Current Status and Vision of CIPS Certification Program
Creating an infrastructure that encourages professionalism and supports the development of the Canadian ICT profession and its practitioners

Gina van Dalen (CAE, Canadian Information Processing Society (CIPS))

Abstract This paper explores the creation and evolution of the CIPS professional standards program, with a specific focus on professional IT certification. The CIPS professional standards program, has made some significant progress in the last 25 years including the development of the elements traditionally found in the professions such as a guide to the core body of knowledge, post-secondary program accreditation, the definition of admission requirements for the profession, skills and professional development requirements, a code of ethics and conduct, and the creation of a professional society. The paper explores these various elements and provides insight into the details of the professional certification program, including the development of certification levels based around a professional's work autonomy and responsibilities and some of the issues and challenges around market adoption.

1. CIPS

1.1 Profile of CIPS

The Canadian Information Processing Society (CIPS) [1] is the professional association for Information Technology (IT) practitioners in Canada. Founded in 1958, it represents IT professionals on issues affecting the IT industry and profession. The organization is focused on IT excellence through its work on public policy, setting standards within the profession and providing support to its community. Programs include the professional certification of IT practitioners, and the accreditation of computing programs in colleges and universities. CIPS also offers other benefits and services to its members ranging from a Code of Ethics and Standards of Conduct to educational conferences and networking opportunities.

Professional regulations in Canada are a provincial matter. CIPS Provincial Societies are responsible for the pursuit of the legislation and regulation of professional certification within their provincial jurisdictions (Figure 1).

CIPS Provincial Societies are responsible for:

- Administering the certification and legislation or regulation that enables the self-regulating professional body;
- Evaluating and certifying qualified applicants (a task delegated to the National Society);
- Hearing formal complaints against, and disciplining members, as the need arises;
- Developing and maintaining national certification standards through participation in the CIPS Professional Standards Advisory Council (PSAC) and the CIPS governing board.

The CIPS Provincial Societies regulate and govern the professional certification titles (Information Systems Professional – I.S.P. and Information Technology Certified Professional - ITCP) under the authority of the various provincial Acts by setting and maintaining high academic, experience and professional practice standards for all certified members. Individuals certified by a Provincial Society are the only persons permitted under the Act's definition to use the titles in that province. There is full portability of the titles
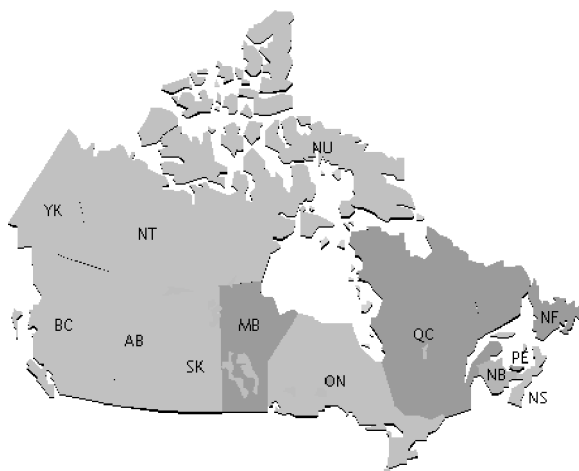
MB, QC, NF, PE: Provincial legislation pending

Others: Covered by legislations

Figure 1: Legislation of the I.S.P. in Canada

across all provinces and a certified members recognized in one will, unless the individual is under a complaint and discipline investigation, be recognized by another province. If a person wishes to use the certification title in more than one province they would have to be registered in all the provinces where they performs work and are using the title. Any complaints regarding possible violations of the CIPS Code Ethics will then be investigated by the Provincial Society in which the complaint was made.

CIPS has operated under much the same governance structure for the nearly 50 years of its existence. The introduction of the Provincial Societies, started in the 1990's, and the subsequent transfer of responsibility for certification from the national organization to the provincial societies, meant that the governance model had to change. CIPS is currently undergoing this governance change moving a federated model. The organization is now governed by a National Board, which consists of a representative from each of the Provincial Societies.

1.2 CIPS Certification Program - Background and Context

A standard level of professional knowledge among all IT professionals relies on standard education approaches and curricula. In the early 1980's, CIPS established a program to review and accredit Canadian computing programs at both the undergraduate and diploma level. The accreditation process is voluntary. The general purpose of accreditation is to advance the development and practice of computing disciplines in the public interest through the enhancement of quality programs in computing. Accreditation provides an indication for the public at large that a program accredited by CIPS is capable of producing graduates who can function at the required level of competence to enter the job market.

