

IT Specialist Certification (ITSC)

Conformance Requirements

April 2008
Version 1.1

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IT Specialist Certification (ITSC): Conformance Requirements, Version 1.1

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1. BACKGROUND

1.1 Introduction

A common characteristic of people-certification programs in the marketplace is that most test or validate the existence of relevant knowledge. Few reach beyond this. Clearly “book learning” is a critical first step to becoming effective at anything. But the effectiveness, potential, and the degree and value of contribution rise to a new level as relevant skills and experience are gained in a topical area. It is clearly important to “know” a subject, but it is more valuable to have applied that knowledge.

It is for this reason that The Open Group IT Specialist Certification (ITSC) program is based on an assessment of people skills, technical skills, and experience, not just tests of knowledge.

In today’s global and highly competitive environment, businesses are striving for Boundaryless Information Flow™; therefore they need to be flexible and able to quickly respond to changing market conditions irrespective of geographical boundaries, time zones, and organizational structures. Also, in order to achieve competitive advantage and to increase performance, organizations need to collaborate more than ever, supported by open and interoperable standards.

Although technological and semantic standards are crucial to support Boundaryless Information Flow, the key success factor for organizations to collaborate is still the quality of their individual employees. The success of an IT-enabled business highly depends on the proper abilities, experience, and skills of its IT Specialists, no matter in what part of the business solutions lifecycle they are involved (solution or product technical sales, construction, implementation, systems integration, and solution support) or in what context (technology, industry, business, or training).

The demand for competent, experienced IT Specialists will further increase, driven by a strong growth in business/IT projects across the world. This is particularly true now that more and more solutions and projects are sold and delivered in a global, distributed context, catalyzed by the growth in offshore IT resources and new, upcoming markets. Businesses need to staff their projects typically from multiple sources, both from within and outside the company, potentially from multiple continents and multiple providers. Businesses increasingly look to multiple vendors to provide products and solutions to address their business requirements. They find themselves more and more involved in collaborative engagements with partners, alliances, providers, clients, and even competitors.

To thrive in a context like this, it is paramount to have a global, standardized view of the skills, experience, and competences of IT Specialists. This will enable organizations to find and select the right resources to address their business needs, which is all the more relevant now that regulatory compliance and the ever-growing expectations of the market explicitly demand the highest quality of service.

Vendor-independent, global, role-based ITSC brings the guarantee that other organizations in the business ecosystem acquire and possess similar, comparable capabilities; this is a prerequisite for any successful collaboration.

From the point of view of the IT Specialist, certification against an open, global standard brings many benefits as well – it provides a clear, motivating path for career development and it contains portable credentials that will be recognized and accepted on a global scale. The latter is crucial, as many IT Specialists find that today’s working environment constantly creates new, often international opportunities. Certified IT Specialists will be part of a world-wide community of professionals that share the same background, values, and standards in their profession. The ITSC standard is explicitly profession-based – it focuses on the competences and experience that provide a much-needed higher dimension to the many limited, product-specific certifications that currently exist.

The Open Group ITSC Program thus provides an element that is currently missing in the IT industry: a set of recognized standards that allow organizations to benchmark against the required skill level, experience, and knowledge, and select the right people for the job.

1.2 The Open Group ITSC Program

The Open Group IT Specialist Certification Program (the Program) is designed to validate the existence of those qualities and skills in a professional that enable the effective development, implementation, and operation of IT solutions. The Program is skills and experience-based and goes beyond validating the mastery of any specific knowledge base.

The Program includes a framework for accreditation of third parties to establish IT Specialist certification programs affiliated to The Open Group. The framework of accreditation and certification is specifically intended to standardize the process and criteria for IT Specialist professional certification and establish a foundation for the required skills and experience necessary to achieve such a distinction. The Program has been designed to be flexible and extensible so that the framework may be adopted by any industry, country, or organization.

The Open Group supports two different routes to IT Specialist certification:

- The first route is *direct* certification by The Open Group.
- The second is *indirect*, through third-party programs accredited by The Open Group.

The ITSC Conformance Requirements for IT Specialist certification apply equally to the direct and indirect routes to certification.

Beyond the ITSC Conformance Requirements for a Certified IT Specialist, third parties operating Accredited Certification Programs (ACPs) may levy additional requirements on their Candidates in order to satisfy their internal skills requirements. Such additional requirements are called *extended certification requirements* or simply *extended requirements*. For example, extended certification requirements might include experience with proprietary corporate tools or products, or appropriate industry or cultural requirements.

The Program requires ACPs' extended certification requirements to be effectively documented and communicated within the accredited program. In addition, extended certification requirements must not relax the skills, experience, or process requirements set forth by the framework established herein.

The Program is based upon a set of key documents:

1. The *Certification Policy*, which sets out the policies and processes by which an IT Specialist may achieve certification.
2. The *Conformance Requirements* (this document), which documents the skills and experience that a Certified IT Specialist must possess.
3. The *Accreditation Policy*, which sets out the policies and processes by which an Organization may achieve accreditation.
4. The *Accreditation Requirements*, which documents the criteria that must be met by an Accredited Certification Program.

1.3 Levels of Certification

The Program recognizes two levels of certification – “Certified” and “Master Certified”, in increasing order of skill and experience.

Level 1: Certified IT Specialist (able to perform with assistance/supervision, with a wide range of appropriate skills, as a contributing IT Specialist)

Level 2: Master Certified IT Specialist (able to perform independently and take responsibility for delivery of systems and solutions as a lead IT Specialist)

It is recommended that all professionals seeking ITSC certification have:

- Three (3) years’ experience in the Stream in the last five (5) years
- Five (5) years’ work experience in IT in the last eight (8) years

For guidance, it would normally take three to five years of additional IT experience to grow from Level 1 certification to Level 2 certification.

| Certification Level | Experience Requirements |
|---------------------------|---|
| Level 1: Certified | <p>Level 1 Certified IT Specialists are required to have led technical aspects of projects or engagements within their chosen Stream.</p> <p>Level 1 Certified IT Specialists must have acted in the role of IT Specialist within their Stream in at least two (2) successful engagements. The deliverables produced by the Candidate must have contributed to the engagement meeting its acceptance criteria.</p> |
| Level 2: Master Certified | <p>Level 2 Certified IT Specialists are recognized experts who have mastered the state-of-the-art in their field.</p> <p>Level 2 Certified IT Specialists:</p> <ul style="list-style-type: none"> Lead teams involving multiple streams on projects or engagements Make significant contributions to project definition and management Are involved in the growth and development of others <p>Level 2 Certified IT Specialists must have acted in a leadership role in at least three (3) successful engagements.</p> |

1.4 Migration

This is the first version of the ITSC Conformance Requirements document, so there are no migration considerations.

