EUROPEAN E-SKILLS 2009 CONFERENCE
FOSTERING ICT PROFESSIONALISM
20 November 2009, Brussels

CONFERENCE REPORT

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This report was funded by:

European Commission
Enterprise and Industry
Information for the readers of this report

The basic structure of the report follows the conference session themes. However, sometimes issues or comments raised may be mentioned under another session than where they were actually presented. This is done in order to avoid repeating topics, and to facilitate and clarify the presentation of the main messages emerging from the conference.

Definitions

The European e-Skills Forum adopted in 2004 a definition of the term "e-skills" covering the following three main categories:

- **ICT practitioner skills** are the capabilities required for researching, developing, designing, strategic planning, managing, producing, consulting, marketing, selling, integrating, installing, administering, maintaining, supporting and servicing ICT systems.

- **ICT user skills** represent the capabilities required for the effective application of ICT systems and devices by the individual. ICT users apply systems as tools in support of their own work. User skills cover the use of common software tools and of specialised tools supporting business functions within industry. At the general level, they cover "digital literacy".

- **e-Business skills** correspond to the capabilities needed to exploit opportunities provided by ICT, notably the Internet; to ensure more efficient and effective performance of different types of organisations; to explore possibilities for new ways of conducting business/administrative and organisational processes; and/or to establish new businesses.

The European e-Skills Forum also proposed to distinguish the following deficiencies:

- **Shortage**: an insufficient number of skilled people in the labour market or in an occupational segment

- **Gap**: a competence shortfall between the current and needed competence levels of individual staff within organisations; mismatch: a mismatch between the competence of the trainee or graduating student/learner and the expected competence needs of the employers.

- **Mismatch** is assumed to arise from course/curricula misalignment
Conference programme

WELCOME AND INTRODUCTION

Dr. János Tóth, President of the Section for Transport, Energy, Infrastructure and the Information Society, European Economic and Social Committee (EESC)
Mr. Costas Andropoulos, Head of Unit, DG Enterprise and Industry
Dr. Vasile Baltac, President of CEPIS

THE IMPORTANCE OF ICT PROFESSIONALISM IN SUPPORT OF BUSINESS VALUE

Moderator: Mr. André Richier, Principal Administrator, DG Enterprise and Industry

Mr. Declan Brady, CTO at Fujitsu Services Ireland and Vice President of CEPIS
Mr. Adam Banks, Senior Vice President, Technology Office, VISA
Mr. Kevin Cooney, Corporate Vice President and Managing Director EMEA and CIO, Xilinx
Dr. Michael Gorriz, CIO Daimler, President EuroCIO and Co-Chair of the e-Skills ILB

THE IMPORTANCE OF A LONG-TERM E-SKILLS STRATEGY

Moderator: Mr. Daniel Bunch, Deputy Head of Unit, DG Enterprise and Industry

Mr. Werner Korte, Director, Empirica
Dr. Jacob Kirkegaard, Research Fellow, Peterson Institute for International Economics
Ms. Orfhlaith Ni Chorcora, Senior Director, Oracle
Mr. Gerhard Rohde, Head of UNI IBITS, UNI Global Union

PROGRESS ON THE EUROPEAN E-SKILLS STRATEGY

Moderator: Ms. Maruja Gutierrez Diaz, Senior Adviser, DG Education and Culture

Dr. Nils Olaya Fonstad, Senior Research Fellow, INSEAD eLab
Mr. Terry Hook, Managing Director of Clock-IT-Skills Ltd, and e-Skills UK
Ms. Elena Bonfiglioli, Director Corporate Social Responsibility, Microsoft EMEA
Dr. Hara Klasina, Manager, Digital Economy Policy at DIGITALEUROPE

PROVIDING E-SKILLS FOR NEW JOBS

Moderator: Mr. Robert Strauss, Head of Unit, DG Employment and Social Affairs

Mr. Peter Hagedoorn, Programme Director, EuroCIO
Mr. Markku Markkula, Team Leader, Aalto University, and Chairman of the Board of TIEKE
Ms. Caroline Jacobsson, Information and Communications Adviser, European Metalworkers Federation
Mr. Frank Mockler, Programme Development Manager, ECDL Foundation
E-SKILLS AND ICT PROFESSIONALISM FOR INNOVATION
Moderator: Dr. Peter Dröll, Head of Unit, DG Enterprise and Industry

β Mr. Elmar Husmann, Senior Managing Consultant, Strategy and Innovation, IBM and eLIG
β Dr. Martin Curley, Director Intel Labs and Director of the Innovation Value Institute
β Mr. David Clarke, CEO, British Computer Society
β Mr. Benjamin Herrmann, Manager University Alliances Germany, SAP
β Mr. Michael Sharpe, Managing Director, MS Consulting & Research Ltd., and PIN-SME

E-SKILLS IN THE POST LISBON STRATEGY
Moderator: Dr. Ken Ducatel, Head of i2010 Unit, DG Information Society and Media

β Ms. Anna Maria Darmanin, EESC Member, Vice-President of INT Section, Group II 'Employees', Malta
β Mr. António Bob Santos, Special Advisor, Lisbon Strategy and Technological Plan, Portugal
β Dr. John Vassallo, Vice President EU Affairs, Microsoft
β Ms. Gabriele Zedlmayer, Vice President Corporate Marketing and Citizenship, Hewlett-Packard

CONCLUDING REMARKS
β Dr. Marius-Eugen Opran, EESC Member, Group 1 'Employers', Romania
β Dr. Jean-Noël Durvy, Director, Innovation Policy Directorate, DG Enterprise and Industry
Welcome and Introduction

The conference was opened by the organisers: the European Economic and Social Committee (EESC), the European Commission DG Enterprise and Industry (DG ENTR), and the Council of the European Informatics Professional Societies (CEPIS).

Dr János Tóth, President of the Section for Transport, Energy, Infrastructure and the Information Society, EESC, opened the session highlighting that this conference takes place at an excellent time in view of upcoming changes and planning for new European strategies. It is a moment when Europe is looking towards the future with new expectations, after the Lisbon Treaty has come into force, and the new EU president and European Commission will start their work. In this context, he said, the EESC is confirmed as a bridge between the European institutions and the organised civil society and provides a forum for dialogue and consensus building.

