IP3 – International Profession Practice Partnership

Accrediting Certification Schemes for IT Professionals

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Abstract The International Professional Practice Partnership (IP3) was formed by IFIP in 2007 to fulfil the objective of creating a global IT Profession. This paper describes the development of IP3 by examining: why an ICT profession is needed and why it should be on a global basis; what is a global profession; and the progress made by IP3 in establishing a global ICT profession with the same public respect as the older professions. The paper includes a detailed description of IP3's accreditation procedure for national societies' certification schemes of individual IT professionals.

1. Development of IP3

1.1 Introduction

In 2007 the International Federation for Information Processing (IFIP) created its International Professional Practice Partnership (IP3). This paper notes the contribution of ICT to sustaining contemporary society and explains how the creation of a respected global ICT profession is a key factor in delivering those benefits. It will describe why IFIP and its member societies are uniquely placed to implement such a scheme. The paper explains the ambitions of the scheme and the need to build on what already exists. The paper concludes by outlining some of the prospective benefits from a successful implementation of such a scheme worldwide.

The authors of this paper are both members of the IP3 Board. The authors are jointly responsible for the views expressed here which is written in a personal capacity although they believe that their views would have the general support of the other IP3 Board members.

The IP3 programme has been presented at the IFIP World Computer Congresses held in Milan in 2008 [1, 2, 3] and also in Brisbane in 2010 [4]. This paper provides an update on the continuing progress. For an assessment of IP3 by an outsider, the reader is referred to a paper by Raffai [5].

1.2 IP3's Objectives

The quality of life enjoyed in modern societies are entirely dependent on the successful operation of advanced ICT applications. Developing nations are rightly keen to harness IT in support of achieving their development goals. The very large attendances at IFIP's two-yearly World IT Forum (WITFOR) conferences focussing specifically on how ICT can be leveraged for development bear testimony to the universality of the ambition for IT-led solutions [6].

No other technology has advanced so far so fast. Every year new advances make possible information systems that were previously impractical. Building the vast systems that run on today's computers is an engineering activity that stands comparison with the greatest achievements of the nineteenth-century engineers who transformed that society. Modern information systems are now the most complex artefacts yet made by human beings.

The scale of the achievement comes from the ability to integrate computer technology with communications technology which together can deliver information almost instantaneously around the globe.

Starting from nowhere in the early 1990s, the Internet has revolutionised the availability of information of all types. Companies rapidly advanced from just giving information to offering extensive e-business opportunities.

The internet has become a public information utility. However, this introduces a crucial issue about designing and maintaining public information systems. The professionals who build and maintain such systems have a special responsibility of care in their construction. Like many other engineers, information systems engineers derive satisfaction from seeing others using the artefacts they have built. However, without wanting to understate the

complexity of building a bridge, an information system is intrinsically a much more complex artefact. In particular, the interaction between it and its user is far more complex.

The modern ICT system, unlike the batch processing systems of earlier days, allows individuals to initiate complex transactions with the system without any external mediation by skilled staff. Erroneous information supplied to internet users may cause serious inconvenience. Further, the continuing activities of criminal groups to disrupt the economic activity of both individuals and states remind us constantly of the importance of system security.

If the citizens of the world are to receive the full benefits of ICT they must be able to depend on the integrity of the ICT systems they use. This, in turn, relies on those systems being built, maintained and operated by staff having appropriate technical skills and personal integrity.

These requirements closely match those of many older professions such as law, accountancy and medicine. IP3 believes that the time is now right to create a global profession of ICT practitioners who are recognized individually and collectively as matching the standing of the older professions. This is especially important for ICT where users can initiate a transaction in one country for its processing to take place in a number of countries aound the globe. The appearance of "cloud computing" with its implication that the designers and implementors do not know where data will be processed or stored adds urgency to the challenge facing us. IP3 members believe that best practice in such a global environment requires a global standard for ICT practitioners.

1.3 Personal Accountability

As industries mature and their work becomes more central to the well-being and safety of society, society needs to know that the individuals working in that industry are not only qualified in their field but that they always have the best interests of society at heart and display integrity, responsibility and accountability in everything they do.

Information technology, like architecture, engineering and accounting, is now an integral part of every walk of life so ICT systems must be built and run by professionals who understand business as well as ICT.

This requirement has been further accelerated by the advent of legislation around corporate governance, such as Sarbanes Oxley Act of 2002 (Section 404), which requires organisations to certify the quality and integrity of their IT systems.

The innate integrity of individuals is not in itself enough today. Organisations and governments need to know that individuals' professionalism has been certified to globally recognised standards.

IP3's ultimate aim is to ensure that throughout the world there are publicly recognized and accountable ICT professionals with the appropriate education, training and personal commitment who can be entrusted to deliver global ICT solutions of the highest quality.

