

## Industry Certification Programmes Where do they add value?

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## Abstract

This paper discusses four Information Technology certification regimens against the background of academic literature regarding good practice approaches to assessment of individuals' skills and the potential pitfalls of the certification process.

This essay was first presented as a paper towards a Masters Degree at Victoria University of Wellington.

## Introduction

According to the IEEE Computer Society, there are over 400 certification programmes available to IT professionals today, and over one million people have been certified since 1997 (IEEE 2006). With this plethora of certification programmes and the vast pressure on people in the IT profession to attain certification, the question of the validity of the assessment process and the value of the certification to an individual and to their employers has to be raised.

Available certifications include both vendor certifications (Microsoft and Cisco are two vendors who actively promote their certification programmes) and broader industry-wide qualifications such as:

- Certified Software Development Professional (CSDP)
- International Software Testing Foundation Certificate (ISTF)
- Certified Business Analysis Professional (CBAP)
- Project Management Professional (PMP)

These four vendor-independent assessment regimens are aimed at providing employers and consumers/customers of IT services with assurance that the individuals providing the services have achieved a level of competency in the professional area they offer services in.

The purpose of this paper is to assess these certification regimens in terms of the academic literature and industry expectations, and attempt to identify the real value these programmes offer the industry in general and individuals who attain the certification in particular.

## Literature Review

*Certification* 1. A formal demonstration that a system or component complies with its specified requirements and is acceptable for operational use.

2. A written guarantee to this effect

**Definition from the Oxford Computer Dictionary, 1994.**

In the context of industry certification, certification is the process whereby an external organisation or body validates the skill and/or knowledge of an individual as competent to practice in a particular area. The person seeking certification must pass an assessment, sometimes involving an examination, an interview or other mechanism to show their knowledge in the area under examination (White 2005b – proven knowledge). Hennessy (2005) talks of “*certification through an independent, nationally recognized body as a means of ensuring the program's validity, impartiality and integrity*”.

Certification doesn't just happen; the worker seeking certification needs to put in dedicated effort to achieve the requisite standard of skill and knowledge. Study Groups have been shown to be an effective technique for students who are approaching a certification examination (Scott, 2006) – find a likeminded group who are studying towards the same certification and meet virtually or in person for peer encouragement and support.

Many of the certification programmes include guidelines for preparedness (Prekeges, 2005, Rooney 2004), aimed specifically at the self-study student.

Certification is considered to be a tool to assist a candidate in changing career, as well as potentially addressing the shortage of workers in the IT field. A candidate who wishes to build their skill and knowledge using informal means (often self-study and internet based computer based training courses) can pass the certification examination as a means to validate the skills they have acquired (Moor, Yager, Sumner & Crow, 2001).

Some commentators point to studies showing a correlation between increased income for the individual and attainment of a certification. Does this translate to increased value for the employer and for the industry/society in which that individual operates? (Ewing & Heinrich, 2003).

A strong driver for certification is the “borderless workforce” (Adelman, 2001) – the reality today is that we live in a multicultural world with workers coming from a vast range of educational backgrounds. Certification provides a level playing field which enables employers/customers to be confident that the person actually has the skills they assert to have, by virtue of having sat a standardised examination. (Albrechtson, 2006; Bell, 2001)

Another important consideration is the need to maintain certification once it has been achieved.

## **Maintaining Certification**

*"After completing the last question on the exam, I felt the typical train-ran-me-over blues when a smiling proctor handed me a big envelope," Lewis said. "I opened it on the elevator, on the way up to my overpriced hotel room, and found out that the [certification body] hadn't had enough fun with me yet." (Quoted in White, 2005)*

Having once attained a certification, the candidate climbs onto a treadmill – many of the certification bodies have a requirement for “Continuing Professional Development” or “Re-accreditation” with associated costs and in many cases future examinations. (White, 2005)

Ongoing Professional Development is a recognised and important part of maintaining currency with new tools, techniques and industry best practices in many industries (Roper 2006), and Information Technology is definitely not an exception. Given the pace of change in the IT industry and the laborious processes universities must go through to change their programmes it is up to industry bodies to ensure that the new tools and techniques are disseminated rapidly after their development, in theory ongoing certification maintenance will achieve this. (Microsoft, 2006; IEEE 2006; IIBA 2006).