Mr. Costas Andropoulos, Head of Unit, European Commission, DG ENTR, stressed that employers of ICT labour force are increasingly in user industries, which emphasises the need for investment not only on ICT sector but on all sectors. Studies show that investment in ICT provides higher returns than any other investments. Successful investment concerns not only the infrastructure but emphasises relevant human resources and skills. E-skills are not pure technical skills but cognitive, problem-solving skills and entrepreneurial skills, a key ticket to the job market and better jobs.

Dr. Vasile Baltac, President of CEPIS, suggested that in the global market Europe cannot compete in terms of labour costs. Instead, Europe has to build its competitive edge on the quality of its services and products produced by a skilful and competent workforce. Therefore, professionalism, particularly in ICT, is a key enabler of economic growth and competitiveness.

The three speakers emphasised the importance of digital skills for the information society and the relevance of current e-skills strategy. Highly skilled and adaptable workforce is the foundation for innovation, paving the way for growth and competitiveness. Multi-stakeholder partnerships are essential and this conference plays an important role in developing upcoming action plans for e-skills and innovation together with stakeholders.

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ICT Professionalism in Support of Business Value

This conference session discussed the nature and role of ICT professionalism. It needs more recognition and understanding in all industry sectors, as well as among all current and prospective ICT employers and employees. E-Competences are crucial for all managers today, as they form an important part of higher level innovation skills.

ICT professionalism enables innovation and quality

Mr. Declan Brady, CTO at Fujitsu Services Ireland and Vice President of CEPIS, introduced the results of the survey that CEPIS had carried out in 2009 among their member societies on ICT professionalism. The outcomes show that professionalism means a different thing for different people in different places. Based on the results, CEPIS expert panel elaborated a definition with common characteristics in the diverse European context. These core characteristics are: Knowledge, Quality, Ethics, Accountability, Experience, and Derives Living. From these, Mr. Brady emphasised that the following are foundations for innovation:

- Knowledge. Professionals create and maintain knowledge and skills through developing and using knowledge and best practices.
- Quality. Professionals aim at good results with respect to requirements and excellence in task execution for the benefit of the consumer.
- Experience. Professionals have a track record that enables them to develop innovative solutions considering a pool of previous situations and experiences.

Mr. Adam Banks, Senior Vice President at VISA pointed that technology is a hidden factor in almost everything. Given the importance of ICT in current society and the increasing dependence upon it to support people’s lifestyle, reliability and quality of products and processes are very important. Public validation of professionalism can give confidence for the consumers. Furthermore, in companies, a visible track record of a professional could be used to enhance trust and interest in one’s ideas and innovations. There is also a risk that rapid growth in corporate organisations will be stunted without the ability to assess the professionalism of external candidates applying for positions.

Mr Kevin Cooney, Corporate Vice President and Managing Director of EMEA and CIO, Xilinx, stressed that although it sounds obvious, it is crucial that organisations really emphasise the continuous development of their people. Without adding value of people, it is not possible to add value of the organisation. A successful organisation needs to add value emphasizing the strategic and business competences, not the ICT infrastructure. Lifelong learning is a necessity since technologies are developing all the time. People need to be able to maintain and develop their ICT professionalism and competence, as otherwise Europe will run out of competent people with the aging workforce.
ICT professionals are needed in all sectors

It is a challenge for ICT professionalism that many people do not understand the strategic role of ICT. There is a large difference between the perception and reality of ICT jobs, and it is crucial to solve the misperception. ICT related tasks are not only technical, there are many new interesting jobs in the field with various career paths, and at least half of the IT jobs are outside IT industry. There is a need to educate people that working on an IT department does not equal to fixing computers. ICT professionalism needs and means functional, operational and strategic skills, including social skills, business and management in the various tasks related to technologies. Dr. Michael Gorriz, CIO Daimler, President of EuroCIO and Co-Chair of the e-Skills ILB, highlighted how ICT can enable innovations and offerings from a traditional product in new ways which would not be possible without ICT.

Importance of IT-Management for enterprises

IT-Management is no longer only a cost factor, it's also the driver for organizational changes and a new management style.

*Some figures:
- 4.2 Million people are working in IT in Europe (approx. 50% for the IT industry and 50 % in professional IT-Management)
ICT can improve the efficiency of the whole organisation thus safeguarding and creating jobs in all industry sectors. Specifically this is important in Europe as the labour force is more expensive than elsewhere. For example, the service sector could not thrive in Europe without the contribution of ICT. Despite offshoring, Europe needs competent ICT professionals for management and strategic functions in all sectors. A good share of today’s ICT professionals is no longer technical specialists but broadly educated business consultants. He suggested that working in the ICT department in an organisation is a good preparation for any other department, as it increases the understanding of the processes of the organization.

**Related recommendations and suggestions:**

**Raising awareness**

- Aim to solve the misperceptions regarding the need and nature of ICT related jobs.
- Increase awareness that strategic ICT skills are important for all professionals and needed in all sectors as part of innovation skills
- Promote at schools that learning ICT is a good basis for any career and needed everywhere.
- Increase the awareness of the importance to shift from focusing on ICT infrastructure investment towards promoting higher level skills in its effective, strategic and innovative deployment.

**Supporting actions and tools**

- Facilitate further development of a pan-European understanding of ICT professionalism through broadly participated multi-stakeholder partnerships.
- Develop transferable and transparent ways to validate and make visible ICT professionalism.
Importance of a Long-term e-Skills Strategy

This session presented trends and perspectives for future e-skills needs and suggestions for developing long term e-skills strategy. Foresight work shows that demand for e-skills, especially higher level skills, increases in the long term. Current context of the economic crisis and continuous technical developments emphasise the need for a long term European level strategy, which is developed with multi-stakeholder partnerships and social dialogue.

Europe needs the right e-skills in the future

**Mr. Werner Korte**, Director at Empirica, presented the first results of the study carried out by Empirica and IDC on e-skills foresight scenarios in Europe 2010-2015.² The study has developed different future scenarios, based on variations in the main factors that influence the demand and supply for e-skills: GDP growth, the pace of the economic recovery, the ICT innovation rate, ICT policies, and the attractiveness of ICT jobs and careers in general.

