



**4th IT STAR WS on ICT Skills, Education and Certification: the Multi-stakeholder
Partnership
27 – 28 November 2009, Rome, Italy**

European E-Competence Framework (e-CF)- www.ecompetences.eu

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Introduction

This paper provides a brief overview of the activities of the CEN WS on ICT Skills and the European e-Competence Framework, its rationale, structure, dimensions, applicability and future development. It also takes a look at the e-CF introduction and take-up in the IT STAR Region and the "new" EU member countries of Eastern Europe.

For detailed information, we recommend the full documentation, including User Guidelines and other supportive material, posted at www.ecompetences.eu.

I. CEN and e-CF

CEN is the European Committee for Standardization whose mission is to assist the European economy in global trading, the welfare of European citizens and the environment by providing a platform for the development of European standards (EN), technical specifications (TS), reports (TR) and CEN workshop agreements (CWA).

One of the workshops within CEN focuses on ICT skills. It is managed with the support of DG Enterprise and Industry, the European Center for the Development of Vocational Training (Cedefop) and CEPIS. Since its establishment, the WS adopted several CWAs related to ICT skills and university graduates, national frameworks, the European Qualifications Framework and other.

The European e-Competence Framework and User Guidelines (resulting from e-CF project 1.0) were published by CEN as CWA 15893-1 and 15893-2 in December 2008. In March 2009 a follow-up project "e-CF in Action" was kicked-off and this is one of four current projects conducted by CEN under the CWA process.

e-Competence Framework (e-CF 1.0)

The e-CF is the result of two-years' work and a process of European multi-stakeholder cooperation on several levels. This involved ICT e-Skills stakeholders comprising the CEN WS on ICT Skills community including representatives of national competence frameworks, industrial enterprises, professional organizations, HR and ICT management experts.

It is a common reference framework of ICT competences representing the needs of the ICT industry. It is intended for ICT users and supply companies, practitioners, managers, HR departments, the public

sector, educational and social partners across Europe, to be adopted, applied and used in their own specific environments. The focus is on ICT competences as needed and applied on the workplace. e-CF assists transparency and mobility in the EU labor market and is a benchmark from the ICT business employers' perspective, useful in various ways according to specific needs and perspectives.

It addresses:

- suppliers and customers (ICT industry and end-user companies)
- ICT practitioners and managers involved in the ICT business process

and provides a basic orientation for decision-making regarding training, career development, recruitment, assessment and other and gives the possibility for better understanding of the competence needs of companies. One important characteristic is that it provides a structure that could be related to and linked with existing national ICT competence models to assist a common European translation.

e-CF Structure

The Framework is structured on the basis of 4 dimensions of business and human resource planning requirements:

Dimension 1	5 e-Competence areas, derived from the ICT business processes PLAN - BUILD - RUN - ENABLE - MANAGE
Dimension 2	A set of reference e-Competences for each area, with a generic description for each competence. 32 competences identified in total provide the European generic reference definitions of the framework.
Dimension 3	Proficiency levels of each e-Competence provide European reference level specifications on e-Competence levels e-1 to e-5, which are related to EQF levels 3-8.
Dimension 4	Knowledge and skills related to the e-Competences are indicated as optional framework components for inspiration. They are not intended to be exhaustive.

- Dimension 1 reflects the 5 e-Competence areas of the ICT business process
- Dimension 2 defines a set of reference e-Competences for each area, with generic descriptions
- Dimension 3 aligns proficiency levels of each e-Competence (on a scale e-1 to e-5) with the European Qualifications Framework (levels 3 to 8).
- Dimension 4 is dedicated to knowledge and skills related to the e-Competences. These are indicated as optional framework components for inspiration.

e-CF adopted definitions

Competence: A demonstrated ability to apply knowledge, skills and attitudes for achieving observable results.

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

Skill: Ability to carry out managerial or technical tasks. Skills are components of competences and specify some core abilities, which form a competence.