1.4 What IP3 is Not

It is important to state several things which IP3 is not.

Firstly, IP3 is not creating a new body to which individuals can belong. Individuals seeking certification as an ICT professional must go to an accredited IFIP member society and join at an appropriate grade. Thus the accreditation by IP3 of a body's individual certification procedure is an additional member benefit which can lead to increased membership and higher levels of member retention amongst IFIP member bodies.

Secondly, IP3 is not seeking to "re-invent wheels". The adoption of existing material enables the spread of demonstrated best practice between IP3 member societies to the benefit of all. The basis of this sharing is evolving. Some material has been placed in the public domain and is available for adoption subject to appropriate acknowledgment to the original authors for granting the right to its use. For example, the Skills Framework for the Information Age (SFIA) has been adopted as IP3's reference model for a skills framework [7]. Work is now being actively undertaken to create mappings between SFIA and other skills and competence frameworks. Other material is shared as part of the IP3 mentoring process mentioned later in this paper and on the IP3 website.

Thirdly, IP3 is not an examining body. IP3 sets standards for member societies to apply to their members when considering applications for certification in terms of demonstrating competence with the Core Body of Knowledge and also commitment to Continuing Professional Development (CPD). However, the way in which accredited bodies determine the competence of individuals they wish to certify is a matter for them. This

could include traditional tertiary qualifications covered by the Seoul Accord or a combination of other qualifications, national or regional such as European Certification of Information Professionals (EUCIP) [8]. What IP3 accreditors will wish to ascertain is that alone or in combination they achieve the minimum standard set down by IP3. Again, IP3 believes that certification of individual practitioners can increase interest in professional and vocational qualifications to the benefit of a range of existing examining bodies.

Finally, IP3 is not yet another new body but a partnership amongst member societies in IFIP. All bodies seeking accreditation must be either Full Members or Professional Affiliates of IFIP.

2. Achieving Acceptance by the Community and Enterprises

The International Federation for Information Processing (IFIP) is a global, apolitical, not-for-profit federation of over 55 member societies in the field of information and communication technologies and sciences and, through its regional affiliates, it links almost 100 national IT bodies with a total aggregate membership of over half million individuals. IFIP was established by a UNESCO initiative in 1960 and remains a formal UNESCO consultative body on IT matters.

This provides IFIP with a unique position from which to invite the ICT bodies of the world to join in a collaborative endeavour which its supporters believe can make a significant contribution to the designing, implementing and operating of ICT systems of the highest quality.

The advent of IP3 has been welcomed the world over by computer societies representing large numbers of ICT practitioners because there is huge appetite amongst ICT practitioners in many countries to professionalise their ICT industries. IP3 has made significant strides since its formation in 2007 – eight countries currently belong to IP3 and several more are showing an active interest.

The support of the international employer community is critical to IP3's goal of building ICT professionalism globally. Recognizing this criticality, IP3 has established the Global Industry Council (GIC) as the principal forum within which ICT employers can engage with IP3 and influence the development of the global profession. GIC includes recognized thought leaders from major organizations (both private and public sector) with acknowledged experience and expertise in information and communication technologies. Membership is by invitation and a seat reflects the global third party validation that is only possible through a 50 year old body with UN roots. In the interest of independence, the Council operates with a high level of autonomy within Terms of Reference agreed with the IP3 Board.

GIC is a vehicle for organizations to:
• Participate in frank and open discussion of matters of common interest within a global forum under the auspices of a UNESCO-recognoised body;
• Demonstrate a public commitment to professional ICT standards;
• Play a real and active part in developing the global ICT Profession;
• Provide detailed comment of the certification requirement and on the shape and content of development and support services for professionals; and
• Provide valuable support to the growth of ICT capability within developing nations.

GIC enables the IP3 Board to:
• Obtain valuable, independent input from industry;
• Engage with outside organizations and keep them interested and actively involved in IP3;
• Access support from industry for IP3's activities.

IP3 is planning to engage with developing nations as a means to increase their ICT capability. A primary objective will be to enhance their economy by establishing a respected and recognized ICT industry. A plan has been devised for this activity; the first step will be to reach out to various contacts in developing countries to get their input. Once this has been obtained, IP3 will seek sponsorship for a feasibility study. Widespread adherence to the highest global standards of professionalism drives demand for that country's ICT expertise and, therefore, has a positive impact on GDP.

The final key element in achieving widespread engagement is the regular written contributions made by leading IP3 figures in learned and professional journals as well as speaking at numerous conferences.

3. IP3 Business Model

As an IFIP initiative, IP3 inherits IFIP's not-for-profit status. It is run by a Board comprising up to 12 members comprising mostly representatives of the IP3 member societies.