The scenarios show that short-sighted thinking is dangerous. Even though the most negative scenarios do show oversupply of ICT professionals for a few upcoming years, it is still less than the oversupply of other occupations. Furthermore, once the economy recovers, demand for e-skills will again reach beyond supply in most scenarios. There are likely different national situations, which will lead to workers migrating from excess supply countries to the ones with excess demand. This emphasises the need for a European level approach. Companies do not need to own all the competences; they can also outsource and subcontract labour.

![Slide 3: EU27 2010–2015 demand and supply in future scenarios presented by Werner Korte](http://www.eskills-monitor.eu)

2 See: [http://www.eskills-monitor.eu](http://www.eskills-monitor.eu)
It was highlighted that not all ICT jobs and skills will be in demand. Even during the recession there is demand for education, but the right kind of education. Higher skills are needed more. In addition to technical skills, critical thinking and collaboration are important for 21st century, and people need to be able to deploy them in technological environments.

Dr Jacob Kirkegaard of Peterson Institute for International Economics, Washington, highlighted that, in the United States, IT practitioners have been doing quite well even in the context of crisis; their unemployment figures are lower than among the general population. Also here it can be seen that more educated IT practitioners have better employment. However, there are no integrated strategies or coordinated public-private partnerships in the US, and there Europe has an advantage in providing e-skills supply for the future needs.
Partnerships and social dialogue play a key role

Partnerships and social dialogue are one of the pillars on which European fabric is built, and Europe has been ahead of other areas in coming together for a long term e-skills agenda. The 2007 e-skills strategy already emphasises promoting regular dialogue with stakeholders: industry, associations, trade unions, civil society, academia and training institutions. Partnerships and dialogue are important for the relevance and legitimacy of the strategy. Solutions built on broad consensus are more likely to be implemented and working towards them fosters cross-fertilisation and innovation. This is crucial as technology underpins almost every sector, and e-skills are in high demand in a global economy and competition. Multi-stakeholder partnerships are important for enabling widespread adoption towards new practices and connecting like-minded organisations to effect change.

Ms. Orfhlaith Ni Chorcora, Senior Director at Oracle stressed that partnerships are essential for building a sustainable e-skills strategy. Projects need to aim at sustainable and replicable approaches, which can be adopted and applied in a broader European context. Furthermore, there needs to be emphasis on the accountability of the projects’ outcomes and implementation. A long term agenda is needed to narrow the gap between knowledge and skills required at jobs and provided by the current education systems. Collaboration between educational institutions and industry is important for integrating learning of important e-skills for young people. There are already good existing examples from both industry-led and university-led collaboration efforts.

Mr. Gerhard Rohde of the UNI Global Union raised the importance of social dialogue in facing the great challenges of the future. It is the only way to find solutions to the e-skills image problem and the diversity challenge i.e. lack of women, young students and older professionals. Furthermore, new developments such as Next Generation Networks and Green IT will create jobs and needs for new skills. However, at the same time they will cause needs to change or remove some of the currently existing jobs and tasks. Every development that has a big impact on employees shows the need for re-skilling and e-skills, and is a challenge and opportunity for genuine social and multi-stakeholder dialogue. There is no alternative towards a long term strategy in this sector.

- Magic figures: 2% versus 98% (IT footprint and renewables
- 20-20-20 EU Commission’s targets for energy efficiency and renewables
- „green new deal“ needed for R&D investment and creation of a market for green IT
- Huge impact on employees:
  - Virtualisation, dematerialisation: telework
  - Cloud computing, server centers
  - Green IT skills
- Challenge for social and multistakeholder dialogue !

Slide 6: Green ICT – greening by ICT: the need for social dialogue presented by Gerhard Rohde.
**Related recommendations and suggestions:**

**Supporting actions and tools**

- Keep following the supply and demand of e-Skills, taking into account different levels of skills and their relation to innovation skills.
- Develop a strong institutional framework to support e-Skills development in Europe.
- Develop teacher training for successful e-Skills strategy adoption with scalable approaches.

**Partnerships and social dialogue**

- Develop and strengthen multi-stakeholder partnerships further with European level forums for information exchange and collaboration.
- Encourage more user-industries to join e-Skills Industry Leadership board emphasising the link between e-Skills and innovation.
Progress of the European e-Skills Strategy

This session presented and discussed the achievements regarding the 2007 e-skills agenda and needs for further development. Good progress has been achieved, but need for further awareness raising, investment and supporting tools were suggested. Furthermore, the scope of the strategy should better consider the link between e-Skills and innovation skills.

Good progress in addressing the e-skills agenda

At the end of 2009, all the major action lines of the e-skills agenda 2007 have been addressed: strengthening partnerships and cooperation, supporting human resources investment for e-skills, promoting the attractiveness of ICT education and careers, developing digital literacy and e-competences for the workforce, and enhancing lifelong learning of e-skills. Concrete results such as the European e-Competence Framework and the European e-Skills and Careers Portal have recently been complemented with the drawing up of forecasts and foresight scenarios on the demand and supply of e-skills, the development of European e-competence curriculum guidelines, the analysis of existing financial and fiscal incentives for e-skills training and support initiatives, the study of e-learning exchange mechanisms, and the further development of multi-stakeholder partnerships. Furthermore, the establishment of the Industry Leadership Board (ILB) is a great achievement by the stakeholders for contributing to the e-skills strategy.

Dr. Nils Olaya Fonstad of INSEAD eLab presented insights from their recent projects. He suggested that e-competences are a core set of competences for innovation and global competitiveness. Firms need a portfolio of different e-competences, such as project delivery, strategy and innovation, and demand management. INSEAD eLab’s Skills pyramid shows different levels of skills from basic literacy to skills that support innovation. Capacity to benefit from ICT in operational and strategic aspects adds value to all the tiers, and all these levels of e-skills are needed for future jobs.

