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Developing a Demand-Driven Framework for European ICT Professionalism

Abstract

This paper outlines key findings that should be considered as part of the development of a demand-driven and sustainable ICT professionalism framework: a framework designed to support the development of the Information and Communication Technology (ICT) profession in Europe. A more detailed account of the research, and the resulting framework, are presented in "Governance Framework for ICT Professionalism - A Proposal" (Veling et al. 2014). This paper outlines eleven key findings that have been validated with industry-based subject matter experts. The effective consideration and management of these findings will be vital for the successful development of any overarching ICT professionalism framework. The research leading to the development of this framework is part of the larger European Union e-skills strategy¹ and the "Grand Coalition for Digital Jobs". In 2013, a service contract was awarded by the European Commission (DG Enterprise and Industry) to a consortium led by empirica GmbH (Gareis et al. 2014) to monitor the evolution of the supply and demand of e-skills, to update foresight scenarios and forecasts (2015–2020), to benchmark multi-stakeholder partnerships, and to measure progress on the implementation of the EU e-skills strategy in Europe.

KEYWORDS: ICT professionalism, ICT profession, professionalism framework, demand-driven

1. Knowledge Definition and Knowledge Creation

There are currently a number of identified business and societal challenges related to Information and Communication Technology (ICT) in Europe. Employment rates in Europe remain high, over 12%, with youth unemployment up to 22% (International Labour Office 2013). Despite this, empirica and IDC predict that Europe could face a skills shortage of up to 509,000 unfilled ICT positions in 2015². Such a "skills mismatch" could hold back "economic competitiveness and growth" and generate "significant economic and social costs", according to an EC report from 2013 (European Commission 2013).

The shortage of skilled ICT workers also contributes to localised knowledge gaps, meaning businesses find it increasingly challenging to meet the demands for ICT-enabled innovation (McLaughlin et al. 2012). Research from Saïd Business School also shows the high number of ICT-related project failures, with eight out of ten projects experiencing cost overruns, and one in six projects experiencing a cost overrun of 200% (Flyvbjerg & Budzier 2011). Additionally, new and emerging technologies will continue to require new skill sets.

¹ http://ec.europa.eu/enterprise/sectors/ict/e-skills/index_en.htm

² <https://ec.europa.eu/digital-agenda/en/grand-coalition-digital-jobs-0>

As technology becomes increasingly pervasive across and embedded in all aspects of business and society, so too are its associated risks, such as institutional technology failures and individual privacy issues. There is an urgent need, therefore, to ensure that there is an adequate supply of ICT workers and that the people tasked with assessing, deploying and managing these technologies have the appropriate skills, education, and level of professionalism.

Currently across Europe, however, there is no common understanding of the term 'ICT Professional', nor a common language to describe ICT roles. This situation has prompted the European Commission to initiate a number of initiatives aimed at supporting ICT Professionalism in Europe. By maturing the ICT Profession, it is envisaged that there will be an improved ability to educate, hire and plan for ICT labour provision. Additionally, it is claimed that the low maturity of the profession affects public perception, which may affect the number of people entering the profession.

The report "e-Skills and ICT Professionalism" (McLaughlin et al. 2012) proposed a definition for ICT Professionals, as follows:

ICT Professionals:

- Possess a comprehensive and up to date understanding of a relevant body of knowledge;
- Demonstrate ongoing commitment to professional development via an appropriate combination of qualifications, certifications, work experience, non-formal and/or informal education;
- Agree to an agreed code of ethics/conduct and/or applicable regulatory practices; and
- Through competent practice deliver value for stakeholders.

Reflecting this definition, the report also identified four key building blocks of the profession at the EU level, namely, the e-Competence Framework (e-CF)², a Foundational ICT Body of Knowledge meta-model, multiple educational paths, and professional ethics. Additional possible components suggested were ICT job profiles, an ICT register and a portfolio of evidence, etc.

This paper presents the findings from a follow-on research project, which considered stakeholder perceptions of ICT professionalism to develop proposals for a demand-driven and sustainable institutional framework to continue to mature the ICT profession in Europe.

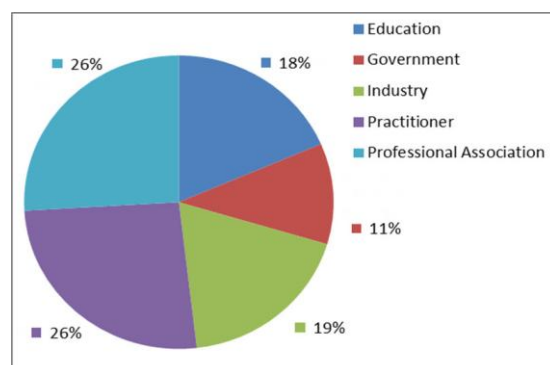
² <https://www.cen.eu/CEN/sectors/sectors/iss/activity/Pages/wsict-skills.aspx>

2. Project Overview

This project aimed to identify the perceptions of stakeholders relevant to the professionalization of ICT with regard to professionalization in order to iteratively develop proposals for a demand-driven institutional framework to operationalize professionalism.