Version 1.1 adds a new Stream (Business Information Management) to those available in Version 1.0. No Streams have been removed.

1.5 Program Logo

IT Specialists certified within the Program are able to use an Open Group logo on their business cards, etc. In accordance with the Trademark License Agreement and Trademark Usage Guide, the logos that may be used include a label (tag line).

The labels for the two levels are as follows:

| Level | Label |
|-------|--------------------------------|
| 2 | Master Certified IT Specialist |
| 1 | Certified IT Specialist |

1.6 Terminology and Definitions

This table defines terms or clarifies the meaning of words used within this document. Where an acronym is also used, it is provided in parentheses.

| | |
|--|---|
| Accredited Certification Program (ACP) | An IT Specialist certification program, operated by a third party, that has successfully completed the accreditation process and which is listed in the Accreditation Register on the Certification Authority's web site. |
| Certification Authority (CA) | The organization that manages the day-to-day operations of the Program in accordance with the policies defined in this Conformance Requirements document. The Open Group acts as the Certification Authority for IT Specialist Certification. |
| Certification Board | The group of subject matter experts appointed by the Certification Authority or by an Accredited Certification Program to evaluate applications for certification. |
| Certification Package | The detailed description of the skill levels attained and experience undergone that provides the Certification Authority or Accredited Certification Program with sufficient information to determine whether the Candidate meets the Conformance Requirements. The Certification Package is never made public. The Certification Package is created by the Candidate by filling in the Certification Package Template. |
| Certification Package Template | The template document provided to Candidates by the Certification Authority to enable them to create Certification Packages. |
| Certification Record | The information identifying the Candidate, including contact details, and describing the way in which the Candidate meets the Conformance Requirements, including the Candidate's selection of Client Focus, Technical Focus, and Stream. The Certification Record of a Certified IT Specialist is made available by the Certification Authority at the discretion of the Certified IT Specialist. |
| Certification System Deficiency (CSD) | An agreed error in the Certification System, which is inhibiting the certification process. A Certification System Deficiency is one possible outcome of a Problem Report. |
| Certified IT Specialist | A Candidate that has successfully completed the certification process, who has been notified in writing by the Certification Authority that the certification requirements have been met, and who has accepted the TMLA. |
| Direct Certification | Direct certification is achieved by applying directly to The Open Group, or to a third party operating the Program on behalf of The Open Group, and successfully completing the certification process. Direct certification is open to any Candidate, regardless of who they work for, or where in the world they live and work. |
| Directory of Certified IT Specialists | The official list of all Certified IT Specialists, which is maintained by the Certification Authority and made publicly available on the Certification Authority's web site. |
| Evaluation Process Deficiency (EPD) | An agreed error in the Evaluation Process that is inhibiting the certification process. An Evaluation Process Deficiency is one possible outcome of a Problem Report. |
| Indirect Certification | Indirect certification is achieved by applying to an Accredited Certification Program and successfully completing the certification process. To be eligible for certification by a particular Accredited Certification Program, Candidates must work for the Organization running the Accredited Certification Program. |

| | |
|------------------------------------|--|
| Interpretation (INT) | Decision made by the Specification Authority that elaborates or refines the meaning of the Conformance Requirements, Certification Policy, Accreditation Requirements, Accreditation Policy, or a standard or best practice referenced therein. An Interpretation is one possible outcome of a Problem Report. |
| Problem Report (PR) | A question of clarification, intent, or correctness of an accreditation or certification document, or the web-based Certification System. |
| Program Logo | The logo or other trademarks as designated from time to time by The Open Group for use within the Program in relation to Certified Specialists. |
| Specification Authority (SA) | The Open Group IT Specialist Certification working group, or its successor, which is responsible for developing, maintaining, and interpreting the Certification Policy, Conformance Requirements, Accreditation Policy and Accreditation Requirements of the Program. |
| Trademark License Agreement (TMLA) | The agreement between the Certified IT Specialist and The Open Group that contains the legal commitment by the Candidate to the conditions for use of the Program Logo. |

1.7 Relationship to SFIA

The Skills Framework for the Information Age (SFIA) is a framework for describing the skills of information systems professionals. SFIA is used to unite a wide variety of other systems in the recruitment, development, training, and reward of Information Systems (IS) staff throughout the world (see www.sfia.org.uk).

In developing the Program, SFIA has been used as an underlying structure to help with the organization of the ITSC Conformance Requirements and as a resource to help in their validation.

ITSC and SFIA differ in their approaches:

- SFIA identifies a comprehensive set of categories of skill that are needed in the IS domain, and describes the skills in these categories at several different levels. Individuals assessing themselves against SFIA are likely to find that they meet the SFIA criteria in several different categories, and organizations using SFIA to define the skills required for a particular role may need to select skills from more than one SFIA category.
- The ITSC program identifies a number of different areas of work that need to be performed by IT Specialists, and defines the detailed skills and experience requirements that would be expected of people who have successfully performed in those roles.

Where there is a clear mapping between an ITSC Conformance Requirement and SFIA, the SFIA reference is included in the ITSC definitions in the column “Skill”.

It is intended that ITSC Level 1 and Level 2 fully meet the SFIA generic requirements at Level 5 and Level 6, respectively.

1.8 Change History

| | |
|---------------|--|
| December 2007 | Version 1.0 released. |
| February 2008 | Copyright notice revised. |
| April 2008 | Version 1.1 released, including application of Corrigendum U081 (dated December 17, 2007), adding the Business Information Management (BIM) Stream and revising requirements ITSCDM06 and ITSCDM07 to correctly reflect the agreed company review change requests CR102 and CR103. |

2. ROLES AND RESPONSIBILITIES

IT Specialists support solution construction, implementation, and systems integration in a Technology, Industry, or Business Stream. IT Specialists are proficient in a Client Focus Area and Technical Focus Stream Area. They are capable of working with requirements and designs to ensure successful implementation of production projects and engagements. Depending on their organization or role, IT Specialists can perform services for fee, or provide sales for products, services, and solutions, or provide support for products, services, and solutions, or provide training in support of products, services, and solutions.

