NZCS Professional Knowledge Curriculum [DRAFT]

Non-technical knowledge possessed by ICT Professionals

July 2009

Table of Contents

Version Control

Version	Date	Author	Change summary
0.1	10/07/2009	Bev Bunker	Initial draft released for review
0.2	24/07/2009	Paul Matthews	General edits and updates for consistency

Introduction

Background

This document outlines the non-technical requirements of ICT Professionals, and as such forms part of the ICT Professional Certification Programme currently being implemented by the New Zealand Computer Society Inc. (NZCS).

It assumes the reader has some familiarity with the Draft Certification Model issued by NZCS March 2009 and available at www.itcp.co.nz.

The ITCP programme, while assessing technical knowledge and skills, is also focused on establishing professionalism and ethical standards within the profession (in NZ). It will accredit ICT professionals across 4 areas as shown in *Figure 1* below:

Figure 1: ITCP Areas of Assessment

Currently the SFIA framework (http://www.itcp.co.nz/detail/sfia) is used to assess the specialist ICT knowledge and the EUCIP Core Syllabus is used to assess broad ICT knowledge (http://www.itcp.co.nz/detail/bok). The assessment of "Competency and Responsibility" is based on the SFIA level 5 (see Appendix A). Sound character is assessed through interviews with referees and other check as shown above.

However "Professional Knowledge", within the scope as defined by NZCS, is such that there is no suitable assessment model available internationally at this time and much is specific to New Zealand - therefore professional knowledge requires further definition to fit within the NZ context.

Approach

The NZCS Certification Model describes Professional Knowledge as:

> *"Covering the non-technical aspects of being a professional which help define the fundamental difference between a professional and a practitioner. This includes an understanding of, and adherence to, Ethics and Professional Practice, knowledge of ICT Legal Issues, and Organisational context and awareness."*

A focus group was established using subject matter experts in the specialist areas as well as some members who could represent the profession, with specific focus from a recruitment or management perspective.

Membership of the Focus Group was as follows:

- **Beverley Bunker** (Convenor) – Independent Consultant
- **Katrine Evans** – Privacy Commission
- **Rosie Byford** – Privacy Commission
- **Laurence Millar** – Independent Consultant
- **Paul McKitrick** – Centre for Critical Infrastructure Protection
- **Gavin Adlam** – ICT Lawyer
- **David Downs** – Corporate Services Director
- **Jim Whitman** – NZCS Member
- **Paul Heath** – ICT Recruiter
- **Alison Holt** – Standards Expert
- **Don Robertson** – NZCS President
- **Paul Matthews** – NZCS Chief Executive
- **Guy Burgess** – ICT Lawyer

Initial interviews were held with focus group members to identify the areas and develop the content in each area. Following this two forum session were held to refine definitions and confirm the content of each area, and further input was sought from the focus group.

Purpose of the curriculum

A detailed definition of the professional knowledge curriculum is required to:

- Define the professional knowledge required by ICT Professionals operating in New Zealand
- Provide guidance for ITCP candidates to assess their professional knowledge competency and identify areas requiring further development
- Assist in determining content for professional development courses offered in New Zealand
- Allow ICT Professionals and their managers to identify potential professional development options
- Assist in the assessment of the competency of ITCP applicants
- Provide guidance to tertiary providers in professional development requirements for inclusion in academic curricula

Next Steps

This document

This document provides a draft based on the initial description of the Professional Knowledge area and its further definition. It provides a high-level summary of the areas of Professional Knowledge considered as necessary for any ICT professional operating in New Zealand.

This summary will now be provided to the ICT community for review and comment.

Consultation process

ICT professionals are invited to review and provide comment on this document.

Definitions of the topics should be reviewed in each of the four areas and determine:

- Is this a basic level of knowledge expected of ALL IT professionals in New Zealand?
- Are there any topics missing from the areas? If so, please suggest the topic and a suitable definition.
- Are the current definitions clear and reasonably explanatory?

How to provide feedback

- The consultation period will run until 5pm Friday August 7th 2009.
- Suggested changes or modifications can be emailed to: submissions@nzcs.org.nz

Proposed Curriculum

Overview

The key concept and scope of the Professional Knowledge Curriculum was set to *what non-technical knowledge (in the broadest sense) should ALL ICT professionals have?*

The following minor modifications were made to the original high-level structure:

- The approach of a high-level view of ICT risk rather than focus on the two areas of security and privacy would be more appropriate.
- It is necessary to broaden the area of legal issues and including compliance and good practice frameworks that are becoming increasingly important in an interconnected world.