Attitude: cognitive and relational capacity (e.g. analysis, synthesis, flexibility, pragmatism,...).

32 e-Competences and 5 proficiency levels

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					
	A.2. Service Level Management					
	A.3. Business Plan Development					
	A.4. Specification Creation					
	A.5. Systems Architecture					
	A.6. Application Design					
	A.7. Technology Watching					
B. BUILD	B.1. Design and Development					
	B.2. Systems Integration					
	B.3. Testing					
	B.4. Solution Deployment					
	B.5. Technical Publications Development					
C. RUN	C.1. User Support					
	C.2. Change Support					
	C.3. Service Delivery					
	C.4. Problem Management					
D. ENABLE	D.1. Information Security Strategy Development					
	D.2. ICT Quality Strategy Development					
	D.3. Education and Training Provision					
	D.4. Purchasing					
	D.5. Sales Proposal Development					
	D.6. Channel Management					
	D.7. Sales Management					
	D.8. Contract Management					
E. MANAGE	E.1. Forecast Development					
	E.2. Project and Portfolio Management					
	E.3. Risk Management					
	E.4. Relationship Management					
	E.5. Process Improvement					
	E.6. ICT Quality Management					
	E.7. Business Change Management					
	E.8. Information Security Management					

Fig.1. Dimension 2 of the e-CF identifies 32 e-Competences

Figure 1 shows the 32 e-Competences that are identified in Dimension 2.

Generic descriptions, proficiency levels (Dimension 3) and Knowledge and Skills (Dimension 4) are shown in Fig 2.

Dimension 1 e-Competence area					
A. PLAN					
Dimension 2 A.1. IS and Business Strategy Alignment e-Competences: Title + generic description Anticipates long term business requirements and determines the Information System model in line with organisation policy. Makes strategic ICT policy decisions for the enterprise (ERP, CRM, Groupware, Network etc.).					
Dimension 3 e-Competence proficiency levels (on e-CF levels e-1 to e-5, related to EQF levels 3 to 8)					
	Level 1	Level 2	Level 3	Level 4	Level 5
	—	—	—	—	Provides strategic leadership to reach consensus and commitment from the leadership management team for the construction and implementation of long term innovative solutions.
Dimension 4 Knowledge (k) and skills (s) examples s1. analyses business processes and architectures s2. determines requirements for processes related to ICT Services s3. identifies, analyses and defines user/customer needs s4. k1. knows ERP system potential and opportunities k2.					

Fig.2. Generic descriptions, proficiency levels, k&s.

As an example, in e-Competence area A “Plan”, Dimension 2 A.1. “IS and Business Strategy Alignment” the corresponding generic description is: “Anticipates long term business requirements and determines the Information System Model in line with organization policy. Makes strategic ICT policy decisions for the enterprise (ERP, CRM, Groupware, Network, etc.) In Dimension 3 the specific proficiency level is determined to be 5 “Provides strategic leadership to reach consensus and commitment from the leadership management team for the construction and implementation of long term innovative solutions”.

User Guidelines

For the understanding, adoption and use of the e-CF an accompanying guide is developed.

These guidelines:

- explain the overall context, background and aims
- explain the main principles and methodological choices
- enable ICT stakeholders across Europe to adopt, apply and use the e-CF in their environment

II. European “e-CF in Action” follow-up project (2.0)

The European Commission is supportive of the e-Competence Framework development and its long-term maintenance and actualization. As mentioned, a follow-up project was kicked-off early this year with the following objectives:

- Ensure maintenance in accordance with published framework experience and feedback (maintain and update dimensions 2 and 3 -- competence descriptions and levels, identify further high-value competences and add if required)

Efforts would be made to collect and analyse feedback on the e-CF, circulate the framework among further groups of stakeholders, update descriptions and add new competences where needed, collect and integrate final feedback for the European e-Competence Framework version 2.0.

