

# **Professional Certification**

## **And ICT Competency Framework**

### **Update 1: Considerations and Structure**



***NZ Computer Society Inc. (NZCS)***

Version 1.0p January 2009

**Matthews, P and Wood, D**

## Please Note

This paper assumes the reader has an understanding of the NZCS Certification background, including familiarity with the NZCS Certification Discussion Document available at [www.nzcs.org.nz/certification](http://www.nzcs.org.nz/certification)

### **This is the beginnings of a draft model only.**

This paper or implementation plan has NOT been endorsed by the NZCS National Council and hence should be regarded as draft in nature, and **not** NZCS policy.

Note that considerably more detailed work has been completed, however this paper concentrates on the “skeleton” or “foundation” for the Certification Project.

## Table of Contents

<b>Executive Summary .....</b>	<b>5</b>
<b>Introduction.....</b>	<b>6</b>
Digital Strategy 2.0 .....	7
Deficiencies in the Sector.....	7
<b>New Zealand’s Professional Certification – the options .....</b>	<b>9</b>
Current Preferred Option.....	10
<b>The 10 Certification Streams.....</b>	<b>11</b>
<b>Stream 1: Implementation of the SFIA Framework in NZ .....</b>	<b>12</b>
<b>Stream 2: Standards to be met for Certification.....</b>	<b>13</b>
Area 1: Skills and Knowledge .....	13
Area 2: Professional Knowledge.....	13
Area 3: Competency and Responsibility .....	13
Continued Professional Development .....	15
Service to the Professional Community .....	15
Professional Standards Board .....	15
<b>Stream 3: Assessment Process .....</b>	<b>16</b>
ICT Professional Business Alignment, Ethics and Legal Course.....	16
Routes to Certification.....	16
Assessment Process.....	16
Assessment of Area 1 – Skills and Knowledge .....	17
Assessment of Area 2 – Professional Knowledge .....	17
Assessment of Area 3 – Competency and Responsibility .....	17
Appeals .....	17
<b>Fast-track Process for Existing NZCS Professional Members.....</b>	<b>18</b>
Same Requirements.....	18
Assessment .....	18
<b>Stream 4: Professional Responsibilities and Consequences.....</b>	<b>19</b>
Professional Conduct Board .....	19
Operation of PCB.....	19
<b>Stream 5: Ongoing Governance Structure of NZCS Certification .....</b>	<b>20</b>
Certification Governance Board (CGB).....	20
Professional Conduct Board (PCB) .....	20
Professional Standards Board (PSB).....	20
<b>Stream 6: Negotiation with Kindred Partners (BCS/ACS) .....</b>	<b>20</b>

<b>Stream 7: Body of Knowledge Development</b> .....	<b>21</b>
<b>Stream 8: Communications Plan</b> .....	<b>21</b>
<b>Stream 9: Costing and Financials</b> .....	<b>21</b>
<b>Stream 10: Ongoing Marketing of CITP and ICT Profession</b> .....	<b>22</b>
NZICT as a potential Marketing Partner .....	22
<b>Consultation Plan and Input from Stakeholders</b> .....	<b>22</b>
<b>Alignment with International IITP Standard</b> .....	<b>23</b>
<b>Other Factors</b> .....	<b>23</b>
Mapping of Professional Training .....	23
ISEB, BCS Professional Examinations and ACS CPeP.....	23
<b>Relationship with other projects</b> .....	<b>25</b>
NZCS National Mentoring Programme .....	25
Degree accreditation scheme with ACS and Seoul Accord .....	25
<b>Where to from here?</b> .....	<b>26</b>
<b>Appendix 1: Glossary of Terms and Abbreviations</b> .....	<b>29</b>
<b>Appendix 2 – SFIA Levels of Responsibility</b> .....	<b>30</b>
SFIA Responsibility Level 1 – “Follow” .....	30
SFIA Responsibility Level 2 – “Assist” .....	31
SFIA Responsibility Level 3 – “Apply” .....	32
SFIA Responsibility Level 4 – “Enable” .....	33
SFIA Responsibility Level 5 (CITP Level) – “Ensure, advise” .....	34
SFIA Responsibility Level 6 – “Initiate, Influence” .....	35
SFIA Responsibility Level 7 - “Set strategy, inspire, mobilise” .....	36
<b>Appendix 3 – BCS Professional Examinations Mapping to CITP</b> .....	<b>37</b>
<b>Appendix 4: ISEB Mapping to CITP Pathway</b> .....	<b>40</b>
<b>Appendix 5: ACS CPeP Mapping to SFIA</b> .....	<b>41</b>

## Executive Summary

NZCS is the professional body of the ICT sector and has the responsibility for setting the professional standard for ICT practitioners.

It is generally accepted that the sector has suffered from a lack of professional standards and practice, and NZCS, together with global partners in many other countries, are addressing this via the implementation of accreditation of ICT professionals.

The beginnings of the “straw man”, or draft, model contained in this document are very much in draft form, and are likely to change significantly before implementation.

The implementation of this programme maps with the *Digital Strategy 2.0* as well as significant other work that has been completed in this area in the past, and will significantly address many of the secondary resultant consequences of a lack of such a programme, such as the current skills shortage.

Defining a profession via Certification requires a number of steps, including adoption of a *Body of Knowledge*, implementation of an underlying competency framework, the setting of standards, sector support, development of processes and procedures to complete the assessment, decisions around the final shape of the programme, and others.

NZCS have identified 10 necessary “streams” of work to address the various requirements, as well as a series of overarching considerations (such as Sector Buy-in and Launch Logistics). These streams cover areas such as the implementation of the SFIA Framework (the chosen competency framework), assessment criteria, professional consequences, governance, Body of Knowledge development, and other important issues.

The NZCS programme will be mapped to the *International IT Professional* standard (IITP) which is being used globally to provide equivalency of regional and country-specific certification programmes. NZCS is the only body that can provide IITP, being the NZ representative to IFIP (the global governance body defining the IITP through a taskforce).

It is intended that this model will be refined and defined in detail in Q1 2009, along with the establishment of Advisory Groups covering Government, Industry, Academia and Representative Bodies.

