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# E-Skills Competences In Europe: A Partnership to Deliver Sustainable Value

*Hugo Lueders*

*Industry-based competences and certifications (IBCs) are fast becoming an integral part of the Information and Communications Technology training landscape. However, a common framework that addresses how IBCs can be used to align and improve workforce preparation systems is lacking. This is an important issue that requires exploration as policymakers, firms, individuals, and educators try to understand how to bridge the gap between the demand and supply of skilled Information and Communication Technology (ICT) workers internationally. In this article, we will look at how industry-based certifications can play a crucial role in a credentialing system that supports skills development, innovation and life-long learning, and the importance of Multi-Stakeholder Partnerships (MSPs) to make this happen.*

**Keywords:** e-Skills, Industry-based Competences and Certifications (IBCs), Information and Communication Technology (ICT), Multi-Stakeholder Partnerships (MSPs), Training.

## 1 Introduction

Several important surveys, studies and white papers produced in the past few years have highlighted the growing importance of the knowledge-based economy for 21<sup>st</sup> century growth, prosperity and political stability. Many of them have been produced in the context of the European Union's Lisbon Agenda, re-launched in 2005 with even more emphasis on the key role of Information and Communication Technology (ICT) to European growth and competitiveness, and a heightened sense of urgency in matching skills to emerging and changing technology, and to job specifications.

One of the most pressing issues is certification of e-competences, not only in Europe but worldwide in ICT-dependent economies.

CompTIA, the Computing Technology Industry Association, produced a milestone survey for the European e-Skills 2004 Conference in Thessalonica on behalf of e-SCC<sup>1</sup>, entitled "The Situation and the Role of E-Skills Industry Certification in Europe"[1]. This was followed by the Tunis e-Skills Declaration on e-Skills Capacity Building for Growth and Employability from the World Summit of the Information Society in November 2005, a Topic Paper from the Working Group on Skills and Employability of the Eu-

## Author

**Hugo Lueders** has worked for many years in the ICT industry, and is a passionate believer in bringing stakeholders together to provide solutions to the e-competences challenges facing the European Union. He is Secretary General of the European e-Skills Competences Consortium (e-SCC), serving also the European Alliance on Skills for Employability, a multi-stakeholder partnership to enhance ICT literacy and professional skills training across Europe. He is also Director, Public Policy EMEA for CompTIA (the Computing Technology Industry Association) and European Director of the Initiative for Software Choice (ISC). Mr. Lueders has twenty years experience as corporate counsel with the automotive industry in Europe, Africa and East Asia. He served for several years as First Secretary with the German Embassy in Japan and holds a IEP Paris degree in political science as well as a Paris Sorbonne degree in international public law. <hlueders@comptia.org>.

ropean Commission's Task Force on ICT Competitiveness and Uptake in September 2006 [2] and by the "Thessalonica Declaration" of the European E-Skills 2006 Conference, October 2006 [3], all of which have been instrumental in guiding the author's thinking<sup>2</sup> in developing this article.

Additionally, this paper draws upon a technical report on ICT certification in Europe by R. Bellini, P. Schgör, and P. Weiß [4], and a 2005 paper by Michiel Van der Voort, Vice President of EXIN International on "European-wide Recognition of e-Skills Certification from an Industry Perspective" [5], as well as other sources which will be cited in the course of this article.

## 2 Challenges in ICT Training and Education

*Every economy has a driving force. The agricultural economy relied on land, while the industrial economy leveraged machines. Two critical commodities anchor the knowledge economy of the 21<sup>st</sup> century: people and knowledge.*

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<sup>1</sup> the e-Skills Certifications Consortium recently changed its name to the "e-Skills Competences Consortium. <www.e-scc.org>.

<sup>2</sup> Hugo Lueders is Secretary General of the e-SCC Consortium. The views expressed herewith are purely those of the author and may not necessarily be regarded as stating an official position of the e-Skills Competences Consortium.

**EUROPE AND THE USA:  
SIMILARITIES AND DIFFERENCES** (p.11-12 [1]).

European society and economy have experienced major changes in recent years. Some of the upheaval is related to the enlargement of the European Union but some is due to technological, social and economic trends affecting not only Europe but the rest of the world as well. Seismic technological development has fuelled and shaped other changes and prompted the EU to launch a number of policy initiatives such as the "Lisbon Agenda" to speed the transition to a sustainable and all-inclusive knowledge-based economy.

