Common Core Characteristics of IT Professionalism –a Foundation

CEPIS report for the European e-Skills 2009 Conference
Fostering ICT Professionalism, Brussels, November 20th

Version 2.0

Introduction

This document sets out the outcomes of the first round of CEPIS' Expert Panel survey of the common characteristics of IT Professionalism across Europe. It sets the foundation for achieving pan-European consensus on IT Professionalism, including terminology, institutional issues, benefits and actions. CEPIS believes this to be a necessary first step in achieving a common, valued and respected pan-European IT Profession that leads Europe in innovation and adds value to business and society. The Expert Panel survey and related actions are conducted by the CEPIS Taskforce on Professionalism.

CEPIS' activities in this important area to date have included:

- participation in the European e-Skills 2008 Conference in Thessaloniki, October 2008,
- participation in "eSkills and ICT Professionalism" workshop in Brussels, December 2008 and production of workshop's report
- participation and support for "e-skills: Professionalism and Industry-Based Training" in Brussels, March 2009
- preliminary study and Expert Panel review on aspects of IT Professionalism (see below)
- participation and organisational support for "European e-Skills 2009: Fostering ICT Professionalism", November 2009

During late spring and early summer 2009, with the encouragement of DG Enterprise and Industry, CEPIS prepared and conducted a study into IT Professionalism entitled "The State of the Profession: Management of Professionalism," The study, targeted at CEPIS member societies and industry partners, was designed to obtain a preliminary view of:

- Whether or not there is a concept of Professionalism with respect to ICT
- What is the scope/boundary of any ICT Profession
- The level of recognition of ICT as a Profession
- What kind of demand exists for any ICT Profession
- The opportunity for mutual recognition of ICT Professionals

The survey results were studied by the CEPIS Taskforce to elicit the common themes, core characteristics, and other key features of the results in preparation for their consideration by the first episode of an Expert Panel study (a summary of these themes can be found in Annex A). The results were considered by the Expert Panel on 5th October 2009. The panel was drawn from the societies and organisations which responded to the survey; in addition to members of the CEPIS Taskforce, the panel participants were: Ing. Roberto Bellini, President of AICA Milan chapter (IT); Dr. Jaroslaw Deminet, PTI (PL); Marcin Paprzycki, PTI (PL); Paul Heynen, General Manager, Innovation Value Institute (IV), National University of Ireland (IE); Socrates

Socratous, CCS (CY); Dr. Julius Stuller, Institute of Computer Science, Academy of Sciences of the Czech Republic and CSKI (CZ); Prof. Luis Fernandez-Sanz, Universidad de Alcalá and ATI (ES); Jörg Ruegg, SI (CH) – facilitator.

CEPIS acknowledges with gratitude the support and encouragement of DG Enterprise and Industry and the Innovation Value Institute in this endeavour.

In this document, we first present the EU policy context and initiatives relating to this discussion. We then look at the following aspects, as considered by the Taskforce and Expert Panel:

- **Professionalism**: Comments on the concept of Professionalism and the need for Professional Institutions
- **What is IT?** Comments on what is understood by IT in this rapidly changing world, and the need to accommodate various backgrounds and disciplines
- ***Cui Bono*?** Where is the *benefit* from a defined IT Profession?
- **Vision and Action**: CEPIS' aspirations and positive actions

EU Policy Context

Fundamental to the Lisbon Strategy for Growth and Jobs is the deployment of Information and Communication Technologies in every aspect of social and economic activity. Europe's vision of transforming itself into a knowledge-based economy can only be achieved with a workforce equipped with ICT-related skills (e-skills). The European Commission, recognising the necessity of e-skills for Europe's aspirations, adopted the Communication entitled "e-Skills for the 21st Century[1]" which sets a long-term eSkills agenda and strategy. The objective of the strategy is to assist and support Member States to respond to the growing demand for qualified and competent ICT Professionals that subscribe to high standards of Professionalism. Key components of the eSkills agenda are:

- Long-term cooperation amongst stakeholders
- Investment in human resources and e-skills
- Promoting the attractiveness of ICT education and careers
- Fostering employability and e-inclusion through digital literacy and e-competence actions
- Encouraging lifelong acquisition of e-skills.