In all, 27 cross-industry participants took part in one or more workgroup exercises designed to test the validity of the proposed framework. The distribution of stakeholders across the key stakeholder groups is shown in Figure 1.

Figure 1: Distribution of participants across stakeholder groups



An additional thirty subject matter experts also contributed to the research in a workshop, organized by empirica, as part of the wider EU-commissioned project.

3. Key Findings

The industry perspective was sought in terms of specific feedback, on topics such as the definition of an ICT professional, the key components of professionalism, and the ongoing development of the institutional frameworks, as well as encouraging discussion on the ICT field and professionalism generally. From this, existing perceptions and values were identified that need to be considered if a pragmatic and achievable framework is to be considered. The key research findings from the industry engagements are detailed below.

1. The ICT Field is young, disparate and fragmented

There was general agreement that while the ICT field is young, disparate, and fragmented, it is also at the cutting edge in terms of process, technology, and having a global perspective. A framework for developing the profession should therefore be flexible enough to incorporate multiple perspectives, cultural differences, and future technological developments.

“Ultimately, to be seen as a profession it needs to have stability and room for growth.”

“For a young industry like ICT we need to ensure that what we embed within our view is an opportunity to grow, mature and develop.”

2. There is a need for a common language

As a result of the disparate nature of the ICT field, participants identified a pressing need for stability and a common language, which, it was felt, the professionalism project should aim to provide.

"Bring about cohesion... common understanding..."

Participants felt that a common language was instrumental in the profession, in terms of entry into and progression within the profession as well as aiding communication and transparency.

3. The European professionalism effort should leverage existing European and global initiatives

A key trend arising out of the focus groups and interviews was the need for any potential framework to leverage existing global initiatives, rather than seeking to create new ones. In this sense, the framework should emphasise a coordinating and integrating function, rather than establishing new mechanisms and requirements in an already crowded market.

"We shouldn't reinvent the wheel."

"There are lots of activities that may be streamlined or may have synergies."

4. The benefit of the process of professionalization

While the ultimate aim of this initiative is the establishment of an EU ICT profession, there was some agreement that the key benefit of the initiative would be to start the conversation. There was general consensus that the process should be multi-staged and iterative. Here again, the importance of communication and establishing an effective forum for communication was emphasised.

"...the point is the process."

"Instigate a feedback loop."

5. The need for collaboration across multiple stakeholders

There was clear support across all of the focus groups and interviews for an approach that would include multiple stakeholders.

"A battlefield of ideas."

"Depends on collaboration between industry, professionals, educators. If their interests are aligned it will have a chance."

"The only way to go anyway. The only way that we may have a chance of seeing something that is adopted. Open initiative where all the different stakeholders can contribute."

The key stakeholder categories identified in the framework for promotion of ICT professionalism were: practitioners/professional associations, industry, and academia. Users of ICT and non-ICT

industries were also identified as stakeholders. Governments were singled out as significant stakeholders in terms of supporting and promoting the profession, for example by adopting the e-CF to describe competences and by providing financial incentives.

6. The need for promotion/advocacy to establish momentum for the profession

The requirement for promotion or advocacy of the profession also emerged from the research. There was an identified need to get financial support for aspects of the professionalism effort, as well as mustering support for action and establishing a shared vision. In addition, there were suggestions that prompted the idea of engaging independent influencers, particularly from industry, to champion the professionalism effort; for example, by adopting the e-CF competence descriptions and job profiles when advertising job roles.

"You need a critical mass to get things going."

"Who will be the first to throw away their own body of knowledge and framework and embrace the new one?"

7. The need for transparency and demonstration of practitioner skills

There was strong support for the need for improved means of skills demonstration and transparency of practitioner skills and achievements in the form of, for example, an ICT Professional Register or Skills Portfolio. However, there were some concerns on whether a dedicated platform would adequately represent practitioners

"So HR people can see 'this guy comes from X university and he has an Information Systems Masters and therefore he has a 60% e-CF coverage.'"

"People do not always fit into little boxes."

8. The centrality of ethics

While it was widely acknowledged that it would be difficult to achieve a common, pan-European agreement on a code of ethics due to existing cultural differences, possible duplication, and potential clashes with national legislation and/or industry codes, there was a great deal of support for such an effort. The primary reasons that emerged for the development of an ethical code were uniting professionals under a set of common values and promoting trust in the profession.

"If we really regard ourselves as professionals we need to have a position on this."

There was also consensus amongst the majority of participants with regard to which ethical standards were relevant to the ICT profession at a high level, with participants identifying three key issues;

privacy and confidentiality, quality, and conflict of interest.

With regard to how, or the degree to which, these codes should be enforced, participants cited multiple examples of existing models that warrant further investigation.