Particular attention is currently being paid in EU Member States to the availability of skilled ICT professionals. The E-Skills Monitoring Group was formed in 2002 under the auspices of the European Commission with the participation of all EU Member States and Norway and the objective of analysing and monitoring the demand for ICT and e-business skills, and also actions aimed at improving the availability of these skills.

A European e-Skills Forum was created in 2002 to bring together all relevant stakeholders for discussion and action to address mismatches of ICT/e-business skills supply and demand. This Forum includes representatives from each Member State and Norway, the Commission, international organisations, economic and social partners and universities/vocational training institutions.

Subsequent European e-Skills Forums have refined and focused views on immediate needs and stakeholders, culminating in 2006 with the Thessalonica Declaration, which called upon all relevant stakeholders to include certain items in a long term e-skills agenda, including setting up an Industry Leadership Group and improved integration "of industry-based ICT curricula and certifications into formal education, with a focus on tertiary education and vocational training." (p.4 [2]).

Meanwhile, in the USA, concern about the pending problem of skills demand versus supply has been driven by the business sector rather than the government. There is a recognition in the public sector that today's knowledge-based economy will continue to result in occupations requiring "post-secondary" knowledge and skills but there has been little practical commitment of ideas or resources from that sector to address the shortfall.

US experts caution that this gap should not be viewed as a simple "workforce development" problem, and that it will not be closed by relying on short-term, job specific training financed by employers and/or through job training systems of poorly resourced workforce development agencies. Many believe that this gap can only be bridged through a new educational commitment – one that can help adults already in the workforce get access to post-secondary education and gain the credentials they need to succeed in the knowledge-based and ICT- facilitated economy.

This indicates that a comprehensive response by policy makers, business leaders and education officials is needed in the USA (and indeed everywhere) when it comes to validation of e-skills.

ASTD (American Society for Training & Development) Public Policy Council (2003) p.10 [1].

In its 2004 paper, CompTIA cited the statement above, and also quoted from the World Bank that "creating and exploiting ideas are the primary means to prosperity in today's knowledge-based economy" observing that people are the critical commodity of the 21<sup>st</sup> century (p.10 [1]).

Moreover, another World Bank survey declared that people must be able and willing to produce, create, and use knowledge, as well as interact with a continuously changing information infrastructure to facilitate the effective gathering, communication, dissemination and processing of information (p.10 [1]).

**2.1 The Need for Life-long Learning**

These new and unprecedented demands on people have far-reaching implications for education and training, and place a premium on life-long learning.

Members of the Working Group on Skills and Employability of the European Commission's Taskforce on ICT Competitiveness and ICT Up-take remind us that even non-ICT related professions require a basic level of ICT-skills at a minimum, and say that "innovation and ICT uptake in Europe are thus highly dependent on the e-skills of the workforce" (p.4 [2]).

The Working Group goes on to say that "where knowledge becomes the main value driver for the business and the key to be employable over the duration of a working life, technology enabled learning (e-learning) can significantly contribute to lifelong learning and make it a reality" (p.5 [2]).

But if we acknowledge that e-competences have become almost essential tools for life-long learning, we must also acknowledge that life-long learning is essential for e-skills competence-building and certification, as businesses "face the need to respond to the shortening of the technology life-cycles in ICT and the accompanying obsolescence of related knowledge, skills and competences of their employees" [4].

**2.2 Recognition of Learning**

The demand for life-long learning creates the need to account for all categories of formal and informal learning and use alternative mechanisms for delivering learning (e.g. distance learning, e-learning, etc). This demands a requirement for a flexible credentialing system to provide those pursuing life-long learning with the ability to formally document their continuously evolving stock of knowledge and skills.

Such a system needs to:

- Facilitate linkages between different types of qualifications
- Articulate training standards and qualifications that link formal and informal learning
- Integrate the needs of the labour market (p.8-9 [1]).

Worker mobility adds urgency to the certification dilemma. Worker mobility is on the increase around the world,

and is highly visible in Europe as a consequence of enlargement of the European Union coupled with growth of the multinationals. This presents challenges for employers as well as those who want to move countries to further their careers, or simply to find a job, in terms of being able to quantify and certify skills and training.

Bellini, Schgör and Weiß note in their technical report to the European Commission for an initiative for ICT Certification in Europe that certification "appears to be an appropriate means to increase the mobility of the ICT workforce in Europe" [4]. Certifications need to be portable and recognised by employers no matter where they are located.