Along with the detailed Implementation Plan, the entire model will undergo extensive sector-wise consultation in February and March 2009 with the intended presentation to National Council for formal approval at the end of March. If approved, the programme will be rolled out Q2/Q3 2009.

## Introduction

The NZ Computer Society is the professional body of the ICT sector, and works to improve the professional delivery of ICT in New Zealand.

An important aspect of any profession is definition and recognition - defining what the profession is, defining the *Body of Knowledge* for that profession, recognising those that have achieved a professional level of *competency* and helping practitioners reach that level.

To that end, the NZ Computer Society has embarked on significant research and the implementation of an ICT Competency Framework and Certification process. Whilst this has been talked about for some time, in 2008 the organisation stopped just talking about it and began the process of research, planning and implementation.

This report intends to outline a number of interlocking and related strategies which, in parallel, will create a professional Information and Communications Technology (ICT) industry framework in New Zealand, closely aligned with our significant international partners and world standards for education and professionalism in this industry segment.

These initiatives will address the key action points outlined in the 2008 *Digital Strategy 2.0* booklet produced by the NZ Ministry of Economic Development (MED) and supported by the Digital Development Council (DDC). It is intended that NZCS efforts closely follow the guidelines and experiences of international partners and the findings and proposals outlined in "Growth and Innovation Pilot Initiative Project" Project Proposal prepared for the Tertiary Education Commission by IPENZ and others, dated August 2007.

The New Zealand programme will learn and benefit from those countries and professional bodies around the world which have already made substantial progress with related initiatives. As part of an international community, NZCS will draw on the experiences and expertise of global kindred partners to ensure a high quality and sustainable programme.

Although NZCS intend to closely follow BCS and ACS in particular, NZCS believes that New Zealand's implementation will be different and possibly slightly more stringent in the requirements than some jurisdictions, particularly in the areas of core professional values covering topics such as business alignment and responsibilities, legal requirements, adherence to all appropriate codes of ethics, and general professional behaviours.

NZCS views the maintenance of a "chartered"-type recognition as being vitally important for the credibility of our profession and for the continuing value proposition of the individual to the industry. Demonstrable adherence to the NZCS Code of Ethics, adequate competence and responsibility levels and continuing personal development and education are considered essential components of an ICT Professional.

As part of the process, NZCS will, in conjunction with international partners, provide accreditation of courses and training which will count towards the Certification, as well as mapping to the underlying framework to provide career “pathways” to assist practitioners move “upwards” in their careers more rapidly.

## **Digital Strategy 2.0**

The overall objectives of this programme match closely with the *Capability* aspects of the *Digital Strategy 2.0* as outlined on Page 38 of that report, specifically:

- Implement professional standards and qualification equivalency.
- Attract more skilled ICT practitioners to New Zealand.
- Promote digital careers and skills.

The Framework will also serve as the underlying foundation to many other Capability-based projects throughout the sector.

## **Deficiencies in the Sector**

Before continuing it is necessary to define the following sectoral deficiencies. These are consequences of the lack of definition, recognition and hence vision in our profession:

- **Skills Shortage:** a shortfall in the number of workers with the skills needed to fill the jobs currently available<sup>1</sup>;
- **Gap:** a competence shortfall between the current and needed competence levels of individual staff within organisations;
- **Mismatch:** a mismatch between the competence of the trainee or graduating student/learner and the expected competence needs of the employers. Mismatch is assumed to arise from course/curricula misalignment<sup>2</sup>;
- **Fill Rate:** These provide evidence about the relative difficulty employers are having in filling vacancies. Fill rate data in New Zealand is available from the NZ Department of Labour's Job Vacancy Monitor Programme and is a key result from the programme's Extensive *Survey of Employers who have Recently Advertised* (SERA).

---

<sup>1</sup> <http://dictionary.bnet.com/definition/skills+shortage.html>

<sup>2</sup> e-Skills for Europe: Towards 2010 and Beyond <http://ec.europa.eu/enterprise/ict/policy/doc/e-skills-forum-2004-09-fsr.pdf>

These deficiencies are a direct result of the lack of definition and recognition in the ICT sector. There are a number of other consequences as well;

- How do we set educational standards at school or tertiary level with no defined *Body of Knowledge*?
- How can we market a profession we haven't defined?
- How can the public have confidence in a profession that doesn't define itself?
- How can we promote *Good Practice* when the profession doesn't provide recognition for those that subscribe to the philosophy?
- How do we provide congruence and consistency throughout the education system without professional standards?
- Why would professionals treat ethics and professionalism as more than just marketing words if there are no professional consequences?

In short, the ICT profession in New Zealand and elsewhere is experiencing a multitude of problems culminating in a prolonged, serious and significant skills shortage. Previous attempts to address many of these problems have been unsuccessful as they have addressed the symptoms rather than the cause.

This programme addresses the very structure and foundations of the ICT profession as a whole. Once the foundations are set we can set about redefining what it means to be an ICT Professional.

Without this programme our sector will continue to be a sector of individuals (a mish-mash of professionals and non-professionals) rather than a profession in its own right. Only when we have defined what it means to be an ICT Professional, and begun the process of independently recognising ICT Professionals through this programme, can the raft of secondary issues be dealt with in a productive, consistent and sustainable manner.

## **New Zealand's Professional Certification – the options**

NZCS ICT Certification in New Zealand must follow the example set by kindred societies, particularly those that have already received, or are close to receiving accreditation from IP3, the international body accrediting professional certification programmes.

Whilst New Zealand lags behind the efforts of a number of other countries in this area, NZCS can move to accreditation very promptly by mirroring the efforts undertaken overseas and taking advantage of the smaller size of New Zealand to take a more agile approach. NZCS has the benefit of their hindsight, and has the support, assistance and advice available from global partner bodies with far greater resources than ourselves.

NZCS has a number of options available, however the fundamental decision is whether to “go it alone” or partner with one of our international kindred organisations. Both approaches have their advantages and disadvantages.