![INSEAD eLab e-Skills pyramid presented by Nils Olaya Fonstad.](image-url)
According to Mr. Terry Hook, Managing Director of Clock-IT-Skills Ltd and e-Skills UK, European e-Competence framework is a good example of multi-stakeholder cooperation on multiple levels – it has been built by Europe for Europe, engaging many different people from the very beginning. The importance of long term ICT skills planning cannot be overemphasised and the e-Competence framework provides a tool to support the development of European and national professional ICT skills strategies.

The framework is an important benchmark for the ICT supply and demand from employers’ perspective, increasing transparency and mobility on the European labour market, creating job profiles and career paths. It focuses on e-competences needed and applied in the workplace. It is not a qualifications framework, but it is compatible with the European Qualifications Framework (EQF).

The e-Competence framework is meant to be used flexibly; it is neutral and allows local adaptation in different countries. It has been applied, for example, for industry competence catalogues, national ICT training profiles definitions, development of Green IT competences, and for empowering national e-skills strategies.

Slide 8 : The 4 dimensions of the EU e-Competence Framework as presented by Terry Hook.
Need for further awareness raising and investment

Ms. Elena Bonfiglioli, Director at Microsoft EMEA and Co-chair of e-Skills ILB, agreed with the other speakers that a lot of progress has been made. But more investment in e-skills through public and private funding is needed. She suggested that investments for e-skills need to be more integrated in all the strategies. Innovation policies do recognise their importance, but all policies should do that. For example, e-skills investments should be considered in connection with policies for energy efficiency, cyber security, sustainability, e-Health, smart logistics and transportation. ICT professionalism is needed in all these fields. Therefore, e-skills capacity building needs to be embedded into policies in several user industries. The investment and mainstreaming of e-skills in different sectors should be supported with more metrics and indicators that show the contribution of e-skills for innovation in Europe. There is a need to increase awareness of the importance of matching skills investment with infrastructure investment. For example the framework developed by the Innovation Value Institute (IVI)³ can contribute to planning and assessing ICT investments.

All the speakers in the session agreed that awareness raising about ICT careers has progressed well. However, the awareness is higher on the policy level than on the ground; among parents, young people, teachers, workers and SMEs. The upcoming European e-Skills Week will be important in enhancing this.

The European e-Skills Week was introduced to the conference participants by Dr. Hara Klasina, Manager Digital Economy Policy at DIGITALEUROPE. The European e-Skills Week will be organised by European Schoolnet (EUN) and DIGITALEUROPE in collaboration with several stakeholders 1-5 March 2010 in 21 European countries. The target groups are young people, ICT practitioners, and SMEs and entrepreneurs. Through activities such as students visiting ICT job places in all sectors, technology caravans to rural areas and workshops about the importance of up-skilling ICT workforce in companies, the awareness campaign aims to deliver its main messages:

- ICT has a major contribution to growth and job creation
- ICT offers an interesting, creative, well-paid and rewarding career path
- e-Skilled staff improve the performance of the business

Slide 9: Upcoming European e-Skills Week 2010 activities presented by Hara Klasina.

³ http://ivi.nuim.ie/
Related recommendations and suggestions:

Raising awareness

- Implement and develop regular awareness raising campaigns such as e-Skills week 2010 to engage stakeholders, especially SMEs and potential future employees to consider the needs and importance of e-Skills for them.
- Increase the knowledge and recognition of e-Skills portal and resources among young students and women, actively linking and promoting relevant recent developments.
- Highlight the link between e-Skills and innovation in promotion campaigns in order to address the image problem of ICT practitioners and demonstrate the interesting career opportunities available.

Supporting actions and tools

- Develop common indicators to show the contribution of e-skills to innovation.
- Develop e-Skills scorecard for evaluating progress in investing in e-Skills for innovation.
Providing e-Skills for New Jobs

This session discussed the nature and provision of new e-skills for the jobs in the future. It is clear that the important e-skills in the future are interdisciplinary, often higher level ICT application skills. Lifelong learning becomes a necessity for learning and updating relevant e-skills, and co-operation is needed between industry and academia for providing the right skills.

New e-skills are interdisciplinary

Throughout the conference, it was emphasised that ICT related activities have changed from mainly technical tasks (infrastructure, programming) to business related tasks, where ICT departments are strategic partners inside the organisation, brokering between business and new technology, thus pushing for business innovation. As put by Mr. Peter Hagedoorn, Programme Director at EuroCIO: “All the typical jobs are mixtures of ICT and something else, not ICT jobs as such”.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Explanation</th>
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<tbody>
<tr>
<td>Strategy and innovation</td>
<td>Translate or drive business strategy to IT strategic plans with the following activities: function and service improvements, business process improvement, business innovation, determine technological direction.</td>
</tr>
<tr>
<td>Architecture</td>
<td>Define and maintain the information architecture, including process, information, applications, and infrastructure.</td>
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<tr>
<td>Demand management</td>
<td>Identify business and automated solutions. Maintain IT portfolio. Define and manage service levels.</td>
</tr>
<tr>
<td>Global Sourcing Management</td>
<td>Define and maintain sourcing strategy. Manage suppliers and supplier performance. Procure IT resources: people, software, hardware, and licenses.</td>
</tr>
<tr>
<td>Project delivery</td>
<td>Specify, build, test and deploy business and IT solutions. Manage change. Educate end-users. Manage projects.</td>
</tr>
<tr>
<td>IT Support and Execution</td>
<td>Manage service delivery management. Manage operations. Control Master Data.</td>
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Slide 10 : Typical new jobs in CIO-department from the presentation by Peter Hagedoorn.

It was reminded that both the higher and lower level skills are important. It is crucial to ensure basic user e-skills for the whole workforce in order to unlock the potential that ICT has for transforming processes and services. The level of ICT literacy in the enterprises is the key for the future. Everyone should be comfortable with technology.

Lifelong learning of new skills through new partnerships

It was pointed out in several presentations that many educational institutes do not realise that they are educating people for the old occupations, not for the new jobs. Pupils may learn at schools that ICT means mainly programming, or word processing and spreadsheet applications. There needs to be more collaboration between educational institutes and industry for developing curricula that meet the real skills demands and job profiles, and enhances the attractiveness of e-skills related education. The real needs and opportunities of e-skills need to be both advocated top down (e-Skills ILB) and promoted...
bottom up (European e-Skills and Career Portal). Learning and personal development need to be permanently on the agenda. It is important that workers themselves realise that they need skills to maintain their employability and be attractive to employers.