Already the use of Industry-Based Certifications (IBCs) in the ICT industry has changed the manner in which knowledge and skills are recognised. This is not surprising given the rapid pace of change in the industry, driven by competitive pressures.

### 3 What do We Mean by Certification?

Before answering the question above, perhaps we should take a step back and define more precisely what we mean by "e-skills".

The Working Group on Skills and Employability says that e-skills enable use of ICT tools which in turn "enable acquisition and deployment of the 'real life' employability skills that employers say they most need – literacy, numeracy, teamwork and collaboration, meeting deadlines, and critical and strategic thinking." (p.4-5 [2]).

Moving on to the meaning of "certification," Michiel Van Der Voort, Vice President of EXIN International, posits a very basic and simple definition in his paper "European-Wide Recognition of e-Skills Certification from an Industry Perspective":

*Certification is a formal validation of knowledge, skills and competencies. The goal is to ensure that an individual has the knowledge, skills and competencies to perform a particular job.* (p.5 [5]).

Certifications are credentials that result from a voluntary evaluation process whereby an individual's knowledge and/or skill in a particular subject area is verified against a set of predetermined skill standards by means of an objective assessment. Moreover:

- **Certifications differ from skill standards, certificates, assessments and licences.** Certifications formally attest to, and publicly recognise an individual's attainment of knowledge and skills required for a specific role within an occupational cluster or across an industry sector.

- **Unlike licences, certifications are not granted by a governmental entity and they do not provide individuals with the "right to practice".** They are voluntary, and in the ICT sector, usually granted by industry stakeholders. They provide *de facto* recognition by business in the marketplace.

- **Certifications employ standardised assessments, not attendance, to define success.** The assessments provide objective, third-party validation.

- **Certifications are based on skill standards, but**

**they are not skill standards.** Instead, certifications provide formal documentation that an individual, by successfully passing an assessment, has met the performance specifications delineated within the skill standards. (p.17-18 [1]).

Certifications are not exclusive to the ICT industry, but they have become closely identified with the computing technology sector due to their history, outlined below.

In general, there are two target populations for certifications:

- **ICT Professionals – ICT is their main job responsibility.**

#### BRIEF HISTORY OF THE ICT CERTIFICATION LANDSCAPE (p.19 [1]).

ICT certifications were initially developed by professional societies (e.g., the Institute of Electrical and Electronics Engineers) representing individual computing professionals. These certifications, created for the purpose of "self regulation," covered a broad range of vendor-neutral competencies. However, no one certification gained broad recognition in the industry. This all changed with the introduction of networked computing and the heavy reliance of ICT technology suppliers on distribution channels in the late 1980s. It is at this point that ICT technology suppliers became the driving force for ICT certifications.

Novell, commonly credited as the firm that permanently changed the ICT certification landscape, initially created their Certified Network Engineer (CNE) certification program to supplement an over-burdened technical support function. It served as a first line of defence against common networking problems. However, the program evolved to become part of an initiative to literally "entrench" Novell's products among a highly targeted group of purchase-decision influencers. In this initiative, certification became a means for stratifying distribution channels based on their competency. Once it recognized the benefits of Novell's use of certifications, Microsoft soon joined the fray with its MCP programme. Similarly, Cisco set up Cisco Career Certifications.

The success of vendor-specific certifications, in turn, spurred most major ICT firms to establish their own certification programs. By the late 1990s, over 300 vendor-specific certifications were being offered by software and hardware firms.

Vendor-neutral certifications, on the other hand, rapidly gained momentum starting in the mid 1990s. The driver for this growth was the advent of industry standards for PC hardware and the continued growth of the Internet. As the popularity of vendor-specific certifications grew, vendor-neutral certifications began to gain ground as "solutions-based" credentials that could be used to signal an individual's capability with respect to a host of interrelated technologies. The rise of vendor-neutral certifications further shifted the certification focus from vendor promotion to job readiness. This move raised awareness of certification within the job market as a viable means to signal potential employee's capabilities.

- ICT Users – use ICT to perform some aspects of their job.

There are three broad categories of Industry Based Certifications (IBCs) to meet the needs of these target groups:

**Category 1 – Super-professional:** characterised by the requirement for a four-year degree and/or actual experience in practice (in addition to successful completion of an assessment) prior to gaining certification. Examples include Professional Engineer, board certification for medical specialties, or Chartered Accountant or Certified Public Accountant.