Building on this program, in the late 1980's, CIPS felt that the Canadian IT industry had reached a level of professional maturity, and that it was time to more clearly define the scope of professional practice through a voluntary certification program. The Information Systems Professional (I.S.P.) was introduced in 1988. The benchmark for the I.S.P. was set at demonstrated mastery of the Body Knowledge, which was linked to the completion of a four year accredited undergraduate computer science program plus two years of relevant professional level IT experience (or equivalent).

1.3 Rational and Intention of the Program

There are a plethora of certifications on the market, ranging from vendor-specific, third-party and vendor-neutral certifications to general professional certification all catering to a $600,000+$ Canadian IT practitioner market, creating a level of confusion in the market place. The CIPS certification program was intended to provide a single, integrated certification to IT practitioners and managers. It offers an independent "stamp of approval" that an IT professional's skills and experience meet national IT industry standards defined by the profession for the profession. Certification established evidence of an individual's knowledge, understanding and competence. It demonstrated a commitment to professional standards, a commitment to continuing development of competence as an IT professional, and provided a differentiator when applying for jobs. Above all, the certification program was intended to create a climate and ethos of professionalism within the IT community. Serving and protecting the public was seen as an essential characteristic of the program and certified members were required to abide by the CIPS Code of Ethics and Standards of Conduct. Policies and procedures were developed to allow for the investigation of professional misconduct complaints which could lead to the disciplining of the certified member.

The assessment of the certification applicants is done through a peer review system. The professional peer review process focuses on the performance of an applicant, with a view to verify the alignment of their professional experience to the professional standards. Reviewers are selected among the most prominent CIPS members. They are competent experts in the assessment of IT professional experience. Reviewing applications is a responsible job and is time consuming. In spite of that, reviewers readily accept to review since it is a good way to contribute to the profession, accumulate professional development credits, and remain aware of the newest developments in the field. Policies have been developed to ensure that the assessment process is transparent, fair, and constructive and avoids any potential for conflict of interest.

2. Professional Standards

2.1 Guide to the Core Body of Knowledge

In February 2005, the CIPS National Board adopted the British Computer Society (BCS) Professional Examination Study Guide Syllabus - Diploma level as the Initial Body of Knowledge (iBOK) for CIPS. The iBOK provided CIPS with topical access to the core knowledge areas and served mainly as a foundation for the certification program allowing for the creation of career-based and Prior Learning and Assessment (PLA) entry routes.

Following the adoption of the Initial Body of Knowledge, CIPS embarked on a new multi-year project in 2011 to define a more comprehensive document (Figure 2).

Figure 2: Development Cycle of the CIPS
Guide to the Core Body of Knowledge

This work is in line with CIPS' goal to establish a recognized IT profession in Canada, and the new more comprehensive Guide to the Core Body of Knowledge (CBOK) will:

- Establish more clearly defined boundaries of the profession;
- Establish the breadth of knowledge required, including mandatory knowledge areas;
- Clarify to employers and users the basis of the expertise of IT professionals and what to expect from them;
- Provide guidelines to educators and course designers of what knowledge and skills to deliver;
- Create a framework for the development of alternate paths to professional certification;
- Provide the level of specificity required to develop exams to test for mastery of specific parts of the CBOK.

The goal of the Guide to the CBOK is not to inventory everything that computing or IT professionals should know, but to identify what forms the core. Moreover, the Guide does not purport to define the body of knowledge, but rather to serve as a compendium and guide to the body of knowledge that has been developing and evolving over the past decades. The current draft Guide contains a list of topics about which any computing or IT professional should have some knowledge of. Achieving consensus by the profession on a common (or core) body of knowledge is a key milestone in all disciplines and has been identified by the CIPS as crucial for the evolution of IT towards professional status. Consultation on the draft Guide has started through an outreach campaign involving the broader IT community.

2.2 Certification Requirements

2.2.1 Information Systems Professional (I.S.P.)

Drawing on the elements of a professional practitioner as defined by the established professions of engineering and accounting, in 1988 CIPS created the Information Systems Professional (I.S.P.) designation. The criteria for the I.S.P. were defined around an IT practitioner who had specific skills rooted in a broad knowledge base and had appropriate qualifications (mastery of the Body of Knowledge), was committed to continuous professional development and operated to a code of professional conduct. Mastery of the BOK was qualified as the ability to demonstrate performance and application of knowledge and skills to perform a required skill or activity to a specific predetermined standard in a particular area or areas of the BOK.