IP3 has two main streams of activity which incur significant costs

- accreditation of IP3 member societies
- promotion of the value of the certification of IT practitioners worldwide

Accreditation visits by IP3 are conducted on a cost recovery basis from the society applying for accreditation. These costs are mainly the travel and hotel costs of the visiting party, as described in section 4.3.

The cost of IP3's activities promoting the professionalisation of ICT worldwide are met mostly from external sources raised for the purpose and can include funding from member societies or external supporters including a number of major corporations many of whom are represented on IP3's Global Industry Council.

As a partnership of leading computer societies, several have undertaken in turn to provide administrative support on a *pro bono* or cost recovery basis. In addition, a number of individual members of these societies have given substantially of their own time to assist in building up the IP3 programme in their own country and more widely.

Finally, other, mainly administrative, costs are met from a modest annual subscription paid by each society based on the size of their membership. In 2011 the larger societies, those with over 5,000 members, paid €2000 per annum each.

4. IP3 accreditation

4.1 Scope and purpose

IP3 Accreditation is a review and audit process designed to determine whether an applicant professional body is fit for purpose in all respects to be able to certify members of its professional community to specified standards. The scope and purpose of the process is effectively captured in the form of following two key questions:

1. Does the applicant organisation have in place the necessary infrastructure and other resources to enable it, effectively and consistently, to set, monitor and maintain standards of competence, ethics and

integrity that meet the international standards prescribed by IP3?

2. Are those infrastructure elements and resources deployed and operated effectively so that the required standards are set, monitored and maintained in practice?

To satisfy these questions an applicant professional body must show that it has a clear and effective set of standards at the level required by IP3, set within a sound framework of governance, policies, processes and practices as shown in Figure 1.
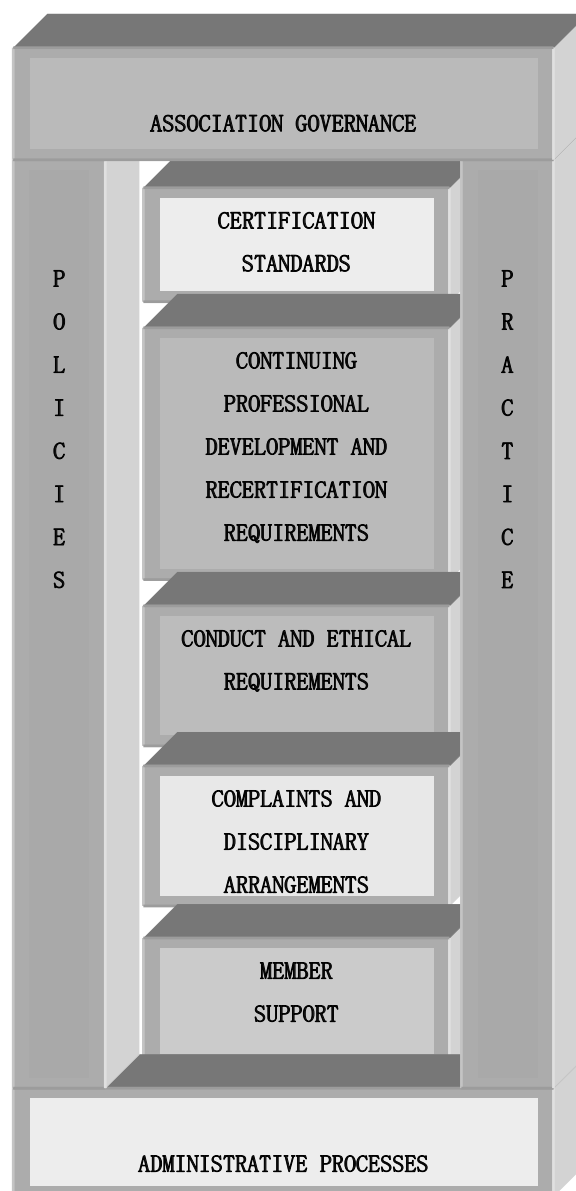

Figure 1 Professional society essential infrastructure

It will be apparent from this that the accreditation process will involve a very wide-ranging review of an applicant professional body coupled with an audit process

to validate the conclusions from that review against results in the real world.