The revised professional knowledge curriculum is as per *Figure 2*:

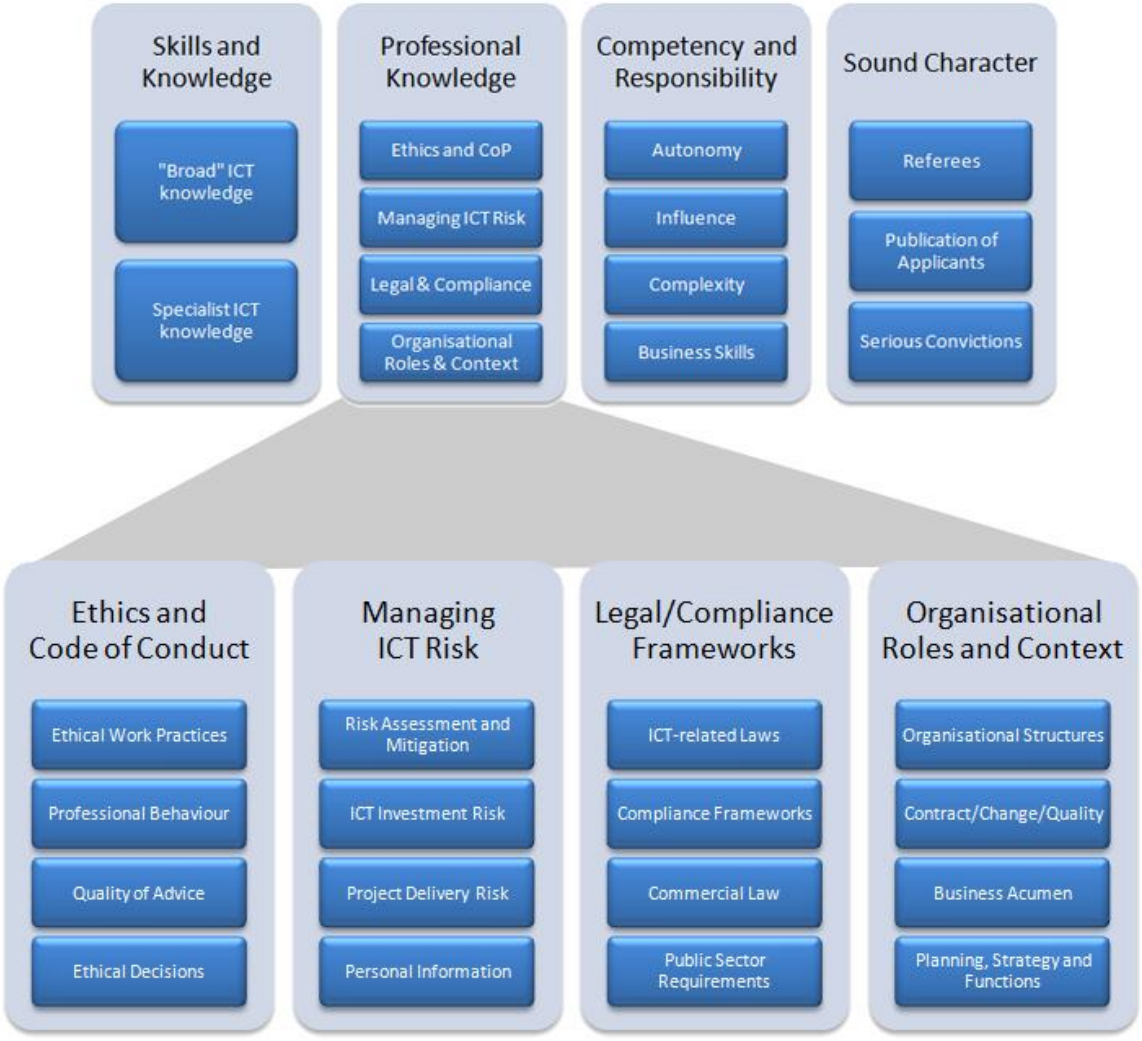

Figure 2: Outline of Professional Knowledge Curriculum

Ethics and Code of Professional Conduct

This category includes an understanding of ethical issues and knowledge of topics to support NZCS's Code of Professional Conduct and Code of Practice.

