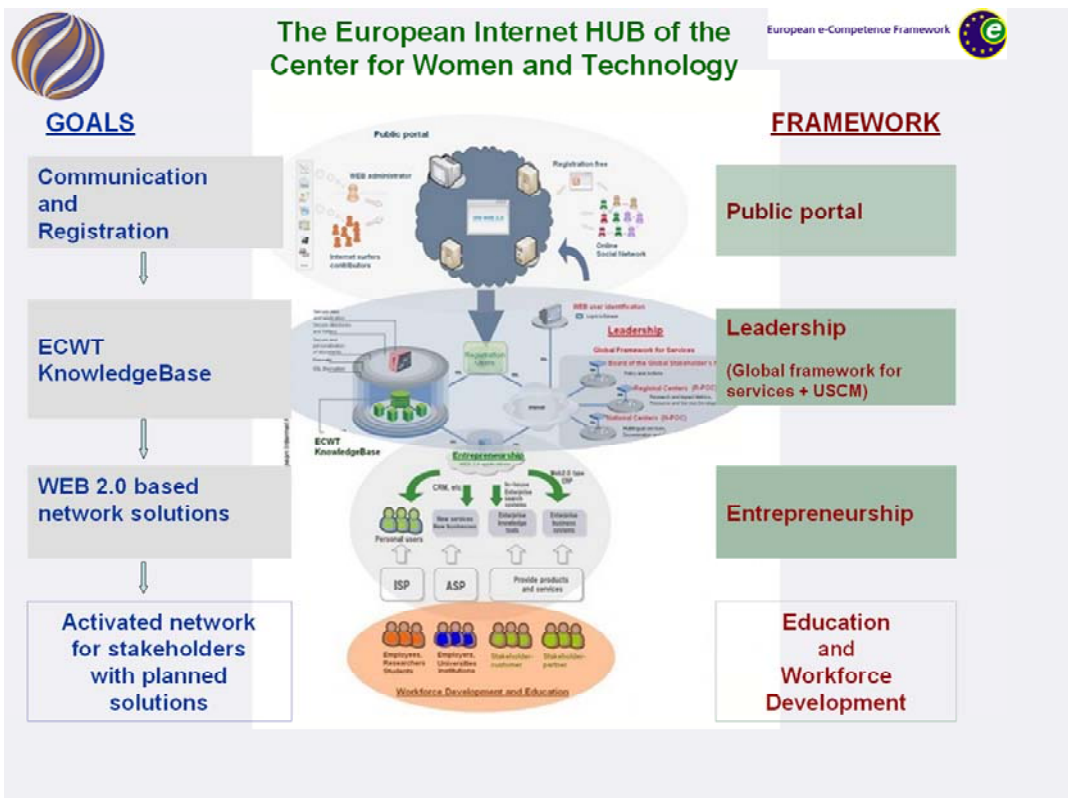
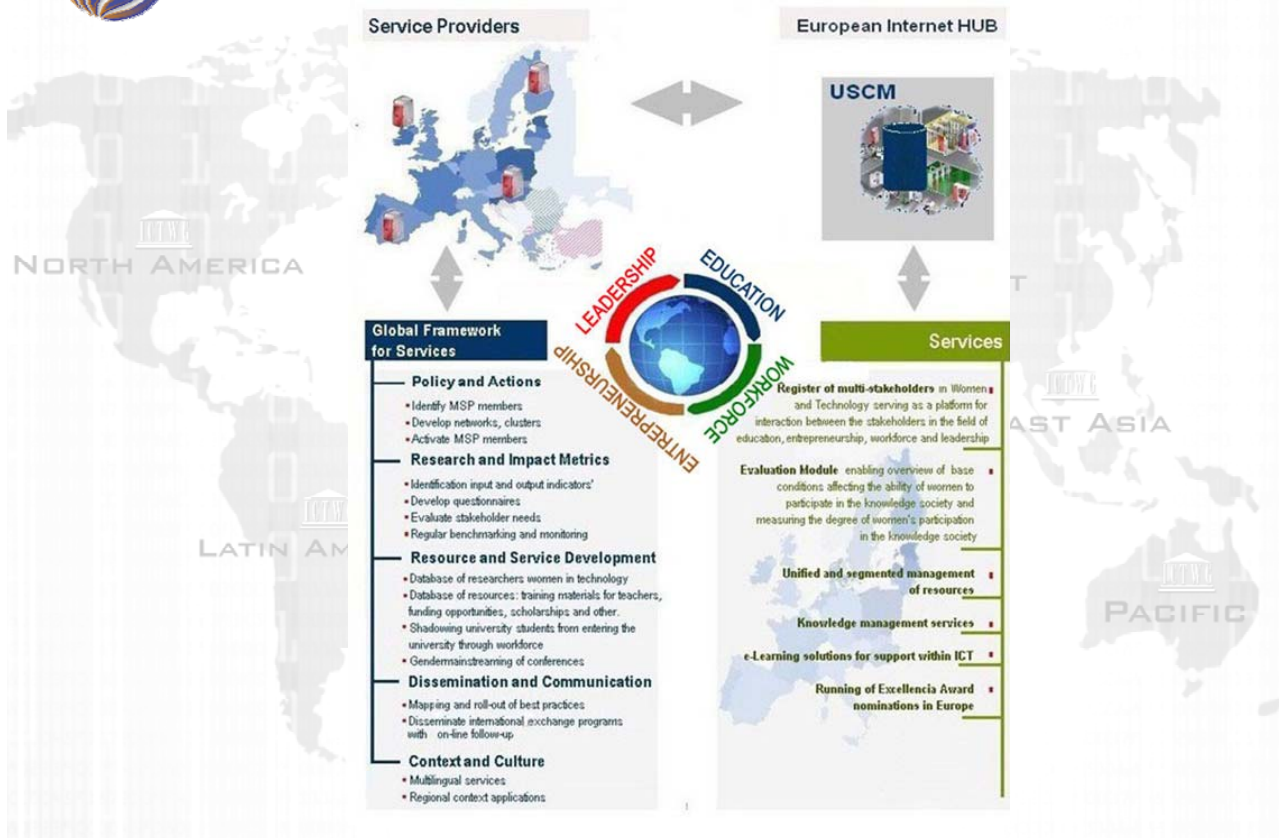
- **Focal point** for reporting and communicating relevant new research
- **Access** to scientific reports and publications through Regional POC
- **A common global perspective** through **uniform gender indicators** for establishing **baselines** and **impact metrics**