The frequency and style of re-accreditation ranges from the need to show a certain number of professional development hours per year (NZCS 2006, PMI 2006) to regular re-examination as new technologies are introduced (Microsoft 2006, Cisco 2006). For vendor-specific certifications the norm is a new examination and accreditation with each new release of the underlying software/hardware. This ongoing certification has become a significant revenue earner for the certification bodies and training providers (De Marco 1998).

Proven excellence in recertification examination is used in some fields to provide a competitive advantage for the holder, a certificate “with distinction” indicates to potential employers/customers that the candidate truly knows their field and can be trusted to provide a high level of service. (Baechle, 2005)

Another aspect of ongoing certification that a number of organisations require (industry bodies rather than vendor certifications) is the commitment to a code of ethics. Where the accreditation body is trying to promote a professional approach to the application of skills there is a tendency to require certified practitioners to commit to behaviour in accordance with a “code of practice” or some other such set of ethical guidelines. (White 2005b, IEEE 2006, NZCS 2006). These ethical standards are only valuable where the accreditation body has the teeth to penalise the individual for infringements and where there is a strong and respected process for examining alleged breaches of the code.

In part because of the ongoing costs of maintaining certification, a number of commentators are distinctly sceptical about certification.

## ***Scepticism towards Certification***

Commentators such as Johnson (2002) and De Marco (1998) make a strong case against using certification as a decision making tool for both consumers and employers.

Minter (2001) objects to the proliferation of new certifications, urging industry to “use what already exists” – why add a new certification where an existing one already covers the area of skill.

De Marco points out that many of the commentators who are promoting certification represent the organisations who (1) receive the payment for the certification examination and (2) might no longer have a rationale for existence if they don't have a certification programme to oversee.

Do training providers or authors take advantage of the certification need to promote their own wares? Gonzalez (2002) gives a programme for a certification body to assist unsuccessful candidates with exam passing; is this ethical? What about courses which are advertised as “examination preparation”?

How realistic is a certification as a predictor of success or even a measure of competency in a subject area? Anecdotal evidence from practitioners, and at least one formal study (Turocy, Comfort, Perrin & Gieck, 2000), indicate that there is very little correlation between examination marks, experience and success in a field.

How should the potential candidate chose? Perhaps a starting point is to examine some of the certification programmes in somewhat more detail.

## Certification Programmes

All four of the certification bodies examined in this paper embrace the concept of a Body of Knowledge against which customers are assessed. The body of knowledge in all four cases is considered (by the organisations concerned) to be the underlying basis for entry into the profession that the certification body supports.

### *Certified Systems Development Professional – CSDP*

The screenshot shows a Microsoft Internet Explorer browser window displaying the IEEE Computer Society website. The address bar shows the URL: [http://www.computer.org/portal/site/ieeecs/menuitem.c5efb9b8ade9096b8a9ca108bcd4f3/index.jsp?&path=ieeecs\\_level1&path=ieeecs/education/certification&file=index.xml&sl=generic.xml&](http://www.computer.org/portal/site/ieeecs/menuitem.c5efb9b8ade9096b8a9ca108bcd4f3/index.jsp?&path=ieeecs_level1&path=ieeecs/education/certification&file=index.xml&sl=generic.xml&). The page title is "Certified Software Development Professional Program - Microsoft Internet Explorer".

The website header includes the IEEE Computer Society logo and a search bar. The main content area is titled "Certified Software Development Professional Program" and features the CSDP logo. Below the logo, the text reads: "Certified Software Development Professional".