**Category 2 – Professional:** IBCs in this category do not have educational or experience prerequisites and typically target technical, technician and technology workers.

**Category 3 – Basic or "Work Readiness":** These "digital literacy" certifications (such as the European Computer Drivers Licence) play an important role in workforce development programmes and/or in providing evidence of basic competency in computer usage. (p.20 [1]).

Observers inside the ICT industry and within governmental bodies or opinion-leading bodies, look upon the bewildering (and increasing) array of available industry certifications with some consternation. For example, the CompTIA Tech Career Compass lists some 800 global ICT certifications. Further, CompTIA estimates that over 69 ICT vendors run certification programmes with approximately 4.5 million individuals certified worldwide. (p.2 [5]).

Michiel Van der Voort observes that the numbers alone suggest that there are too many certifications and employers have no way of knowing their value. He says companies are looking for transparency and trustworthiness in a limited set of global certifications (p.2 [5]). This observation seems to be shared by Bellini, et al. who state that "a multitude of offerings and products do exist and a proliferation of job titles and roles can be observed. As a matter of fact, the certification market is difficult to overview due to significant variety and diversity of ICT skills certification products ..." [4].

### 4 The Necessity for Partnerships

Today, computer and media literacy represent essential building block competences that, like reading and writing, demand fluency. However, as noted in a Eurostat Report of June 2006, well over half of Europe's population have little (15%) or no (37%) basic computer skills [6]. Yet despite this obvious e-skills shortage, business sector certification and training continues to occupy an entirely separate domain from public sector education policy.

So it is not surprising that important areas of business and commerce which have great potential for the European economy also suffer from a lack of ICT skills, even though certifications are abundant, as we have already seen.

Let us take the use of Radio Frequency Identification (RFID) as an example.

In today's ICT-embedded society one specific area of technological development that is seeing a dramatic increase in demand for qualified professionals is the use of RFID.

According to one estimate, 600 million RFID tags were sold in 2005 alone and the number of tags delivered in 10 years will be over 450 times the number actually to be delivered this year.

With a diverse range of business applications that use RFID, such as transport and logistics, access control, real time location, supply chain management, manufacturing and processing, agriculture, medicine and pharmaceuticals, Government sector and the consumer field, the need for skilled RFID technicians is acute.

Yet, a 2007 CompTIA survey showed that there are fewer than 1,000 qualified ICT professionals available worldwide who understand and know enough to deploy and service RFID technology. [7] Compared with the hundreds of thousands of technicians who are certified by ICT companies for other purposes (such as fixing PCs or servers) the current number of available RFID skilled workers is very low.

This is but one example of an obvious mismatch between supply and demand of specific e-skills. It shows that certifications are a means to an end – not the end themselves.

ICT qualifications developed by ICT companies play an increasingly important role in the supply of up-to-date and in-demand skilled labour. However, e-Skills, business sector certification and training continue to occupy an entirely separate domain from public sector education policy. Groups including the European e-Skills Forum and the European Commission's ICT Task Force have warned of "parallel universes" arising between industry-based and formal government-supported education in ICT.

This disconnect between public education and industry training means that available resources and expertise are not being productively used to confront this major economic issue. There is therefore an obvious need to build bridges between industry and education.

The e-SCC (e-Skills Competences Consortium) was formed in 2003 to address this concern by bringing together members of the European ICT training industry and other stakeholders concerned to call upon public and business-sector actors to establish a political framework which will allow recognition and/or endorsement of the important role and competence of the commercial ICT training industry in bridging the e-Skills gap in the EU.

More recently the "European Alliance on Skills for Employability" was launched in January 2006 by the e-SCC members together with other partners like State Street and Randstad to help better co-ordinate industry and community investments, services and other offerings, dialogue and engagement with NGOs and public authorities. [8]

#### 4.1 Multi-Stakeholder Partnerships – One Solution

Partnerships between business, government and civil society are a growing feature of both industrial and emerging economies. Such multi-stakeholder partnerships (MSPs) are necessary because it is increasingly clear that no single sector in society can deliver the complexities of sustainable development and education in today's global economy.

MSPs build on the idea that the business sectors can complement, supplement and extend services provided by the public sector by increasing the available resources. Another advantage is utilising and combining the respective strengths and resources of the different actors, and compensating for each other's respective weaknesses (p.4 [9]).