- Further develop Dimension 4 ‘Knowledge and Skills’ associated with identified e-competences (determine and specify the way to relate knowledge and skills to the overall framework)

In presenting the forthcoming e-CF to interested stakeholders, it became clear that there is significant interest in a specification of this dimension. It will support linkage between on the job ICT competence

requirements (Industry and Public Sector) and educational products developed by higher education, vocational training and qualification providers across Europe.

Accordingly, for each e-competence, a set of “core” knowledge and skills will be identified with the support of qualification and training providers and developers (both public and private). Knowledge and skills will be defined systematically and will be expressed in learning outcome terminology in line with the EQF. Compliant with the aim of the e-CF to promote European ICT labour force development and competitiveness, the knowledge and skills dimension will not be exhaustive, but will provide pragmatic support to employers and education providers. The articulation of knowledge and skills will provide flexible guidance for training institutions; enabling design of educational offerings to meet employer requirements and position qualifications transparently and competitively in the European e-skills market.

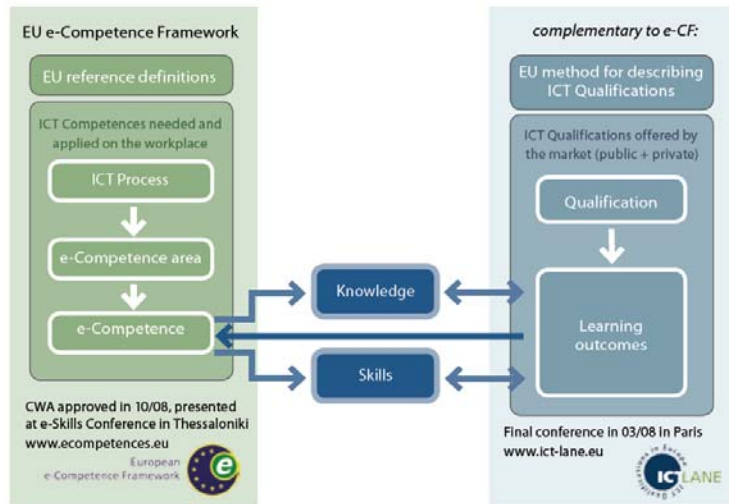


Fig. 3 Relationship of e-Competences with ICT qualification contents by specifying Dimension 4 of the European e-Competence Framework (source: www.ict-lane.eu)

The inclusion of an enhanced knowledge and skills element will make the e-CF application wider and will strengthen the capability to bridge ICT competence demand (industry and public sector) and e-Skills training supply by applying a common language, which is “competence” and also “learning outcome” oriented.

- Develop presentation for daily users coming from ICT industry, qualification and training (user focused framework navigation structure with easy guidance and pragmatic access to competences and skills descriptors, graphical design for reference material - posters, documents and web pages, online solution for implementation on appropriate web-sites)

Application by employers and other stakeholders requires a simple, logical and innovative presentation style to support user take-up. The e-CF version 1.0 model provides a credible structure, however, it requires orientation towards casual users if it is to be widely applied. To provide value to employers and other stakeholders, there is a need for a more attractive, eye-catching framework navigation and design structure. The 2.0 deliverable will be a graphical design in the form of a chart/scheme, which can be used in reference material such as posters, documents and web pages to provide an easy navigational method. To determine the most appropriate navigation method, ‘best of breed’ graphical interfaces will be investigated.

- Work on e-CF methodological documentation for scientific and/or methodologically interested public from higher education, science and research

An essential consideration within the 1.0 framework development philosophy was to work towards an end product, which is readily usable by employers. Further discussion with stakeholders from science and

research showed a high interest and need to receive further methodologically founded documentation. This requirement will be addressed by the development of methodological documentation addressing the entire project to support increased understanding and acceptance of the framework by the higher education and research community.

- Update of the e-CF User Guidelines

The guidelines will also be updated to explain the framework version 2.0.

A European expert working group for the “e-CF in Action project” was established in early 2009 comprising representatives of the ICT Industry, social partners, national ICT framework stakeholders, as well as ICT higher education, qualification and research.