As IT Specialists mature in the profession, it is expected that their area of Technical Focus may broaden to include deep skills in areas related to their technical Stream. This development pattern is supported and encouraged as this makes the professional better rounded and more valuable to their client and their organization.

IT Specialists deliver high-quality solutions to clients (internal or external) in response to varying business requirements. They utilize product, technology, industry, architectural, and business skills. IT Specialists often use tools to manage, analyze, design, and implement solutions. IT Specialists have an in-depth understanding of products, offerings, and services within their Technical Focus Area and Stream.

2.1 Characteristics of the IT Specialist – Client and Technical Focus Areas

The key skills and contributions IT Specialists bring to their pursuits are multifold. IT Specialists ensure that IT solutions are designed, implemented, operated, and maintained to suit client needs. IT Specialists possess a variety of skill sets based on their particular Client and Technical Focus Area.

IT Specialist skills are comprised of a number of skill sets, which are largely determined by a number of factors:

- IT Specialists interface with clients in one of four ways, termed Client Focus Areas:
 - **Services:** IT Specialists who primarily apply their technical skills in an internal or external customer billable services and implementation environment.
 - **Sales:** IT Specialists who apply their technical skills to support the sales of vendor products, services, and solutions.
 - **Support:** IT Specialists who apply their technical skills to support the operation and maintenance of vendor products, services, and solutions.
 - **Training:** IT Specialists who primarily apply their technical skills to develop and deliver training courses.
- IT Specialists focus on one Technical Focus Area. This document will describe Streams and Sub-Streams within each Technical Focus Area. An IT Specialist will generally focus on one Stream or Sub-Stream within one Technical Focus Area. The Technical Focus Areas are:
 - **Solution Development:** IT Specialists in this Technical Focus Area transform business requirements and architecture requirements through analysis, design, development, test, and deployment into viable business solutions.
 - **Solution Deployment:** IT Specialists in this Technical Focus Area work with products or solutions based on any vendor hardware or software to ensure the service provision based on business operations requirements.

IT Specialists in each Stream work in very diverse roles or specialties but are united by their deep technical expertise and the methods they use. To designate these different specialties, we use the word *Streams*. In many organizations, Streams are comparable to job codes or domains. In some Streams, we have defined *Sub-Streams*. This is purely for convenience in documentation. There is no difference from a certification perspective between a Stream and a Sub-Stream except that, where Sub-Streams are defined, certification is only available to the Sub-Streams.

IT Specialists possess a set of core skills regardless of their chosen Client and Technical Focus Areas. In order to implement complex solutions or contribute to the sale of technically advanced products and solutions, the IT Specialist should possess deep Technical, Leadership, and People skills in their area of expertise. Candidates must demonstrate that they possess a common set of fundamental skills and experiences, and in addition must show that they possess deep skills in one Client Focus Area as well as one Technical Focus Stream.

The Conformance Requirements for the Program consist of the following skill sets, as shown in Figure 1 below:

- Core Foundation skills
- Client Focus skills
- Technical Focus skills
- Experience requirements

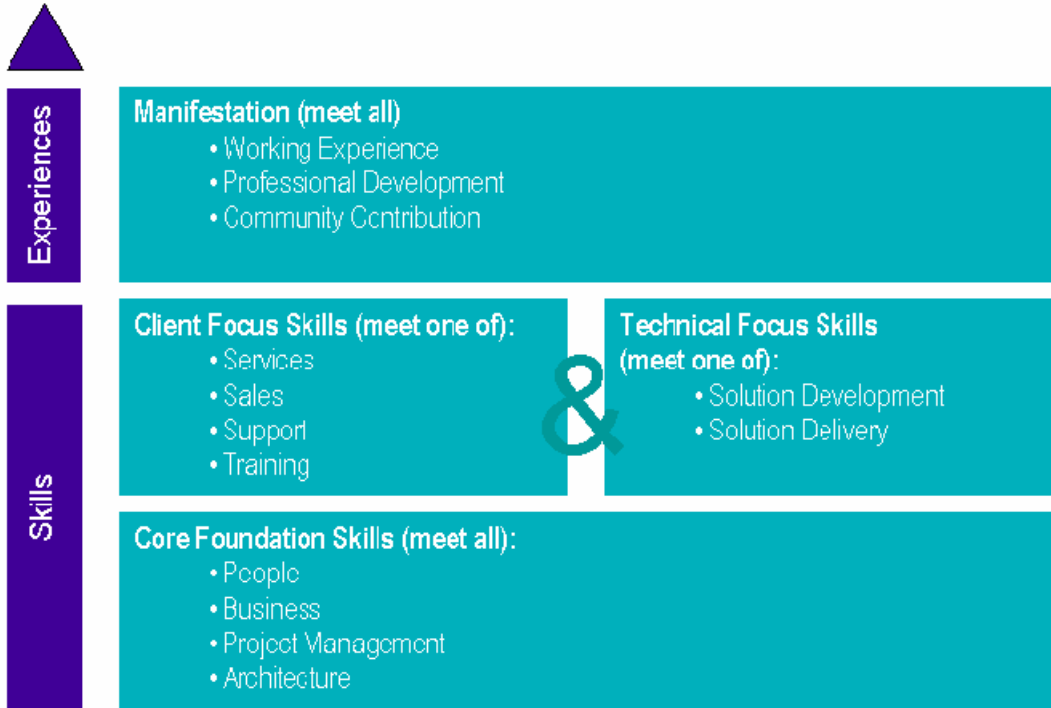


Figure 1: Required Skill Sets of IT Specialist Certification

The Core Foundation Skills apply equally to all IT Specialists and therefore provide a foundation for flexibility and an opportunity for career change and personal development. IT Specialists are expected to be deployable in both client-facing and pure technical roles, and must be able to make the bridge between them. Both sets of skills are needed to transform client ideas and requirements into effective solutions. For these reasons, a Certified IT Specialist must have both a Client Focus and a Technical Focus.