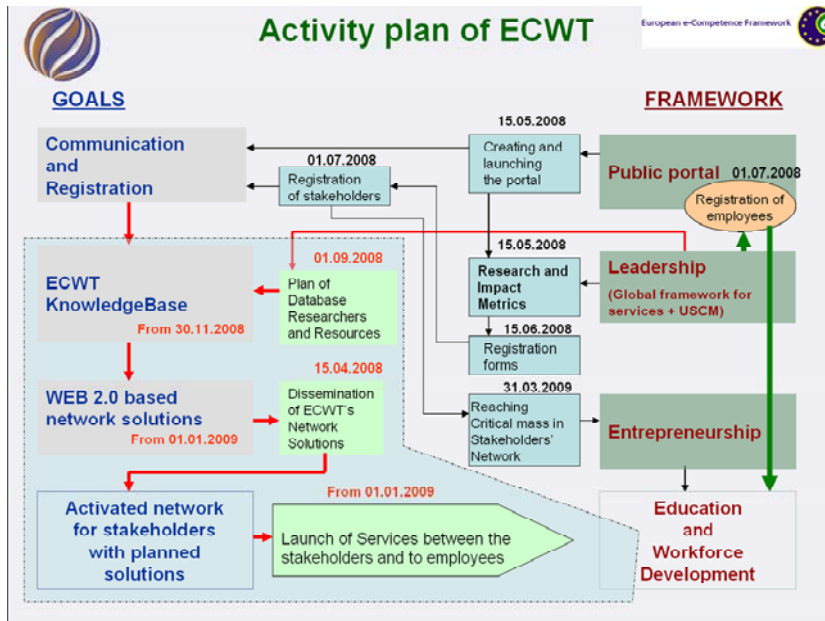
Support to EU Member States and acceding countries

- Help to reach the **Lisbon agenda** and **Millennium Development goals**
- Regional and global **networking**
- **Sharing** of expertise and good examples
- **Joint projects** and **management** services



How does ECWT Communicate?







ISTC Activities and Programs



Main ISTC Activities:

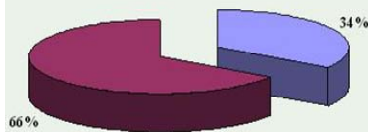
- Science Project Program
- Partner Project Program

Support and Sustainability Activities:

- Communication Support Program
- Competency Building Program
- Commercialization Support Program
- Patenting Support Program
- Travel Support Program
- Seminars and Workshops Support Program

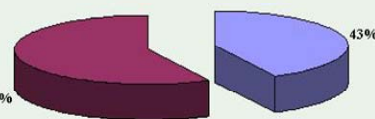
Gender Distribution in
ISTC Ongoing Georgian Projects Managers

■ Women ■ Men



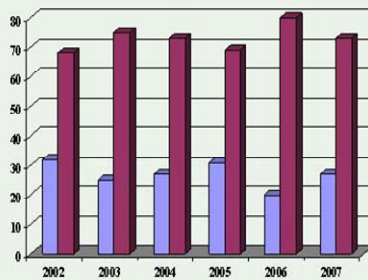
Gender Distribution in
ISTC Ongoing Georgian Projects

■ Women ■ Men



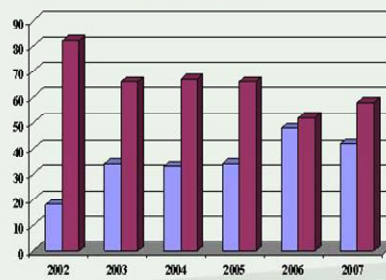
Gender Distribution in
ISTC Applied Georgian Projects Managers
(by years)

■ Women ■ Men



Gender Distribution in
ISTC Applied Georgian Projects
(by years)