Mr. Markku Markkula of the Aalto University and Chairman of the Board of TIEKE (Finnish information society development) presented how universities should integrate developing new skills for new jobs to all the knowledge triangle aspects (research, education, innovation). Capabilities for collaboration and the opportunities of social media for knowledge co-creation need to be seriously taken into account. Innovation needs to be supported with a human-centric working, and learning environment that enables innovations to emerge and collaboration between people. Research needs to emphasise multi-disciplinarity. Education needs methodological development and emphasis on curiosity and passion to learn. Good orchestration is crucial and new approaches to measurements and performance metrics in the universities are needed to concentrate on knowledge sharing and co-creation instead of academic publications.

Slide 11: Collaboration and strategic alliances for reforming learning and innovation presented by Markku Markkula.

Firms need to have a portfolio of different training methods, where also universities play an important role. Cooperation with universities is important not only for the initial qualification but also for customized ongoing trainings. Universities and other educational institutions should place as much emphasis on training the skills of those already in the workplace as in basic education.

Ms. Caroline Jacobsson, Information and Communications Adviser at the European Metalworkers’ Federation (EMF), suggested that workers should be provided with opportunities for training that can be done during working time, and provides a certificate demonstrating the achievements in a transferable way. Furthermore, achieving better competences through training should also be reflected in the salary. There should be flexible solutions to balance professional education and lifelong learning that is feasible also for SMEs.

Mr. Frank Mockler, Programme Development Manager of ECDL Foundation, stressed that ICT enables effective use of knowledge, collaboration, considering Green IT, cloud computing etc. and all users, both as workers and as customers, need to be aware of how to benefit from these.
The Future…

- A strong institutional framework to support e-Skills development in Europe
- A range of valid and current educational, training and certification offerings
- An awareness of the importance of matching skills investment with infrastructure investment
- A broad coalition of public sector, private sector, NGOs and civic society that values high-quality e-Skills development

Slide 12: Needs for supporting e-skills in the future for all suggested by Frank Mockler.

Related recommendations and suggestions:

Learning skills for the 21st century

- Provide computer literacy, media literacy, and 21st century skills on all education levels, starting from primary school.
- Develop robust and clear definitions of new innovation skills and how they relate to European frameworks (EQF, e-Competence FM).
- Provide incentives for academics to develop curricula that foster a portfolio of competences.
- Consider pan-European bridges and linkages for developing e-Skills, innovation and creativity at schools and to the population at large, for example, with the European Institute of Innovation and Technology (EIT).

Partnerships and alliances

- Establish systematic collaboration between educational bodies and all industry sectors in order to reduce mismatches between the e-skills of the graduates and the ones needed in current jobs.
- Coordinate non-ICT sectors (especially SMEs) to learn about and communicate demand for e-competences.
- Experiment and prototype new models of strategic alliances for lifelong learning of new innovation skills.
- Support university research centres that link academia, industry and government.

Inclusive lifelong learning opportunities

- Develop a range of credible and verifiable education, training and certification offerings for e-Skills and innovation skills.
- Develop incentives for and a concept of lifelong learning where universities, training providers and companies support in collaboration people’s development with common certifications.
E-Skills and ICT Professionalism for Innovation

This session focussed on the important role of e-skills in an Innovation society. There are different forms of innovations and they should be supported. Overall, the competitive and innovative application of technology was seen to be the critical success factor in the future in all types of enterprises. The session audience agreed as a final statement that EU should provide strong support beyond facilitation for e-skills and their contribution for innovation.

E-skills enable innovation and competitiveness

During all the sessions in the conference, several presentations showed and discussed examples demonstrating how e-skills are critical for innovating and operating more effectively and less costly, and how they enable working with new tools and towards new goals such as Green IT. New skills for innovation are where business and IT meet. Dr. Elmar Husmann of IBM discussed that innovation takes place on different levels, on basic research, precompetitive innovation on developing interoperable standards, and on application levels. People need to understand not only technology but larger systems. This applies especially for innovations aiming at larger societal goals through enabling technologies.

Dr. Martin Curley, Director Intel Labs and Director of the Innovation Value Institute at the National University of Ireland, suggested that ICT innovation is a new discipline, which still needs a lot of basic knowledge building. For example, the business project success rates are often low. There is a need for an innovation maturity model that helps to progress from sporadic innovation to more predictable, probable and profitable systemic innovation. Although innovation is spontaneous, it is possible to create circumstances which facilitate the emergence of creativity and innovation.

Slide 13: ICT Innovation at the Innovation Value Institute presented by Martin Curley.
It was suggested that ICT professionalism and computer science are not the same thing, when considering business innovation. Computer science is about developing new technologies and research, often producing results that are available for all. ICT professionals know and innovate how to apply ICT so that it gives the competitive edge. **Mr. David Clarke**, CEO of the British Computer Society emphasised that this competitive application of technology will be the most important critical success factor for tomorrow.

The competitive application of technology will the **THE** most important critical success factor for tomorrow:

- Having the best people in this profession;
- Having the right combination of skills in the right place at the right time;
- Having an environment where these skills can be used to their full advantage

The page of change will simply get faster.

- 60% of five year olds will work in jobs that don't exist today;
- 40% of the content of computer science first year course will be different by the time students graduate.
Different approaches to innovation in different environments

The presentations in this session emphasised that the face of innovation is changing. It is done in more open and collaborative ways, driven by users, networks and communities. Mr. Benjamin Herrmann, Manager at SAP, showed that their educational solutions have been developed in collaboration with different stakeholders. Today, innovations can be developed and shared even with competitors. ICT drives and enables innovation, and younger generations are often used to work, share and innovate in an open way. Co-innovation with the ecosystem is becoming the dominant paradigm.

Mr. Michael Sharpe, Managing Director of MS Consulting & Research Ltd. and Member of the Advisory Board of PIN-SME, discussed how in SMEs, the training and innovation capacity varies widely. Small and medium enterprises have specific features that need consideration, and a huge variation in descriptors, such as their relation with technology, size of the company, and their growth aspirations. Therefore, they need differentiated policies. Furthermore, he highlighted that it is important to ensure mobility of skilled ICT workers so that European SMEs can have the best ICT skills where needed.

