International Summit on Computing Professionalism (ISCP)

A Special One-Day Event to be held at the IFIP 2004 World Computer Congress 2004, Toulouse, France, 23 - 26 August 2004

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The summit will continue work, undertaken since 2000 to promote consideration and evaluation of a document entitled the "Harmonization of Professional Standards" that had been produced under the auspices of the International Federation for Information Processing. The IFIP Harmonization document highlights six areas for consideration with regard to professional standards. These are:

- Professional Practice
- Established Body of Knowledge
- Education and Training
- Professional experience
- Best Practice and Proven Methodologies
- Maintenance of Competence

A copy of the IFIP Harmonization document is provided at the end of this document.

The previous work has concentrated on Software Engineering as it was believed that was the area within the Computing discipline where professionalism was likely to receive the greatest attention. The work on Software Engineering professionalism In addition to research investigations and conference presentations has included a number of intensive workshop type events. Notable among these were workshops in 2001 at the International Conference on Software Engineering (ICSE2001) and the Conference on Software Engineering Education and Training (CSEE&T 2001) and an International Summit on Software Engineering Professionalism (SSEP) which was co-Located with the 2002 International Conference on Software Engineering in Orlando, Florida.

The results of the various activities have all been reported in the academic press, for example, the results of the workshop held during the2001 Conference on Software Engineering Education and Training (CSEE&T 2001) were reported in depth in a paper published in Education and Information Technologies Volume 6 Number 4 December 2001. Clear outcomes of these activities is confirmation that the document produced by IFIP can provide an effective framework for the harmonisation of Software Engineering professionalism but that in its current form the document it is limited.

The IFIP harmonization document does contain relevant concepts and a useful framework which is acceptable within a range of geographical locations, but there is a significant level of detail that is missing which needs to be added to enable its effective use. To supply the missing details there is a need tot:

- Try and build up a truly international view and be sensitive to local situations.
- Get accurate data and find out what the situation is across the world both in the areas of professional practice and educational structures.

The prime aim of this summit is to provide a forum to consider not only professionalism within Software Engineering but also within the wider computing discipline. In particular, delegates will be directed, in both the activities at the Summit and in their position papers, to consider aspects of professionalism that are relevant to the following four particular areas that are highlighted in IFIP document:

1. Education and Training
2. Professional experience

3. Best Practice and Proven Methodologies
4. Maintenance of Competence

Potential delegates are invited to submit short position papers that address one or more of the above topic areas. Papers should include proposals regarding what needs to be produced to support the relevant sections in the IFIP document. These position papers and the activities at the summit should enable opinions to be formed on:

- What are the key steps in a career in Software Engineering and other branches of computing?
- What education and training are needed?
- How should professional behaviour be regulated?
- How is competence maintained and certified?

IFIP

INTERNATIONAL FEDERATION FOR INFORMATION PROCESSING

Harmonization of Professional Standards

Draft: October 1998

Summary

This document sets out an international standard for professional practice in information technology.

Practitioners who meet the standards will:

- publicly ascribe a code of ethics published within the standard.
- be aware of and have access to a well-documented current body of knowledge relevant to the domain of practice.
- have a mastery of the body of knowledge at the baccalaureate level.
- have a minimum of the equivalent of two years supervised experience before the practitioner operates unsupervised.
- be familiar with current best practice and relevant proven methodologies.
- be able to provide evidence of their maintenance of competence.

Purpose

The purpose of this work is to clearly set out an international standard for professional practice in information technology.

The components of the standards are:

- Ethics of professional practice,
- Established body of knowledge,
- Education and training,
- Professional experience,
- Best practice and proven methodologies and
- Maintenance of competence.

A customer has a right to expect that a practitioner offering information technology services to the public meets these standards.

This document will be offered as a draft standard to the International Standards Organization in anticipation that it will in turn conduct its process of obtaining consensus from its member bodies and hence the standard would be adopted by the standards bodies within each country.

It is expected that the IFIP member societies would prepare any local or regional adaptation of the standard. The administration process, which may include promotion, assessment and certification as well as the distribution of materials, may also be carried out by the IFIP member society.

The standard could also be incorporated in the requirements for a level of qualification of individual members in the member society.

Although the initial country or regional implementations may have differences, the intent is to move towards a common implementation.

Why Have Professional Standards?

The traditional professions such as accounting, medicine and engineering have long had standards which enable a qualification gained in one country to be recognised in another. The World Trade Organisation in conjunction with the International Standards Organisation has now taken an active role to create such standards under the General Agreement on Trade in Services (GATS).

The benefits of internationally recognised standards are that:

- the public is assured that safety or economically critical work is performed by competent individuals regardless of where in the world those persons gained their qualifications and experience.

- a client is assured that a person who meets such international standards is competent to carry out tasks in documented specific areas regardless of where the work is done or the output of the work is used (subject to recognition of issues of culture and locale).

- professionals are assured that their qualifications if recognised in one country will be accepted in other countries without re-examination (except possibly for being up-to-date).

- Under GATS, trade in products developed by practitioners who meet this standard cannot be restricted on the grounds that the developers were not competent or used inadequate professional practices.

Such standards will contribute to the attainment of a reputation for competence by the profession.