Since 2007, much progress has been achieved on this agenda. The creation of the e-Skills Industry Leadership Board, the eCompetence Framework[2] and the e-Skills and

[1] COM(2007) 496, "E-Skills for the 21st century: Fostering competitiveness, growth and jobs"

[2] The European e-Competence Framework (e-CF) is a reference framework of 32 ICT competences that can be used and understood by ICT user and supply companies, the public sector, educational and social partners across Europe.

Career Portal[3] all foreseen in the Communication are operational and supporting stakeholder's initiatives.

Since its inception 20 years ago, CEPIS has been actively engaged in the debate to promote e-skills and ICT Professionalism across Europe. However, the European Commission's Communication on e-Skills prompted CEPIS to give a new direction to its work on Professionalism and to align it with the EU eSkills strategy. In this context, the European Commission offered the CEPIS Taskforce the opportunity to present its work to the European eSkills community on several occasions.

Professionalism

The results of the study brought to light many distinct and often divergent views on the concept of an IT Profession; however so far as Professionalism itself is concerned, there was a reasonable convergence of opinion. The Taskforce therefore offers the following description of Professionalism:

> *"**Professionalism** is defined by the exhibition of these* **common characteristics***:*
>
> *Knowledge*
>
> *Quality*
>
> *Ethics*
>
> *Accountability*
>
> *Experience*
>
> *Derives Living"*

A Professional is said to be professionally competent if he/she exhibits all of these characteristics. We can offer some explanation of what is meant by each of these characteristics:

- **Knowledge**:
  A Professional clearly has knowledge of the domain or skill that he or she practices. This is typically expressed by professional institutions as a Common Body of Knowledge (CBOK, or just BOK) that defines a core of knowledge that must be known and understood by all qualified practitioners. It may equally be expressed by the need of practitioners to hold a qualifying academic degree, or to have completed a qualifying apprenticeship (e.g. electricians). In the area of IT, this Body of Knowledge is exceptionally characterised by the fact that it is both emergent and subject to continuous and rapid evolution, making a static definition difficult; nevertheless, there is a core of IT and Computer Science knowledge which has remained relatively stable over the past thirty years, and could be used as a foundation upon

[3] http://eskills.eun.org/

which to build a flexible CBOK that would accommodate the breadth of modern IT[4].

Knowledge, of course, must be maintained and kept current during the Professional's career. The e-Competence framework, as well as other schemes such as SFIA and EUCIP programme have a role to play in this area. It should be noted that knowledge also implies knowledge of related standards, legal implications and obligations.

- **Quality**
  It is evident that a Professional produces a quality product; like Professionalism itself (or beauty!), quality is often more easily recognised than described. Although some are perhaps more useful than others, there are many available descriptions and definitions of quality that can be employed. A good place to start is ISO, which defines "quality" in ISO 9001:2008 as the "degree to which a set of inherent[5] characteristics fulfils requirements[6]." The term "quality" can be qualified by adjectives such as poor, good or excellent, and this definition retains some subjectivity. It is assumed by ISO that this definition embraces almost all classical definitions from "fitness for purpose" through "quality is free" and on to "zero defects" orientation.

  Formally, quality is not necessarily intended to mean excellence or fault-free services and products, but is to be considered relative to the circumstances (i.e. quality is defined against a certain context – budgetary restrictions, use-purpose etc.) Appropriate levels of quality in different circumstances must be allowed for. In determining the relevant level of quality, the organisational outcome to which the Professional is contributing must be considered.

  Whatever the definition, there is an understanding that the Professional employs "best practice methods" to produce quality. Awareness and knowledge of best practice comes from both the CBOK and from continuous professional development (CPD) or learning.

- **Ethics**
  "*Primum non nocere*" ("first, do no harm") typifies the concept of ethics, more commonly exemplified by the *Hippocratic Oath*. Ethics define the boundaries associated with the relationship between the Professional and:
    - customers
    - colleagues
    - society

  As elements of ethics are often cultural, the difference of traditions across Europe renders it difficult to define a single, all-embracing, universally

[4] Within the sphere of IT, it is clear that any statement about knowledge must be broad enough to accommodate both the generalist and the specialist [akin, perhaps, to the General Practitioner and Specialist in Medicine]

[5] "Inherent", as opposed to "assigned", means existing in something, especially as a permanent characteristic.

[6] A requirement is defined as a need or expectation that is stated, generally implied or obligatory.

accepted code of ethics; nevertheless, a single statement of universal ethical *principles* is possible.