There was a realization that, unlike the established professions, practitioners working in IT come from a wide variety of backgrounds and CIPS had to provide a way for applicants to demonstrate mastery of the BOK through other means than the completion of an accredited program. The following principles were applied in devising new routes to the I.S.P. Demonstrated mastery of the BOK should:

- permit varying degrees of knowledge of and competency provided overall mastery of the BOK is maintained;
- allow competency to be manifested in different ways by

individuals with different career paths;

- happen within the relatively recent past (i.e. last 5 to 10 years).

The initial rate of applications was encouraging, with an average of around 300 applications a year.

2.2.2 Information Technology Certified Professional (ITCP)

In 2008, CIPS introduced the Information Technology Certified Professional (ITCP) designation. The designation was build not only around mastery of the BOK but also around the Skills Framework for the Information Age (SFIA) [2]. The criteria for the ITCP are that the practitioner has spent (at least) the last 24 months in a role that demonstrates that they posses a well developed broad technical understanding of IT; understands how IT fits within the organizational model; has demonstrated competence in one or more specialist areas of IT (technical or domain knowledge) at SFIA Level 5 or equivalent or above; has the demonstrated capability to operate at the SFIA Level 5 (or equivalent or above); and agrees to adhere to the CIPS Code of Ethics and Professional Conduct.

The ITCP designation was directed specifically to senior IT practitioners and academics who wanted to demonstrate that in addition to their IT knowledge, they understood how to effectively utilize and apply their organizational experience to achieving organizational excellence. The ITCP standard was accredited by the International Professional Practice Partnership (IP3) [3] in 2009 and ITCP holders are internationally recognized under the IP3P umbrella.

2.2.3 Relationship between the I.S.P. and the ITCP

The I.S.P. and ITCP are very similar, but distinct professional recognitions. Adherence to the CIPS Code of Ethics and a commitment to ongoing professional development are staples that pertain to both designations. In addition, demonstrated mastery of the Body of Knowledge is a requirement for both certification products. The key difference between the two certifications lies in the assessment of a professional's competence and their level of responsibility and autonomy. Whereas the I.S.P. is a certification that applies to a broad spectrum of IT practitioners (early, mid and late career), the ITCP is more narrowly defined and is only available to senior IT practitioners. I.S.P. holders can upgrade their certification to

an ITCP by demonstrating that they are capable to work at a SFIA Level 5. ITCP holders typically would not apply for the I.S.P. as the ITCP more clearly defines their specific level of work related autonomy and responsibility.

2.2.4 Entry Routes

A number of routes were devised to gain entry to the certifications. They include:

- Completion of a relevant education program plus a certain number of years of professional experience;
- Completion of an exam administered by either the Institute for Certification of Computing Professionals [4] or the British Computer Society Diploma [5] or Professional Graduate Exam [6] plus a certain number of years of professional experience;
- Career-based routes (including one for senior university academics and one for mid to late career senior IT professionals); and a
- Prior Learning Assessment and Recognition (PLAR) route.

A full list of entry routes can be found on the CIPS website [7].

3. CIPS Professional Certification

3.1 Current Status of the Program

Although the measure of a designation's success is not measured in adoption rates alone, the certification did not achieve the level of market adoption to make it a meaningful and viable designation. There are currently approximately 1,300 I.S.P. holders and an equal number of ITCP holders. One reason for the lack of market adoption may lie in the program's original main goal of serving and protecting the public, which was seen as an essential characteristic of the program. Whilst not definitive, there does appear to be a correlation between situations where the public interest is paramount, such as in engineering, law and medicine, and the buyer of professional services such as organizations or general public. Where the prime buying group is an organization, it could be argued that the body of company and commercial law provides sufficient protection and redress for professional failures. For the IT profession, services are provided by an individual to an organization (a client or an employer), and from some organizations (suppliers) to others.