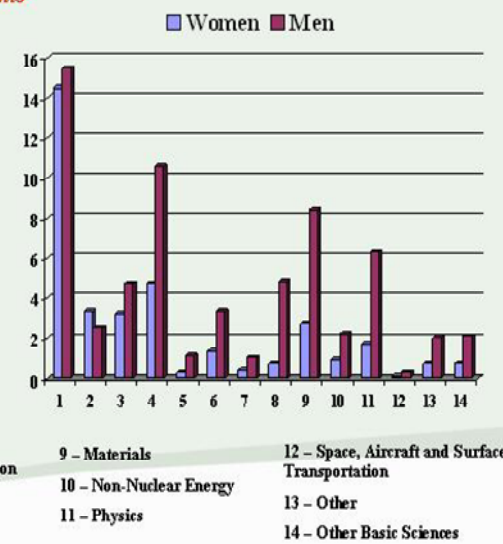
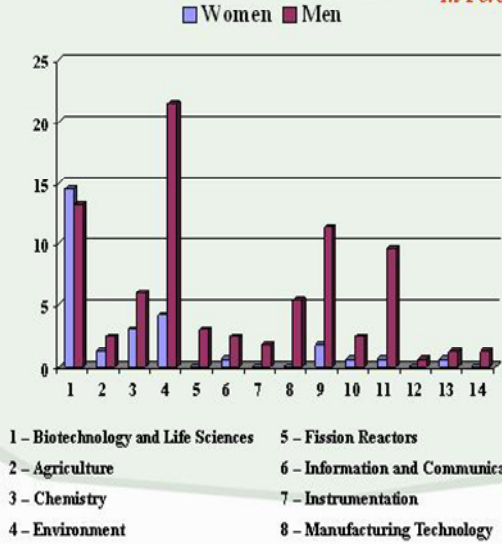
■ Women ■ Men



Gender Distribution in ISTC Georgian Projects Managers by Technology Area (Including 2007)

Gender Distribution in ISTC Georgian Projects by Technology Area (Including 2007)

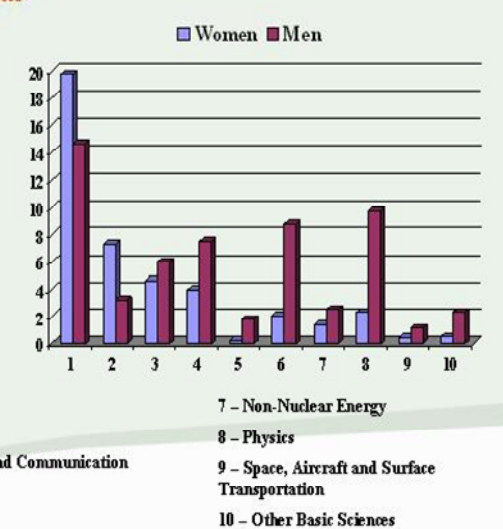
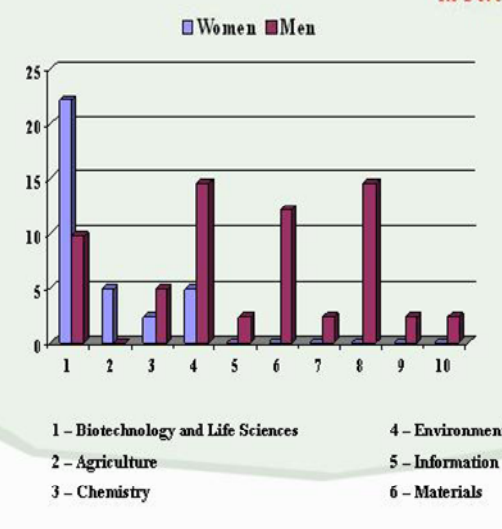
In Percents



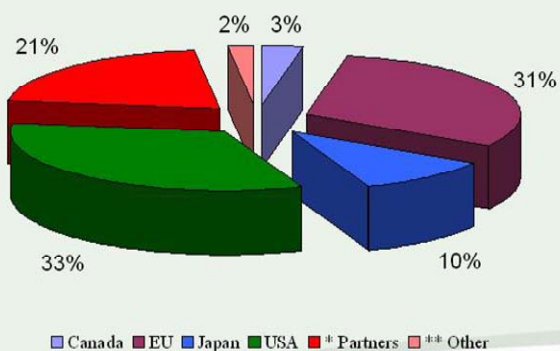
Gender Distribution in ISTC Ongoing Georgian Projects Managers by Technology Area

Gender Distribution in ISTC Ongoing Georgian Projects by Technology Area

In Percents



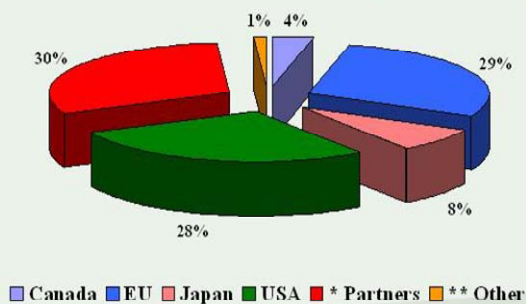
ISTC Funded Georgian Projects By Source
(Including 2007)



ISTC Funded Projects by Source (Including 2007)



Total: 784 754 438 USD



Thank you for your attention!