When considering skills for innovation, Mr. Sharpe argued that SMEs may often be small dynamic businesses with no time for qualifications or certificates. Therefore, peer reputation and networks can be more important for SMEs than official certificates. He emphasised that ICT standards or measures for skilling need to reflect modern reality and not create structures that stifle innovation instead of stimulating it. ICT professionalism needs to be low-cost and vendor-neutral, so that certifying it is feasible also for SMEs. Mr. Sharpe pointed that the European e-Competence framework is a good example of a flexible solution that can be adapted to different situations and environments as needed.
Small companies often lag behind large companies in ICT training and exploitation. However, they can often react fast, following the new technological innovations. For example, Ms. Caroline Jacobsson from EMF mentioned earlier in the conference that those companies in metal and manufacturing sectors that are doing well today, are typically the ones that have been investing in skills, and they are often small companies with innovative and disruptive technologies.

**Related recommendations and suggestions:**

**Raising awareness**

- Improve the image of ICT as a creative and entrepreneurial environment.
- Recognise e-skills as a core element of innovation policy.

**Supporting actions**

- Promote EU wide recognition of e-skills and innovation skills
- Support a low-cost and vendor-neutral ICT professionalism, taking into account also the emerging peer networks and recognition systems.

**Promote innovation**

- Support worker mobility and new digital business models.
- Invest in ICT SMEs as innovation agents.
- Develop an innovation community for sharing and innovating new supportive measures.
E-Skills in the Post Lisbon Strategy

This session aimed at suggesting and discussing ideas for the upcoming European Digital Agenda. In the final discussion of the session, the presenters highlighted that both low-level and high-level e-skills are important for the European society and economy. The European Commission is currently seeking opinions and ideas through a public consultation for the future EU 2020 strategy at [http://ec.europa.eu/eu2020/](http://ec.europa.eu/eu2020/)

E-skills and social dimension

**Ms. Anna Maria Darmanin**, EESC Member, argued that the overall social dimension needs to be considered in the context of ICT policies. It is more than only social inclusion. E-skilling for well-being is important, for example, in the case of older people and disabled people. Furthermore, workers’ main concern at the moment is not to have new training but to keep their job. Employers should appreciate more e-skills training.

Social computing is becoming very widespread and bringing new opportunities for all citizens. People may not use ICT in their work, but they use social networking in their free time. Civil society is becoming a key player through the social media approaches, which empower and motivate new groups of people. It is necessary to integrate the opportunities of top-down ICT approaches with emerging bottom-up usage and applications for learning and participation. She also stressed that increased women’s participation in the ICT professions should be encouraged, notably at the higher managerial levels.

Following a question from the audience, there was a discussion on the importance of acquiring e-skills in order not to become a slave of technologies. One needs to learn how to use these tools and not let them regulate and limit life, or reduce other skills. This is about learning to use the e-skills with right timing, maintaining and improving the quality of life and social freedom. These skills are also important for appropriate, safe and secure usage of ICT services.

**Mr. António Bob Santos**, Special Advisor to the National Coordinator of the Lisbon Strategy and the Technological Plan in Portugal, presented elements and impacts of Portuguese Digital Agenda. With public-private partnerships they provide laptops and broadband connections for primary and secondary school students, teachers and adults with exceptional prices for developing the skills and preparedness for information society.

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Speakers also reminded that the widening digital divide needs to be addressed. After the broadband coverage is reached, there is a need for public services that deploy them and pull people towards learning and using the new opportunities. Simplifying platforms and digitizing processes with public authorities can motivate people to acquire and use e-skills. Mr. Santos stressed that investment in next generation networks is important as they will play a key role in the future for society, e.g. for e-Health.

**E-skills and innovation cannot be separated**

**Dr. John Vassallo**, Vice President at Microsoft, emphasised that there is a need for an integrated approach, an e-skills approach that addresses at the same time innovation, inclusion and education. This requires a stronger approach for e-skills promotion as a key component for Innovation Society, not only integrated in other policies and programmes. It is important to invest both in innovation and skills for innovation. All citizens need to be empowered through key enabling technologies to participate, work and innovate in different phases of their life. Furthermore, all citizens need skills to benefit from and use the innovative solutions, such as, for example, environment friendly technologies.

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**Slide 18 : Impacts of the Portuguese agenda presented by Antonio Bob Santos.**

**Slide 19 : Need for a combined e-skills approach for innovation, inclusion and education presented by John Vassallo.**
Ms. Gabriele Zedlmayer, Vice President of Corporate Marketing and Global Citizenship at Hewlett-Packard, pointed out that many companies have not yet realised that they cannot remain successful without changing and innovating their business models. This requires an e-skilled workforce. Although it is generally acknowledged that people are the most important asset, the training investments of companies do not show that. Furthermore, policies should better support new digital business models in order to facilitate the deployment of e-skills for innovation and support new innovative small businesses.

**E-skills, learning and education**

It was stressed many times during the conferences that when thinking about policies for ICT and innovation, one needs to think about education as these cannot be separated. For providing new skills, one needs to provide new ways to learning. Suitable infrastructures should be provided and used for learning about new technologies and innovating with their application. It is important to consider what are the basic skills and complementary skills in future society, and build broad interdisciplinary approaches to learn them. Old skills will not fade or lose their importance, but will be complemented with new skills, and people need to have an opportunity to learn them through experience.

It was pointed out that e-Learning has been around for 20 years, but it is still not integrated into the systems. ICT usage for learning needs to be integrated into programs. It should be embedded into the processes and not considered as an additional tool. Social computing is bringing new opportunities and motivations for learning with ICT for all groups of people. These opportunities should not be lost but integrated through new approaches for lifelong learning. Classrooms and curricula need to be updated to 21st
century in their approaches, taking into account the way technology has changed the way people live and work.

Slide 21: Need for shifting towards new approaches in e-learning presented by Gabriele Zedlmayer.

