# Towards a European ICT sector framework

Addressing ICT competence demand
and qualification supply in Europe

Trends, products and
multistakeholder activities

# Introduction

The Information and Communications Technologies (ICT) sector is one of the most dynamic in the European Union. Approximately 5.3 million people in the EU are employed in ICT jobs, in a market worth more than 670 billion €.

ICT innovation has brought fundamental change to industry and commerce, with particular impact on ICT careers, job profiles, skills and competence needs and education and training. As a key contributor to Europe's productivity and competitiveness in a global environment, the European ICT sector urgently needs common standards and references for describing ICT competences, job profiles and qualifications. To facilitate employability and mobility of Europe's ICT workforce within an increasing global context; efficient interaction between e-Skills supply and demand is dependant upon a shared European ICT sector Framework.

Building and maintaining a European ICT sector Framework accounting for national, cultural and product diversity, to a high standard, can only be achieved through collaborative effort. It is in the common interest of industry, qualification providers and policy makers at national and European level to establish ICT sector qualification and workforce development strategies. Building upon national and business-specific diversities but with a common European goal to stimulate prosperity and growth, all stakeholders were invited to develop and implement a collective strategy for ICT workforce development.

Various multistakeholder initiatives have been launched involving public and private sector representatives providing a high quality yet neutral reference base. These partnerships were designed to highlight European diversity and richness but also to broaden national perspectives.

This brochure provides an overview of some key activities carried out with multistakeholder cooperation commenting on interim outcomes and achievements. The example of the European e-Competence Framework shows that building neutral but high quality reference tools for wide applicability is possible. However this is not enough; following development such tools have to be disseminated and continuously updated to remain relevant.

 "Made in Europe" and "by highly qualified professionals" needs to become synonymous. In this spirit this brochure seeks to provide inspiration for future work. On route to implementing a multistakeholder vision of a shared European ICT sector Framework, much has been achieved, yet there remains still much to do!

## Addressing ICT competence demand and training supply – Towards a European ICT Sector Framework

Despite its crucial status in the EU economy, the European ICT job market suffers from unequal supply and demand. ICT professional careers are not always seen as attractive and better promotion of career opportunities is required. Europe is missing Europe-

*"Common competence and qualification frameworks and standards with the associated education models are a prerequisite for the achievement of the goal of a European labour market with higher levels of mobility. The need is to ensure a very high-quality of training, competence and qualification. 'Highly qualified, made in Europe' needs to become a trademark worldwide. The European Commission is also asked to initiate and guide related processes in a multitude of industrial sectors. The IG Metall is always pleased to join in."*

**Michael Ehrke**
Senior Advisor
**IG Metall**

wide working communication and reference tools to enable efficient cooperation between qualification institutions, companies, job agencies, policy makers and ICT professionals.

As an example Germany traditionally builds vocational qualification systems which are oriented towards competences and recognition of skills acquisition by national diploma. Other countries such as the UK have established reference frameworks for e-skills required by employees with less emphasis on qualifications. Many countries have no ICT skills

or training frameworks. In a competitive international environment, these national differences can become barriers to efficient workforce development and mobility especially in the field of fast moving technology.

However, in addressing ICT Skills or e-Skills in Europe[1], there are some obvious national synergies. As a matter of course, ICT practitioners regularly work in teams across national boundaries. Regardless of cultural and national educational system differences or stakeholder perspectives the skill and competence required within ICT job roles is the same.

This commonality encouraged representatives from ICT vendor and user companies, the public sector, employer associations, trade unions, higher education and training institutes, HR managers and ICT experts to work together. Their aim was to create a single, mutually acceptable and neutral reference set of e-Competences for application in the workplace across Europe. The intention was to provide a basis for efficient ICT human resource development in a long-term perspective.

Common competence and qualification standards related to existing education models are a prerequisite for an efficient European labour market.

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1The European e-Skills Forum, 2004, adopted a definition of „e-skills" which embraces ICT practitioner skills, e-business skills and ICT user skills. This publication focuses on ICT practitioner and manager skills and makes synonymous use of both terms, "e-skills" and "ICT skills".

## A key tool: The European Qualifications Framework

The European Qualifications Framework (EQF) was initiated by a decision taken by the Ministers of Education from 32 European countries in December, 2004 and has been formally adopted by the European Parliament and the Council in April 2008.

The EQF objective is to provide a common, not-content-oriented reference framework, which serves as a translation device between different qualification systems and their levels, for general and higher education as well as for vocational education and training. It may be used as a translation tool between EU Member State frameworks (National Qualification Frameworks/NQFs) and also for European sector frameworks. As the EQF provides a translation instrument between countries and sectors/industries, it offers greater transparency for education and training across Europe.

### International comparable standards on eight levels, oriented towards learning outcomes

On eight levels, the EQF offers a generic guidance of knowledge, skills and competences which are achieved at a specific level. In order to focus on what learners have learnt instead of how and where they learnt, the EQF adopts a learning outcome approach. This approach is significant for mobility, recruitment, and careers as it switches attention from ways of learning to assessment methodologies. Moreover, learning outcomes are expressed as observable behaviours which can be demonstrated by actions. In addition, focusing on learning outcomes instead of training processes opens the door for recognition of informal learning.