ISTC Requisites:

International Science and Technology Center (ISTC):
Krasnoproletarskaya 32-34, 127473, Moscow, Russian Federation

Tel: 7 (495) 982-3200
Fax: 7 (499) 982-3201
E-mail: isteinfo@istc.ru
Web-Page: <http://www.istc.ru>

ISTC Georgian Branch Office (GBO):
13, Chavchavadze Ave., 0179, Tbilisi, Georgia
Tel.: (+995 32) 223700
Tel./Fax: (+995 32) 912386.
ISTC Georgian Branch Office Head – Prof. Inna Khomeriki
E-Mail : khomeriki@istc.ru

Closing Speech



The way forward

Dr. Rosalie Zobel
Director
Directorate G: Components and Systems
DG Information Society and Media
European Commission

Move out of the shadow! Seize the opportunity!
Final plenary session conclusions



The challenge:

To elaborate a Code of Best Practices for
the ICT industry and to commit to it

Move out of the shadow! Seize the opportunity!
Final plenary session conclusions



The situation

- No significant differences in 15 years old girls and boys to follow a career in ICT fields;
- Despite the general increase in the number of highly educated females, female computer scientists are outnumbered six to one by men;
- The imbalance persists and accentuates in the industry: women earn less and find themselves only seldom in management roles;

Move out of the shadow! Seize the opportunity!
Final plenary session conclusions



What needs to be done?

- Attract young people in the technology sector (...especially more women);
- concrete steps should be taken to train, recruit, and retain women in the ICT professions;
- Consolidate and integrate the collective experience of the ICT companies in tackling the skills gap;
- Define and commit to a **Code of Best Practices** to reduce the skill gap by encouraging more women to follow ICT as a career and retain them.

Move out of the shadow! Seize the opportunity!
Final plenary session conclusions



How do we proceed?

- The companies present at this event are invited to form an Industrial Group that would take the lead in elaborating this common Code of Best Practices;
- The Commission could provide guidance and political support as well as logistics (meetings, workshops);

Move out of the shadow! Seize the opportunity!
Final plenary session conclusions



The Code of Best practices should include mechanisms to:

- Repair the “leaky pipeline” in the career;
- Suggest solutions for dual career couples and single parents in work respecting their need for work-life balance;
- Manage the cultural change required in society with the same holistic approach as the one followed for example in the management of quality in business;
- Develop in managers the ability to optimize the efficiency of a diverse group;
- Measure this efficiency increase, and objectively observe the business impact of gender diversity as it is being deployed;
- Create awareness in young people between the ages of 11 and 16 especially girls, of the exciting possibilities of a career in ICT;
- Encourage companies to value the abilities and experience of all staff. Career path to the top of the organisation should be managed in a fair way.

Move out of the shadow! Seize the opportunity!
Final plenary session conclusions

Curricula

Myriam Diocaretz

Myriam Diocaretz is the Socrates Professor, Special Chair in Humanism and Digital Society at the Maastricht ICT Competence Centre (MICC), Maastricht University, The Netherlands, since 2007. She is also the Secretary-General of the European Writers' Congress (Brussels), the federation of authors' associations in 23 European countries. She set up and directs her own company, MDD-Consultancy/Information Society Services. Her current research relates humanist visions with Knowledge Engineering, Artificial Intelligence, Multi-Agent Technology, Machine Learning, Artificial Life and Adaptive Behaviour, Intelligent Search and Games, and technology in the 21st century.

Her recent publications include: **The Matrix in Theory** (Editions Rodopi, 2006) with S. Herbrechter, and the essay "Interactivity and the New Technological Imaginary" (Acta Poetica 27 2006). She has been a member of the Copyright Subgroup of the High Level Expert Group in digital libraries (INFSO & Media), and of the Steering Group of the Civil Society Platform for Intercultural Dialogue since 2006.

She has lectured extensively in European universities and institutions on critical studies, digital issues, and eCulture and most recently on **Humanism and Converging Technologies** and is the author, editor, and co-editor of 18 books in English, French and Spanish on poetics, translation studies, gender, and dialogical criticism.

In the last five years she has published research and reports on ICT innovation, e-publishing, e-content, mobile Internet services, and LivingLabs. As an academic editor she has established five scholarly book series, including **Critical Studies** (Rodopi, Amsterdam/New York), which she directs since 1989.

Her previous work experience includes being *Senior Researcher* and *Head of the eCulture Unit* at the European Centre for Digital Communication/Infonomics (2001-2005) in Maastricht; *Worldwide Training Manager* at WorldCom, Amsterdam and *Training Co-ordinator* at Stream International, Amsterdam, specialised in ICT skills trainings. She received her title of teacher of English, and the degree of Licenciada en Letras at the University of Concepcion, Chile; her M.A. in English at Stanford University, and PhD. in Comparative Studies at the State University of New York at Stony Brook (1982).

http://www.stichtingsocrates.nl/leerstoelen/profiel_maastricht.html.

