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- **Informatik-Spektrum**, journal published by Springer Verlag on behalf of the CEPIS societies GI, Germany, and SI, Switzerland
- **ITNOW**, magazine published by Oxford University Press on behalf of the British CEPIS society BCS
- **Mondo Digitale**, digital journal from the Italian CEPIS society AICA
- **Novática**, journal from the Spanish CEPIS society ATI
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Monograph of next issue (August 2008)

**"EUCIP: A Model for Definition and Measurement of ICT Skills"**

(The full schedule of UPGRADE is available at our website)



The European Journal for the Informatics Professional  
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### Monograph: Technology-Enhanced Learning (published jointly with Novática\*)

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\* This monograph will be also published in Spanish (full version printed; summary, abstracts, and some articles online) by **Novática**, journal of the Spanish CEPIS society ATI (*Asociación de Técnicos de Informática*) at <<http://www.ati.es/novatica/>>.

## CEPIS Projects

## Harmonise Outcomes

*Peter Weiß*

*The Harmonise project has been officially approved by the European Commission and received a highly positive rating. The purpose of the Harmonise project was to review the existing qualification and certification schemes for ICT professionals in Europe, and to clarify the underlying schemes, profiles, terminology and curricula. We are pleased to present this extract from the Executive Summary which includes the results of the survey and summarises the main findings of the analysis.*

**Keywords:** Harmonise, Harmonisation, ICT Certification Market, ICT Industry, ICT International Standards, ICT Professional Certification, ICT Professionalism.

### 1 Introduction

The Harmonise project examined vocational ICT qualifications in Europe, with a view to establishing a common basis for assessing and comparing the ICT professional qualifications offered in each country. The project started by gathering information on the current situation, and then examined the need for harmonisation and the feasibility of achieving it. It proposes a number of concrete measures designed to achieve convergence between the existing approaches to ICT skills certification in different countries and provides recommendations on the way in which these differences in various countries and institutions might be made more transparent, with obvious benefits for users and employers.

The project concentrated on certification arrangements and related training offerings, and on career development services offered to ICT professionals in Europe and beyond.

This report analyses four thematic areas:

- ICT Professional Labour Market.
- ICT Skills Certification System.
- ICT Skills Certification Market.
- ICT Professional Certification Quality.

An overview of the key findings is presented in Figure 1.

### 2 ICT Professional Certification

Since the 1990s, ICT certification has become an integral part of the edu-

cation and training landscape. While the growth of ICT vendor-specific certification appears to be slowing, vendor-independent offerings are still in the initial phase of their lifecycle. There is also an observable shift towards profile-based certification. These developments are driven mainly by vendor-neutral and vendor-independent certification providers.

### 3 Need for Harmonisation

The continued development of the ICT industry (and ultimately the success of the economy as a whole) depends on the availability of sufficient numbers of qualified people with the required skills and competences.

The annual cost of software failures in Europe is estimated at almost 100 billion euros. Adequate training of staff would result in improved project success rates and better innovation capability. Thus, ensuring that ICT practitioners are able to perform to professional standards is a matter of vital importance for the economy and for society.

Our survey revealed 62 certification suppliers, delivering 617 types of certification. This proliferation is an obstacle to the achievement of global standards for the ICT profession. It also hampers the development of ICT as a professional discipline, and makes it less likely that employers will recognise ICT as a serious profession adhering to higher principles and clearly defined, international standards.