4.2 The accreditation application

Given the comments above regarding the nature of the review involved, it will come as no surprise that as part of the application there is a requirement for extensive information and supporting documentation. Within 8 main categories:

- The Association
- Information about Stakeholders
- Membership Qualifications
- Continuing professional development
- Code of Ethics and Code of Practice
- Complaints and Discipline Systems
- Quality Assurance and Audit
- Administration of the scheme

The Application and Assessment guidelines [9] provide details of the information and documentation required under each of these headings. They also provide, within a series of tables, details of the relevant IP3 standards:

Appendix 1 – IP3 Standards – Code of Ethics checklist

Appendix 2 - IP3 Standards – Complaints and discipline process

Appendix 3 – IP3 standards – Core body of knowledge

Appendix 4 – IP3 standards – Level of competence

4.3 The Assessment process

The process following the submission of an application is set out in detail in the *Application and Assessment guidelines.* The key steps following the receipt of an application are as follows:

i. The Chief Assessor appoints a Senior Assessor to lead the assessment work

ii. The Senior Assessor reviews the application and requests any further information or documentation considered necessary.

iii. The Chief Assessor issues advice to IP3 Board with recommendations for an Assessment panel (Senior assessor plus two other IP3 Assessors) where appropriate.

iv. Panel members consider the submitted application and may also raise queries and/or request additional information or documentation.

v. When Panel is broadly satisfied that the applicant

organisation appears to satisfy the first of the key questions in the opening paragraph of this section, the Senior Assessor arranges an Assessment visit and invites the applicant body to nominate a local IT employer representative and a local academic representative to sit as members of the assessment team during the visit. This latter provision is designed to ensure that key local stakeholders are involved in the assessment and that the assessment is informed by a sound understanding of essentially local factors.

vi. Panel makes visit to applicant organisation and interviews relevant members of staff, members and officers and external stakeholders.

vii. At the completion of the visit the panel considers its initial conclusions and discusses these with the senior officers and staff of the organisation. Any significant reservations are highlighted and the organisation is given an opportunity to respond.

viii. Following the visit the Panel reports formally, with conclusions and recommendations, to the IP3 Board for consideration. In the case of a positive recommendation for accreditation the Panel may attach such conditions as it considers appropriate

ix. Following consideration by the IP3 Board the applicant body is notified of the decision.

4.4 Progress and experience to date

To date, IP3 has undertaken accreditations of the Australian Computer society (ACS) and the Canadian Information processing Society (CIPS), the former being accredited without condition and the latter receiving provisional accreditation. A number of other organisations, including the New Zealand Computer society (NZCS) and the Computer Society of South Africa (CSSA) are actively considering or working towards an application for accreditation.

For many other organisations the task of building a professional body to the point where it is ready for accreditation, will take several years and here the IP3 priority is to build a mentoring and support structure that will assist the development. Details of these support arrangements will be found on the IP3 web site.

5. Current status and developments

IP3's membership is drawn from around the globe. At present the membership is:

Asia

Information Processing Society of Japan (IPSJ) and Korean Institute of Information Scientists and Engineers (KIISE);

Australasia

Australia Computer Society (ACS) and

New Zealand (NZCS).

Africa

Computer Society of South Africa (CSSA)

Computer Socity of Zimbabwe (CSZ)

Europe

British Computer Society (BCS)

North America

Canadian Information Processing Society (CIPS)

The aggregate membership of all these societies is well over 120,000 people.

There are a number of new prospects amongst IFIP member societies and IP3 is commited to continuing to extend its influence.

6. Vision and Perspectives for the Future

ICT is the industry that builds, operates and maintains the ICT applications that support the global knowledge society. Modern civilisation is totally dependent on effective and robust ICT systems. To provide these applications, the world needs a global ICT profession able to stand comparison with other established professions.

The vision is to create:

- A vigorous programme to promote professionalism in IT, define international standards and create a global infrastructure that will encourage and support the development of both practitioners and employer organisations.
- An international IT profession, equivalent in prestige and structure to other established professions such as law, accountancy and medicine
- A worldwide set of professional certification schemes recognised as the hallmark of true IT professionalism, delivered through independent national member societies and supported by development frameworks for both

individuals and organisations.

- Educational programmes which prepare students to the highest standards for entry to the profession
- A programme which reaches beyond the developed world to encourage and facilitate the development of IT capability within emerging nations.

7. Summary

IP3 invites national computer societies around the globe to come together within the IP3 programme to establish a global ICT profession.

In doing so the partners believe that this will lead to

- High standards of competence amongst individual practitioners
- Global standards for higher education institutes in preparing graduates for entry to the profession
- More consistent project delivery with enhanced outcomes
- Enhanced workforce planning and development by employers
- Safeguards for the public interest by providing complaint and disciplinary processes
- Improved maintenance of practitioner skills throughout their careers in a fast developing industry
- Raised status for ICT professionals through a better understanding of their role

The IP3 partners believe that this programme can deliver a respected and prestigious ICT profession which can build, operate and maintain world class ICT applications to the benefit of all. They believe that this initiative can make a major contribution by supporting the creation of a globally respected profession comprising highly competent professionals able to build and maintain ICT systems to world class standards.

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