### From the EQF to the sector framework - the ICT industry as an example

Initiated by education planners in the European qualification environment, the EQF is of major interest in continuous professional development. Even if EQF level definitions can not be directly used to describe levels of competence in the workplace, the levels provide a common reference point. The first example of this application has been developed by the ICT industry through the creation of the European e-Competence Framework.

*"The availability of e-skills is a key condition for successful innovation and for the competitiveness of European enterprises. Shortages and mismatches of ICT practitioners' skills have been endemic due to technological innovation and the fast growth of ICT activity in comparison with the relatively low supply and availability of employees and entrepreneurs with relevant educational qualifications. For Europe to remain successful in a global economy, efforts are needed to raise and widen the level of e-skills of the workforce. This requires a consistent long-term e-skills agenda and coordinated efforts by the European Commission, Member States and stakeholders."*

André Richier
Principal Administrator

European Commission
Enterprise and Industry
Directorate-General

**Creating shared European qualification**

**and competence development tools –**

**European multistakeholder cooperation in the ICT field**

## The e-skills demand side – European e-Competence Framework

Following two years' work by e-Skills multi-stakeholder, ICT and human resources experts across multiple organisational levels, the European e-Competence Framework (e-CF) is ready for Europe-wide use. The framework consists of 32 jointly defined ICT practitioner and manager competences as needed and applied on the workplace. The common reference tool can be used and understood by ICT user and supply companies, ICT specialists, managers and HR departments, the public sector, and educational and social partners across Europe. It provides for the first time a European standard reference for communicating ICT competence needs in a Transnational and European environment.

The European e-Competence Framework has been developed by a large number of European ICT and HR experts in the context of the CEN/ISSS Workshop on ICT Skills. In order to achieve European agreement and beneficial results on an international and national level, the Europe-wide involvement of players from the ICT sector and stakeholders from business, politics and education has been crucial for framework development philosophy and strategy.

The European e-Competence Framework version 1.0 provides a basic, clear and sound orientation for companies and further ICT sector players who need to take decisions about recruitment, career paths, training, assessment, etc. It articulates knowledge, skills and competence as needed and applied in the ICT workplace for the ICT vendor and user industry as well as in the public sector.

## 32 ICT practitioner and manager competences on a European scale

The European reference framework for ICT competences makes a link between national and company systems.

The framework defines ICT practitioner and manager competences, classified according to corresponding ICT business areas and further specified on five proficiency levels (e-1 to e-5) which are related to the European Qualifications Framework (EQF) levels 3-8. This provides a European basis for internationally efficient personnel planning and development.

*"The pride taken by nations of the European Union in their unique cultural heritage brings a richness and diversity to be savoured. It also manifests itself in education systems but here some uniformity would support mobility of European labour and consequent industry productivity. Nowhere is this more essential than in the ICT industry. The e-Competence Framework seeks to balance the benefit of cultural diversity and need for commonality. It provides an added dimension to complement the EQF and supports ICT competence translation for ICT practitioners and managers across the EU."*

**Terry Hook**
Professional ICT Skills
Development Executive

**e-Skills UK,
The Sector Skills Council
for IT & Telecoms**

*"As the key to prosperity for all, education and competence development is of central importance for every country and for the European Community as a whole. National identities and cultural differences of member states are a precious part of the European identity, however unprofitable barriers have to be overcome. The ICT sector is a vital contributor to the European economy. Engaging the huge range of key stakeholders views and their wealth of experience makes it possible to build common high quality tools, making the most of Europe's diversity and richness to the benefit for all players."*

**Jutta Breyer**
Consultant and European
e-Competence Framework
team leader

**Breyer Publico Consulting**

| Dimension 1 | Dimension 2 | Dimension 3 | | | | |
|---|---|---|---|---|---|---|
| 5 e-Comp. areas (A – E) | 32 e-Competences identified | e-Competence proficiency levels e-1 to e-5, related to EQF levels 3-8 | | | | |
| | | e-CF levels identified per competence | | | | |
| | | e-1 | e-2 | e-3 | e-4 | e-5 |
| **A. PLAN** | A.1. IS and Business Strategy Alignment | | | | | X |
| | A.2. Service Level Management | | | X | X | |
| | A.3. Business Plan Development | | | X | | X |
| | A.4. Specification Creation | | X | X | | |
| | A.5. Systems Architecture | | | X | X | |
| | A.6. Application Design | X | X | X | | |
| | A.7. Technology Watching | | | | X | X |
| **B. BUILD** | B.1. Design and Development | | X | X | X | X |
| | B.2. Systems Integration | | X | X | X | |
| | B.3. Testing | X | X | | | |
| | B.4. Solution Deployment | X | X | | | |
| | B.5. Technical Publications Development | X | X | | | |
| **C. RUN** | C.1. User Support | X | X | | | |
| | C.2. Change Support | X | X | | | |
| | C.3. Service Delivery | X | X | | | |
| | C.4. Problem Management | | | X | X | |
| **D. ENABLE** | D.1. Information Security Strategy Development | | | | X | X |
| | D.2. ICT Quality Strategy Development | | | | X | X |
| | D.3. Education and Training Provision | | X | X | | |
| | D.4. Purchasing | | X | X | X | |
| | D.5. Sales Proposal Development | | X | X | | |
| | D.6. Channel Management | | | X | X | |
| | D.7. Sales Management | | | | X | X |
| | D.8. Contract Management | | X | X | | |
| **E. MANAGE** | E.1. Forecast Development | | | X | X | |
| | E.2. Project and Portfolio Management | | X | X | X | X |
| | E.3. Risk Management | | X | X | X | |
| | E.4. Relationship Management | | | X | X | |
| | E.5. Process Improvement | | | X | X | X |
| | E.6. ICT Quality Management | | X | X | X | |
| | E.7. Business Change Management | | | X | X | X |
| | E.8. Information Security Management | | X | X | X | |