To be certified, an IT Specialist must have demonstrated substantial working experience within their Client and Technical Focus Areas and have repeatedly demonstrated their ability to make the bridge between the client-facing and technical aspects of a solution.

As professionals, IT Specialists are expected to contribute to the community of IT Specialists and to continue to develop their professional skills and expertise.

Effective IT Specialists typically possess and exhibit the following:

| | |
|-------------------|--|
| Technical skills | IT Specialists require practical skills and experience with many application and infrastructure (operational) products, technologies, and services. IT Specialists have the specialized skills required to construct, implement, operate, and maintain all aspects of a client IT infrastructure. Beyond that base of technical depth, effective IT Specialists usually possess additional technical skills in one or more specialty areas. |
| Leadership skills | The effective IT Specialist is a leader, providing knowledge, technical, and team leadership skills in their work, to their clients, and for their teams. |
| People skills | The IT Specialist must have a high level of communications, consulting, and client relationship skills. The IT Specialist must be able to clearly communicate complex technical and business concepts, both to clients (internal or external) and to team members, and to negotiate change. Problem-solving of client business and technical issues is a principle role of the IT Specialist, and he or she must be capable of effectively identifying and framing problems, leading the collection of elements of information, and integrating this information to produce timely and thoughtful decisions. |

2.2 Description of IT Specialist Depth and Breadth

The Program validates certification candidate skills across four major dimensions: Client Focus, Technical Focus, People & Business, and Project & Architecture. The certification program ensures that the Candidate not only possesses deep technical skills, but also Business and People skills that are deemed important in today's business climate.

As the IT Specialist gains the required skills and experiences in each dimension, the IT Specialist outwardly expands the depth and breadth of skills required for certification. Figure 2 depicts this process.

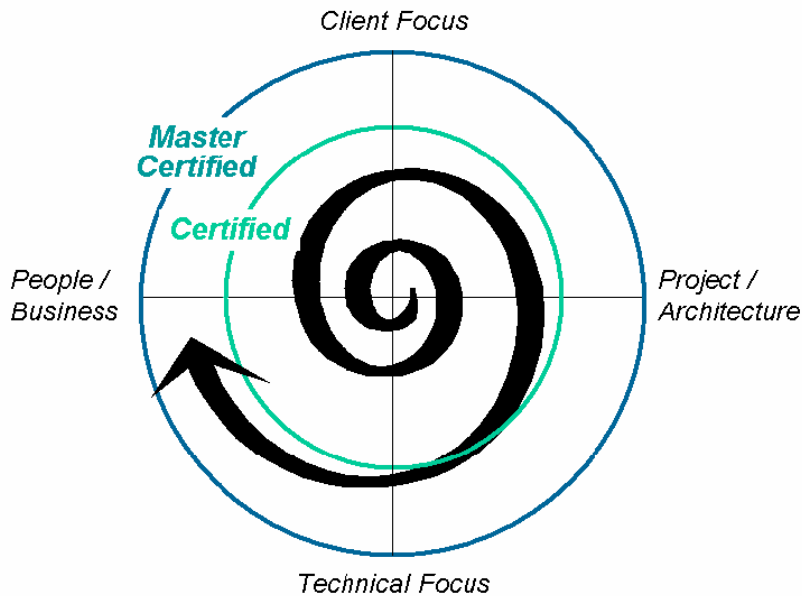


Figure 2: IT Specialists must Develop Themselves in each Dimension

These skills cover **People, Business, Project, and Architecture** aspects and enable IT Specialists to work effectively with Architects, Business Consultants, and Project/Engagement Managers. These skills are needed in order to implement complex solutions or contribute to the sale of technically advanced products and solutions. Each skill may be Solution, Client, Technical, or Leadership-related.

2.3 Client Focus Areas

IT Specialists are deployed in four broad Client Focus Areas across company organizations worldwide. IT Specialist Client Focus Areas are: Services, Sales, Support, and Training.

| | |
|----------|---|
| Services | IT Specialists in this Client Focus Area primarily apply their skills in an internal or external customer billable services and implementation environment. |
| Sales | IT Specialists in this Client Focus Area primarily apply their skills to support the sales of vendor products, services, and solutions. Individuals who are part of Sales typically have responsibility for non-billable activities, such as driving revenue through in-depth, complex demonstrations, technical evaluations, or proof-of-concepts. |
| Support | IT Specialists in this Client Focus Area primarily apply their skills to support the operation and maintenance of vendor products, services, and solutions. Individuals who are part of Support typically have responsibility for sizing, troubleshooting, and critical customer situations. |
| Training | IT Specialists in this Client Focus Area primary apply their skills to develop and deliver training courses. The professionals in this area combine assignments in client projects with the delivering of training courses to clients (internal or external). |

2.4 Technical Focus Areas and Streams

An IT Specialist will focus on one of two Technical Focus Areas: Solution Development or Solution Delivery. Each of these Technical Focus Areas has multiple Streams and/or Sub-Streams against which a Candidate may apply for Certification. For convenience in documentation, related Streams may be grouped together and called *Sub-Streams*.

Sub-Streams were introduced to the Program purely for convenience in documentation and description. There is no intended difference in depth, scope, value, or significance between an area of specialization categorized as a Sub-Stream *versus* one categorized as a Stream.

For certification purposes, Sub-Streams are treated as Streams.

It is expected that, over time, additional Streams (and Sub-Streams) may be added to the Program to address the evolving roles of IT Specialists.

2.4.1 Technical Focus Area: Solution Development

IT Specialists in this Technical Focus Area transform business requirements and architecture requirements through analysis, design, development, test, and deployment into viable business solutions. The Solution Development Technical Focus Area aims at realizing total and partial information systems solutions, including the description and formulation of processes, procedures, and work instructions. The Solution Development Technical Focus Area contains the following Streams:

- **Business Analysis**

IT Specialists in this Stream have expertise in analysis and description of business processes, and their translation into functional and non-functional IT requirements. Business analysts act as the interpreters between the worlds of IT and business. Typical examples of the deliverables are functional and non-functional requirements, use-cases, process models, and impact analysis.

- **Applications Development**

IT Specialists in this Stream have expertise in translating IT requirements in the design, development, and assembly of components to create custom information systems. Typical examples of the deliverables are functional and technical designs, models, components, code, unit tests, and documentation.