The standards will facilitate the obtaining of work by individual practitioners in the international arena.

To Whom does the Standard Apply?

This standard is primarily focused on practitioners involved in the development of software-based systems and related services. The standards are not necessarily intended to apply to other members of IFIP member societies such as:

- academics, who in general will be much more qualified but possibly in a narrow discipline and whose research may be at a more abstract level than practice.

- school teachers, who in general will be qualified to teach rather than to develop IT systems.

- users, who have input into the designs of computer systems but who do not construct them.

- electronic engineers, who design computers but who would normally be qualified as engineers.

It is recognized that these classifications may be blurred.

Harmonization of Professional Standards

The following clarifications are offered in this context.

Harmonization means that the standards of different countries would be brought together to be substantially the same. Any extremes from the commonality of these standards would gradually be pruned away until each country has the same standard by mutual consent.

Professional identifies the peculiar responsibility of a person with high levels of knowledge and related practical skills in a given discipline with respect to members of the public who do not have that knowledge or skill-set. It is particularly relevant to the information technology profession because it has significant impact on society at large. The power of the knowledge must be balanced by a sense of responsibility towards others. This definition is focused on practitioners, persons who actually develop, maintain and operate software systems for commercial or governmental purposes.

Standards are clear statements that reflect the minimum qualifications for mastery and knowledge of processes, skills and practice that a professional should have before undertaking work which may put an employer or client at risk, either physical or financial.

The field of Information Processing has many domains ranging from data management to embedded software systems. Any one individual cannot be expected to be expert in more than one or a few such domains. This needs to be recognized particularly in the body of knowledge required to be known by one person.

The changes within the many domains together with the dynamic development of new domains in information technology means that the standards themselves must be continuously developed and individuals must anticipate life-long learning.

The Standard for Professional Practice in Information Technology

Ethics of Professional Practice

A code of ethics acknowledges the professional responsibilities of practitioners to society at large, members of the public, employers, contracting parties and fellow practitioners.

Codes of ethics have been published by many member societies and IFIP itself.

Every implementation of the standard must include a code of ethics.

Such a Code of Ethics must be compatible with the culture of the society in which the practitioner normally works.

Practitioners must operate in a manner compatible with the culture of the locale in which they are currently working and in which the product may be used.

Practitioners must publicly ascribe to the code of ethics published within the standard.

Established Body of Knowledge

Several IFIP member societies have published bodies of knowledge, some of which have gained wide acceptance. Such recognised bodies of knowledge are divided into many domains determined by the various services carried out by practitioners. The body of knowledge on which any implementation is based should include at least the common components of these but also ensure that each domain is complete in itself for the domains adopted locally.

Mastery of such a body of knowledge forms the basis of preparation for practice. A practitioner must demonstrate mastery of at least one such domain as well as all core components identified in the body of knowledge.

Practitioners must be aware of and have access to a well-documented current body of knowledge relevant to the domain of practice.

Education and Training

Most practitioners will enter the workforce with prior education and training which will commonly be a baccalaureate degree assessing the mastery of the body of knowledge.

Institutions offering such education and training should be prepared to openly compare themselves to internationally well-known and recognised peer institutions offering similar programmes.

It is recognised that this level of mastery may be achieved by various combinations of education and experience. Nevertheless a practitioner must be able to provide evidence of such mastery to practitioners who have met this standard.

The minimum level of mastery of the body of knowledge must be at the baccalaureate level.

Professional Experience

Experience builds on knowledge in many essential ways. Such as:

- It develops and improves practical skills and competencies.
- It provides understanding of task definition in the users' terms.
- It helps develop interpersonal skills that facilitate the communication and human interaction between all participants.
- As many approaches to problem solution are not readily scaleable experience over a wide variety of problem types and sizes is desirable before working in an unsupervised environment. Experience is generally required in assessing task complexity.
- Task management, overall project management and quality management generally require experience.

Other professions have clear requirements for experience before allowing their members to practice without supervision.

In addition to a demonstrated mastery of the body of knowledge a minimum of the equivalent of two years supervised experience is recommended before the practitioner operates unsupervised.

Best Practice and Proven Methodologies

Experienced practitioners have identified and documented many practices and methodologies the use of which generally leads to successful project outcomes. Where such best practice and proven methodologies are available the practitioner should use them unless a particular task has exceptional attributes.

Member societies drawing on all available international sources should encourage the documentation and promulgation of best practice and proven methodologies.

Practitioners should be familiar with current best practice and relevant proven methodologies.

Maintenance of Competence

To maintain demonstrated competence practitioners must be familiar with new developments in their domains of practice.

Such developments may be reflected in the body of knowledge, best practice and proven methodologies as well as in specific skills.

Familiarity with new developments may be obtained through formal education or peer interaction.

There may be assessment of current competence by formal examination, peer assessment or employer or client acknowledgement of successful work.

A practitioner should participate for at least the equivalent of 10 days per year in activities that contribute to maintaining competence. It is recognised that in different locations the opportunities for such ongoing development may vary.

The standard in each country or region must state how this requirement will be met and the role of the IFIP member society in monitoring this function.

Practitioners must be able to provide evidence of their maintenance of competence.

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