Table 1 – European e-Competence Framework v.1.0 overview

| Dimension 1 | Dimension 2 | Dimension 3 | Dimension 4 |
|---|---|---|---|
| e-Comp. area | e-Competences: Title + generic description | e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8) | Knowledge (k) and skills (s) examples |
| B. Build | **B.3. Testing**<br>Constructs and executes systematic test procedures for IT systems or customer usability requirements to establish compliance with design specifications. Ensures that new or revised components or systems perform to expectation. Ensures meeting internal, external, national and international standards including health and safety for either usability, performance, reliability or compatibility. Produces documents and reports to evidence certification requirements. | Level 1 – Performs simple tests in strict compliance with detailed instructions.<br><br>Level 2 – Organises test programmes and builds scripts to stress test likely vulnerabilities. Records and reports outcomes providing analysis of results.<br><br>Level 3 – Exploits specialist knowledge to supervise complex testing programmes. Ensures tests and results are documented to provide input to subsequent process owners such as designers, users or maintainers. Accountable for compliance with testing procedures including a documented audit trail.<br><br>Level 4,5 – Not applicable | B.3.s1. selects appropriate test methods<br><br>B.3.s2. writes technical documents<br><br>B.3.s3. ...<br><br>B.3.k1. knows test methods and techniques<br><br>B.3.k2. ... |

Table 2 – European e-Competence example in its four dimensions

## Framework structure and look

Structured in four dimensions, the European e-Competence Framework reflects different levels of business and human resource planning requirements, as well as job and work proficiency guidelines. Dimension 1 reflects 5 e-Competence areas, derived from ICT business processes PLAN – BUILD – RUN – ENABLE – MANAGE. Dimension 2 defines a set of reference e-Competences for each area, with a generic description for each competence. 32 identified competences provide the framework with European generic reference definitions. In dimension 3, proficiency levels of each e-Competence give European reference specifications on e-Competence levels e-1 to e-5, which are related to EQF levels 3 to 8.

| e-CF Level | related to EQF Level |
|---|---|
| e-5 | 8 |
| e-4 | 7 |
| e-3 | 6 |
| e-2 | 4 and 5 |
| e-1 | 3 |

Table 3 – The five e-CF levels and their relationship to EQF levels 3-8

*"Increasingly IT jobs are exposed to very fast evolution. Technology imposes a rhythm which pushes ICT needs, uses, and resultant jobs. This is why CIGREF is interested in organising IT jobs and in the management of IT competences needed to answer effectively the needs of IT departments. For this purpose, CIGREF has for many years maintained an IT Job Profiles Nomenclature. The e-Competence Framework is a very useful tool which supports the continuation of this profile catalogue. CIGREF plans to use it to complete its competence vision for the next version of the IT Jobs Profiles Nomenclature. This will enable companies to benefit from appropriate competences while defining jobs. It also answers effectively the need for competence forecasting to address continuous professional development within an international context."*

**Frédéric Lau**
Directeur de mission
**CIGREF**

Dimension 4 of the European e-Competence Framework is dedicated to knowledge and skills related to the e-Competences. Knowledge and skills are indicated as optional framework components. Supplied for inspiration they are not exhaustive, nevertheless they provide the key link to the ICT qualification offer side of the European e-skills market.

### User guidelines for framework application by European ICT sector players

To support the understanding, adoption and use of the European e-Competence Framework (e-CF), a complementary CWA incorporating user guidelines for the European e-Competence Framework is also provided. ICT stakeholders – ICT user and supply companies, the public sector, ICT managers and practitioners, HR developers, ICT job seekers, educational institutions, recruiting agencies and social partners – can find a basic explanation of the framework context and underpinning methodology as well as initial guidance on how to adapt the framework and exploit its benefits for specific needs.

The European e-Competence Framework development is supported by the European Commission and the Council of Ministers (Commission's Communication of 07.09.2007 and Competitiveness Council Conclusions of 23.11.2007 on e-skills).

### European e-Competence Framework v.1.0 for download

The CEN Workshop Agreement "European e-Competence Framework", consisting of the framework itself as well as the accompanying user guidelines, was published in October 2008 and is available via www.cen.eu/cenorm/sectors/sectors/isss/activity/wsict-skills.asp.

See: www.ecompetences.eu

*Bring transparency to the e-skills offer and connect it to the market demand*

# ICT Lane – A shared European language for ICT qualifications and competences

Within the ICT Lane initiative, European experts in ICT qualification and training have developed a sector-specific model for implementing the European Qualifications Framework (EQF) in the ICT field. The work covering many kinds of ICT qualification programs has been closely connected to the European e-Competence Framework.

Defining description standards makes ICT qualification programs (both independent and ICT vendor industry certificates) internationally transparent and understandable, enabling end-users to compare them with requirements.