- **Packaged Application Implementation**

IT Specialists in this Stream have expertise in implementing, integrating, and customizing commercial Independent Software Vendor (ISV) packages such as CRM, ERP, Finance, Accounting, or vertical industry-specific packages. The Packaged Application Implementation IT Specialist is characterized by a combination of general development knowledge with package knowledge and the specific domain to which the package relates. Typical examples of the deliverables are functional and technical designs, models, components, code, parameters, unit tests, and documentation.

- **Data Integration**

IT Specialists in this Stream will have expertise in making available, integrating, and optimizing structured and/or unstructured data using database products, technologies, and methods. Typical examples of the deliverables are database designs, information models (logical, physical, dimensional, etc.), data migration plans, and data warehouses.

- **Infrastructure Design**

IT Specialists in this Stream will have expertise in selecting the optimal combination of storage systems, networking systems, servers, and/or printing systems based on application and business information requirements. Typical examples of the deliverables are capacity plan, standardization plan, migration plan, and infrastructure model.

- **Testing**

IT Specialists in this Stream will have expertise in the planning, design, management, execution, and reporting of tests using appropriate testing tools and techniques, and conforming to agreed standards, to ensure that new and amended systems, together with any interfaces, perform as specified together

with the business. Typical examples of the deliverables are testing strategies, test plans, test cases, test reports, and quality metrics.

- **Business Information Management**

IT Specialists in this Stream have expertise in making available, integrating, and optimizing structured and/or unstructured data in order to present or distribute information for use and analysis by the business. Specialties are Business Intelligence and Content Integration. Typical examples of the deliverables are strategy maps, information models (logical, physical, dimensional, etc.), data warehouses, balanced scorecards, and reports.

2.4.2 Technical Focus Area: Solution Delivery

IT Specialists in this Technical Focus Area work with products or solutions based on any vendor hardware or software to ensure that the service provision meets business and architecture requirements. The Solution Delivery Technical Focus Area is composed of a number of Streams and Sub-Streams:

- **Infrastructure & Application Management**

IT Specialists in this Stream will have expertise in managing and operation of IT hardware, software, communications, and/or application solutions, and the resources required to plan for, develop, deliver, and support properly engineered IT services and products to meet the needs of a business.

The scope of this Stream includes preparation for new or changed services, management of the change process, and maintenance of regulatory, legal, and professional standards, management of performance of systems and services in relation to their contribution to business performance, and management of bought-in services including, for example, public network, virtual private network, and outsourced services. Typical examples of the deliverables are service-level reporting, risk, and contingency planning.

- **Systems & Hardware Products**

IT Specialists in this Stream work with products or solutions based on any vendor hardware and/or any vendor operating system software. The Systems & Hardware Products Stream is comprised of four Sub-Streams:

- **Storage Systems**

IT Specialists in this Sub-Stream will have expertise in one or more storage system technology areas. Examples include: disk, tape, optical, SAN, NAS, or storage software related to these technologies. Typical examples of the deliverables are building proof-of-concept solutions with storage system technology and architecting storage solutions to address client requirements.

- **Networking Systems**

IT Specialists in this Sub-Stream will have expertise in one or more networking system technology areas. Examples include: routers, networking controllers, bridges, or networking software related to these technologies. Typical examples of the deliverables are building proof-of-concept solutions with networking system technology and architecting networking solutions to address client requirements.

- **Server**

IT Specialists in this Sub-Stream will have expertise in one or more server technologies, including different hardware architectures and operating systems. Typical examples of the

deliverables are building proof-of-concept solutions with server system technology and architecting server solutions to address client requirements.

— Cross Systems

IT Specialists in this Sub-Stream will have expertise in two or more servers, their operating system environments, and/or storage technologies and their interrelationship and operation. Typical examples of the deliverables are building proof-of-concept solutions with server and storage system technology across multiple operating system environments, and architecting server and storage solutions across multiple operating system environments to address client requirements.

Note: Level 1 Certification is not available for this Sub-Stream.

• Software

IT Specialists in this Stream work with products or solutions based on any vendor software or open source software products. Software products fall under five Sub-Streams:

— Application Development Products

IT Specialists in this Sub-Stream will have expertise in one or more application development products. Examples include mainstream application development frameworks, such as those from IBM, Microsoft, and Sun.

Typical examples of the deliverables are building proof-of-concept solutions with application development technology, architecting application development software solutions to address client requirements, and conducting solution assurance reviews to ensure proposed solutions meet client requirements.

— Application & Integration Middleware

IT Specialists in this Sub-Stream will have expertise in one or more Application and Integration Middleware (AIM)-based software product areas. Examples include mainstream AIM software, such as those from IBM, Microsoft, and Mercator.

Typical examples of the deliverables are building proof-of-concept solutions with AIM technology across multiple operating system environments and AIM solutions to address client requirements.

— Data Management

IT Specialists in this Sub-Stream will have expertise in one or more relational and non-relational data management-based software product areas. Examples include mainstream data management software, such as those from IBM and Oracle.

Typical examples of the deliverables are building proof-of-concept solutions with data management technology and architecting data management solutions to address client requirements.

— Content Management

IT Specialists in this Sub-Stream will have expertise in one or more areas of content management software. Content management software captures, stores, manages, integrates, and delivers all forms of digital content across a company's entire value chain to create real

business value. Content management systems and integrated processes provide the unified approach for managing multiple content types. Examples include mainstream content management software, such as those from IBM, Microsoft, and Sun.

Typical examples of the deliverables are building proof-of-concept solutions with server and storage system technology across multiple operating system environments and architecting server and storage solutions across multiple operating system environments to address client requirements.

— Portal and Collaboration

IT Specialists in this Sub-Stream will have expertise in one or more areas of portal and collaboration software. Examples include mainstream portal and collaboration software, such as those from IBM and Microsoft.

Typical examples of the deliverables are building proof-of-concept solutions with portal and collaboration technology, architecting portal and collaboration software solutions to address client requirements, and conducting solution assurance reviews to ensure that proposed solutions meet client requirements.