Eth-001	**Ethical work practices** *Understanding the elements of ethical behaviour in dealing with clients and business colleagues* Includes an understanding of the following items: o The 8 tenets of the NZCS Code of Ethics/Conduct o What Professional Misrepresentation is, and how to avoid it o The importance of managing Conflict of interest issues o The concept of appropriate remuneration for services o "Full disclosure" requirements with regard to ICT advice
Eth-002	**Professional behaviour** *Knowledge of what constitutes good professional behaviour* Includes an understanding of the following items: o Discretion in regard to client and employers affairs o The importance of cultural respect in the workplace, including the principles of the Human Rights Act and Treaty of Waitangi o What is meant by personal integrity in a professional sense o The importance of not denigrating or damaging reputation of competitors, clients or colleagues
Eth-003	**Quality of Advice** *Knowledge of the importance of ensuring the work and advice you provide as a professional is of the highest standard* Includes an understanding of the following items: o Your professional limitations and where and when to seek further expertise o What is meant by "delivering on promise" o "Expert advice", and managing conflicting opinions o The importance of continuing professional development
Eth-004	**Ethical Decisions** *An understanding of what constitutes an ethical decision and resolving them* Includes an understanding of the following items: o The importance of ensuring a decision or advice is in the best interests of the client or employer o Importance of informing oneself and one's clients or employers of the economic, social, environmental or legal consequences which may arise from decisions and actions

ICT Risk

This category includes an understanding of risk in relation to the management and delivery of ICT. It comprises knowledge of the topics identified below

IR-001	**Information Risk Assessment** *Understanding of the concepts of risk assessment of Information assets* Includes an understanding of the following items: o How to quantify the business impact of information risks o Risks to information confidentiality and mitigation concepts o Risks to integrity of information and mitigation concepts o Risks to information availability and mitigation concepts
IR-002	**Risk Mitigation** *Understanding what risk mitigation strategies in relation to Information assets* Includes an understanding of the following items: o The types of strategies for dealing with risk, including avoidance, acceptance and mitigation o Typical security frameworks and how and when they apply o The importance of security awareness in the use of ICT o The concepts of business continuity, disaster recovery and service continuity in relation to ICT o The role ICT audit plays with regard to risk mitigation o The role of ICT governance structures in risk mitigation
IR-003	**ICT Investment Risk** *Understanding the importance of risk considerations in regards to ICT investment decisions* Includes an understanding of the following items: o That information assets have significant value and may be formally valued o Typical lifecycle and replacement models for ICT assets o Cost-benefit analysis in relation to ICT investment decisions
IR-004	**Project Delivery Risk** *Knowledge of the risks associated with the delivery of a project and appropriate mechanisms to manage them* Includes an understanding of the following items: o The key risks associated with projects and how to assess them o The importance of project controls and governance structures to minimise project risk, and how they apply o The role of project quality and testing processes in reducing delivery risk

IR-005	**Managing Personal Information** *Understanding the principles that apply to personal information including identification, collection, storage, use and disclosure of personal information* Includes an understanding of the following items: o The principles of privacy o Ethical issues of using personal information o How personal information can be identified & categorised o The concept of "privacy by design"
IR-006	**ICT Operational Risk** *Understanding the risk that may impact day to day operations of the system or affect users and ICT personnel* Includes an understanding of the following items: o Risks that may impact health and safety of ICT personnel or users of the systems o The concepts of physical security requirements of information and associated technologies

Legal & Compliance Frameworks

This category includes an understanding of the Legal and compliance frameworks that impact ICT within NZ. It comprises knowledge of the topics identified below