### ICT Lane project outcome – Facing ICT competence demand and training supply in Europe

The outcomes of the ICT Lane initiative provide a significant contribution to increasing transparency and efficiency of ICT qualification development and provision in Europe. Implementing the identified shared language in online environments such as the European e-Skills and Career Portal can help to clearly structure the multifaceted world of ICT qualification and certification. Moreover, a method was established to compare the offer and demand side of the European e-Skills market.

Representatives from five European countries, coming from Higher Education, employers associations and trade unions, industry, continuous training, higher education and research, developed and provided together;

– A description standard to read, understand and choose ICT qualifications across Europe according to specific needs, e.g. learning path, entry requirements, price, etc.

– A translation standard for qualification content based on the learning outcome approach applied by the EQF. It also enables lCT qualifications to link to the European e-Competence Framework dimension 4 (knowledge and skills)

– A shared format to identify levels according to the EQF, adopting the specific needs of the ICT sector and in accordance with e-Competence Framework levels

*"Competence and Skills are the important human factors to face the future challenges of a successful company.*
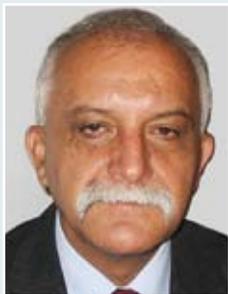
*Due to globalisation and the increasing European spirit, it will become more and more important to implement a harmonized view of qualifications. The outcomes of the ICT Lane project are a step forward for the Information and Communication Technology sector."*

**Harry Eils**
HO Training Information Systems

**Airbus Deutschland**

The commonly elaborated standard description method for comparing, evaluating and choosing ICT qualification programs across Europe has been implemented and illustrated in a pilot software pro-

The ICT Lane initiative was implemented within a Leonardo da Vinci co-funded project coordinated by IG Metall under the methodological lead of Fondazione Politecnico di Milano. The results were presented and discussed with a wide audience on several occasions including a final conference in Paris in March, 2008 and also at the EQF Implementation Conference in Brussels in June, 2008.

See: www.ict-lane.eu

*"As Hungary joined to the European Union and the Bologna process the Faculty of Informatics in the Eötvös Loránd University worked out a new type of education by offering the possibility for students to choose subjects freely not only from Hungarian universities but also European universities. Here, the ICT Lane Tool can support our students to select the right subjects to be studied. The ICT sector-specific implementation of the EQF can also facilitate the process of the Hungarian Accreditation Committee. Its scope is to accredit higher education institutions, to evaluate applications on new study programs of Hungarian institutions and to review applications by foreign higher education institutions to function in Hungary, either alone or in conjunction with our faculty."*

**László Kozma**
Assoc. Prof. habil. dean

**Eötvös Loránd University
Faculty of Informatics**

gram. Qualification search by e-competence requirements, as defined in the European e-Competence Framework, is demonstrated through the use of the ICT Lane Tool.
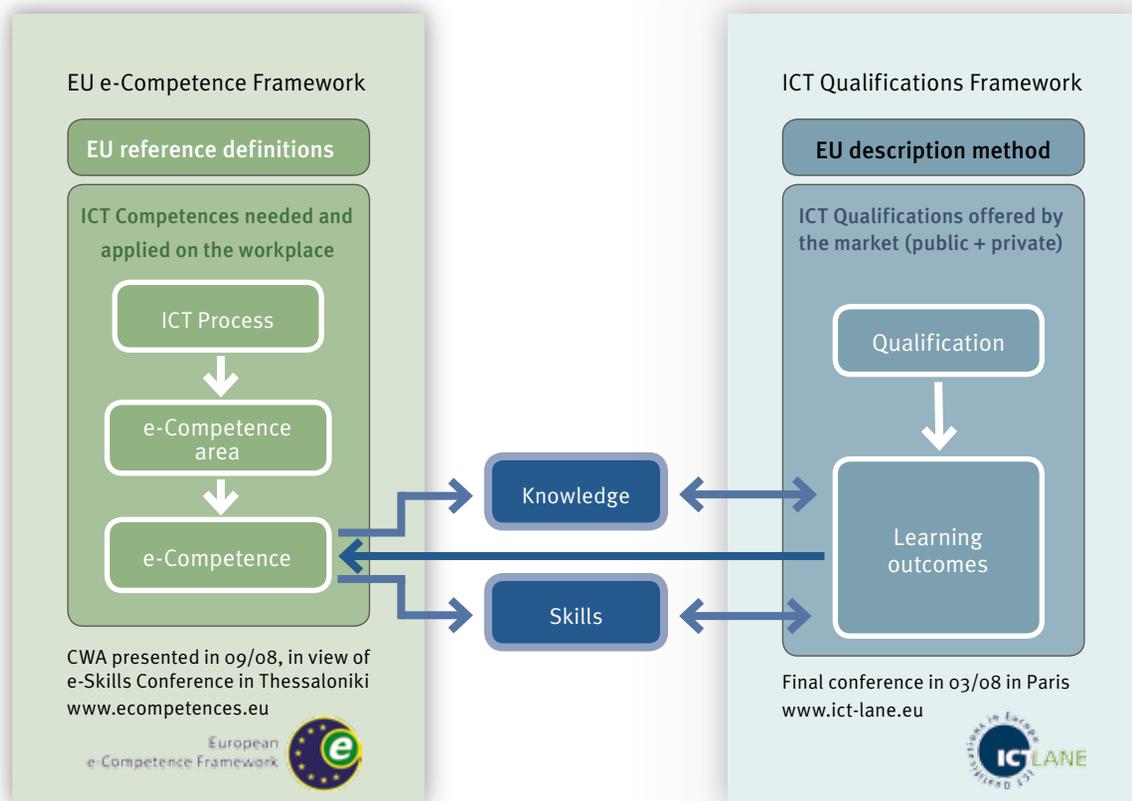
Figure 1 – Addressing e-competence demand and ICT qualification supply: Connecting learning outcomes to competences

## From Job profiles to competences for greater transparency and flexibility

The European e-Competence Framework as well as the qualifications framework developed by the ICT Lane initiative are based on the concept of "competence", as opposed to job profiles.