3. CONFORMANCE REQUIREMENTS (NORMATIVE)

The ITSC Conformance Requirements for a Certified IT Specialist are broken down as follows:

- Core Foundation skills
- Client Focus skills
- Technical Focus skills
- Experience Requirements

Requirements that are stated as applying to Certified IT Specialists apply equally to Candidates for certification.

3.1 Selecting the Appropriate Certification Template

A certification Candidate will select only one Client Focus Area, and one Stream within one Technical Focus Area. The Candidate will describe his or her experiences based on these selections.

Core Foundation skills are the same for all Candidates regardless of the Client Focus and Technical Focus/Stream selected.

3.2 Skill Levels

For the Core Foundation, Client Focus, and Technical Focus Stream skill sets, Candidates must meet or exceed the minimum skill level defined for each of the skill sets. Skill levels are defined as follows:

| Skill Level | Description |
|--------------------|--|
| Limited | Limited or no knowledge |
| General | General conceptual knowledge only |
| Applied | Applied skills – performs with supervision or mentoring |
| Deep | In-depth skills – mastered the current state-of-the-art and is able to perform without supervision |
| Expert | Expert skills – advances the state-of-the-art |

Table 1: Skill Levels and Descriptions

3.3 Core Foundation Skills

The following table defines the Core Foundation skills for the Program. The Core Foundation skills are categorized into People skills, Business skills, Project skills, and Architecture skills.

Candidates must be able to document that they have demonstrated these skills at the required level (or higher) repeatedly and successfully.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|----------|---|--|-------------------------------|-------------------------------|
| ITSCCF01 | People | Apply Written communication Skills | Demonstrate good written communications, including the use of proper grammar, spelling, document organization, clarity, and use of content appropriate for the audience. | Applied | Deep |
| ITSCCF02 | People | Apply Verbal Communication Skills | Demonstrate good verbal communications, including strong eye contact (where culturally appropriate), responsiveness to questions, ability to stay on subject, use of good feedback, and follow-up questions, etc., so that effective two-way communications is demonstrated. | Applied | Deep |
| ITSCCF03 | Project | Set Technical Direction | Given a scope of solution to be accomplished, set the technical direction and constraints of the project or engagement and monitor compliance. | Applied | Deep |
| ITSCCF04 | People | Negotiate Equitable Solutions | Given a conflict, mediate opposing viewpoints and negotiate equitable solutions to ensure successful and stable outcomes. | Applied | Deep |
| ITSCCF05 | Project | Manage Stream-specific Elements of an IT Project Plan | Given a project plan, identify those elements of the plan that put the integrity of the Stream-specific elements at risk and help the client and or project manager by managing those elements so that the project can be successfully completed. | Applied | Deep |
| ITSCCF06 | Business | Understand Business Aspects | Understand the stakeholders' business needs and how they relate to the Candidate's Stream. | Applied | Deep |
| ITSCCF07 | Business | Provide Solution Input to Winning Bids | Create the Stream/Technical Focus Area-related solution within winning bids, proposals, or contract extensions. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|--------------------------------------|---|--------------------------------------|--------------------------------------|
| ITSCCF08 | People | Problem Analysis & Resolution | Demonstrate the ability to perform logical analysis and problem solving. | Applied | Deep |
| ITSCCF09 | People | Apply Mentoring Techniques | Establish mentoring relationships that provide feedback and coaching to enable colleagues or clients to develop and improve performance. | Applied | Deep |
| ITSCCF10 | People | Team Leadership | Capable of leading a team. | Applied | Applied |
| ITSCCF11 | Project | Develop Solution | Given one or more business or technical requirements, create the structures of a solution that can be validated to meet those requirements. | Applied | Deep |
| ITSCCF12 | Project | Personal Impact Awareness | Understand the relationship of the personal contribution to the context of the overall objective of the project or engagement. | Applied | Applied |
| ITSCCF13 | Architecture | Understand Interface to Architecture | Understand the relationship of the personal contribution to the context of the enterprise or project architecture. | Applied | Deep |
| ITSCCF14 | Technique | Develop Re-use Mindset | Use, when possible, already developed objects and materials. | Applied | Deep |

3.4 Client Focus Skills

Certified IT Specialists must be able to demonstrate that they have demonstrated skills in *one* of the Client Focus Areas:

- Services
- Sales
- Support
- Training

3.4.1 Services

IT Specialists in this Client Focus Area primarily apply their technical skills in an internal or external customer billable services and implementation environment.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--|--|-------------------------------|-------------------------------|
| ITSCTS01 | Technique | Advise on Possible Solution (TECH) | Provide advice to the client on a range of applications and products, which may be employed in the solution. | Applied | Deep |
| ITSCTS02 | Technique | Understand Business Aspects | Assess client needs, requirements, preferences, and expectations. | Applied | Deep |
| ITSCTS03 | Technique | Advise on Large and/or Complex Engagements | Given a large and/or complex engagement, define and prepare partial or complete solutions and/or proposals and plans that successfully meet or exceed client needs and expectations. | Applied | Deep |
| ITSCTS04 | Technique | Assure Solution Viability | Assure solution viability that meets the client's requirements (appropriateness of the solution in the client context). | Applied | Deep |
| ITSCTS05 | Technique | Develop Plans | Develops plans that are comprehensive, realistic, and effective. | Applied | Deep |

3.4.2 Sales

IT Specialists in this Client Focus Area primarily apply their technical skills to support the sales of vendor products, services, and solutions. Individuals who are part of sales typically have responsibility for non-billable activities, such as driving revenue through in-depth, complex demonstrations, technical evaluations, or proof-of-concepts.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|---|--|-------------------------------|-------------------------------|
| ITSCSA01 | Technique | Advise on Technical Decisions (TECH) | Provide advice to the client on a range of applications and products, which may be employed in the solution. | Applied | Deep |
| ITSCSA02 | Method | Use Sales Method (SALE) | Use a documented sales method. | Applied | Applied |
| ITSCSA03 | Technique | Lead Technical Evaluation & Demonstration | Lead technical evaluations and demonstrations (e.g., proof-of-concepts, feasibility studies, benchmarks, or pilots). | Applied | Deep |
| ITSCSA04 | Technique | Assure Initial Solution Viability | Assure initial solution viability that meets the client's requirements (e.g., Quality Assurance, Systems Assurance, Risk Assessment). | Applied | Deep |
| ITSCSA05 | Technique | Develop Competitive Analyses | Given a set of client priorities and constraints, develop a competitive analysis and business justification. | Applied | Deep |
| ITSCSA06 | Technique | Create Client Deliverables | Create client deliverables (e.g., by creating scenarios, custom demonstrations such as prototypes or user interfaces, or custom presentations that represent vendor products and solutions). | Applied | Deep |