“Going it alone” is not as arduous a task as originally envisioned. With the new international standardisation of certification programmes (via IP3), much of the necessary support and guidance is available, and, provided NZCS's offering meets the criteria and our resultant programme is of a high standard, international recognition is available through the IP3 programme.

This would involve creation of assessment processes against the SFIA Framework (which need be created either way and can still be based on NZCS partner's programmes), potential implementation of an underlying examination regime (such as BCS ISEB or ACS CPeP) to provide one route to certification, and promotion of the new standard. The processes would also need to be created with either option.

The other option is to partner closely with another body, such as licensing BCS's Chartered IT Professional (CITP) programme, or ACS (with their PCP programme).

This approach has advantages and disadvantages.

The primary advantage of partnering with another organisation is the recognition this will afford. For instance, in the case of BCS, the ability to gain access to the globally recognised “Chartered IT Professional” is very significant. Accessing the same through alternative means involves an Act of Parliament or Royal Charter which would be a time-intensive and expensive process.

Other advantages include additional support and assistance with the establishment of our programme, and ready access to the processes and systems of the partner organisation.

The key disadvantage with this approach is the additional cost this would impose on CITP applicants. It is likely there would be an ongoing licensing fee, along with additional auditing requirements (as the programme would most likely need to be audited by *both* the partner organisation, *and* the IP3 group within IFIP).

### **Current Preferred Option**

NZCS is currently in negotiations and discussions with BCS regarding the logistics, costs and benefits of licensing CITP from BCS. The option recommended to the NZCS National Council will depend significantly on the results of these discussions and a careful evaluation of the costs and benefits.

From a process perspective, there is not that much difference between the “going it alone” approach and the “full partner” approach. Both involve adopting a Body of Knowledge, defining and assessment process, bringing the SFIA framework to New Zealand, and accreditation with the IP3. The fundamental difference is the early international recognition versus the additional cost.

## **The 10 Certification Streams**

NZCS have defined 10 streams of work which must be researched and completed, many in parallel, to implement the Competency Framework and Certification Programme. Note that these streams will be required regardless of whether NZCS partners with another body for the certification or not.

### **The ten streams are:**

1. Implementation of the SFIA Framework in New Zealand
2. Overall standards to be met for NZCS Certification eligibility (initial and ongoing)
3. Assessment process
4. Professional Responsibilities and Consequences (Disciplinary Processes)
5. Ongoing Governance Structure of NZCS Certification Programme
6. Negotiations with Kindred Partners
7. Body of Knowledge Development
8. Communications Plan, including launch of Certification Programme
9. Costings and Financials
10. Ongoing Marketing of Programme, and marketing of wider ICT Profession

### **The following surrounding issues are also being considered in all streams:**

1. Launch Logistics and ongoing Management
2. Consultation with wider Sector
3. Sector Buy-in
4. Relationship with other projects
5. ISEB or other Professional Examinations/Training
6. Degree Accreditation and Seoul Accord

## Stream 1: Implementation of the SFIA Framework in NZ

NZCS are in discussions and negotiations with BCS and the SFIA Foundation to make the SFIA Framework, and possibly BCS's SFIAPlus, readily available in New Zealand through NZCS.

Whilst SFIA as a framework is freely available to any end-user, NZCS will package the framework into a structure suitable for New Zealand, including providing (or accrediting) formal assessments of ICT Professionals, mapping of courses and training opportunities, providing ICT Professionals with career pathways and guidance to grow as professionals, and the overarching NZCS Professional Certification.

NZCS's proposed New Zealand variant of SFIAPlus will have strong benefits in establishing job or position descriptions and facilitate either training or recruitment by highlighting skills and needs, as well as the courses and training available through third-party providers to bridge the gaps.

NZCS are also considering making a product similar to BCS's *CareerBuilder* available in NZ. Together these tools will assist NZCS and New Zealand enterprises in general to classify roles, skills and position descriptions. Further, by identifying which skills, knowledge and training is required by individuals, NZCS can then source and accredit courses (or arrange for their creation), and assist individuals to obtain training and hence improve the competence, expertise and professionalism of the sector as a whole.

Accreditation of training and courses in conjunction with, or shortly after, this initial implementation will be paramount. Ideally, every IT course offered in New Zealand should be mapped to SFIA so that all educational effort provides the best return for students.

These measures will contribute towards the development of templates which can be used widely to assess skill and knowledge gaps for existing staff and also when immigration applications are being assessed. The latter will help remove some of the risks for both employers and employees.

The other consequence is that training and courses available in New Zealand will then be directly comparable to those available overseas (where the same process is happening in many other jurisdictions). This has significant benefits to the Immigration Service, Employers, and the ICT Professionals themselves.

## **Stream 2: Standards to be met for Certification**

Where NZCS sets the bar in terms of professional requirements necessary to achieve Certification is the single most significant decision which will affect the success or otherwise of this programme.

NZCS proposes to address three areas as part of ICT certification:

### **Area 1: Skills and Knowledge**

NZCS will define a requirement for the Skill and Knowledge aspects of Certification.

This will include:

- Understanding of the core (fundamental) knowledge in MANY areas
- A high level of skill and knowledge in one or more SPECIFIC areas

Hence, as is appropriate for any profession, **both** a “narrow and deep” and “broad and shallow” understanding of the *Body of Knowledge* will be required. Compare this, for example, with a lawyer who will generally have an area (or areas) of expertise plus a broad knowledge of many areas of law.

The areas of knowledge will be defined in the proposed Body of Knowledge, and mapped clearly to the SFIA Framework.

### **Area 2: Professional Knowledge**

Professional Knowledge covers the non-technical aspects of being a professional which help define the fundamental difference between a professional and a practitioner.

These will include:

- An understanding of, and adherence to, Ethics and Code of Practice
- Knowledge of ICT Legal Issues
- Business Congruence (an understanding of ICT within the organisational framework)

Additionally, there will be a requirement that the applicant is of good character, as well as a number of other core requirements.

### **Area 3: Competency and Responsibility**

The applicant must be operating at SFIA Level 5 or above, and have done so for at least 1000 hours in the previous 12 months (ie essentially at least 6 months working at this level each year).