It is common to find from company to company identical job titles that correspond to different job descriptions and vice-versa. Moreover, both job titles and job descriptions often prove inadequate in expressing job content. Business environments are complex and change continuously making structured schemes based on job profiles, inefficient at describing tasks and activities being fixed and rigid.

To avoid reflecting the rigidity of job profiles within competences they need to be general but sufficiently comprehensive to represent complexity and context. In this way, competence descriptors can be applied which provide flexibility and do not become redundant in a short time. In addition applying competence combinations can produce different job profiles specific to organisational requirements. Consequently competence application instead of profile adoption brings the benefits of increased flexibility, customisation, transparency and ease of understanding.

### What do we mean by competence?

There are many definitions of competence. Jonathan Winterton widely explains this complex topic in "Typology of knowledge, skills and competences:

clarification of the concept and prototype" (January 2005) and "What Is Competence?" (Francoise Delamare Le Deist & Jonathan Winterton, Toulouse Business School, France, March 2005). But below we concentrate on the methodological indications of how to read competence descriptions and dimensions provided within the e-CF (European e-Competence Framework) and the related ICT Lane project.

### Some definitions
The e-CF defines "competence" as "a demonstrated ability to apply knowledge, skills and attitudes for achieving observable results". Consequently, the related descriptions embed and integrate knowledge, skills and attitudes through a holistic approach. Competences are "holistic units" expressing complexity of behaviours, described through operational descriptions (i.e. sentences that can be verified and proved).

**"Skill"** is defined as "ability to carry out managerial or technical tasks". Managerial and technical skills are the "measurable" components of competences and specify some core abilities that form a competence.

**"Attitude"** means in this context the "cognitive and relational capacity" (e.g. analysis capacity, synthesis capacity, flexibility, pragmatism...). If skills are the "measurable" components of competences, attitudes are the glue, which keeps them together.

**"Knowledge"** represents the "set of know-what" (e.g. programming languages, design tools...) and can be described by operational descriptions.

## Linking learning outcomes to competences

What are the differences between learning outcomes and competences? Learning outcomes come out of learning processes (formal or informal). Competences as well as skills, pieces of knowledge and attitudes can be developed at work. When learnt they are learning outcomes. From an individuals' perspective, competences and their components can also be considered as learning outcomes.

With regard to competence and qualification frameworks, the former expresses an industry view, the latter defines vocational and educational system results. Thus, as an industry-addressed competence framework, the European e-Competence Framework articulates competence as needed and applied at the workplace. A qualification framework such as the EQF reflects a qualification perspective and provides guidelines to identify and describe learning outcomes. However, both perspectives need to be interrelated, as qualifications must contribute significantly to industry required competence development.

To be able to connect learning outcomes to competences they both need to be expressed in the same way. Therefore learning outcomes must be described through "operational descriptions" and both must use the same vocabulary. However, learning outcomes are not only competences, they can also be components of them. In addition work place competence is mainly acquired on the job, i.e. within non formal-informal learning environments. It is therefore important to recognise relationships, similarities, differences and gaps, between learning outcomes formalized by vocational and educational systems and competences needed by companies. Using similar language is an important step towards mutual understanding.

*"Flexibility is a key factor for companies who need to face keen competition and flux. On the other hand, education and training systems lack the agility required to respond promptly to the rapid evolution of industry and technology. EQF seems to answer this question; its learning outcome-based approach enables transparency and common understanding and also modular curricula and programme development that can be arranged in flexible ways within a well defined but adaptable structure."*

**Clementina Marinoni**
Head of HR Research Department

**Fondazione Politecnico di Milano**

Likewise there are similarities and differences in "proficiency" levels of a competence framework and "learning" levels of a qualification framework. The former is about levels of competences applied to work; the latter is related to levels of learning acquisition.
*by Clementina Marinoni, Fondazione Politecnico di Milano*

# ICT Certification in Europe

Around 5 million ICT certificates have been issued over the last six years by over 60 certification providers covering over 600 types of certification. The availability of many overlapping qualifications has been described as a "certification jungle". It is characterised by poor information, and lack of clarity which confuses prospective candidates and employers; all of which is detrimental to the labour market.

*"Continuous training of workers in cooperation with all stakeholders is a prerequisite for maintaining manufacturing in Europe and keeping pace with the changing technological development in the ICT sector."*

Caroline Jacobsson
Information & Communications adviser
European Metalworkers' Federation, EMF

The work on transparency of ICT Certification in Europe is one of three current projects being conducted by CEN/ISSS, the European standards body for ICT, under their CEN Workshop Agreement (CWA) process. Why are there so many certifications? And why is the number increasing? What is their role for an individual's ICT competence development and lifelong learning?