The page includes a sidebar with navigation links: Home, Digital Library, Site Map, Store, Contact Us, Press Room, Shopping Cart, Help, and Login. The sidebar also lists various resources and services, including "Hundreds of FREE online courses", "computer magazine", and "Conference discounts and much more...".

The main content area contains the following information:

- Resources:** Is Certification for You? The Certification Process, Requirements, Preparation and Study, Application, Exam Sites, Continuing Education, Professional Ethics, SWEBOOK.
- Highlights:** Congratulations to the CSDP's certified in Spring 2006!
  - 2007 Candidate Bulletin
  - Certification Magazine mentions CSDP in "Northrop Grumman IT: Developing Tomorrow's Applications Today"
  - Banquet held to honor Beijing's first group of CSDPs
  - New study aide - IEEE Computer Society Real-World Software Engineering Problems: A Self-Study Guide for Today's Software Professional
  - CSDP Testing available around the world in 2006
  - CSDP alignment to SWEBOOK
  - CSDP Examination Fee now reimbursable under the GI Bill
  - Register for the CSDP Online Course Software Engineering Overview: Preparing for the IEEE Computer Society CSDP Examination
  - Join the CSDP Study Group Forum on Yahoo and talk to other test takers. (Group Name: ieeecsdp)
- Applying for the Exam:** How to Apply, Special Testing Accommodations, Application Requirements, Application Form and Candidate Bulletin.

Administered and provided by the Computer Society of the International Institute of Electrical and Electronics Engineers (IEEE) the CSDP programme is aimed specifically at creating a recognised profession of Software Engineering. According to the IEEE web site, the elements of a profession are:

- Initial professional education
- Accreditation
- Skills development
- Certification
- Licensing
- Professional development
- Professional societies
- Code of ethics

The CSDP certification was launched in 2000 and is aimed at meeting the Accreditation and Certification aspects of the profession, in line with the society's mission to "*Build the Community of Leading Software Practitioners.*" According to the IEEE computer society professional certification has three critical components:

- Exam-based testing demonstrating mastery of a Body of Knowledge (BOK);
- Extensive experience base in the performance of the work or profession being certified; and
- Continuing professional education, measured and relevant to the BOK.

The BOK for the CSDP programme is the Software Engineering Body of Knowledge ([www.swebok.org](http://www.swebok.org)), covering the following knowledge areas:

- I. [Business Practices and Engineering Economics](#)
- II. [Software Requirements](#)
- III. [Software Design](#)
- IV. [Software Construction](#)
- V. [Software Testing](#)
- VI. [Software Maintenance](#)
- VII. [Software Configuration Management](#)
- VIII. [Software Engineering Management](#)
- IX. [Software Engineering Process](#)
- X. [Software Engineering Tools and Methods](#)
- XI. [Software Quality](#)

The SWEBOK is available as an electronic publication from the IEEE Computer Society web site, [www.computer.org](http://www.computer.org).

Candidates for the CSDP certification are required to show experience in at least six of the knowledge areas (a total of 9000 hours of provable experience), agree to be bound by the IEEE Computer Society code of ethics and pass an examination.

The examination format is multiple-choice, closed book, completed under controlled conditions using an online assessment tool at a Prometric testing centre. The cost of applying and sitting the examination is US\$450.00. The examination is offered in two testing windows each year, in countries across the globe.