All SFIA Levels are outlined in Appendix 1 of this document. Level 5 is defined as:

### **Autonomy**

Works under broad direction. Is fully accountable for own technical work and/or project/supervisory responsibilities. Receives assignments in the form of objectives. Establishes own milestones and team objectives, and delegates responsibilities. Work is often self-initiated.

### **Influence**

Influences organisation, customers, suppliers and peers within industry on the contribution of own specialism. Has significant responsibility for the work of others and for the allocation of resources. Makes decisions which impact on the success of assigned projects i.e. results, deadlines and budget. Develops business relationships with customers.

### **Complexity**

Performs a challenging range and variety of complex technical or professional work activities. Undertakes work which requires the application of fundamental principles in a wide and often unpredictable range of contexts. Understands the relationship between own specialism and wider customer/organisational requirements.

### **Business skills**

Advises on the available standards, methods, tools and applications relevant to own specialism and can make correct choices from alternatives. Analyses, diagnoses, designs, plans, executes and evaluates work to time, cost and quality targets. Communicates effectively, formally and informally, with colleagues, subordinates and customers. Demonstrates leadership. Facilitates collaboration between stakeholders who have diverse objectives. Understands the relevance of own area of responsibility/specialism to the employing organisation. Takes customer requirements into account when making proposals. Takes initiative to keep skills up to date. Mentors more junior colleagues. Maintains an awareness of developments in the industry. Analyses requirements and advises on scope and options for operational improvement. Demonstrates creativity and innovation in applying solutions for the benefit of the customer.

## **Continued Professional Development**

Certified Professionals will have a clear requirement to complete 30 hours of Continued Professional Development (CPD) per year.

This will be formally recorded and audited regularly, and all courses and training registered with a contactable referee (eg the person responsible for holding the course).

CPD requirements will be further defined, but will most likely resemble those required for NZCS Professional Membership.

## **Service to the Professional Community**

A requirement of professionals is that they give back to the professional community, thereby improving the profession and helping path the way for those entering the profession in the future. This is similar to the expectations of most other professions.

There will be an expectation of 5 hours/year of “pro bono” or unpaid service to the professional community per year.

This could be in a number of areas, including Mentoring, participation in NZCS Working Groups, CITP Assessments, participation in the ICT-Connect Programme, participation in programmes such as e-Day, or any other NZCS-accredited activity.

The primary requirement is that this will not be completed as part of paid employment (or contracting), not as a publicity or marketing exercise for any person or organisation, and be for the good of the ICT professional community or public at large.

It is intended that enough options will be made available, both through NZCS and through third parties, to ensure there are suitable options for all professionals.

## **Professional Standards Board**

NZCS will create a *Professional Standards Board* who will evaluate the Requirements on an ongoing basis, and make recommendations to the NZCS National Council from time to time as to changes necessary.

Please see Stream 5 for more information.

## **Stream 3: Assessment Process**

SFIA is described as the reference base for skills and competence by IP3 in its “International IT Professional” (IITP). NZCS is working closely with the organisations involved in IP3 during the establishment of the NZCS Certification Programme to ensure our programme maps to these international efforts.

After considerable evaluation of options, NZCS will be using the SFIA Framework as the underlying foundation of the Certification Programme.

### **ICT Professional Business Alignment, Ethics and Legal Course**

It is proposed that NZCS creates or commissions a half-day course covering the core areas of Area 2 (Professional). In the first instance, completion of this course would be mandatory for Certification applicants. In due course other third-party courses would be accredited as meeting this requirement.

### **Routes to Certification**

There will be a number of routes to professional certification. Based on those offered in other jurisdictions, at this stage the focus is on the following 6 routes:

1. Established Academic Route
2. IT Industry Leader Route
3. Established IT Professionals Route
4. Education Plus Experience Route
5. Exam Route
6. NZCS Existing Member fast-track Route (time limited – first 6 or 12 months)

Each route will have slightly different requirements and assessment, however they will each assess to the same level of competence, skills and knowledge.

### **Assessment Process**

The Assessment Process will involve assessing each of the three Areas outlined in the previous section.

### **Assessment of Area 1 – Skills and Knowledge**

This assessment will take advantage of the fact that training and courses will be mapped against the SFIA Framework. Depending on the route chosen, it will involve assessment of formal training as well as experience to ascertain whether the candidate meets the requirements set.

### **Assessment of Area 2 – Professional Knowledge**

A pre-requisite for all (except potentially Route 6) will be completion of the *ICT Professional Business Alignment, Ethics and Legal Course*.

The intention is to accredit other courses in time as meeting this requirement, including degrees through the NZCS Degree Accreditation Programme.

Additionally, there will be a requirement that the applicant is of good character. This will include publishing their details in the NZCS Newsletter, industry magazine, or some such other place as is determined from time to time, with a request to members that any information that may challenge their good character be made available.

### **Assessment of Area 3 – Competency and Responsibility**

This will involve a teleconference interview and assessment by two independent experts to ascertain whether the candidate meets the requirements set for this area (predominantly, that they are operating at Level 5 of the SFIA Framework).

These experts may be previous CITP recipients, recognised leaders in their field, senior NZCS staff, or other professionals asked to participate.

This will require a culture and clear understanding that there will be an expectation for successful CITPs to assess future applicants. This will satisfy the “Service to the Professional Community” provision of CITP.

Should the assessment for Area 1 not be clear, this can be visited as part of the interview process, and the assessment panel can then make a judgment call as to whether the applicant meets the requirements for both areas.

### **Appeals**

With the exception of the fast-track process, a fair and transparent Appeals process is essential to ensure the programme adheres to the concept of transparency.

## Fast-track Process for Existing NZCS Professional Members

It is intended that a fast-track process be instigated for existing full NZCS members (MNZCS and above). This will be available for a very limited time after the launch of CITP (most likely 6 or 12 months).

### Same Requirements

A fundamental principle of the Fast-track process is that the standards cannot and should not be lowered. The recognition and standing of the Certification Programme implemented in New Zealand will depend on successful Certified Professionals being of a high standard.