3.4.3 Support

IT Specialists in this Client Focus Area primarily apply their technical skills to support the operation and maintenance of vendor products, services, and solutions. Individuals who are part of support typically have responsibility for sizing, troubleshooting, and critical customer situations.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--------------------------------------|--|-------------------------------|-------------------------------|
| ITSCSU01 | Technique | Advise on Technical Decisions (TECH) | Advise and guide the client on technical decisions for the use of vendor products, services, and solutions (trusted technical advisor). Examples include: Identify problems related to installation, update, configuration, operations, or performance Provide subject matter expertise on solution design Provide advice on potential resolutions and their implementation | Applied | Deep |
| ITSCSU02 | Technique | Problem Analysis & Resolution | Provide problem management. Examples include: Apply problem solving skills Assess risk and severity Locate and allocate resources as necessary Involve Subject Matter Experts (SMEs) to solve the problems Implement problem resolution (install, test, and run patches, upgrades) | Applied | Deep |
| ITSCSU03 | Technique | Provide Technical Leadership | Provide technical leadership; for example, leading reviews of impact analysis and fitness-for-purpose. | Applied | Deep |
| ITSCSU04 | Technique | Create Client Deliverables | Create client deliverables. Examples include: Create scenarios and custom demonstrations (e.g., prototypes, user interface) Develop custom presentation that represents vendor's products, services, and solutions | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|----------------------------|--|-------------------------------|-------------------------------|
| ITSCSU05 | Technique | Manage Change | <p>Manage change with significant technical scope or business impact. Examples include:</p> <ul style="list-style-type: none"> Ensure all changes are authorized and reviewed for their potential impact Give personal attention to high priority/emergency change processing Ensure all changes are tracked and that history is available Track and authorize changes using appropriate tools Allow emergency changes to be made by authorized personnel Have a back-out and recovery plan in place for major changes Define go, no-go decision points | Applied | Deep |
| ITSCSU06 | Technique | Identify Sales Opportunity | Identify sales opportunities by recognizing and articulating potential new business opportunities related to clients or client relationships. | Applied | Deep |
| ITSCSU07 | Technique | Propose Solution | Given a non-trivial client problem, propose a successful solution or part solution within the Stream. | Applied | Deep |

3.4.4 Training

IT Specialists in this Client Focus Area primarily apply their technical skills to develop and deliver training courses. The professionals in this area combine assignments in client projects with the developing and delivering of training courses to clients.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|---|---|-------------------------------|-------------------------------|
| ITSCTR01 | Technique | Understand Training Concepts & Models | Understand basic training models and concepts and the art and science of teaching. | Applied | Deep |
| ITSCTR02 | Technique | Define Learning Objectives | Define the learning objectives of the training program together with the client. | Applied | Deep |
| ITSCTR03 | Technique | Customize Training Programs (TMCR) | Design and develop customized training programs based on client needs. | Applied | Deep |
| ITSCTR04 | Technique | Use Training Techniques | Understand varying training forms, styles, and interventions most appropriate for the situation. To do this, Candidates must be aware of their own natural training styles. | Applied | Deep |
| ITSCTR05 | Technique | Vary Training Delivery Mode | Use more than one form of training delivery (e.g., classroom training, individual coaching, e-learning, case-based training, action learning). | Applied | Deep |
| ITSCTR06 | Technique | Adapt Delivery | Adapt delivery based on target audience. | Applied | Deep |
| ITSCTR07 | Technique | Teach to Different Learning Styles | Recognize different learning styles of trainees and translate this into effective interventions. | Applied | Deep |
| ITSCTR08 | Technique | Create & Maintain Training Programs (TMCR) | Translate the relevant developments in the candidate's area of expertise into new training programs and improvements of existing training programs. | Applied | Deep |
| ITSCTR09 | Technique | Develop & Update Training Materials | Develop and update training materials (e.g., syllabi, exercises, e-learning modules, simulations). | Applied | Deep |
| ITSCTR10 | Technique | Relate Training Concepts to Subject Matter Expertise Area | Publish or present about relationships between training concepts and subject matter area expertise. | N/A | Applied |

3.5 Solution Development Streams

3.5.1 Business Analysis

IT Specialists in this Stream have expertise in analysis and description of business processes, and their translation into functional and non-functional IT requirements. Business analysts act as the interpreters between the worlds of IT and business. Typical examples of the deliverables are functional and non-functional requirements, use-cases, process models, and impact analysis.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--|---|-------------------------------|-------------------------------|
| ITSCBA01 | Context | Understand Business Aspects | Apply knowledge of the client's vertical or horizontal business context to identify, understand, and articulate the client's business strategy, problems, and objectives. | Applied | Deep |
| ITSCBA02 | Technique | Conduct Requirements Gathering Workshops | Conduct requirements gathering workshops with a client to meet the stated objective. | Applied | Deep |
| ITSCBA03 | Technique | Define Requirements | Define requirements using modeling techniques or otherwise to produce deliverables (e.g., use-cases, data flow diagrams, entity relationship diagrams, etc.). | Applied | Deep |
| ITSCBA04 | Technique | Perform Gap Analysis | Validate the proposed solution against requirements (gap analysis). | Applied | Deep |
| ITSCBA05 | Strategy | Develop Requirements Gathering Strategy | Select the appropriate methods, techniques, and tools for identifying, analyzing, and documenting client requirements. | Applied | Deep |
| ITSCBA06 | Technique | Perform Business Justification | Develop business justification (scope, goals, benefits, costs) for proposed solutions. | Applied | Deep |
| ITSCBA07 | Technique | Define Business & IT Requirements (ANAL) | Translate business needs and opportunities to business and IT requirements. | Applied | Deep |
| ITSCBA08 | Context | Perform Business Process Impact Analysis | Identify the impact of the proposed solutions to the business process. | Applied | Deep |
| ITSCBA09 | Method | Use Method | Use a Stream-specific method and/or process to gather and analyze requirements. | Applied | Deep |
| ITSCBA10 | Technique | Validate Requirements | Validate requirements with the client. | Applied | Deep |