Stronger efforts are needed to attract young people and women to learn ICT by investing in education and curricula. Furthermore, attitudes and images need to be developed among teachers, employers and policymakers. Ms. Darmanin pointed out that engaging women with ICT jobs is important not only because women often have social skills, but because they have many other important skills as well. ICT careers and entrepreneurship should be promoted as an opportunity for women and all young people to develop and apply their competences in a unique and influential way in interdisciplinary tasks.
**Related recommendations and suggestions:**

Mobilizing funding instruments, targeting investment

- Establish a specific programme for e-skills and innovation skills, similar to the current Competitiveness and Innovation Framework Programme (CIP).
- European Structural Funds (2007-2013) should be used for improving e-skills and ICT access for poorer regions and social groups under risk at exclusion.
- Target educational investments and funding for curricula development and training of teachers and trainers.
- Set the EU target for educational investment in the Member States to 7% of GDP.
- Establish specific programs and industry awards for encouraging ICT careers and entrepreneurship of women.

Inclusive lifelong learning

- Developing openly available learning materials and supporting relevant online communities for self-directed participation and learning.
- Financial support and incentives for continuous learning and certification systems for skills obtained through different learning paths.
- Develop lead initiatives, such as a Computer club program for Roma and handicapped children to improve their e-skills and inclusion.
- Recognise, upscale and share best practices, such as the laptop and broadband access programme launched in Portugal in public-private partnership and being transferred also to other countries.

Support innovation

- Develop innovative citizen-centric public services, which encourage and invite innovations from public servants and citizens, and motivate digital participation.
- Learn from the lessons and elements of the e-Skills 2007 agenda implementation when developing a strategy for innovation skills for 21st Century information society, and integrate both low and high-level e-skills to this strategy.
Conclusion

Dr. Marius-Eugen Opran, EESC Bureau member, emphasised the importance of e-skills in the global economy and society with rapidly developing new technologies. All the skills and jobs are changing, not only ICT jobs. Many of the jobs created will require hybrid skills which are not yet well defined or provided. However, it is clear that the ability to apply technologies, be creative, collaborate and innovate with them is the core. These will help to adapt to new situations, to learn more and create new solutions to new problems. Furthermore, promoting e-skills can be used to promote social inclusion for groups which might otherwise face the risk of exclusion, such as Roma children.

Dr. Jean-Noël Durvy, Director, DG ENTR, thanked the conference for demonstrating excellent collaboration among different stakeholders. Overall, the conference highlighted that e-skills play a crucial role in facing both the economic and social challenges in Europe, including growth, competitiveness, innovation, sustainability, social inclusion and lifelong learning for the citizens’ well being in Europe in the 21st century and beyond.

Slide 22: Global vision for e-skills presented by Marius-Eugen Opran.
The main messages emerging from the conference are:

- ICT enable new types of innovations in products, processes and services.
- People often have misperceptions of the nature and need for ICT related careers, and especially young people and women do not necessarily see them attractive.
- E-Skilled practitioners and managers are needed in all sectors, not only on ICT sector.
- Despite the crisis, the demand for e-skills increases in long term, especially for higher level strategic e-skills for innovation.
- Multi-stakeholder partnerships and social dialogue are crucial for a sustainable and successful long term skills agenda.
- European e-skills agenda has accomplished several achievements but there is need for further awareness raising and investment
- E-skills for new jobs are interdisciplinary and closely related to higher level innovation skills, which needs to be taken into account in future actions.
- New alliances and approaches are needed for providing lifelong learning opportunities of relevant e-skills and innovation skills.
- New modes of collaboration enabled by ICT need to be taken into account in developing education, business and strategic co-operation.
- Both lower and higher level e-skills need attention, in order to enhance citizens’ well-being, knowledge society, and competitiveness in Europe.
Recommendations and suggestions on e-skills for innovation:

.estado Multi-stakeholder partnerships and social dialogue. Strengthen European co-operation by expanding e-Skills ILB to Innovation ILB and aiming at having at least 50% of participants from ICT user industries by 2012; Policy co-operation by establishing a European Innovation Forum with ILB representatives and Member States representatives; Coordinate non-ICT sectors (especially SMEs) to learn about and communicate demand for e-competences.

批示 Awareness raising. Improve the image of ICT as a creative and entrepreneurial environment with yearly large scale awareness campaigns with stakeholder participation and an actively maintained Career and skills web portal; Raise awareness in companies about the importance of higher-level skills investment in the context of ICT investment; Establish yearly industry awards and role models for women ICT entrepreneurs.

批示 Supporting actions and tools. Develop widely recognised definition for ICT professionalism, and transparent and transferable ways to validate it; Develop definition, competence framework and curricula guidelines for innovation skills; Develop indicators for assessing the contribution of e-Skills on innovation; Develop a model for evaluating progress in investing in e-Skills for innovation.

批示 Monitoring. Monitor and assess the supply and demand of different levels of e-Skills and innovation skills; assess the impact and trends of globalisation and outsourcing; Develop regularly foresight scenarios of the e-Skills and innovations skills needs development.

批示 Developing education for new skills. Encourage and facilitate new innovative learning approaches with ICT in all levels of education; Support curricula development for interdisciplinary skills; Orchestrate systematic industry-academia co-operation for solving skills mismatch; Develop teacher training to take into account e-Skills strategy implementation.

批示 Inclusive lifelong learning for e-Skills. Invest both in low-level and high-level skills; Develop a range of credible and verifiable education, training and certification offerings for e-Skills and innovation skills; Develop incentives for and a concept of lifelong learning where universities, training providers and companies support in collaboration people’s development with common certifications; Support relevant learning communities emerging through social technologies through providing learning resources available.