The project covers both vendor and independent qualifications for ICT professionals and explores the landscape of certification systems.

## Aim: A navigator for the European ICT skills certification landscape and market

This initiative will elaborate a map of the ICT skills certification landscape and market to support improved navigation. The project aims to:

– Provide a map of the organisational landscape showing the main certification stakeholders in the major markets in Europe, and at European level

– Provide updated metrics on the current state of play of the main certifications in those major markets, with a methodology for annual updates

– Investigate methodologies for mapping e-certifications onto the emerging e-Competence Framework and European Qualifications Framework

– Explore the possibility of a proposed European standard or reference model for e-certification schemes, and make recommendations

The European Commission Communication on e-Skills of 7 September 2007 endorsed by the EU Council of Ministers on 23 November 2007 explicitly refers to "European quality criteria for existing e-skills industry based certifications (…) to be available in 2009". By working with the main stakeholders in the field, it is hoped that industry, users and academia will welcome the new standard, and that current vendor and independent certification schemes will converge towards it.

See: www.ict-certification-in-europe.eu

# Increasing beneficial data exchange: Interoperability of European ICT Career websites

The volume and diversity of ICT career and e-skills development websites found and hosted on local, national, European and international levels by organisations, companies and institutions is unsurprisingly huge. Some websites aim to encourage young people to choose a career in ICT, others provide advanced ICT career and job guidance, qualification and certification promotion, assessment tools or job opportunities, others focus on statistical data and sector policies or simply provide space for interaction between sector players.

However, navigating through the web and identifying relevant links is difficult as website information about ICT careers and e-skills development are structured and presented in many different ways. However ICT operates in a global market and differences between jobs, methods, competence requirements and solutions are becoming less. Common reference standards to communicate about jobs, skills and competences could provide for interoperability of e-career related websites, increasing efficient data exchange and interconnections across EU member states.

## What is relevant for practitioner e-skills and ICT career development?

Guided by the key question: "What is relevant for ICT practitioner careers and e-skills development?", the CEN ICT Skills project "e-Career" seeks to structure relevant services provided today by the internet

to key target groups, e.g. students and ICT professionals, companies, social partners, training and certification bodies and recruitment agencies, in a way that is logical and beneficial links between services can be established.

*"In order to face the challenge of an open market operation, the R&D Direction of AFPA, the leading French adult vocational training organization, plans to develop new services for adults and enterprises. These services include competence-based approaches used to identify acquired competences and facilitate their transfer from one professional domain to another. AFPA intends also to increase the electronic links existing between these services and the services offered by other public and private operators. In this practical context, multistakeholder projects such as ICT Lane, e-Career services or the e-Skills and Career Portal provide worthwhile models for building future efficient services."*
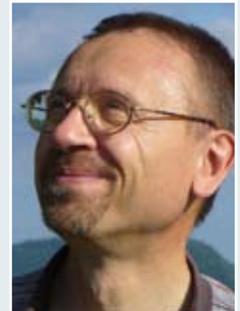
**Marc Robichon**
ICT Training Consultant

**AFPA**

Building on the European e-Competence Framework as a key reference, the project will elaborate strategic, functional and technical recommendations for website designers and Information Systems architects on how to interconnect beneficially ICT career web services in a European environment. This will include:

– a clear "helicopter view" representation of the human resources domain in the ICT field, its relevant e-Career development services provided to key target groups

– the strategic and functional standard specifications for interoperability between existing as well as future portals and the forthcoming European e-Skills and Career portal

*"Europe needs a common understanding of ICT qualifications and competences for ICT professionals, and even broader of for all citizens requiring digital literacy. Knowledge, skills and competences are the main capital of European citizens and digital competences are a key competence in the context of lifelong learning. The work towards common European references and frameworks will facilitate comparison and transfer of qualifications between countries, systems and institutions and will therefore be relevant to a wide range of users at European as well as at national level."*

**Lieve van den Brande**
Senior Policy Officer

**European Commission DG Education & Culture**

The CEN e-Career project team is actively supported by the pilot-experimental network of stakeholders (PEN), a community of European ICT career and online services experts who are interested and willing to validate, test, use and exploit together interoperable e-Career Services in Europe.

The recommendations addressed to European ICT Career website designers and IS architects will be published as a CWA (CEN workshop Agreement) by mid 2009.

See: www.cen.eu/cenorm/sectors/sectors/isss/activity/wsict-skills.asp

– a competence / qualifications connecting translation standard for ICT qualification contents, enabling to link learning outcomes to e-competences

# Towards a common European online platform: European e-Skills and Career Portal

The need for a European portal is driven by the significant relevance of Information and Communication Technologies for the EU economy, the international competitiveness of the sector and the existence of e-skills gaps in Europe. The provision of a shared European internet platform for e-skills development is intended to support a wide range of ICT sector players and career seekers.

Following a feasibility study of a European ICT Career Portal carried out in 2007, the European e-Skills and Career Portal project was initiated and is supported by the e-Skills Industry Leadership Board (ILB). Together with the European Schoolnet as the service provider, the ILB launched a pilot version of the portal for the European e-Skills Conference 2008 in Thessaloniki.