The updated framework is planned for publication as a CEN Workshop Agreement in autumn 2010.

III. e-CF and the IT STAR Region

With a few exceptions, the IT STAR region (currently 3 old EU-member states, 8 new EU-member states and 3 western Balkan states, but soon to grow) was insufficiently involved in the activities leading to e-CF 1.0. Therefore, it was deemed necessary to devote special attention to stakeholders from the Region, the 10 “new” EU member states and other non-EU member states.

In our ongoing work in this region e-CF is presented as a European multistakeholder-agreed neutral reference for ICT professional competences across the EU member states and all industry sectors. The fact that e-CF has the potential to become a major asset and that it is closely aligned and related to the European Qualifications Framework (EQF), adopted by the European Parliament and Council on 23 April 2008, is accentuated. The e-CF, as an important activity of the CEN WS on ICT Skills, is actively promoted with the support of IT STAR, the regional ICT Association in Central, Eastern and Southern Europe:

- The last 3 issues of the IT STAR Newsletter -- <http://nl.starbus.org> contain e-CF related articles.
- Several of our presidents and executives -- Messrs. V. Baltac, G. Occhini, N. Schlamberger, E. Telesius -- were supportive by providing endorsements and assistance in promoting the e-CF in their respective countries.
- The e-CF was presented at the recent LIKS -Lithuania "Computer Days - 2009" conference organized in conjunction with the 20th Anniversary of LIKS with the attendance of senior representatives of government, parliament, academia and industry. Further presentations within the Region are envisaged.
- The e-CF will be considered during the forthcoming IT STAR Conference *on ICT Skills, Education and Certification: The Multistakeholder Partnership*, 27 - 28 November, Rome within the session related to the activities of the CEN WS on ICT Skills.

The Framework is referred to, considered and used in the following concrete cases known to us:

- A process to match the computing curricula at Sofia University (the largest university in the country) with the e-CF has been initiated and will further reflect on the bachelor, master and doctoral levels (*endorsement by R. Nikolov*).
- The e-CF and the EQF efforts have been adapted by the Hungarian higher education, by the Committee for Program Accreditation (*see paper by P. Dobay*).
- AICA, in collaboration with CEPIS, is definitely oriented to make efforts in aligning the EUCIP Standard with the e-CF (*see paper by R. Bellini*).
- CNEL – Italy considering the e-CF approach, has proceeded to establish a specific ICT Standard and Certification Table to help awareness and discussion on this topic at a high institutional level and to propose this method to enhance the convergence processes between the demand and the supply sides in other fields of qualified professional services (*see paper by V. Gervasio*).

Our feedback from the communications activities so far is quite positive and the interest of individuals and national professional ICT societies is encouraging. These societies support various programs related to the Bologna process and to certification schemes (i.e. EUCIP and ECDL related). They find the e-CF fully compatible with their initiatives and they see value in aligning and integrating the e-CF into their activities and programs.

Further work is in progress and the feedback from the Region would contribute to the project development. A survey and on-line questionnaire will be available in December. All IT STAR member societies as well as other stakeholders in the region – representatives of governmental institutions, trade unions and employer organizations – were contacted and we look forward to their participation.

The participants of the 4th IT STAR WS on *ICT Skills, Education and Certification: the Multi-stakeholder Partnership* are also kindly invited to take part in the survey. **A follow-up message containing the questionnaire link will be sent in early December**

IV. Useful Links

e-CF 1.0 overview and full version:

http://www.ecompetences.eu/site/objects/download/4756_EuropeaneCompetenceFramework1.0.pdf

User guidelines for e-CF application:

http://www.ecompetences.eu/site/objects/download/4758_UserGuidelineseCF1.0.pdf

e-CF 1.0 executive overview:

http://www.ecompetences.eu/site/objects/download/4983_ExeoverviewEuropeaneCompetenceFramework.pdf

CEN Workshop on ICT Skills: <http://www.cen.eu/cenorm/sectors/sectors/iss/activity/wsict-skills.asp>