This is simply a process whereby those that have shown a high level of professionalism and competency can be assessed in a more prompt manner to enable the fast take-up of the programme whilst still maintaining the same standards.

### Assessment

Area 1 – As the course and training mapping will be being conducted during this initial period, subjective assessments will be made by the Certification Assessment Team.

Area 2 – For the purposes of the Fast-track Process, full membership of NZCS shall be deemed as evidence of meeting this criteria.

Area 3 – Signed statements from two senior ICT professionals (preferably CIO or senior management level) stating that the applicant meets the requirements of Level 5 of the SFIA Framework will be required, as well as assessment from the Certification Assessment Team.

- The NZCS Certification Assessment Team will then make an initial assessment as to whether the applicant **clearly** meets the criteria.
- If it is not clearly obvious whether they meet the criteria, the full standard process will be required.
- If, in the opinion of the Assessment Team they do meet the requirements, they will be provisionally approved.
- A percentage of each batch of successful applications will be re-evaluated by a team of senior NZCS members. If all meet the criteria, the whole batch will be approved. If not, the whole batch will then be re-evaluated.
- The member will be informed of the outcome

Fast-track decisions may *not* be appealed by applicants, and no further correspondence will be entered into.

## **Stream 4: Professional Responsibilities and Consequences**

With professional recognition comes responsibilities, and the NZCS Certification Programme will be no exception.

Since this programme will be considered the most important standard available to ICT Professionals, adherence to all of the requisite codes and standards will be mandatory.

There will be a number of consequences for serious breaches of such codes and standards. These may include:

- Issuing a Warning
- Issuing a fine, within a certain limit
- Publicly naming the Member
- Stripping the Member of their Certification or removing them from the organisation
- Other appropriate disciplinary action

### **Professional Conduct Board**

NZCS will put in place a *Professional Conduct Board*, appointed by the National Council, to oversee Certified Professionals' adherence to their professional responsibilities.

The power vested in this board will include:

- Recommend disciplinary or conduct-related policy to National Council
- The authority to investigate any alleged breaches of conduct-related policy or the Code of Ethics
- Recommend any disciplinary measures to National Council, relating to specific individuals and events

This Board should be Chaired by the Deputy President, but otherwise independent from National Council (i.e. no member on this board shall be a member of National Council).

### **Operation of PCB**

The operation of the PCB shall be governed by the National Council in the NZCS Bylaws.

The principles of natural justice will be a paramount in guiding the operation of this board.

## **Stream 5: Ongoing Governance Structure of NZCS Certification**

To ensure the long-term sustainability of the programme, it is important that a good governance structure is implemented.

Three boards will be created:

### **Certification Governance Board (CGB)**

This board will have overall responsibility for evaluating the performance of the Certification Programme, and making recommendations to National Council for structural changes.

At a minimum, an annual report will be completed.

### **Professional Conduct Board (PCB)**

The PCB will have responsibility for recommending conduct and ethics-related policy to National Council, as well as investigating breaches.

### **Professional Standards Board (PSB)**

The PSB will have responsibility for reviewing the professional requirements of the Certification Programme on an ongoing basis, and making recommendations to National Council accordingly.

All Board members will be appointed by the National Council following recommendation from the NZCS Executive, and all appointees will be for a 12 month term with further re-appointment possible.

## **Stream 6: Negotiation with Kindred Partners (BCS/ACS)**

NZCS is in active discussions with ACS (Australia), BCS (Britain), CIPS (Canada), SFIA Foundation and IP3 (International) and is taking a watching brief on other partners.

It is intended, and indeed vital, that dialogue and alignment with these and other organisations continues indefinitely. NZCS needs to leverage the existing programmes that partner organisations have developed, whilst also working to contribute back to the international community.

Current topics being discussed include access to and local licensing of CITP, SFIA, SFIAPlus, CareerBuilder and possibly ISEB from BCS.

NZCS are also in discussions with ACS, including potential access to their Body of Knowledge, experience in degree and course accreditation and possible use of the CPeP programme.

## Stream 7: Body of Knowledge Development

It is essential that this and other professional programmes are developed atop a recognised and quality *Body of Knowledge*, which outlines the knowledge areas of ICT.

NZCS are currently in the process of evaluating different (Core) Bodies of Knowledge, (CBoK or BoK), from major and influential organisations around the world. It is the Society's intention that the CBoK implemented in New Zealand will be the best available to ensure the ICT industry and the professional members of the industry are both challenged and respected for their abilities and competencies based on their certifications and accreditations (which will be mapped to this body of knowledge).

For the most part, the CBoK will relate and be relevant to the technical skills and competencies peculiar to ICT. For NZCS, and in particular for professional certification in New Zealand, some key generic skills, capabilities, attitudes and practices will be included.

The CBoKs that are currently being reviewed and compared include, but are not limited to, those from IP3, ACS, BCS, EUCIP, CIPS, and SWEBOK.

Early indications are that the ACS CBoK may be the most appropriate starting point, suitably modified to suit the NZCS perspective.

## Stream 8: Communications Plan

[Removed]

## Stream 9: Costing and Financials

[Removed]

Indicative costs for other professional certifications are listed in the following table. Note that these are indicative only.

Organisation	Initial Assessment	Annual Cost
<b>IPENZ (Engineers)</b>	\$1262 - \$2388	\$714
<b>NZICA (Accountants)</b>	\$225 (Provisional) then \$200 (Full)	\$750
<b>Practicing Cert (Lawyers)</b>	Unknown	\$1018 - \$1735

## **Stream 10: Ongoing Marketing of Programme and Profession**

It is not possible to market a profession that is not defined, and one of the primary purposes of this programme is to define what an ICT Professional actually is.

Once established, it is essential this programme is accompanied by an ongoing marketing programme. This should not just market the Certification Programme but the ICT Profession as a whole.

Pressure is building both internationally and from New Zealand employers for ICT to lift the game and create benefits for the businesses that they support in today's uncertain economic climate. The demand for cost effective ICT services and a thoroughly professional approach to delivering them has never been more important.

Competition from offshore organisations and recruitment competition for NZ ICT staff overseas will increase if New Zealand continues to lag behind other countries in both introducing Professional Recognition and Standards and the consequent marketing of the profession.