Our research suggests that employers do not place much value on ICT professional certification. This deserves further examination, as it strongly influences the demand by ICT

#### Author

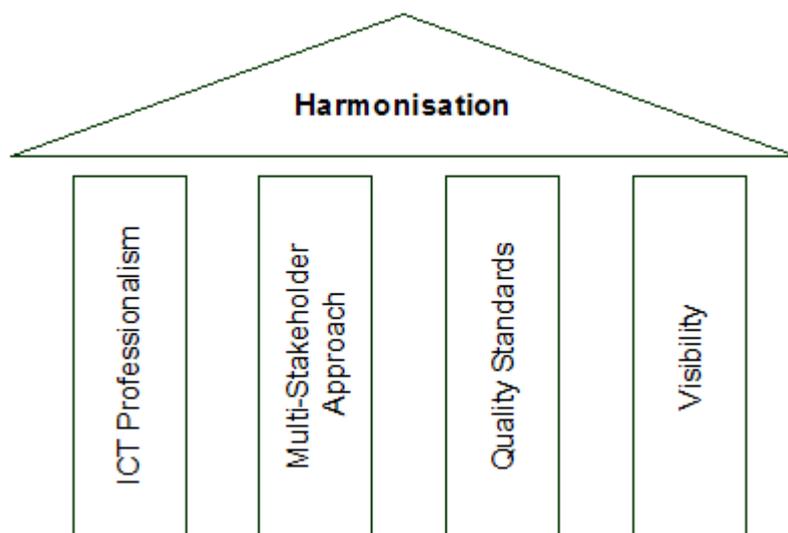
**Peter Weiß** is department manager and team leader in the research group Software Engineering at the Research Center for Information Technology (FZI) in Karlsruhe, Germany. Before he was project manager and member of the research group of Prof. Dr. Wolfried Stucky at the Institute Applied Informatics (AIFB) at the University of Karlsruhe (TH). He received his doctorate in Applied Informatics from the University of Karlsruhe (TH) in 2005. Prior to joining AIFB he was leading the international relations office at FZI for three years. His educational and professional background includes a diploma degree in business engineering from the University of Karlsruhe (TH) (1999) and a certificate of apprenticeship as industrial clerk (1992) from industry. <weiss@fzi.de>.

practitioners for training and certification. We believe that certification should not itself be a priority, but that the obvious need is to establish ICT professionalism and international professional standards.

### 4 Defining Harmonisation

If ICT professional certification schemes are successfully harmonised, the certifications will be more widely recognised, employers and job-seekers will be more aware of them and their value, and it will be clear to all stakeholders what they are and what they mean. This would be of considerable value in establishing ICT as a professional discipline.

In this project, harmonisation was defined in the following terms: the



**Figure 1:** Identified Basic Pillars of the Harmonisation Process.

achievement of broader recognition and transparency of ICT professional certification, higher awareness of what is available in the market, and the promotion of the benefits arising from a consistent, international ICT profession, based on clearly defined standards.

From the start, it was clear to the project team that this was an ambitious and challenging task. A number of pivotal questions were explored with experts and the wider community:

- What are the specific complexities of the ICT certification market?
- How do we expect this market to evolve and change?
- What do we need to do to harmonise this market?

## 5 Towards Harmonisation

The Harmonise project sets out a roadmap for harmonising ICT professional certification, along with concrete recommendations for action. It draws on the EUCIP<sup>1</sup> experience to suggest a path towards how IT Professional Certification harmonisation can be implemented.

The proposed harmonisation approach is built on ICT professionalism, a multi-stakeholder approach, quality standards, and visibility. It attempted

to address the following key questions: Why harmonisation? For whom? and How?

The proposed approach is market-driven; we do not recommend a top-down regulatory approach to the existing market for ICT certification.

## 6 Recommendations<sup>2</sup>

■ Harmonisation activities need to be carefully planned, and must involve all stakeholders. The successful implementation of quality standards will require commitment from all involved and affected parties, and in particular from professional associations, industry, and educational institutions.

■ Harmonisation of ICT professional certification must be seen in the broader context of ICT professionalism. The ICT professional associations play a pivotal role in setting, developing and promoting standards in ICT certification; their desire to develop ICT as a professional discipline is the single most important driver of harmonisation.

■ A sustainable solution to the harmonisation of ICT professional certification must be based on an umbrella approach that allows different certification systems to co-exist and to be cross-referenced in a reference frame-

work. This requires:

- a common language for describing professional skills and competences;
- a standard means of measurement for professional skills and competences;
- a mechanism for independent recognition and quality assurance of those professional skills and competences.