9. Need for recognition of informal and non-formal education

Participants identified a pressing need for recognition of informal and non-formal education. Some ways of demonstrating and validating this knowledge mentioned include peer interviews, reviews, and endorsements; employer references and endorsement; evidence of time spent in specific activities; assessment; and evidence of past success/successful project completion. Mentoring and apprenticeship arose as important aspects of a profession.

“Education... you can show your paper but that paper doesn’t show anything about how you dealt with that knowledge after you studied. The paper only shows that you [were] able to copy information that was handed to you. It doesn’t present a total package.”

Other topics that arose include utilising existing mechanisms for transferring informal and non-formal learning into recognised academic qualifications. The existing relationships between ICT industry and academia were also highlighted as effective relationships that should be leveraged. There was both scepticism of and support for industry-based accreditation.

“...always sceptical of company certification of people... company’s goals not sufficiently divorced from commercial interest.”

“I am proud of my [industry] certification, it shows I know how to work a particular system.”

10. There is support for the development of a Foundational Body of Knowledge

There was significant support for and interest in the development of a single, Foundational Body of Knowledge (FBOK) for the ICT profession. There was, however, less agreement in terms of its scope. One participant commented that they struggled with the idea of a single body of knowledge. Other participants felt that the FBOK should contain only a very general and base level of knowledge. There was widespread consensus that the FBOK should be expressed in terms derived from university education, specifically module outlines and expressed as (learning) outcomes. In this area, more than any other, participants felt the dual need for flexibility and stability. In terms of ownership, it was felt that universities and industry would be instrumental in its creation: universities to disseminate the knowledge and industry to

define the need. Although some of these mechanisms already exist, the broader professionalism agenda presents an opportunity to formalize them.

“The things that belong in the common body of knowledge are things that are not likely to change over a period of time.”

11. The need for a multi-levelled structure in a European context (with a global view)

The global nature of ICT was highlighted, prompting calls for the professionalism effort to be developed in a global context. Reflecting the European context and the existing initiatives and stakeholders, however, participants favoured a multi-levelled approach, with professionalism functions at a European level to coordinate related functions at national levels. There was some evidence of cultural differences between participants from different countries and organizations in terms of ideal organizational models at a national level. To this end, the report “Governance Framework for ICT Professionalism – A Proposal” also describes three national cases studies that were developed to illustrate how existing and diverse national strategies might align within the proposed frameworks (Veling et al., 2014). A multi-levelled structure would allow new and existing national initiatives to be accommodated within their local educational, industrial, and regulatory environments, while enabling cross-border coordination, communication, and collaboration.

Conclusion

This paper has outlined the results of a research aimed at elaborating preliminary proposals for a governance framework for ICT professionalism. The governance framework proposals were developed in collaboration with 57 stakeholder representatives using various interactive processes – including a questionnaire, focus groups, individual and group interviews, and a workshop – and are presented in “Governance Framework for ICT Professionalism – A Proposal” (Veling et al. 2014)

The consultative approach used has served to include stakeholder perspectives in the design of the frameworks from an early stage of development and to ensure that the proposals were demand-driven. Engagement by, and support from, all of the relevant stakeholders is essential to ensure the sustainability of the proposed frameworks. Additionally, existing initiatives must be coordinated and aligned in order to successfully embed an effective structure for ICT professionalism.

Establishing the profession will take many years and proposals for its development

will need to be flexible and open to change and adaptation. It is worth noting that there is value both in achieving this goal and in the process of attaining it, in bringing together relevant stakeholders across Europe to discuss the current state of ICT professionalism and how it must be developed for the common good.

Further work on ICT professionalism will continue under the umbrella of the European Committee for Standardization (CEN). A new service contract was awarded by the European Commission in early 2014 to Capgemini and Ernst & Young to develop a pan-European foundational body of knowledge for ICT professionals and a sustainable operating model for the promotion of ICT professionalism in Europe.

References

1. European Commission, 2013. *Employment and Social Developments in Europe 2012*.
2. Flyvbjerg, B. & Budzier, A., 2011. Why Your IT Project May Be Riskier Than You Think. *Harvard Business Review*, 89(9), pp.23–25.
3. Gareis, K., Hüsing, T., Bludova, I., Schulz, C., Korte, W.B.: e-Skills: Monitoring and Benchmarking Policies and Partnerships in Europe (Final Report for the European Commission), January 2014
4. International Labour Office, 2013. *Global Employment Trends 2013*, Geneva: International Labour Organization.
5. McLaughlin, S., O'Brien, C. and Dolan, D., 2012. *e-Skills and ICT Professionalism Fostering the ICT Profession in Europe*, Report for the European Commission by: IVI and CEPIS.
6. Veling, L., Murnane, S., O'Brien, C., McLaughlin, S., 2014. *Governance Framework for ICT Professionalism - A Proposal*. Report for the European Commission by IVI and empirica.

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