### **NZICT as a potential Marketing Partner**

In late 2008 the ICT Industry formed a Vendor Association named "NZICT". Whilst this group has a different set of objectives to NZCS, it is natural that NZCS and NZICT would partner to promote the sector, profession, and industry as a whole, and discussions have commenced.

## **Consultation Plan and Input from Stakeholders**

It is absolutely essential that this programme has the support, input of, and feedback from, a large group of stakeholders.

A series of Advisory Groups are being established, including representatives from (1) The Government Sector; (2) Industry; (3) Academia; and (4) Representative Bodies.

A number of workshops will also be held around the country in early March 2009, predominantly in Auckland, Wellington, Christchurch, Hamilton and Dunedin. This will give ICT Professionals and others the opportunity to provide feedback on the first "straw man" model, as well as providing input into the process and requirements.

As well as this, a series of formal and informal discussions will be held with related stakeholders such as IPENZ, NZICT, SSC, MED and others.

## **Alignment with International IITP Standard**

The IFIP IP3 Taskforce has created the global IITP Standard, of which local Certification Programmes will map. It is essential that the NZCS Programme maps to this international programme to ensure global recognition of NZ ICT professionals.

NZCS has registered with IP3 to be involved in the ongoing development of the international IITP standard, as well as gaining support for implementing the appropriate standards in New Zealand. This directly aligns the NZCS programme with others such as BCS (UK), ACS (Australia) and CIPS (Canada) as well as IEEE Computer Society (US based).

NZCS are in the process of establishing the procedures, competencies and environment for the NZCS Certification Programme to map to IITP. As NZCS is New Zealand's representation on IFIP, NZCS are the only body that can produce a Certification process which will map to IITP and hence gain international acceptance.

IP3, International Professional Practice Partnership, is a partnership of the world's leading professional bodies for IT, guided by IFIP (International Federation for Information Processing), which was established under the auspices of UNESCO.

## **Other Factors**

### **Mapping of Professional Training**

It should be noted that the priority for the requirements of NZCS Certification is the need for demonstration of knowledge, skills and competence.

One such method is recognition of prior training. NZCS will accredit ICT courses and training available in New Zealand to the framework, providing a range of benefits to ICT Professionals, their employers and others (such as the Immigration Service).

This project is scheduled to begin in 2009, and the mapping of courses to the framework will be independent of the Certification process.

The programme will also have the flexibility of measuring and assessing those that have achieved a professional level via other means (such as in-house or on-the-job training over a number of years), provided they are demonstrably at a high level of competence.

### **ISEB, BCS Professional Examinations and ACS CPeP**

Most other jurisdictions include the provision of an examination or course regime as one pathway to Professional Certification.

The two most prolific are the BCS Programmes (ISEB and BCS Exams) and the ACS CPeP Programme. All of these options are potentially available to NZCS.

Involvement in administering these examinations in New Zealand is one option, although some consideration of how this would be received by academia in NZ is required as this option is considered. NZCS is not generally a course provider, and, while we may bring options to New Zealand to fill a gap, NZCS does not intend to compete with our industry and tertiary partners.

The BCS in the UK offers both ISEB and BCS Professional Examinations as prerequisite measures for professional certification and both are described as the “gold standard”. ACS has addressed the issues by aligning their CPeP education programme with SFIA levels.

The table in Appendix 2 attempt to map the BCS Professional Examination (academic bias) to the CITP pathway. ISEB (vocational bias) mapping follows in Appendix 3.

ACS CPeP programme is similar to the BCS Professional Examination route, without the interim steps of certificate and diploma. Completion and graduation via CPeP enables an individual to complete the educational requirement towards CITP standard. With the recent changes to the modules of CPeP to provide SFIA level 5 compliance, this curriculum should be a very good fit to CITP level education. Appendix 4 shows the curriculum and level required for CITP or CP status.

ACS has made available the CPeP programme to other societies. CSSA (South Africa) already provide a scheme where ACS provides the education and CSSA assist with enrolling their members for which they charge a modest premium. CIPS (Canada) have commenced negotiations with ACS to provide the same offering.

ACS have indicated they would welcome NZCS’s participation in this scheme. This is not an easy route to individual certification but provides an opportunity for graduation and accreditation from 2010 onwards for suitable candidates, possibly those without degrees or with limited experience.

## **Relationship with other projects**

NZCS have a number of other, related, projects in operation. Some of these are listed below.

### **NZCS National Mentoring Programme**

In 2008 NZCS formed the Mentoring Working Group to re-design the National ICT Mentoring Programme.

This work is now complete, and the programme will be re-launched in 2009. It is hoped that CITPs will participate in this programme.

### **Degree accreditation scheme with ACS and Seoul Accord**

NZCS have agreed in principle to create an *Australasian Degree Accreditation Board* to accredit degrees in New Zealand and Australia.

ACS is currently revising their Body of Knowledge, which the Degree Accreditation will be based on. Once this process is complete, NZCS and ACS will design the new programme and implement in 2009.

NZCS is reviewing the current ACS course accreditation document and is planning a series of meetings in Sydney early in 2009, at which time the details of the Course Accreditation Programme will be negotiated.

It is anticipated that at that point a panel or working group will be required and appropriately skilled and experienced members and others will be approached to provide guidance to this process.

In August 2007, the Project Proposal prepared for the Tertiary Education Commission, compiled by IPENZ and the NZ HighGrowth Project Trust, "Developing Well-qualified Information and Communications Technology (ICT) Professionals", provides substantial detail and recommendations. Much of the contents of this proposal provide information valuable to NZCS.