In terms of certification of e-skills, such a partnership must find ways to enable knowledge flow between industry and educational institutions. This means:

- Defining what knowledge and skills are relevant for companies, for whole industries and/or for industry clusters.
- Defining a mechanism for disseminating information regarding what knowledge and skills are relevant to firms, industries and/or industry clusters.
- A need to provide individuals the capability to acquire and/or signal the acquisition of relevant knowledge and skills – regardless of how they were acquired.
- A coherent system to guide relevant individual professional development to meet the needs of employers and society (p.9 [4]).

MSPs have been identified as the main tool for inclusion/integration of industry-based certifications into traditional, state-recognised training. A key corner-stone is co-operation between partners of various sectors to develop jointly industry-based curricula, certifications and training materials, either vendor specific or vendor neutral.

In an MSP, the roles of e-skills stakeholders might be:

**ICT industry training channels:**

- Ensure that performance standards (associated with industry certifications) and validation support "workability" by closer alignment to industry requirements.

**Academic and Adult Learning (AL) educational institutions:**

- Ensure – beyond the public needs of general AL education goals – that credentials they confer remain relevant industry and other stakeholders and the society at large.

**Governments and public institutions:**

- Ensure a tech-neutral enabling environment to provide individuals with the opportunity to attain workable e-skills with identifiable value through self-training or other learning modes.

**4.2 Examples**

Examples are emerging in the European Union's Member States of steps toward MSPs for e-skills certification and recognition that bridge the "parallel universes". In the UK and in the Netherlands, there are programmes to facilitate recognition of vendor certifications affiliated with the educational systems in those countries. The Hungarian government has made a commitment to create a new "National Vocational Qualification". The result was the first NVQ developed solely by industry and formally recognised by the national educational system of a European country. (p.10-11 [9]).

The e-Skills Competences Consortium envisages an

eventual EU e-Skills Meta-Framework to "permit mutual recognition within the EU of public qualifications and vendor certifications gained within the workplace and across different national educational systems, all the time respecting national differences and preferences." (p.12 [9]).

Also on the broader European level, there are plans proposed by the European Commission for the creation of a European Institute of Technology (EIT), launched in 2005 along with a rejuvenated and revised Lisbon Agenda. The EIT is "intended to be a new flagship for excellence in higher education, research and innovation." [10] The ICT and academic communities are optimistic that the EIT can become part of an MSP to drive mutual recognition of ICT competences and applicability to the real world of the knowledge-based economy.

And, on a global scale, the World Economic Forum and UNESCO have created Partnerships for Education (Pfe), to work collaboratively with other global initiatives and deliver effective private sector contributions to "Education for All" goals. Pfe will provide specific help in crafting and sustaining what the Forum and UNESCO call Multi-Stakeholder Partnerships for Education (MSPE). [11] One can envisage see how this initiative could be applied to "MSPEs" for ICT education and building e-competences.

**5 Conclusion**

*The emerging life-long learning paradigm of the 21<sup>st</sup> century implies a **stronger role for key stakeholders** compared to the past. [...] Co-operation between users and providers of e-skills employability alike will enable people to acquire the capabilities they need to actively and continuously participate in an inclusive world economy.*

(The Tunis e-Skills Declaration 2005, World Summit on the Information Society [12]).

The multi-stakeholder process needs to address potential barriers and resistance, put in place transitional mechanisms and create positive incentives for change that leverage the creative potential of the different actors, allowing them to work on established as well as new roles and responsibilities. This process will vary from country to country as the strategic framework is translated into action (p.5 [9]).

Some questions that might be used to assess effectiveness of MSPs for e-skill certification might be:

- Do frameworks established through MSPs enhance support and recognition/endorsement of industry-based e-skills training and certifications to bridge formal and non-formal ICT education, self-training and certification?
- To what extent have EU Member States been encouraged to remove any barriers in their funding for education and training that impede vocational education/AL actors and commercial trainers offering industry-based curricula and certification?
- How has multi-stakeholder networking that promotes e-skills capacity building and vocational training partnership throughout the learning value chain been encouraged? Has this networking delivered a range of choices for ICT



professionals and users at all levels?

■ Have MSPs led to the provision of urgently needed fiscal incentives or other forms of financial basic income support options to encourage the pursuit of e-skills that are tested, recognised and certified?

One of the most important near-term objectives for MSPs focused on ICT competences certifications is to raise awareness in academic and policy-making circles about the value of market-recognised credentials. This in turn would guide public recognition of their value. So it is important to “spread the word” through conferences, symposia, networking and articles like this one that talk is being turned into action, particularly in Europe.

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