## Strategic goals and focus areas of the pilot portal

The strategic goal of the Portal is to lay the foundations for medium to long term development of market-relevant e-skills capacity. In addition it will address tactical activities in support of ICT job seekers and ICT career development. The priority group for the pilot phase is focused on students and ICT professionals. The portal functions are dedicated to ICT career guidance, e-skills information and networking facilities.

In the longer term, the portal aims to address and meet the needs of individuals, employers, educators and trainers, government and non-government as well as third sector stakeholders, Job and employment agencies, as well as ICT skills providers.

To provide added value on a European level without reproducing existing services, interoperability of relevant websites is essential. Commonly established concepts and references such as the European e-Competence Framework will provide standards to support this aim.

See: http://eskills.eun.org

*"Especially in the ICT sector, the continuous updating of knowledge, skills and competences of employees according to the fast moving developments of the market and its technologies are essential for survival. For this reason, the Deutsche Telekom highly welcomed the European initiative for developing a common ICT sector Framework and we were glad to contribute to the experts work. From our perspective, the European e-Competence Framework as it looks today with its 32 competences organised by 5 competence areas the industry is familiar with and related to the EQF provides an essential basis for a successful sector framework. A great leap forward which will hopefully confirmed by Europe-wide application and use."*

Markus Lecke
Senior Expert HRD, Corporate Talentmanagement

Deutsche Telekom AG

## Implementing a long-term e-skills strategy

**Create, manage, plan and develop e-competences that will be needed in a long-term perspective across Europe**
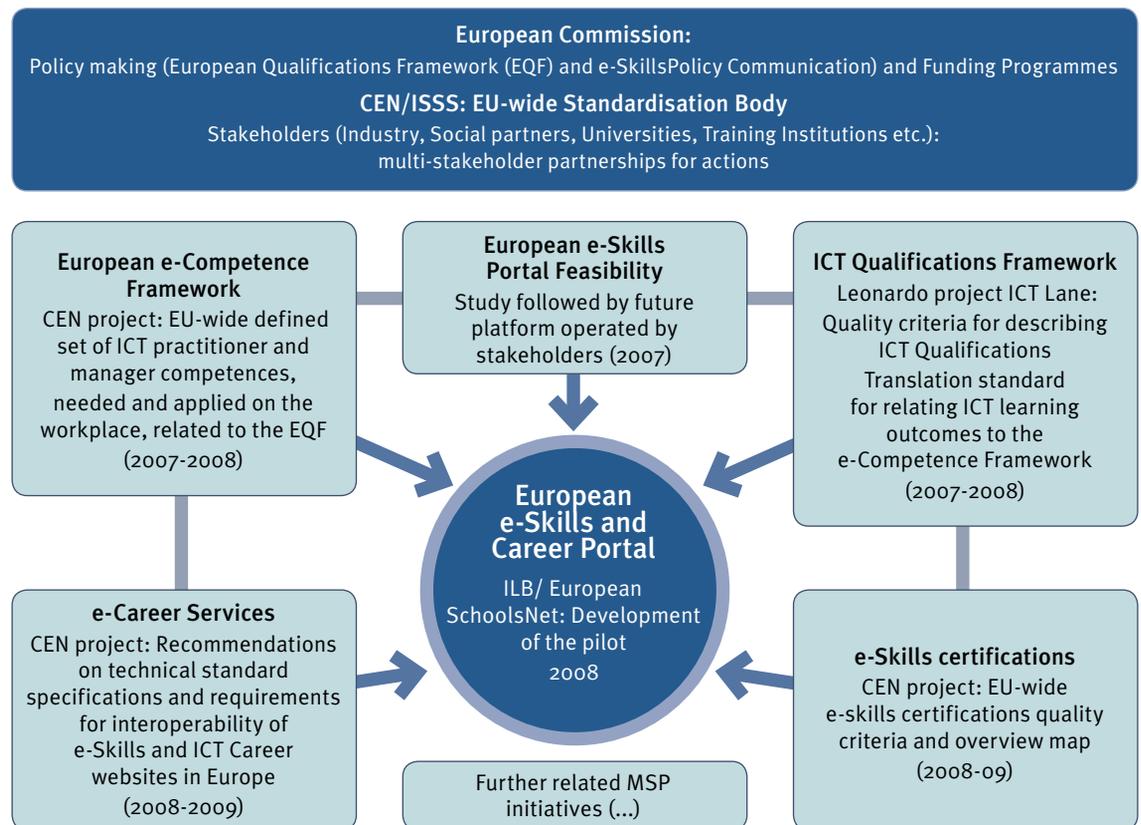
**European Commission:**
Policy making (European Qualifications Framework (EQF) and e-SkillsPolicy Communication) and Funding Programmes

**CEN/ISSS: EU-wide Standardisation Body**
Stakeholders (Industry, Social partners, Universities, Training Institutions etc.):
multi-stakeholder partnerships for actions

**European e-Competence Framework**
CEN project: EU-wide defined set of ICT practitioner and manager competences, needed and applied on the workplace, related to the EQF (2007-2008)

**European e-Skills Portal Feasibility**
Study followed by future platform operated by stakeholders (2007)

**ICT Qualifications Framework**
Leonardo project ICT Lane:
Quality criteria for describing ICT Qualifications
Translation standard for relating ICT learning outcomes to the e-Competence Framework (2007-2008)