## Appendix 1: Glossary of Terms and Abbreviations

ACS	The Australian Computer Society
BCS	The British Computer Society
BoK	Body of Knowledge
CBoK	Core Body of Knowledge
CIPS	Canadian Information Processing Society
CITP	Chartered IT Professional (BCS)
CPeP	Computer Professional education Programme (ACS)
DDC	Digital Development Council
EUCIP	European Certification of Informatics Professionals
IEEE	Institute of Electrical and Electronics Engineers INC
IEEE-CS	IEEE Computer Society (US and International)
ICT	Information and Communications Technology
IFIP	International Federation for Information Processing
IITP	International IT Professional (IP3 and IFIP)
IPENZ	Institution of Professional Engineers New Zealand Inc.
IP3	International Professional Practice Partnership
ISEB	Information Systems Examination Board (BCS)
MED	Ministry of Economic Development
NZCS	The New Zealand Computer Society Incorporated
PCP	Practicing Computer Professional (ACS)
SFIA	Skills Framework for the Information Age (BCS)
SWEBOK	Software Engineering Body of Knowledge (IEEE)

## Appendix 2 – SFIA Levels of Responsibility

This Appendix outlines the SFIA Levels of Responsibility. These can also be found at <http://www.sfia.org.uk/cdv4/busskills/index.html>

### **SFIA Responsibility Level 1 – “Follow”**

#### **Autonomy**

Works under close supervision. Uses little discretion. Is expected to seek guidance in unexpected situations.

#### **Influence**

Interacts with immediate colleagues.

#### **Complexity**

Performs routine activities in a structured environment. Requires assistance in resolving unexpected problems.

#### **Business skills**

Uses basic information systems and technology functions, applications, and processes. Demonstrates an organised approach to work. Learns new skills and applies newly acquired knowledge. Has basic oral and written communication skills. Contributes to identifying own development opportunities.

## **SFIA Responsibility Level 2 – “Assist”**

### **Autonomy**

Works under routine supervision. Uses minor discretion in resolving problems or enquiries. Works without frequent reference to others.

### **Influence**

Interacts with and may influence immediate colleagues. May have some external contact with customers and suppliers. May have more influence in own domain.

### **Complexity**

Performs a range of varied work activities in a variety of structured environments.

### **Business skills**

Understands and uses appropriate methods, tools and applications. Demonstrates a rational and organised approach to work. Is aware of health and safety issues. Identifies and negotiates own development opportunities. Has sufficient communication skills for effective dialogue with colleagues. Is able to work in a team. Is able to plan, schedule and monitor own work within short time horizons. Absorbs technical information when it is presented systematically and applies it effectively.

## **SFIA Responsibility Level 3 – “Apply”**

### **Autonomy**

Works under general supervision. Uses discretion in identifying and resolving complex problems and assignments. Usually receives specific instructions and has work reviewed at frequent milestones. Determines when issues should be escalated to a higher level.

### **Influence**

Interacts with and influences department/project team members. May have working level contact with customers and suppliers. In predictable and structured areas may supervise others. Makes decisions which may impact on the work assigned to individuals or phases of projects.

### **Complexity**

Performs a broad range of work, sometimes complex and non routine, in a variety of environments.

### **Business skills**

Understands and uses appropriate methods, tools and applications. Demonstrates an analytical and systematic approach to problem solving. Takes the initiative in identifying and negotiating appropriate development opportunities. Demonstrates effective communication skills. Contributes fully to the work of teams. Plans, schedules and monitors own work (and that of others where applicable) competently within limited deadlines and according to relevant legislation and procedures. Absorbs and applies technical information. Works to required standards. Understands and uses appropriate methods, tools and applications. Appreciates the wider field of information systems, and how own role relates to other roles and to the business of the employer or client.

## **SFIA Responsibility Level 4 – “Enable”**

### **Autonomy**

Works under general direction within a clear framework of accountability. Exercises substantial personal responsibility and autonomy. Plans own work to meet given objectives and processes.

### **Influence**

Influences team and specialist peers internally. Influences customers at account level and suppliers. Has some responsibility for the work of others and for the allocation of resources. Participates in external activities related to own specialism. Makes decisions which influence the success of projects and team objectives.

### **Complexity**

Performs a broad range of complex technical or professional work activities, in a variety of contexts.

### **Business skills**

Selects appropriately from applicable standards, methods, tools and applications. Demonstrates an analytical and systematic approach to problem solving. Communicates fluently orally and in writing, and can present complex technical information to both technical and non-technical audiences. Facilitates collaboration between stakeholders who share common objectives. Plans, schedules and monitors work to meet time and quality targets and in accordance with relevant legislation and procedures. Rapidly absorbs new technical information and applies it effectively. Has a good appreciation of the wider field of information systems, their use in relevant employment areas and how they relate to the business activities of the employer or client. Maintains an awareness of developing technologies and their application and takes some responsibility for personal development.

## **SFIA Responsibility Level 5 (Cert Level) – “Ensure, advise”**

### **Autonomy**

Works under broad direction. Is fully accountable for own technical work and/or project/supervisory responsibilities. Receives assignments in the form of objectives. Establishes own milestones and team objectives, and delegates responsibilities. Work is often self-initiated.

### **Influence**

Influences organisation, customers, suppliers and peers within industry on the contribution of own specialism. Has significant responsibility for the work of others and for the allocation of resources. Makes decisions which impact on the success of assigned projects i.e. results, deadlines and budget. Develops business relationships with customers.

### **Complexity**

Performs a challenging range and variety of complex technical or professional work activities. Undertakes work which requires the application of fundamental principles in a wide and often unpredictable range of contexts. Understands the relationship between own specialism and wider customer/organisational requirements.

### **Business skills**

Advises on the available standards, methods, tools and applications relevant to own specialism and can make correct choices from alternatives. Analyses, diagnoses, designs, plans, executes and evaluates work to time, cost and quality targets. Communicates effectively, formally and informally, with colleagues, subordinates and customers. Demonstrates leadership. Facilitates collaboration between stakeholders who have diverse objectives. Understands the relevance of own area of responsibility/specialism to the employing organisation. Takes customer requirements into account when making proposals. Takes initiative to keep skills up to date. Mentors more junior colleagues. Maintains an awareness of developments in the industry. Analyses requirements and advises on scope and options for operational improvement. Demonstrates creativity and innovation in applying solutions for the benefit of the customer.