Recertification is required every three years, involving an additional fee (US\$150) and providing proof of Continuing Professional Development – calculated in PDU “units” following a formula which gives credit for the following activities:

[Category 1 - Educational Activities](#)

[Category 2 - Publishing](#)

[Category 3 - Presentations](#)

[Category 4 - Technical/Professional Service](#)

[Category 5 - Self Study](#)

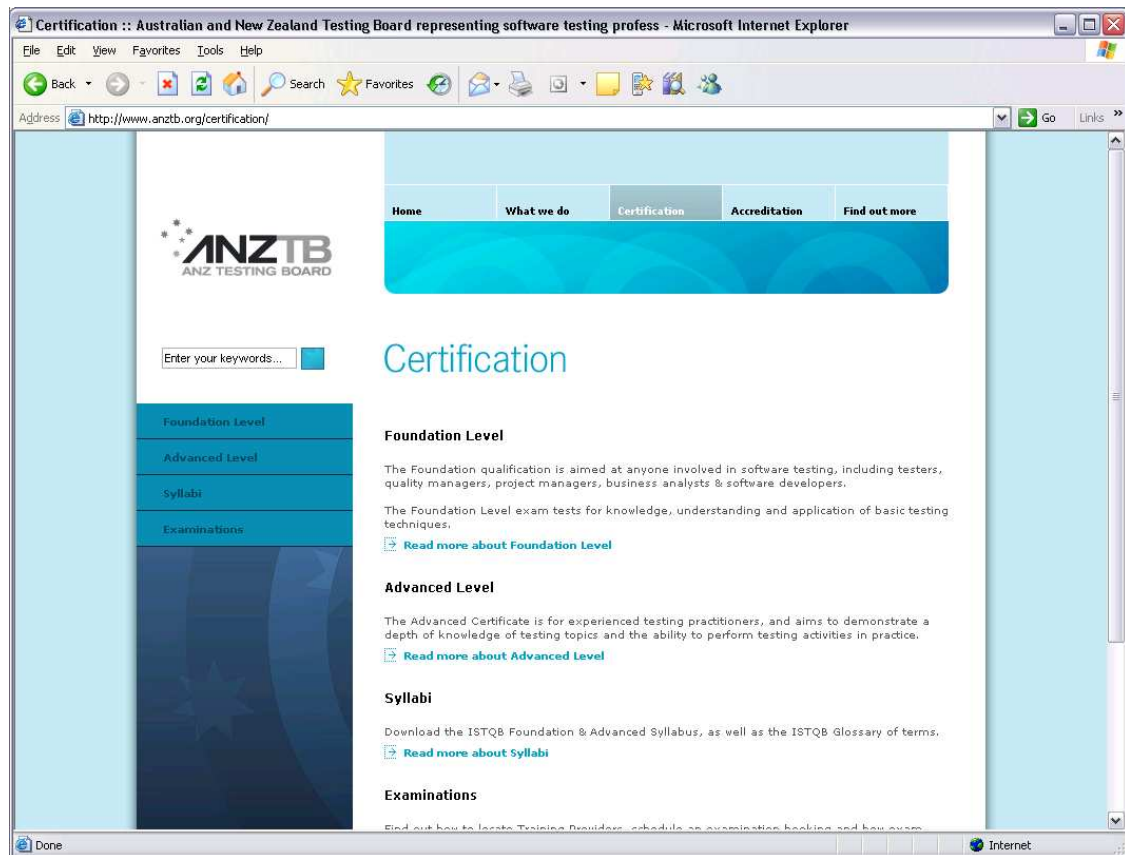
[Category 6 - Employment](#)

[Category 7 - Other](#)

Material sourced from IEEE Computer Society web site – [www.computer.org](http://www.computer.org)

## **International Software Testing Foundation – ISTF**

Administered in Australia and New Zealand by the Australia New Zealand Testing board, this certification is aimed at software testing practitioners.



The certification programme and examination process is administered by the local body, to standards set by the international software testing board. The ANZTB is one of in excess of 20 regional boards covering the whole world. The parent body – the International Software Testing Qualifications Board ([www.istqb.org](http://www.istqb.org)) – publishes the syllabus which forms the body of knowledge for the certification.

The ANZTB offers two levels of certification, Foundation and Advanced.

The Foundation certificate is aimed at practitioners with zero to six months experience in the industry. The examination is paper based, closed book, multiple-choice sat under strict supervision by an impartial invigilator. Examination sessions are arranged by the training course vendors for students who attend their courses. The course instructor may not be present while the students are sitting the examination. The intention is to make the examination available as an online assessment, probably using Prometric testing centres around Australia and New Zealand.