<http://www.kecsum.nl/>

<http://www.mdd-consultancy.com/>

<http://www.rodopi.nl/senj.asp?SerieId=CRIT>

<http://www.myriamdiocaretz.net/>

Eva Fabry

In 1974, Eva Fabry earned her Ph.D. at the University of Oslo in Norway. Between 1975-1990 she served as a Diplomat for the Hungarian Embassy in Sweden and Head of the Scandinavian Desk for the Ministry of Foreign Affairs in Budapest. From 1990 she worked as European Affairs Manager and led numerous Structural Funds and Framework Program projects. Since November 2007 she is International Project Manager at the Norwegian Regional Innovation Center Papirbredden Innovasjon in Drammen.

She holds membership in the Steering Committee of the International Taskforce on Women and ICTs (ITF) and Coordinator of ITF - Europe. She is also member of the Scientific and Political Advisory Board of WINNET Europe and the European Network for Promotion and Exchange of Best Practices within Wider Europe (WEnlargements).

Angele Giuliano

Specialising in innovative business management methodologies, Angèle has been working in the e-business, e-learning and e-finance field for the last 9 years. She also led a 15-strong team to win the coveted Euro-Med Multimedia Award in 1998. Angèle lectures at the Computer Information Systems Department at the University of Malta. She also runs several commercial companies registered in Malta amongst which AcrossLimits (www.acrosslimits.com) which is an ICT company also



heavily involved in European projects. Ms Giuliano participates in several NGOs; most notably as the President of the Foundation for Women Entrepreneurs (Malta) which serves as a networking facilitator for Maltese Businesswomen and promotes entrepreneurial skills (www.women.org.mt). From May 2004 to May 2006, Ms Giuliano was also Board Member of the Malta Transport Authority which is the national authority responsible for roads, vehicle licensing and testing, public transport, traffic management and transport strategy for the Maltese islands.

The European Commission under the research programme of the 5th, 6th & 7th Framework Programme (FP5/FP6/FP7) and also the e-Content programme run by DG Information Society, has appointed her as an expert evaluator of ICT Research and Development projects. Thus she frequently attends evaluation sessions for specific Key Actions. Her role with the Commission was enhanced in 2003 when Ms Giuliano was appointed as reviewer of eContent projects where she conducted mid-term and final project audits for several running projects in Luxembourg. Angele speaks native English and Italian and has an intermediate level in German (Zertifikat Deutsch als Fremdsprache).

Irene Kamberidou

Dr. Kamberidou is a Lecturer of Sociology at the University of Athens. She received her BA and MA from Emmanuel College and Boston College, respectively, Boston, Massachusetts, USA and her PhD from the Sociology Department of Panteios University of Social and Political Sciences in Athens, Greece. Doctoral thesis: *“The Position of Women in Ottoman Society, according to the Personal Accounts of 17th, 18th, and 19th century Women Travellers: the gendered Multiethnic Slavery Institution.”* As a member of the Gender Expert Action Group (GEAG) of the European Commission’s Directorate-General for Information Society and Media in Brussels, Dr. Kamberidou participated in the Consultation Workshops on Gender and Technolog in 2004, 2005, 2006 and in the Women in Science seminar in 2006. From 1983-1991 Dr. Kamberidou worked as a journalist and reporter at the Athens New Agency (ANA), the General Secretariat of Press and Information of the Ministry to the Presidency, the Ministry of Foreign Affairs Information Bureau, and the National Greek Radio and Television’s (ET-1) Department for Overseas Greeks. Her articles on gender issues appeared in *Athena Magazine*, *Publication of the International Studies Association*, *Spotlight*, a fortnightly publication for political studies, *Greek Economy*, *Gamma-Griechische Zeitschrift fur Deutschland und Europa*, and in the Greek dailies *Greece Today*, *Eleftherotypia*, *Vradyni* and *Avgi*. (1984-1997) Since 1991 Dr. Kamberidou has been a member of the academic community of the University of Athens where she now teaches Principles of Sociology, Gender Issues and Gender in Sports. Other activities include extensive research and publications on women and technology, the anachronistic gender-science imbalance, the gender-neutral inclusive Information Society, peace education and women’s initiatives for peace, the technologica gender gap in Greece, the social gender and sport identity, and interdisciplinarity in education and research.