A professional society that holds a code of ethics should aspire first to protect society above the individual. Note that observance of ethics is typically measured in their contravention i.e. failure to comply leading to complaint.

- **Accountability**
  The Professional takes personal responsibility for the quality and effectiveness of his or her work, taking care to produce quality output, and taking action to redress deficit and defect. As with the concept of quality, the concept of accountability is relative, and depends on the context. Accountability is both to others (society, customers) and to oneself.

  Accountability to others borrows from other professions (e.g. engineering) where the professional is a guarantor of the quality of the service or product provided. Accountability in organisational terms may be less important, as accountability there belongs more properly to the employer/group/organisation concerned.

  There is some argument for incorporating accountability into ethics. For example, codes of ethics often (though not always) include the notion of accountability. Nevertheless, it is considered important that accountability is expressed rather than implied.

  It was noted that there are levels of accountability which are proportional to the level of experience and/or the level of seniority of the Professional.

- **Experience**
  A Professional is expected to have practical experience of the competence being practised. Such practical experience is clearly lesser in the recently qualified Professional, and commensurately greater in the senior Professional. The Professional is expected to leverage this experience to the benefit of customer, employer and society alike. Since experience is accumulated over time, there must be a proportional relationship between the level of experience of any Professional and the concomitant level of accountability expected. To a certain extent, an academic career track can be considered as the equivalent of certain (business) experience.

  It is commonly understood that there is gradation in vocation (e.g. junior to senior, part-time to full-time, student to professional to retired, and so on); this concept of gradation may be useful in avoiding complications that may arise from the “derives living” characteristic (see below) e.g. consider the retiree, or the IT Professional who is currently a business manager, and so on.

- **Derives living**
  Perhaps the most contentious characteristic, but nevertheless considered necessary, the condition that at least some element of one’s living should be derived from practice is what distinguishes the “true” Professional from the professionally-capable hobbyist or the merely interested. Where this becomes most important (and most controversial) is in the right of society, through some mechanism, to deny any individual the right to practice if necessary (i.e.

in the extreme, quality of practice becomes guaranteed by threat to livelihood). As noted above, this characteristic needs to take account of those who are retired, or who have changed roles, and so on.

We note that it is common practice in many existing professional institutions, for membership panels or committees to recommend for membership of the profession persons who qualify only exceptionally (e.g. who might trade relevant practical experience for lack of academic qualification – or *vice versa*).

What then, is the role of professional institutions in this context? The most obvious, and vital roles are:

- **Public awareness**; not merely of the institution, nor of the Profession itself, but of issues (especially ethical issues) affecting the public; the professional institution has a role in promoting and mediating public debate on important matters which stem from IT and which affect the public, the individual, enterprises and society. Examples from recent times include data protection, data retention, business process patents, fitness for purpose, security, surveillance, open source, safety criticality, autonomic systems, accessibility, usability – and there will no doubt be many more in the future. The institution has a role in education i.e. in helping society obtain greater benefit and understanding (for example, the ECDL is a model for this).
- **Peer Endorsement**; it is not appropriate that membership of a professional institution confers any kind of exclusivity, rather, membership expresses some qualities about the individual that cannot otherwise easily be identified. For example, it indicates how the Professional has developed her career since graduation. More immediately, it demonstrates publicly that the Professional has all the characteristics listed above (knowledge, experience, ethics etc.). In this sense, membership of the institution represents a form of endorsement of the Professional by her peers within the Profession.

The professional institution also exists to promote, foster and support these characteristics for the benefit of society, and of the Profession itself. Historically, institutions were founded to protect society from the risk of charlatans, and thus a professional institution's first responsibility is to society. It might also be said that professional institutions exist to *enforce*; the concept of "enforcement" was a controversial point in the CEPIS Taskforce discussions and yet all recognise it was a necessity through the professional institution, through the state, through contract law or through the market – is ripe for continued debate.

The question of regulation must be considered. It is apparent that an appropriate balance of relevant regulation is desirable: from the market, through statutory means, and through clearly defined and universally accepted codes of ethics. The EU policy trend is to de-regulate professions, and does not encourage the formation of "guilds[7]". It should also be noted that industry or "the market" dislikes regulation; regulation is only tolerated if it generates a benefit. Nevertheless, it may be the case that there is some benefit in some form of regulation for certain roles within IT that

[7] It was affirmed by the Taskforce and Panel that Professional Institutions should not seek to acquire market monopolies, as these tend to work against the public good.

are considered critical for public health and safety, business and society (e.g. effecting security.)