The Advanced certificate is aimed at practitioners with three plus years of experience, and target a deep understanding of the syllabus and the ability to apply the knowledge in real-world scenarios. The advanced examination is a three-hour written test, predominantly consisting of essay-style questions.

The syllabi for both certificates are available for download, along with a glossary of testing terminology which is important for the understanding of the terms covered in the syllabus.

While self-study is theoretically an option for the certification, the reality over the last year (since the founding of the ANZTB) is that certification examinations have been offered in conjunction with training courses by approved training providers.

The ANZTB does not require commitment to a professional code of ethics nor is there any ongoing professional development requirement. Foundation certificate holders are encouraged to strive and prepare for advanced certification, but this is not mandatory.

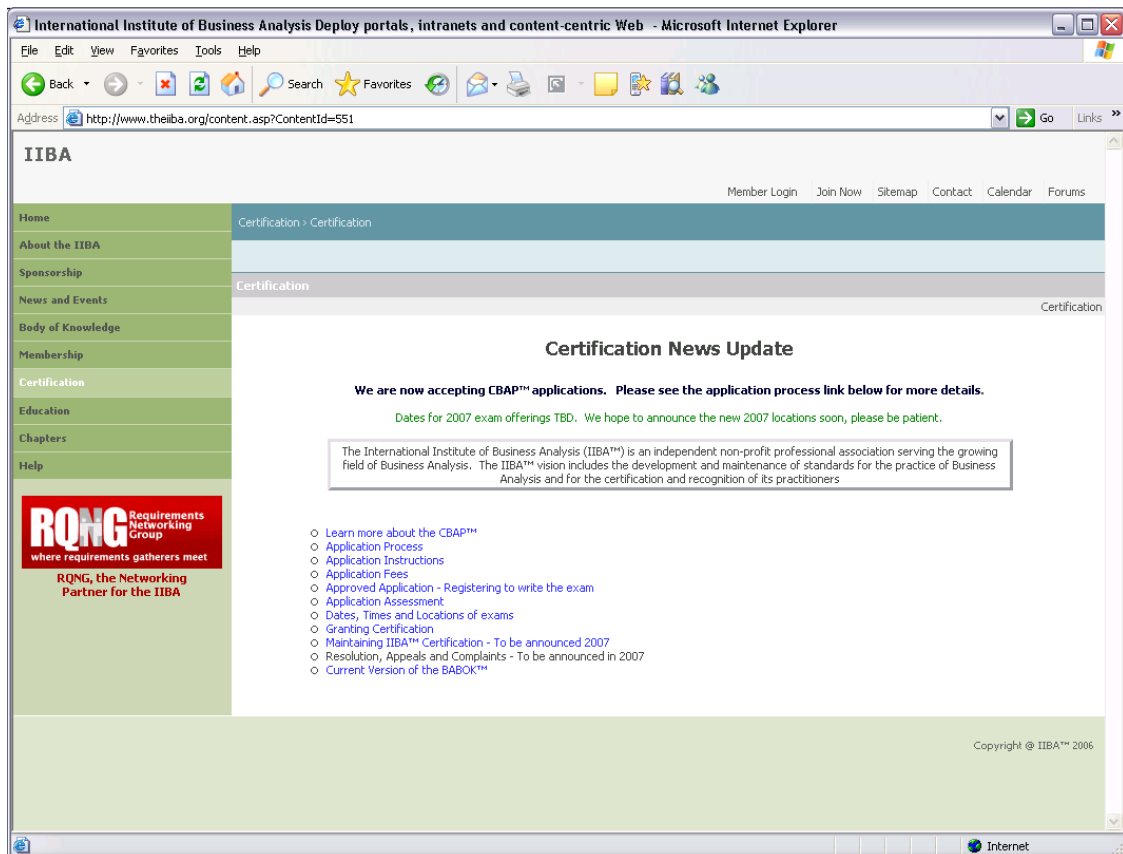
Material taken from ANZTB web site – [www.anztb.org](http://www.anztb.org)

## ***Certified Business Analysis Professional – CBAP***

A relatively new body, the International Institute of Business Analysis (IIBA), was founded in Canada in October 2003. The first international chapter was formed in New Zealand in 2006.