The University of Athens

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www.phed.uoa.gr

Email: ikamper@phed.uoa.gr

Tel. no.: ++ 210-2813887

Sample of Publications

- Kamberidou**, Irene (2008). Promoting a Culture of Peacemaking: Peace Games and Peace Education. In: *Pandektis International Sports Law Review, Official Journal of the International Association of Sports Law (IASL)*. Publisher: Nomiki Bibliothiki S.A. (under publication)
- Kamberidou**, Irene & Patsantaras, Nikolaos (2006). Towards a Gender-Neutral Inclusive Information Society: Preserving the European Model in the Information Age. *CORDIS*, March 2006, Brussels. In: http://cordis.europa.eu/ist/directorate_g/seminar20060405.htm
- Irene **Kamberidou**, Nikolaos Patsantaras, Olga Pantouli (2007). “The anachronistic gender-science imbalance: technophobia and the technological gender gap in Greece”. Published in official Proceedings (ISBN 978-960-89028-4-8, ISSN 1790-661X) of ‘*The 3rd International Conference on Interdisciplinarity in Education, ICIE '07 An International Forum for Multi-Culturality, Multi-Ethnicity and Multi-Disciplinarity in European Higher Education and Research, Multi Forum '07.*’ European Commission DG Education and Culture Jean Monnet Programme Study and Research Centres. Published by the Faculty of Electrical and Computer Engineering of the National Technical University of Athens: 138-151.
- Kamberidou**, Irene (2006). Le corps dans la société ottomane / the Body and Ottoman Society. *MESOGIOS: Mediterranee, Histoire, People, Langues, Cultures*, vol. 28: 13-29. Editions Herodotos, Paris, France.
- Kamberidou**, Irene (2007). “The Social Gender and Sport Identity: a bio-socio-cultural interpretation”. *Sport and the Construction of Identities*. Published in Proceedings of the XIth International CESH-Congress, Vienna, September 17th–20th 2006. The European Committee for Sport History (CESH), the Institute of Classical Archaeology & the Centre for Sport Sciences and University Sport, University of Vienna (ISBN 978-3-85132-494-5). Verlag Turia & Kant, A-1-10 Schottengasse, Wien, Austria: 584-501.
- Patsantaras, Nikolaos & **Kamberidou**, Irene (2006). Gender Equity in Olympic Sports: Absenteeism and Invisibility. *Pandektis International Sports Law Review, Official Journal of the International Association of Sports Law (IASL)*, Vol. 6, issues 3-4: 361-375 . Publisher: Nomiki Bibliothiki S.A., Edition 2006.

Sample of older publications by Irene Kamberidou:

1. “The first victims of unification: the role of Women in Building a Europe without Frontiers”. *Greek Economy*, Issue 6, 1992: 72-74.
2. Greek women now have an equal voice. *Spotlight*, No. 1, May 18, 1984: 2.
3. World Conference on Women in Nairobi. “New Strategies for Women’s Studies”. *Spotlight*, No. 17, Feb. 1, 1985: 8.
4. Women Discuss Mass Media Image. *Spotlight*, No. 31, Nov. 15, 1985
5. Geraldine Ferraro, former vice-presidential candidate. *Spotlight*, No. 32, Dec. 1, 1985:8.
6. Aegean women organize study program. *Spotlight*, No. 34, January 1 1986: 8.
7. The Greek farm woman, a first-class citizen. *Spotlight*, No. 7, August 15, 1984: 3.
8. The Protection of Motherhood. *Spotlight*, No. 8, Sept. 15, 1984: 8.
9. Women at the Wheel. *Spotlight*, No. 9, Oct. 1, 1984.
10. The Protection of the Family, *Spotlight*, Oct. 15, 1984.

Irina Khomeriki

Summary of Work Experience

Since 2006	Full Professor at the Department of the Basis of Informatics and Computer Technologies at Georgian Technical University
Since 2001	Head of the Georgian Branch Office of the International Science and Technology Center (ISTC)
2002 - 2006	Professor at the Department of the Basis of Informatics and Computer Technologies at the Georgian Technical University
1999 - 2006	Head of the International Projects' Coordination Center at Georgian Technical University of Georgia
1999 - 2001	Senior Science Researcher at the Department of Information and Computer Technology at Georgian Technical University
1997 – 1998	Manager of Public Relations for the Eastern Europe of the Corporation “ICN Pharmaceuticals”, Moscow, Russia
1984 – 1996	Assistant Professor, Laboratory Assistant, Assistant, Senior Tutor at the Department of Information Technology and Control Systems at Georgian Technical University

Membership in professional societies

Since 2005	Member of Scientific Council of the International Center of Biocybernetics of Polish Academy of Sciences
Since 2003	Member of the Program – “International Women In Science and Engineering (IWISE)-Georgia”
Since 2003	Member of the Scientific Research Society “SigmaXi-Georgia”
Since 2000	Member of the Board of the Georgian Association of German Alumni (Georgia)
1996 - 1998	The Head of the Moscow Department of the International Association “Georgian Woman For Peace and Life” (Russia)
1995 - 1998	Member of the International Women’s Club (Russia)

Distinctions, honors and awards received:

2007	Winner of the Anita Borg Change Agent Award
2004	State Premium of Georgia in the sphere of science and technology for the processing of cycle of scientific works “Rational Distribution of Information in Large Allocated Computer Networks”