In recent years, extensive research was conducted by the the British Computer Society (BCS) [8] and the Information
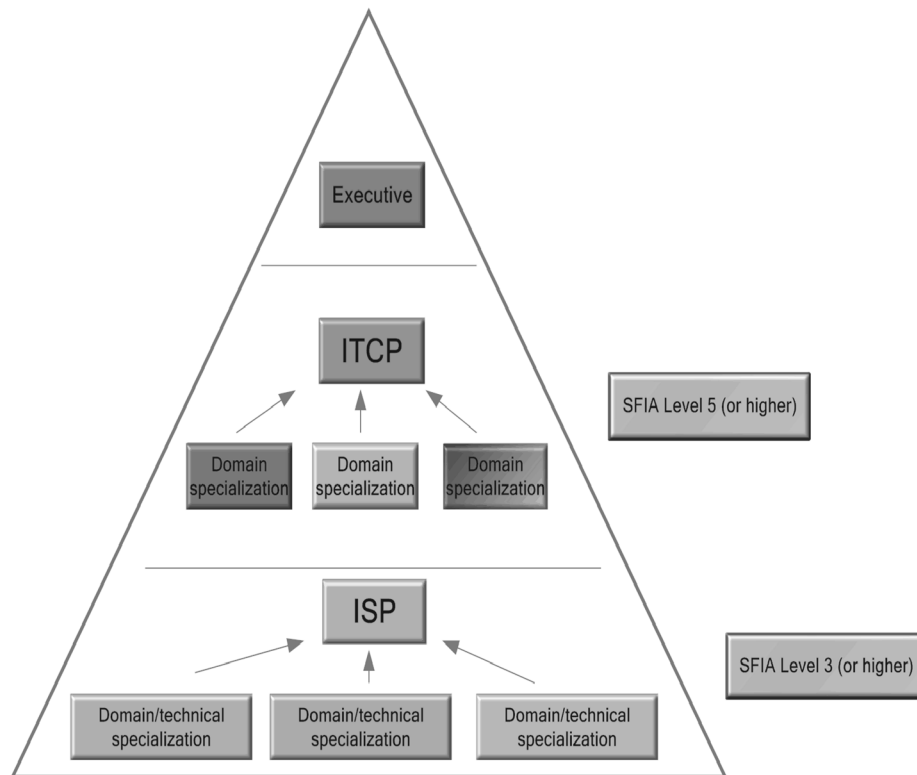
Figure 3: Preliminary View of Future CIPS Certification Program

Communications and Technology Canada (ICTC) [9], a not-for-profit sector council, to explore the needs of industry in the area of professional certification. The research resulted in the following high-level conclusions. Professional certification has to:

- Have a focus on both demonstrated breadth and depth (e.g. domain or technical specialization);
- Recognize the capabilities on the technical, non technical and personal level through the use of an open comprehensive competence architecture;
- Recognize knowledge of operations and management of an enterprise (profile needs to include business related capabilities);
- Include a practical assessment components to make it credible and robust;
- Include recognition for previous work experience and other (vendor or professional) certifications obtained;
- Demonstrate knowledge of a Code of Conduct/Ethics;
- Clearly designate and differentiate between a professional and technologist ;
- Be tied to a real value balance of skill, education, and experience and not simply to an "I can pass an exam" qualification.

According to the research, professional certification needs to be able to assist employers to clearly understand what they are getting in a worker and would need to help employers recognize the specific competencies that IT workers have.   It should also help workers better understand the competencies they need to develop in order to progress in their careers, thereby providing them with a roadmap for life-long learning and professional development.

CIPS has taken this information into consideration and has embarked on a road to change its certification program to better meet the needs of the IT community and offer a product(s) that have demonstrable value to the market.

3.2 Future of the Certification Program

Although work has only started, a proposed direction has been defined (Figure 3). The CIPS certification program needs to include a broader subset of all IT workers and not just the traditional professional level. Consideration will be given to the creation of a "technologist" ensuring that such a grading fits into the broader context of an overall qualification regime. This would then promote multiple entry points into the profession, and provide better career support to professionals. This work will be done within the context of an industry-wide skills map that includes all IT workers.

The certification should not only recognize a practitioner's

current capabilities, experience, and responsibilities, but also provide tools to identify gaps between current and desired competency and to identify ways of moving from current to desired recognition. The certification also needs to provide recognition of specialized areas of knowledge and expertise. Such recognition might include functional (e.g. enterprise architecture, business analysis, software development, etc.), application domain (e.g. health care, gaming, business, etc.), or other dimensions.

In addition, CIPS will be exploring the recognition of certification related courses and training materials to fill specific skills competency and/or knowledge acquisition gaps that are identified in the marketplace, as well as continuing the accreditation of college and university programs to support the certification model.

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Gina van Dalen (nonmember)

E-mail: gina@cips.ca

Gina van Dalen is the Manager Professional Standards for the Canadian Information Processing Society (CIPS), Canada's largest association representing IT professionals.