The mission statement of the IIBA is to “Develop and maintain standards for the practice of business analysis and for the certification of its practitioners”.

With over 50 chapters around the world, the IIBA has experienced massive growth in the short time since its founding. Perhaps it is an “idea whose time has come”.



The screenshot shows a Microsoft Internet Explorer browser window displaying the IIBA website. The address bar shows the URL: <http://www.theiba.org/content.asp?ContentId=551>. The website header includes the IIBA logo and navigation links: Member Login, Join Now, Sitemap, Contact, Calendar, and Forums. A left sidebar contains a menu with items: Home, About the IIBA, Sponsorship, News and Events, Body of Knowledge, Membership, Certification, Education, Chapters, and Help. The main content area is titled "Certification News Update" and features a central announcement: "We are now accepting CBAP™ applications. Please see the application process link below for more details. Dates for 2007 exam offerings TBD. We hope to announce the new 2007 locations soon, please be patient." Below this is a box with the IIBA mission statement: "The International Institute of Business Analysis (IIBA™) is an independent non-profit professional association serving the growing field of Business Analysis. The IIBA™ vision includes the development and maintenance of standards for the practice of Business Analysis and for the certification and recognition of its practitioners." A list of links is provided: Learn more about the CBAP™, Application Process, Application Instructions, Application Fees, Approved Application - Registering to write the exam, Application Assessment, Dates, Times and Locations of exams, Granting Certification, Maintaining IIBA™ Certification - To be announced 2007, Resolution, Appeals and Complaints - To be announced in 2007, and Current Version of the BABOK™. The footer includes the text "Copyright © IIBA™ 2006".

The IIBA has produced the Business Analysis Body of Knowledge (BABOK), version 1.6 of which was released in July 2006. Version 2.0 is due for release in early 2007.

The CBAP certification is based on a written examination (multiple-choice, paper based, closed book) against the current BABOK and documented proof of experience in the

field. The certification is clearly and explicitly targeted at intermediate to advanced practitioners in the field.

According to the IIBA website: *“This [certification] program has been carefully designed to be in compliance with the International Standards Organization (ISO) 17204 standard for certifying the competence of personnel. IIBA™ will be seeking ISO 17024 approval.”*

The focus on ISO certification for the examination process is designed to provide a level of assurance that the examination process itself is of the highest calibre.

The examination was offered for the first time in November 2006, and will be amended based on the feedback from the initial examination candidates. A North American examination schedule for 2007 will be offered and international examinations available in 2008. The IIBA will keep central control over the examination setting and marking.

Currently the IIBA does not require the adoption of a professional code of ethics for certification, nor is there any continuing professional development requirement, but this will most likely be the case in the future.