In addition to and apart from the above-stated data, Irina Khomeriki managed both the ISTC Georgian Branch Office and has ensured continuous support for the ISTC Headquarters staff, visiting foreign collaborators, delegations from many countries worldwide. She has extensive experience in organizing and coordinating conferences, workshops and seminars. She offers assistance to Georgian Scientists in diverse technology areas – including information

technologies – involved in ISTC Georgian projects and despite that fact that the majority of these former weapons scientist are male, Irina Khomeriki has gained their respect and also makes every effort to attract more women to participate in ISTC projects and to assist them in career development. Due to large part of Prof. Khomeriki's efforts, the percentage of women on scientific teams that applied for projects with ISTC for funding over the past 5 years has increased to 48% in 2006 compared to 18% in 2002. In the framework of the ISTC distance-learning course on Business Plan Preparation held in 2006, 71% of participants were women and in a Business Administration course held in 2007 67% of participants were women. Time and again Irina Khomeriki has been participating in conferences concerned to the issues of women's involvement in modern technologies, especially in IT technology area. She has been using the experience and contacts gained at those in her practical activities. As a scientists and manager she is familiar with difficulties and needs of Georgian women scientists. Frequently her initiatives are outside her direct duties and are of volunteer kind. As a result of her work, Georgia continues to provide good scientific proposals of high quality. Irina Khomeriki cooperates with various age groups through different programs: with scientists through the ISTC programs and with students as a professor of Georgian Technical University. For the present Prof. Irina Khomeriki works on creating volunteer groups established on the society base, the aim of which is popularization of IT technologies and involvement of more and more girls and women in IT, from dissolution and strengthen it and give their activities a purposeful face giving concrete results.

Marina Larios MSc MA BSc FRSA
President WiTEC , Director Inova Consultancy Ltd. UK

www.inovaconsult.com

Marina Larios is President of WiTEC and Director of Inova Consultancy, an organisation providing consultancy services that respond to the needs of organisations and individuals in the area of diversity and equal opportunities. Inova specialises in the field of female entrepreneurship and gender and SET (Science, Engineering and Information Technology) Marina has been a speaker at various international conferences presenting positive actions to increase the representation of women in SET including recent presentations at the United Nations, New York and Geneva . She is currently an advisor for the Cambridge Centre of Gender Studies, a consultant expert in European project management and evaluator of national and EU initiatives. In addition she is ex-Trustee of the South Yorkshire Women’s Development Trust , Co- Director of MEXWII- Mexican Women Inventors and Innovators and Member of the International Taskforce which promotes and supports Women and ICTs

Her work includes market research, implementation of mentoring programmes, facilitation of workshops, project management, training, process consulting and intercultural programmes. Inova Consultancy also represents the UK headquarters of the European Association for Women in Science, Engineering and Technology (WiTEC), which is based in 14 countries across Europe and works together to promote and support women in these fields.

In addition Marina holds an MA Communication Studies and an MSc in Organisational Development and Consultancy which have given her a valuable insight in the implementation of change programmes and a sound knowledge in organisational culture. Her main research interests are mentoring, equal opportunities, diversity and the management of change.

Marina has recently been nominated for the “Businesswomen of the Year” Award 2007 – Sheffield Chamber of Commerce.

List of participants

Name	Organisation	Country	Session
Abram Simone	Leeds Metropolitan University	United Kingdom	Best practices
Alandes Pradillo Maria			Spread the message
Alessandrini Carla	H. Senado de la Nacion	Argentina	Spread the message
Anastopoulos Danae	Forum JUMP	{null}	Best practices
Andrei Elena	CompTIA	Belgium	Spread the message
Arranz Sánchez Ana Belén	IDEPA	Spain	Education
Atitsogbe Golo Yawo	TERRE NOUVELLE	Switzerland	Education
Baldrighi Barbara	European Commission	Belgium	-
Balogh Rita	Microsoft		Best practices
Baumann Brigitte	Go Beyond Ltd	Switzerland	Best practices
Berbenni-Rehm Caterina	FUTUREtec GmbH	Germany	Best practices
Bezuhanova Sasha	IT company	Bulgaria	Best practices
Bhatnagar Shradha	Blueprint Partners	Belgium	Best Practices
Birkinhe Seblu	Minstry of Works and Urban Development	Ethiopia	Best practices
Black E Mary	Implementek	Republic of Serbia	Education
Bonnevay Gerard	celimage	Luxembourg	Spread the message
Borczech Tomasz	Information Office of the KUJAWSKO-POMORSKIE Region	Belgium	-
Breyer Jutta Marianne	Breyer Publico Consulting	Germany	Education
Brinchmann Knut	Papirbredden Innovasjon	Norway	Spread the message
Brotcorne Périne	Fondation Travail-Université	{null}	Best practices
Brown Peter	Pensive S.A.	Belgium	Best practices
Bulic Katarina	Croatian Regions Office	Croatia	Best practices
Carabello Giuseppina	Joint Research Centre	Italy	Best practices