LF-001	**ICT-related laws** *Understanding of the various important (NZ) laws that affect ICT operations* Includes a conceptual understanding of the following items: o The Privacy Act and implications of breaches to the Act o NZ laws relating to electronic commerce o The Public Records Act & Archives Act and implications for ICT o The legal requirements for managing Spam o Legal issues of Intellectual Property, copyright and patents o Legal liability, professional liability, third-party liability o Legislation relating to electronic crime and its impact on ICT
LF-002	**Compliance Frameworks** *Understanding of what compliance frameworks are and the role of internal and external standards* Includes an understanding of the following items: o The difference between certification, guidelines, standards, frameworks and methodologies o The purpose of international standards for ICT o How standards can be used to help with legislative compliance o The role of good practice within ICT and an awareness of the existence of key frameworks for example ITIL, CMM, Cobit o The role of industry sectors compliance frameworks that impact on ICT e.g. HIPAA & Sarbanes-Oxley o The use of policies & standards to influence behaviour within the organisation (e.g. acceptable use policies)
LF-003	**Commercial Law** *Understanding of legislation relating to procurement of services and technology solutions* Includes an understanding of the following items: o Legal requirements on companies during the tendering process o Specific legislation relating to contracts e.g. Fair Trading Act, Commerce Act, Consumer Guarantees Act o Specific issues and requirements of software contracts o Software licensing and third party software issues o Specific requirements for service contracts o Contracts for supply of products and components including warrantees o The role of non-disclosure agreements in regards to contracts

LF-004	**Public Sector Requirements** *Knowledge of the concepts of NZ government requirements on public agencies and their suppliers* Includes an understanding of the following items: o That there are E-government requirements from agencies both mandatory & discretionary o That there are requirements on major government ICT projects, including The Gateway Process (SSC) and the Office of Auditor General (OAG) governance o That MED have mandatory requirements for procurement by government departments

Roles and Context of ICT within the Organisation

This category includes an understanding of the key ICT roles and their purpose within the organisation, as well as the application of ICT within an organisational context.

Org-001	**ICT organisation and structure** *Knowledge of how ICT organisations are structured and the various roles and functions performed by ICT within the organisation* Includes an understanding of the following items: o The difference between Decentralised vs Centralised organisational models, and how they affect ICT o Key ICT functional areas and how they relate to each other o The key ICT roles and their purposes o The different models for ICT sourcing: Insourcing, outsourcing, co-sourcing and off shoring
Org-002	**Role of Information Systems strategy** *Understanding of the purpose served by an IS strategy and its components* Includes an understanding of the following items: o How an IS strategy is aligned with the organisational goals o Different models for ICT selection e.g. Proprietary vs. Open source, custom vs. best of breed, lease vs. buy etc, and the pros and cons of each approach o The various approaches to technology adoption based on organisational risk profile (i.e. preference for leading edge, proven or mature technologies) o The rationale for managing an IT portfolio of programmes and projects in support of specific business strategies o Technology trends and how they apply to the organisation
Org-003	**ICT Contract management** *An understanding of the process of procuring ICT products and services and subsequent management of the contractual relationship* Includes an understanding of the following items: o That there are tendering models and requirements (eg including RFP, RFI processes) o The need to determine, measure and review service levels o The processes involved in managing performance of a contract
Org-004	**ICT role within Organisation Change** *An understanding of the role ICT plays in organisational change* Includes an understanding of the concepts of the following items: o How programmes are established and managed to deliver business transformation o How projects are managed and deliverables achieved

	o How to determine feasibility of potential solutions o Understanding who the stakeholders are, and how to determine and manage their expectations
Org-005	**Quality management of ICT** *Understand the role and importance of quality management as it relates to ICT within the organisation. This includes through ICT change and on-going delivery* Includes an understanding of the following items: o How to design appropriate quality standards and measures o Quality assurance processes o Remedial actions
Org-006	**Business Acumen** *An understanding of the commercial context in which organisations operate* Includes an understanding of the concepts of the following items: o Governance e.g. role of board of directors, company structures and funding models o Various business models & differences between public, private and not-for-profit sectors o Key industry sectors; finance, agriculture, manufacturing etc o The importance of global social, political & economic trends to an organisation
Org-007	**Strategic and Operational planning** *Understanding the purpose of organisational strategies, how they are determined and how they relate to business planning and operations* Includes an understanding of the following items: o Activities involved in strategic planning and the purpose of the organisation's strategic plan o How strategies are delivered via tactical and operational plans o How goals and objectives are defined and measured
Org-008	**Organisational functions and processes** *Understanding of how a typical organisation works, key functional areas and role of business process* Includes an understanding of the following items: o The different functional areas within an organisation and how they inter-relate o The role of business processes and the differences between core and supporting processes o The concepts involved in financial management within an organisation o Key concepts of customer service management o Key concepts of people (staff) management

Appendix A - SFIA Responsibility Level 5

"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.