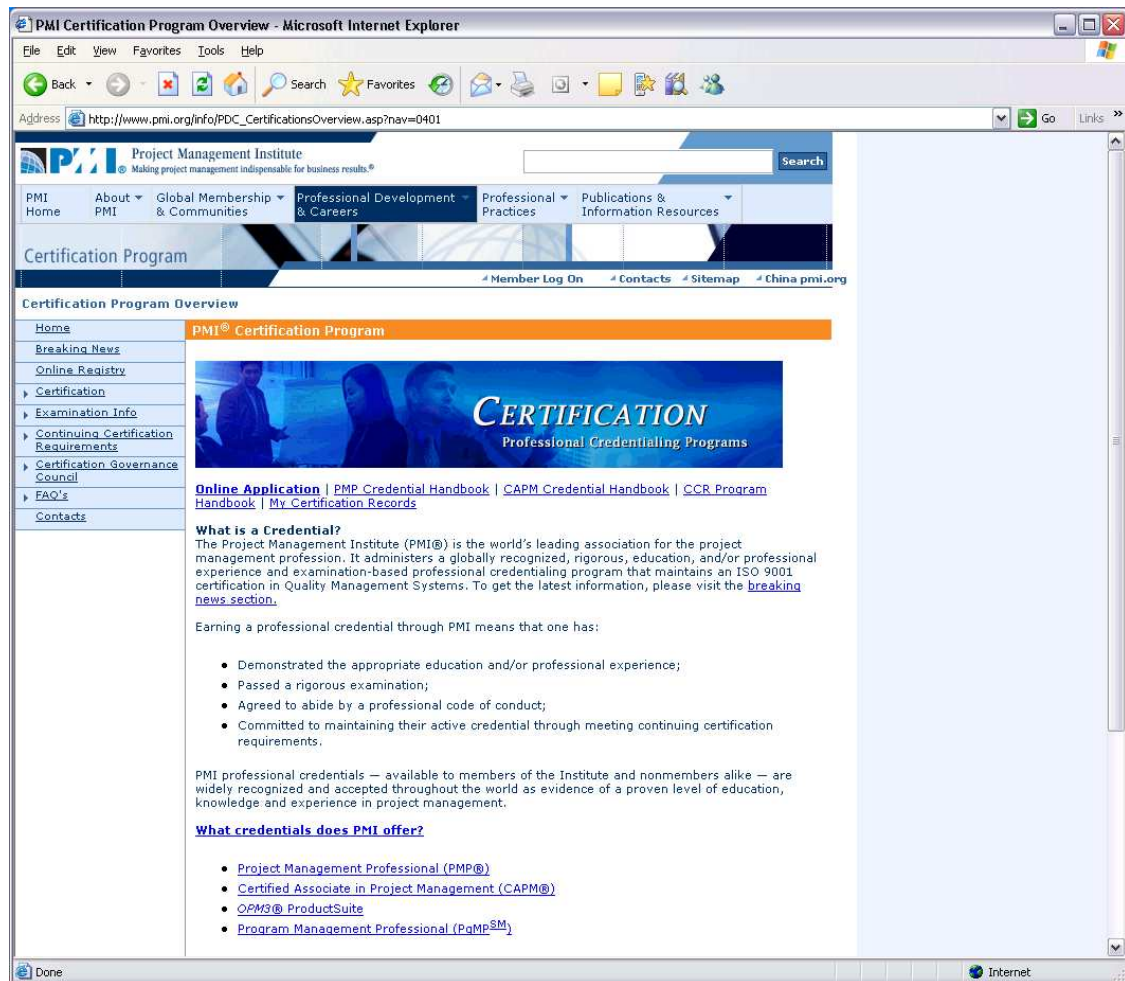
The IIBA accredits training providers whose courses are assessed to cover one or more of the knowledge areas of the BABOK.

Material taken from the IIBA web site [www.theiiba.org](http://www.theiiba.org)

In many ways the CBAP has been modelled on the PMP Project Management Professional programme.

## Project Management Professional – PMP

The longest standing of the four certification programmes, the PMP certification is offered by the Project Management Institute. With in excess of 200000 members in 125 countries the PMP has strong support around the world.



The PMI offers a range of certifications:

- [Project Management Professional \(PMP®\)](#)
- [Certified Associate in Project Management \(CAPM®\)](#)
- [OPM3® ProductSuite](#)
- [Program Management Professional \(PgMP<sup>SM</sup>\)](#)

The certification process is a large revenue generator for the PMI. Local chapters retain a portion of the revenue, with the remainder sent to the parent body.

The examinations are computer-based, multiple choice, sat at Prometric testing centres around the world. The PMP® and CAPM® examinations are offered in 10 languages.