批示 Supporting innovation. Recognise e-skills as a core element of innovation policy; Support worker mobility and new digital business models. Develop innovative citizen-centric public services; Establish leading innovation skills initiative on European level; Recognise and sharing examples of innovative practices; Facilitate the establishment of a European innovation community;

批示 Mobilizing and targeting funding instruments. Set targets for investment in education to 7% from GDP by 2015; Dedicate educational investment to developing new curricula that emphasise learning new skills for new jobs; Focus European Structural Funds earmarked for training in 2007-2013 towards sectors likely to contribute to European competitiveness after the crisis;
ANNEX: CONFERENCE CONCLUSIONS

Brussels, 23 November 2009

e-Skills for innovation are crucial for the EU

The European e-Skills 2009 conference delivered key messages on the developments and significance of e-skills for the European economy and society. Experts from governments, academia, associations, trade unions and industry emphasised the importance of e-skills and professionalism for innovation and business value creation. While ICT increases its importance in strategic and operational aspects of the economy and society, it is now a key component of the new skills requirements for new jobs. E-skills for entrepreneurs, managers, ICT practitioners and users are crucial for fostering innovation and competitiveness. The EU e-skills strategy has progressed with several visible achievements in promoting e-skills and ICT related jobs. Further developing the long term e-skills strategy to encompass higher level innovation skills is a necessity and a logical next step for supporting European growth and competitiveness.

The conference was organised on 20 November 2009 in Brussels by the European Commission and the European Economic and Social Committee in partnership with the Council of European Professional Informatics Societies (CEPIS), the e-Skills Industry Leadership Board and other leading stakeholders. The conference acknowledged that all the major action lines set out in the EU e-skills agenda in 2007 have been addressed: strengthening partnerships and cooperation, supporting human resources investment for e-skills, promoting the attractiveness of ICT education and careers, developing digital literacy and e-competences for the workforce, and enhancing lifelong learning of e-skills. Concrete results such as the European e-Competence Framework and the European e-Skills and Careers portal have recently been complemented with the drawing up of forecasts and foresight scenarios on the demand and supply of e-skills, the development of European e-competence curriculum guidelines, the analysis of existing financial and fiscal incentives for e-skills training and support initiatives, the study of e-learning exchange mechanisms, and the further development of multi-stakeholder partnerships.

One of the main themes of the conference was the need to understand, recognise and promote ICT professionalism. Professionalism fosters quality, innovation and universal benefits for the economy and society. Presentations noted that the essential components of ICT professionalism are knowledge, skills and experience, together with an accountable and ethical professional attitude to quality. Professionalism is recognised by peers and shows itself through external validation and recognition. It was agreed that further work on developing, validating and certifying ICT professionalism is needed. New initiatives were suggested to develop a European framework for the definition and the promotion of ICT professionalism and professions based on the European e-Competence Framework, work from CEPIS and the Innovation Value Institute, as well as to promote a more accurate image of the ICT profession and the variety of activities where it supports real business value.

ICT is a global and pervasive technology, continuously increasing in importance in strategic and operational areas of the European economy. E-skills are becoming a key component of the new skills requirements for new jobs. In particular, e-skills for
entrepreneurs, managers and users, not only ICT practitioners, are crucial for fostering innovation and competitiveness. Concrete projects and experiences were presented to show how e-skills for developing innovative solutions can contribute, for example, to developing green IT and more environmentally friendly products and services.

The conference emphasised that jobs and their skills requirements are changing. Collaboration, critical thinking, problem-solving, creativity and entrepreneurship are becoming increasingly important and ICT can provide support by enabling new opportunities for knowledge and value creation. Partnership and social dialogue play a key role. Skills for benefiting from ICT and for making the most effective use of ICT are crucial. They play a key role in enabling the design and the development of innovative products, processes and services. Furthermore, they provide an important contribution to the development of an environmentally friendly and sustainable society. To take full advantage of the strategic and operational opportunities offered by ICT solutions, it is clear that more and better qualified ICT practitioners as well as e-skilled entrepreneurs and managers are needed. Multi-stakeholder partnerships are important for supporting e-skills for new high-quality jobs that foster competitiveness and innovation.

There was a strong consensus that a long term EU e-skills strategy is more important than ever in the context of the crisis. Analysis and foresight on supply and demand of e-skills in Europe show that in most scenarios the demand of e-skills is likely to outstrip the supply. However, the emphasis of the demand will increasingly shift from lower level skills to higher level, cognitive, problem-solving and entrepreneurial e-skills and to the needs emerging from the future Internet and green technologies. Organisations need to invest not only in infrastructure but in the higher level e-skills of their workforce. Several presentations stressed the fact that the critical factor for future success in Europe is the capacity for the competitive application of technologies.

A European agenda for economic recovery and growth cannot disregard the important role of e-skills and professionalism for innovative capacity, the future Internet, green technologies and social inclusion. Since in the contemporary economy and society, e-skills are a crucial part of higher level innovation skills, broadening the EU e-skills agenda to support innovation skills is becoming not just a natural further development but a necessity. The results and the experiences gained with e-skills provide many valuable lessons for the development of an EU innovation skills strategy. While the responsibility for implementation rests with Member States, it would be supported with actions that bring added value on European level, with relevant funding instruments and regular monitoring.

As a next step, the European e-Skills Week, a major awareness raising campaign, was announced in the conference. It will take place during the first week of March 2010 and will promote awareness of the growing demand for highly skilled ICT practitioners and the importance of e-skills in today’s society. With a wide range of pan-European and national events in European countries organised by different stakeholders, it aims to increase e-skills and to encourage young people to take up ICT studies and careers. A suggestion was also made to strengthen the inclusion and integration of Roma and handicapped children by developing their e-skills.

In conclusion, the conference demonstrated excellent cooperation among stakeholders and a strong consensus on the good progress and continuing need for strategic support for e-skills both for the workforce and citizens. The EU e-skills strategy provides a very good and recognised basis for developing a long term strategy for innovation skills that support innovation, growth, competitiveness, social inclusion and sustainability in the
European economy and society. To that end, a conference report presenting the detailed conclusions and recommendations will be ready before the end of December.

**More information**

E-Skills for the 21st Century, European Commission, DG Enterprise and Industry

http://ec.europa.eu/enterprise/sectors/ict/e-skills

European e-Skills 2009 Conference: Fostering ICT professionalism

http://www.eskills-pro.eu

European e-Competence Framework

http://www.ecompetences.eu

E-Skills Industry Leadership Board

http://www.e-skills-ilb.org

European e-Skills and Careers portal

http://eskills.eun.org

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Skills week

1 – 5 March 2010

http://eskills-week.ec.europa.eu