Regulation of the IT professional could also have the undesirable side effect of encouraging some businesses to locate outside of Europe to countries where regulation (of the profession) is weaker. While this raises the importance of international cooperation and harmonisation, it also emphasises the importance of separating the concept of the "full Professional" (someone who adheres to the highest level of professional quality, has a high level of accountability, etc.) from more general members of the profession[8] (e.g. where the need for accountability is not so great, or the broadness of skill is less important).

Professional validation, therefore, must be accomplished at multiple levels (as well as by multiple bodies), using internationally-harmonised mechanisms. This will allow different countries, at different levels of development to be able to participate in the development of the profession without fear of threat. Awareness needs to be maintained of the challenges and obstacles associated with incompatibility between countries, for example, in countries where a chartering model is possible and countries where it is not. In all cases, the wider benefit must outweigh the cost. A common body such as CEPIS has a clear role to play in this area.

What is IT?

An area that is so broad, is interconnected with so many different spheres, is almost ubiquitous and at the same time is so rapidly evolving that it defies neat definition. Attempts at definition generate much – sometimes heated – debate, and fall foul of boundary issues. Both the Profession itself, and the quality it espouses, are subject to continuous evolution, and corresponding definitions must be adaptable. The definition cannot be too broad, lest it become misleading (is the use of a spreadsheet IT?), not can it be too narrow, lest it result in loss of relevance.

All definitions create boundaries, and it is clear that the boundaries of IT pose difficult challenges. The Taskforce took the view that at this stage in the development of the IT Profession, it is desirable , to eschew the boundaries, and to consider in reality what IT is at its core. The Taskforce therefore offers the following definition of the essential substance of IT, as the foundation for further debate[9]:

> *"IT, or Information Technology, is the study, design, development, implementation, support or management of digital information systems (particularly software applications and computer hardware), and by them solving stakeholders' problems through the management, manipulation, storage and processing of data and information by technological and methodological means"*

An **IT Professional**, then, is a person whose work is defined as in the domain of IT, and whose work exhibits the characteristics of Professionalism proposed earlier.

[8] All members of the Profession should nevertheless aspire to the higher standard.

[9] This definition is derived from that of the *Information Technology Association of America* (now known as TechAmerica) www.itaa.org

It is important that definitions be cautious, so as to not hinder progress (e.g. consider Tim Berners-Lee – inventor of the Web – who by most extant definitions could not qualify as an IT Professional).

There is always the challenge of "domain crossover", exemplified by the interconnected and multi-disciplinarian nature of IT, as it interacts with other spheres. A typical example is the IT Project Manager, who faces a split between being a professional Project Manager who specialises in the field of IT, or an IT Professional whose main practice is in Project Management.

Cui Bono?

Who benefits? Why do we want IT Professionalism? If quality is the central defining characteristic of the IT Professional, then – leaving aside for a moment the choice of definition of quality – everyone benefits. At a more immediate level, the Professional benefits from enhanced reputation. By extension, the customer benefits from the higher quality of the product of the Professional, and so too does the employer, the industry etc[10]. Less obviously, there are wide benefits of varying degrees to all stakeholders from greater mobility of workers, transparency of qualifications and standards, ethical awareness, wider discussion of issues, promotion of professional standards to mention only a few. This is certainly the case with established Professions, and it seems natural that similar benefit should accrue to the IT Profession.

It is important to look at the cost/benefit of Professionalism. Bearing in mind that competition comes from all across the world, Europe needs to look at maintaining its competitive advantage through producing higher quality professionals, as it cannot hope always to compete on pure labour cost.

A cautionary note, and one worthy of further research: while it can be considered self-evident that a professional approach and a professionally-produced product is to be preferred, it remains something of an open question whether or not the market – in the form of employers and consumers – universally expresses a preference for this in its formal sense[11]. The business case for IT Professionalism needs to be made to both the consumer of IT products and services (society), and the consumer of IT labour (industry); demand for IT Professionalism is likely to be balanced between public demand and demand from practitioners.