The examinations are against the Project Management Body of Knowledge (PMBOK) which is maintained by the PMI. The PMI accredits training providers whose course material covers topic areas in the PMBOK.

The CAPM® certification requires only passing an examination.

The PMP® certification requires the candidate to pass the examination, agree to abide by the code of ethics and prove significant experience in project management.

The PgMP certification is considered the pinnacle of project management skills assessment, targeted at senior project managers who manage multiple streams of projects. Assessment involves proving the relevant experience, passing a multiple-choice examination and a multi-rater assessment by a group of experienced project managers in an interview situation.

Retention of both PMP® and PgMP certification requires continuing professional development and payment of fees every three years.

A vast array of books and training courses are available which claim to prepare students for the PMP examination.

Material taken from PMI website [www.pmi.com](http://www.pmi.com)

Another question for the certification candidate is the value of the certification vis-à-vis a formal university qualification.

## Industry Accreditation and University Qualifications

There appears to be a bi-directional, symbiotic relationship evolving between traditional university courses and industry certifications.

(Moor, Yager, Sumner & Crow, 2001) point to a number of initiatives in the USA where industry certification in the IT field is accepted as attaining entry criteria for formal university programmes.

The author is aware of three universities in Australia which offer industry certification as part of their degree programmes, and which also accept a variety of industry certifications as proof of entry level skills to be accepted on a degree programme. (Source: Ongoing commercially sensitive negotiations).

Over time, it is quite likely that more and more university courses will both include preparation of students for certification examinations, and accept certification as evidence of prior learning, allowing students to gain exemption for modules which align with the certification they have already attained.

Given the move by many universities towards offering distance courses, the candidate should also consider how the certification impacts on distance learning delivery.

## Implications for Internet Based Courses

The availability of independent certification programmes which provide an impartial assessment of a candidate's skills against recognised and respected Bodies of Knowledge is an opportunity for providers of internet based training courses, whichever delivery mechanism is used: synchronous distance learning, asynchronous broadcast/lecture based courses, pure self study or a mixture of various delivery tools.

A Google search for practice examination brings up a vast list of organisations offering practice or trial tests for a huge range of certifications. Many of these are commercial organisations trying to sell their own self-study material; some have a business model that makes money by charging for the practice exam and some are personal web sites maintained by individuals who appear to have a genuinely altruistic motive. An area for careful consideration by a candidate needs to be the provenance and credibility of the trial examination provider, and more importantly of the certification itself.

## Conclusion

Industry certification is neither a good nor a bad thing in and of itself, and appears to be an inevitable part of the Information Technology landscape today. Employers (especially larger companies with formalised Human Resources policies) demand some “checking of the box” when sorting through applications for employment and frequently the lack of a certification will prevent an otherwise viable candidate from passing the first hurdle towards employment.

There is valid questioning of the motives of some of the accreditation bodies, training providers, CBT providers and “how to” book authors who focus their courses purely on passing an examination, often sacrificing true knowledge in the area of assessment.

On the other hand, where certification is part of a broader skill and knowledge acquisition process by of a motivated and determined individual, then it becomes part of the proof that the person knows the basics of their chosen profession, irrespective of the path they have chosen to get there, and a recognized certification gives employers and customers confidence in the competency of the individual.

The potential certification candidate must carefully weigh the value of the certification they are pursuing – is the certification credible to prospective employers/customers and does it cover an area that is of career interest to the candidate. There is little point in (for instance) being a certified software tester if the role of testing is one that doesn't interest the individual!

Where certification entails agreement to a code of ethics or other standard of behaviour then the certification brings with it an assurance of appropriate behaviour or censure by the accrediting body for violating the standard. Given the low ranking of the IT industry in many of the “trust” surveys this assurance may help to raise the perceived value of the profession in the minds of our customers and “victims”, provided the certifying body is respected in the wider community.

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