**European e-Skills and Career Portal**
ILB/ European SchoolsNet: Development of the pilot 2008

**e-Career Services**
CEN project: Recommendations on technical standard specifications and requirements for interoperability of e-Skills and ICT Career websites in Europe (2008-2009)

**Further related MSP initiatives (...)**

**e-Skills certifications**
CEN project: EU-wide e-skills certifications quality criteria and overview map (2008-09)

Figure 2 – The schematic shows how the activities presented in this brochure are mutually interconnected

## State-of-the-art summary – European ICT sector framework achievements and outlook

The European e-Competence Framework is a milestone for building a common European strategic base to create, manage, plan and develop ICT competences that will be needed in a long term perspective across Europe. Using the e-Competence Framework to link to formal and informally acquired capability is straightforward if oriented towards learning outcomes. The results of the ICT Lane initiative which are based on the European Qualifications Framework approach and connected to the e-Competence Framework show how to provide a standard vocabulary to reflect efficiently many kinds of ICT qualification in Europe.

There are additional ongoing multistakeholder activities which promise to provide further contributions to improved transparency and efficiency in the development of the European ICT workforce. These include work on an overview map of the ICT and e-Skills certification landscape in Europe and also a project on interoperability of European e-Skills and ICT career websites.

A commonly shared European online platform addressing the needs of all potential users, operated and supported by a large number of stakeholders and linked to existing websites across Europe member states will make a significant contribution to the effectiveness and efficiency of e-skills development across the European Union.

However, there are still many challenges imposed by the fast moving ICT sector. The European e-Competence Framework as well as the online portal, once established, must be disseminated, maintained and kept current. It is vital to sustain the long term co operation between multistakeholders to maintain momentum and move the European e-Skills agenda forward.

*"German ICT industry is very interested in establishing links between the qualification system operated in Germany and European initiatives in the e-Skills-Sector. Both the dual system and the Advanced IT Training System require European wide accepted structures to compare levels and competence profiles. The e-Competence Framework is likely to deliver that structure and foster skills and competence-development across national boundaries. With the e-Competence Framework, the European Education Area takes a great step forward."*

Stephan Pfisterer
Head of Department Education and HR

BITKOM

## Get involved – European platforms and ICT skills communities

### European e-Skills Forum

The European Commission established the European e-Skills Forum in March 2003, following up the European e-Skills Summit (October 2002), with representatives of Member States, leading stakeholders, the European Centre for the Development of Vocational Training (Cedefop) and the OECD. The objective was to bring together all relevant stakeholders to listen to their views and catalyse discussions and actions to address e-skills issues. The Forum released its report "e-Skills in Europe: Towards 2010 and Beyond" in September 2004. Based on its recommendations several initiatives and exploratory actions were launched to prepare for the development of a long-term e-skills strategy. The Commission also established in June 2006 an ICT Task Force to discuss issues relating to the competitiveness of the ICT sector and ICT uptake in Europe. Both the activities of the European e-Skills Forum and the ICT Task Force were very instrumental to promote the e-skills agenda. In September 2007, the European Commission adopted a Communication on "e-Skills for the 21st Century: Fostering Competitiveness, Growth and Jobs". The Council of Ministers welcomed this Communication in their Conclusions in November 2007 on a long term e-Skills strategy.

See: www.e-skills-conference.org

### CEN/ISSS Workshop ICT Skills

The CEN / ISSS Workshop on ICT Skills is a European work group consisting of both national and international representatives from the ICT industry, vocational training organisations, social partners and other institutions. The workshop aims to create long-term human resources (HR) and competence development strategies for the European Information and Communication Technology (ICT) sector. Being active since 2003, the workshop community has achieved various milestones towards more transparency and efficiency in the field of ICT Human Resources development in an international environment, published by CWA's (CEN workshop agreements).

See: www.cen.eu/cenorm/businessdomains/sectors/isss/activity/wsict-skills.asp

## Publications

EITO 2007 report. European Information
Technology Observatory 2007

European e-Competence Framework (CEN CWA 2008)
Part 1 – European e-Competence Framework Version 1.0.
CEN, European Committee for Standardization 2008

European e-Competence Framework (CEN CWA 2008)
Part 2 – User guidelines for the application of the Euro-
pean e-Competence Framework.
CEN, European Committee for Standardization 2008

European ICT Skills Meta-Framework – State-of-the-Art
review, clarification of the realities, and recommenda-
tions for next steps (CEN Workshop Agreement 15515).
CEN, European Committee for Standardization 2005

The European Qualifications Framework for Life-
LongLearning. Luxemburg: Office for Official
Publications of the European Communities 2008

Multistakeholder partnerships for e-skills in
Europe. empirica GmbH, Bonn 2008

## Links to communities and activities

**CEN/ISSS Workshop ICT Skills**
www.cen.eu/cenorm/sectors/sectors/isss/activity/wsict-
skills.asp

**European e-Competence Framework**
www.ecompetences.eu

**ICT Lane – Towards a shared European language for
ICT qualifications and competences**
www.ict-lane.eu

**ICT Certification in Europe**
www.ict-certification-in-europe.eu

**Interoperability of European e-Career services**
www.cen.eu/cenorm/sectors/sectors/isss/activity/wsict-
skills.asp

**European e-Skills and Career Portal**
http://eskills.eun.org

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