Vision and Action

It is the goal of CEPIS to foster a pan-European understanding of the concept of IT Professionalism, and from this to develop and promote a pan-European Professionalism in IT, where achievement of quality is the core factor, that spurs innovation, and which drives benefit to the practitioner, to the enterprise, and to society. Such Professionals will be ambassadors of the profession to other

[10] For an interesting catalogue of risks posed by IT, see *Illustrative Risks to the Public in the Use of Computer Systems and Related Technology* at www.csl.sri.com/users/neumann/illustrative.html [12]

[11] A recent study [13] by the Consultative Committee for Professional Management Organisations (CCPMO) in the UK indicates that, for the management professions at least, there is economic benefit associated with membership of professional institutions, and that employers associated a premium with this. It seems reasonable to assume that there would be a comparable effect for the IT Profession.

communities, evangelists of the Professionalism ideal to other practitioners and aspirants, and will drive value and innovation.

In this document we prepare a foundation for this vision through offering for discussion, development and adoption, descriptions of Professionalism and Information Technology, through which the concept of IT Professionalism can be understood. We also discuss briefly the business case for IT Professionalism; such evidence as exists indicates a wide benefit from Professionalism, but more empirical work is needed. CEPIS believes that regardless of the national and cultural diversity around Professionalism, there is scope for EU-level action that supports and assists existing national initiatives. CEPIS calls for:

- The European Commission to continue facilitating the discussion and debate with stakeholders, including ICT professional bodies, industry, academia and national authorities.
- Raising awareness of the general public of the benefits and value of Professionalism. The eSkills week campaign planned for 2010 is one such opportunity.
- Developing, building upon the work of the e-Competence framework, pan-European standards of Professionalism to facilitate mutual recognition of IT professionals across the EU and to strengthen mobility and transparency.

Annex A – Common Characteristics of IT Professionalism

Area	"positive"	"negative"
Professionalism	The following are recognised as characteristic of Professionalism: • Recognised for their competence and skill. • Follows an ethical code • Defined by Quality • Has appropriate training and qualifications • Continuously develops their skill • Belongs to a network of similar Professionals	There is no formal recognition of Professionalism in IT. The meaning of Professionalism within IT is unclear. Professionalism begets monopoly.
The Professional	The following terms are used to describe Professionals and Professionalism: • Domain-specific knowledge • Formal qualification • Recognised as expert • Public affirmation • Active in field • Proficient • Peer-recognised • Clear development path • Experienced • Abides by code/rules • Sense/Duty of responsibility to customer/public • Maintains skills appropriately	The following are blockers to IT Professionalism: • There are too many different kinds for a universal single definition • The concept lacks value in the absence of any industry recognition • There are too many wide-ranging qualifications for consistency
The Profession	A Profession exists to: • administer/maintain/validate/foster profession • Nurture/foster value to public • Set and maintain relevant standards • Create public Credibility • Useful for International	Professionalism can exist without the need for a profession
Professional Bodies	A Professional Body provides the following services: • Development of methods and practices • Career paths • Manage role descriptions • Maintain register • International Harmonisation • Thought Leadership • Indemnity • Policy Formulation • Accreditation • Community-building • Garnering and promulgation of Best Practice.	Professional Bodies are inhibited by: • A Professional Body must itself be "professional" • They are Anti-competitive and monopolistic • Different legal issues exist in different jurisdictions

Area	"positive"	"negative"
Inclusion	Who is qualified to be an IT Professional? • Academically qualified from accredited institutions • Practised with industry qualifications • Not "users"	Scope of "IT" not defined well enough to allow “IT Professional” to be defined.
Levels	IT Professionals exist at different levels as: • Students • Juniors • Seniors	Different levels of IT Professionals are not useful because: • Only real distinctions are informal - company-specific, not industry-related • If too many, then "waters down"
Continuity	Professionals maintain their status through: • Personal responsibility to stay abreast • Continuing Professional Development • Re-certification (in certain areas?)	There is no discipline in ICT
Stakeholders	The stakeholders of the IT Profession are: • IT Professionals • Society • The State • Clients • Users • Business/Industry	Stakeholders do not exist in the absence of a Profession
Recognition		Recognition of the IT Profession or IT Professional is characterised by: • None • Poor • Senior figures often from other disciplines • Not wanted
Demand	• A demand exists for Professionals • Career path sought for entrants • Professionals recognised as Role Models • Demand for education and practical experience	There is no demand for something that does not exist.
Relevance	• Professionalism is relevant to IT • There is value in certification	There is no relevance to something that does not exist.
Regulation		No Migration