## **SFIA Responsibility Level 6 – “Initiate, Influence”**

### **Autonomy**

Has defined authority and responsibility for a significant area of work, including technical, financial and quality aspects. Establishes organisational objectives and delegates responsibilities. Is accountable for actions and decisions taken by self and subordinates.

### **Influence**

Influences policy formation on the contribution of own specialism to business objectives. Influences a significant part of own organisation and influences customers/suppliers and industry at senior management level. Makes decisions which impact the work of employing organisations, achievement of organisational objectives and financial performance. Develops high-level relationships with customers, suppliers and industry leaders.

### **Complexity**

Performs highly complex work activities covering technical, financial and quality aspects. Contributes to the formulation of IT strategy. Creatively applies a wide range of technical and/or management principles.

### **Business skills**

Absorbs complex technical information and communicates effectively at all levels to both technical and non-technical audiences. Assesses and evaluates risk. Understands the implications of new technologies. Demonstrates clear leadership and the ability to influence and persuade. Has a broad understanding of all aspects of IT and deep understanding of own specialism(s). Understands and communicates the role and impact of IT in the employing organisation and promotes compliance with relevant legislation. Takes the initiative to keep both own and subordinates' skills up to date and to maintain an awareness of developments in the IT industry.

## **SFIA Responsibility Level 7 - “Set strategy, inspire, mobilise”**

### **Autonomy**

Has authority and responsibility for all aspects of a significant area of work, including policy formation and application. Is fully accountable for actions taken and decisions made, both by self and subordinates.

### **Influence**

Makes decisions critical to organisational success. Influences developments within the IT industry at the highest levels. Advances the knowledge and/or exploitation of IT within one or more organisations. Develops long-term strategic relationships with customers and industry leaders.

### **Complexity**

Leads on the formulation and application of strategy. Applies the highest level of management and leadership skills. Has a deep understanding of the IT industry and the implications of emerging technologies for the wider business environment.

### **Business skills**

Has a full range of strategic management and leadership skills. Understands, explains and presents complex technical ideas to both technical and non-technical audiences at all levels up to the highest in a persuasive and convincing manner. Has a broad and deep IT knowledge coupled with equivalent knowledge of the activities of those businesses and other organisations that use and exploit IT. Communicates the potential impact of emerging technologies on organisations and individuals and analyses the risks of using or not using such technologies. Assesses the impact of legislation, and actively promotes compliance. Takes the initiative to keep both own and subordinates' skills up to date and to maintain an awareness of developments in IT in own area(s) of expertise.

## Appendix 3 – BCS Professional Examinations

## Mapping to CITP

Achievement	Pre-req/Effort	Equivalent	ICT Work Experience	Years at SFIA level 5	Membership eligibility	CBoK/ Subject
Certificate in IT	600 hours plus 2 hour exam.	Year 1 tertiary, QCA level 4			Student	Add - Business legal, ethics. Professional and communications training, Essential Professional Knowledge *
					Associate	Information Systems Software Development Computer & Network Technology
Diploma in IT	Certificate, 4 of 11 – 1 core, 900 hours plus 2 hour exam.	Year 2 tertiary, 3 QCA level 5.			Full	Professional Issues in Information Systems Practice (Core Module) Computer Networks Database Systems IT Project Management Object Oriented Programming Systems Analysis

Professional project				Principles of Internet Technologies	
				IT Service Management	
				Software Engineering 1	
				Systems Design	
				Principles of User Interface Design	
Professional Graduate Diploma in IT	Diploma, 200 hours plus exam	Year 3 tertiary, 2 of QCA level 6.	2	Full	Advanced Database Management Systems
					Management Information Systems
					Software Engineering 2
					Computer Services Management
					Distributed and Parallel Systems
					Knowledge Based Systems
					Network Information Systems
					Programming Paradigms
					Realising the User Interface

						System Design Methods
						Web Engineering
Professional project	Diploma, 300 hours exam	Honours plus degree			Full	
SFIA Levels	CV, application, evidence.		8 – 10 *	1	CITP	

\* NZCS regards appropriate early training and assessment in these disciplines as mandatory prerequisites, these are added by NZCS

## Appendix 4: ISEB Mapping to CITP Pathway

Numbers of SFIA skill codes available per level

CITP Levels 5-7

Category	Sub-category 1	Sub-category 2	Sub-category 3	1	2	3	4	5	6	7	Professional development activities at level 5
Strategy and planning	Advice and guidance	Business/information systems strategy and planning	Technical strategy and planning	0	0	3	5	15	15	6	<ul style="list-style-type: none"> <li>• Extra Mural Activities</li> <li>• Extra Mural Studies</li> <li>• Deputising</li> <li>• Job Rotation and Special Assignments</li> <li>• Community Work</li> <li>• Project Assignments</li> <li>• Mentoring</li> <li>• International Experience</li> <li>• "Research" Assignments</li> <li>• Gaining Knowledge of Activities of Employing Organisation</li> <li>• Gaining Knowledge of IT Concepts and Techniques</li> <li>• Participation in Professional Body Affairs</li> <li>• Publications</li> <li>• Teaching and Tutoring</li> <li>• Standards and Legislation</li> <li>• Negotiating and Influencing</li> <li>• Team Leadership</li> <li>• Management Development</li> </ul>
Development	Systems development	Human factors	Installation and integration	1	10	14	14	17	11	2	
Business change	Business change management	Relationship management		0	0	1	3	7	8	2	
Service provision	Infrastructure	Operation	User support	2	7	12	16	17	11	2	
Procurement and management support	Supply management	Quality	Resource management	0	2	5	5	12	11	4	
Ancillary skills	Education and training	Sales and marketing		1	1	3	5	7	5	0	

## Appendix 5: ACS CPeP Mapping to SFIA

SFIA level 3 core subjects plus 1 elective subject passes required for certification level.

Module	Core/elective	SFIA Alignment
Business, legal and ethics	Core	Not yet
New Technology Alignment	Core	Yes
Business, strategy and IT	Core	Yes
Plus 1 elective		
Project Management	Elective	Not yet
IT Service Management	Elective	Yes
Adaptive Business Intelligence	Elective	Yes
Enterprise Architecture	Elective	Yes
Green ICT	Elective	