■ Quality standards and accreditation are among the most important aspects of a harmonised European approach to certification. The harmonisation process should review existing quality approaches, and record their scope and objectives, and how they are applied.

■ The contents of certification programmes must be made more transparent. An important step in this direction is the forthcoming European e-Competence Framework, currently under development by the CEN/ISSS Workshop in ICT Skills.

■ A harmonised system should be aligned with European frameworks such as the EQF (European Qualifications Framework) and ECTS (European Credit Transfer System).

## 7 Network of Interest

The Harmonise project has succeeded in establishing a network of interest and links with the major ICT vendors. This has already raised awareness among stakeholders and promoted the need for harmonisation of ICT professional certification.

The project established links to other projects and existing European groups working in related areas that had the potential to support the work of the project. It participated actively in a number of European working groups, such as the CEN/ISSS Workshop on ICT-Skills<sup>3</sup>, and the European e-Skills Forum and its current follow-up activities, as well as liaising with the e-Skills Industry Leadership Board. The aim was to influence ongoing developments, to inform stakeholders and the expert community about the project and its potential outcome, and to ac-

<sup>1</sup> European Certification for Informatics Professionals. <<http://www.eucip.com/>>.

<sup>2</sup> Please, refer to the project for the full version.

<sup>3</sup> <<http://www.cen.eu/CENORM/Sectors/sectors/iss/activity/wsict-skills.asp>>.

quire inputs needed for the performance of the project's tasks. This network of interest will be used to sustain the work of the project and to implement the required changes in the area of ICT professional certification.

### **8 The Harmonise Project Consortium**

The Harmonise project was carried out by a consortium of nine partners led by CEPIS, and including CEPIS member societies from Estonia, Germany, Hungary, Italy, and the United Kingdom, as well as the ECDL Foundation and partners from education and research. The Harmonise project is one of many activities that CEPIS conducts in the area of professional skills. For example, in its recently completed *eSkills Foresight Scenarios for the ICT*

*Industry*<sup>4</sup>, CEPIS took an in-depth look at the core issues affecting the supply of and demand for IT practitioners and professionals. In that study, CEPIS predicted a significant shortfall in the supply of IT graduates over the coming years.

The Harmonise Reference Material website is <http://www.cepis-harmonise.org/harmonise/php/index.php>. The full report will be posted shortly.

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<sup>4</sup> Report to the European Commission's Directorate General for Enterprise & Industry. <http://www.cepis.org/index.jsp?b=0-636-638&pID=648&nID=717>.

## **CEPIS Projects**

## **Selected CEPIS News**

*Fiona Fanning*

### **Euro-Inf Project Final Conference: Register now!**

The final conference of the Euro-Inf project will take place on September 4th and 5th, 2008 in Cagliari, Sardinia. Registration is open and discounts on accommodation are still available.

The Euro-Inf project aims to create a framework to set up a European system for accrediting informatics education at the first and second cycle levels, and in doing so to improve the quality of informatics education programmes, provide a recognised label for accredited programmes and ulti-

mately to increase the mobility of European graduates in accordance with the Lisbon Strategy.

The conference will deal with issues of subject-specific quality assurance for informatics higher education. In particular, it focuses on the activities, results and future of the Euro-Inf project.

The programme and registration information are now available on the website: <http://www.euro-inf.eu/>. Anyone interested in attending is encouraged to register now or contact Frauke Muth [muth@asiin.de](mailto:muth@asiin.de) for further information.

### **Other News**

The CEPIS Legal and Security Informatics group has recently had their paper "*Online Banking Authentication systems*" published in ENISA's Quarterly Review. This publication is the European Network and Information Security Agency's main channel for sharing new developments and best practice. To view this paper in the Quarterly Review: [http://www.enisa.europa.eu/pages/02\\_02.htm](http://www.enisa.europa.eu/pages/02_02.htm).