Name	Organisation	Country	Session
Castro Martinez Paloma	eBay Inc	Belgium	Spread the message
Chreiki Eric	Innov.Europe	France	Spread the message
Cicone Luiza	highschool	Romania	-
Clark Heather	France Telecom		-
Colligan Pauleen	European Platform of Women Scientists	Belgium	Best practices
Cools Stéphane	ARE Bureau de Bruxelles	Belgium	Spread the message
Coppens Isabelle	Hill and Knowlton	Belgium	Best practices
Corbu Adina-Teodora	"Tudor Vianu" highschool Bucharest	Romania	-
Crane Emily	Equalitec	United Kingdom	Spread the message
Davenport Claire	British Computer Society (BCS)	United Kingdom	Education
De Groot Marion	Motorola		-
De Saedeleir Trees	IBM		Spread the message
De Vreese Margot	Symantec Corporation	Belgium	Best practices
Dewaelheyns Kirsten	ATEL vzw	Belgium	Education
Diamente Christine	Alcatel	France	-
Di Cuonzo Francesca	FUTUREtec GmbH	Germany	Best practices
Di Nardo Maria Cristina	Regione Lazio	Belgium	Spread the message
Diocaretz Myriam	Maastricht University	Netherlands	Education
Donoso Verónica	Catholic University of Leuven	Belgium	Best practices
Dubray Marie-Helene	Panasonic Europe	{null}	Best practices
Dumont Brigitte	France Telecom	France	-
Dyfed Evans	Motorola	-	Plenary
Ehmke Adelheid	European Platform of Women Scientists (EPWS)	Luxembourg	Spread the message
Ersi Zevgoli	Athens Information Technology	Greece	-
Fabry Eva	Papirbredden Innovasjon AS	Norway	Spread the message

Name	Organisation	Country	Session
Fandel Pamela	Panasonic Europe	Belgium	Spread the message
Fejer Andrea	eHungary Project	Hungary	Best practices
Felci Cinzia	Regione Lazio	Belgium	Education
García Elena	Scientific Office for Science and Technology	Spain	Best practices
Giannakis Vicky	Belgacom SA	Belgium	-
Ginneberge Jan	Alcatel-Lucent	France	Plenary
Giuliano Angele	President, Foundation for Women Entrepreneurs		Best practices
Gospic Natasa	Ministry of Telecommunications and Information Society, Republic of Serbia		Spread the message
Gray Kate	Enterprising Women	United Kingdom	Best practices
Gundersen Christer	Norwegian Competence Centre for Open Source Software	Norway	Spread the message
Guslini Giovanna	Ufficio Scolastico regionale della Lombardia	Italy	-
Hallantie Timo	European Commission	Belgium	Best practices
Hazizi Enkela	American Bank Of Albania Of Sanpaolo	Albania	Best practices
Heinrich Ellen	UPS	{null}	Best practices
Hellberg Marita	Ericsson	-	Plenary
Henckaerts Marc	Syntra	Belgium	Education
Hendrycks Debby	Motorola	{null}	Best practices
Herman Clem	The Open University	United Kingdom	Spread the message
Hermens Annelies	Capgemini	Netherlands	Best practices
Hurley Bev	YTKO	United Kingdom	Spread the message
Husovic Alma	Central Sweden	Sweden	-
Ioannou Nikos	ECDL Foundation	Belgium	Spread the message
Ito Misako	UNESCO	France	Spread the message
Jara Cavalho Ana	European Commission	Belgium	-
Jonkers Edith	IBM		Best Practices
Källberg Peter	Ericsson	Belgium	-

Name	Organisation	Country	Session
Kalsnes Bente	Morgenbladet	Norway	Education
Kamberidou Irene	University of Athens	Greece	Education
Karabacakoglu Ferhan	Ericsson	Sweden	-
Kay Zoe	European Commission	Belgium	-
Kessler Beate	Motorola		-
Khomeriki Irine	Georgian Branch Office of International Science and Technology Center (ISTC)	Georgia	Spread the message
Klawiter Malgorzata Maria	Regional Office of Pomorskie Voivodeship	Belgium	Spread the message
Knast Joanna	MOTOROLA	Belgium	Best practices
Kristensen Helle B. B.	Central Denmark EU Office	Belgium	Spread the message
Krukowska Anna	Westpomerania Regional Office	Belgium	-
Lanzoni Elena	ADA	Belgium	Education
Larios Marina	Inova Consultancy	United Kingdom	Education
Lenarduzzi Isabella	Forum JUMP	{null}	Spread the message
Leperre-Verrier Odile	Région Nord-Pas de Calais Délégation Générale Europe	Belgium	Best practices
Liu Eva	student	UK	
Lueders Hugo	CompTIA	Belgium	Spread the message
MacGann Mark	EICTA	Belgium	-
Marinoni Clementina	Fondazione Politecnico di Milano	Italy	Spread the message
Martinez-Sanchez F Javier	Technical University of Valencia (UPV)	Spain	Education
McHenry Olga	Europa One	Belgium	Education
Mijatovic Dunja	Communications Regulatory Agency	Bosnia And Herzegovina	Spread the message
Miller Gloria	Maxmetrics	Germany	Best Practices
Minardi Debora	Università della Calabria	Italy	Best practices
Moldovan Carmen	National Institute for R&D in Microtechnologies (IMT-Buharest)	Romania	-
Monti Cristina	European Internet Foundation	Belgium	Spread the message

Name	Organisation	Country	Session
Morell Claudia	University of Maryland, Baltimore County, Center for Women and Information Technology	USA	Spread the message
Muñoz Perez Reyes	Andalucía Delegation	Spain	Education
Nielsen Dorthe	London's European Office	Belgium	Education
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Sharifah Amirah	Frost & Sullivan	United Kingdom	Best practices
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