3.5.2 Application Development

IT Specialists in this Stream have expertise in translating IT requirements in the design, development, and assembly of components to create custom information systems. Typical examples of the deliverables are functional and technical designs, models, components, code, unit tests, and documentation.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|-------------------------------------|--|-------------------------------|-------------------------------|
| ITSCAD01 | Technique | Write Software | Program in one mainstream programming language, according to project guidelines and coding standards. | Deep | Deep |
| ITSCAD02 | Strategy | Recommend Programming Language | Given a business and technical context, compare the possibilities, strengths, and weaknesses of two or more programming languages to make recommendations. | Applied | Deep |
| ITSCAD03 | Technique | Perform Unit Test & Debug | Given a test plan, perform unit test and debug complex software. | Applied | Deep |
| ITSCAD04 | Tool | Use Automated Development Tools | Use automated development tools. | Applied | Deep |
| ITSCAD05 | Technique | Define Development Metrics | Define and measure metrics tracking development progress and quality. | Applied | Deep |
| ITSCAD06 | Strategy | Develop Complex Solution | Given a set of requirements, design, build, test, and package significant aspects of a complete solution required by the client. | Applied | Deep |
| ITSCAD07 | Tool | Use Configuration Management Tools | Use configuration management tools. | Applied | Deep |
| ITSCAD08 | Method | Use Application Development Methods | Use two or more major application development methods (e.g., LAD/Waterfall, RAD, DSDM, RUP). | Applied | Deep |
| ITSCAD09 | Technique | Develop Design | Elaborate and translate functional and non-functional requirements into a design. | Applied | Deep |

3.5.3 Packaged Application Implementation

IT Specialists in this Stream have expertise in implementing, integrating, and customizing commercial Independent Software Vendor (ISV) packages such as CRM, ERP, Finance, Accounting, or vertical industry-specific packages. The Packaged Application Implementation specialist is characterized by the combination of general development knowledge with package knowledge and the specific domain to which the package relates. Typical examples of the deliverables are functional and technical designs, models, components, code, parameters, unit tests, and documentation.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|---|---|-------------------------------|-------------------------------|
| ITSCPA01 | Technique | Use ISV Products, Technologies, & Methodologies | Use ISV products, technologies, and methods to provide a solution to an internal or external client's problem.. Examples of vendors who produce ISV products include Oracle, SAP, and PeopleSoft. | Applied | Deep |
| ITSCPA02 | Technique | Understand Conversion to ISV Products | Advise or support clients (internal or external) on which migration or conversion tools, procedures, and products are required to migrate or convert to ISV products. | Applied | Deep |
| ITSCPA03 | Technique | Understand ISV Upgrade | Advise or support clients (internal or external) on new ISV product versions, including new features and functions, upgrade process, and any pre-requisites that may be needed. | Applied | Deep |
| ITSCPA04 | Technique | Understand ISV Product Configuration | Advise or support clients (internal or external) on product configuration to run in the client environment. | Applied | Deep |
| ITSCPA05 | Technique | Understand ISV Recoverability | Advise or support clients (internal or external) on ISV logging, recovery, and backup capabilities. | Applied | Deep |
| ITSCPA06 | Technique | Understand ISV Best Practices | Advise or support clients (internal or external) on deployment techniques and/or best practices of ISV solutions or products. | Applied | Deep |
| ITSCPA07 | Technique | Optimize ISV Product Performance & Capacity | Configure product to meet the client's requirements for performance and capacity (e.g., use clustering, mobile and web access, replication and mail routing, multilingual). | Applied | Deep |
| ITSCPA08 | Technique | Understand ISV Failover Capability & Redundancy | Advise or support clients (internal or external) on ISV failover capability and redundancy. | Applied | Deep |

3.5.4 Data Integration

IT Specialists in this Stream will have expertise in making available, integrating, and optimizing structured and/or unstructured data using database products, technologies, and methods. Typical examples of the deliverables are database designs, information models (logical, physical, dimensional, etc.), data migration plans, and data warehouses.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--|--|-------------------------------|-------------------------------|
| ITSCDI01 | Tool | Design Complex Databases | Design of complex databases, applying appropriate data modeling and database design tools. | Deep | Deep |
| ITSCDI02 | Technique | Implement Databases | Follow best practices on implementing databases. | Applied | Deep |
| ITSCDI03 | Strategy | Plan & Develop Databases on Large to Very Large Projects | Plan and develop databases on large to very large projects. | Applied | Deep |
| ITSCDI04 | Tool | Use Database Administration & Management Tools | Use database administration and management tools to meet client needs and/or solve client problems. | Applied | Deep |
| ITSCDI05 | Tool | Use Data Integration/ Federation Tools | Use tools for data integration and/or federation. | Applied | Deep |
| ITSCDI06 | Technique | Manage Performance Measurement, Analysis, and Optimization | Manage performance measurement, analysis, and optimization. | Applied | Deep |
| ITSCDI07 | Method | Leverage Data-related Development Methods | Selection, tailoring, and implementation of data-related development methods. | Applied | Deep |
| ITSCDI08 | Technique | Lead a Complex Database Design/ Implementation Effort | Lead a complex database design/implementation effort. | N/A | Deep |
| ITSCDI09 | Strategy | Advise & Support Clients on Tools & Techniques | Compare the possibilities, strengths, and weaknesses of different tools and techniques that can be combined into different data integration solutions. | Applied | Deep |

3.5.5 Infrastructure Design

IT Specialists in this Stream will have expertise in selecting the optimal combination of storage systems, networking systems, servers, and/or printing systems based on application and business information requirements. Typical examples of the deliverables are capacity plans, standardization plans, migration plans, and infrastructure models.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|-------------------------------------|---|-------------------------------|-------------------------------|
| ITSCID01 | Method | Use Infrastructure Design Framework | Given a set of application and/or business information requirements, select, adapt, and use an appropriate infrastructure design method or framework to design the optimal combination of storage systems, networking systems, servers, and/or printing systems to meet the requirements. | Applied | Deep |
| ITSCID02 | Technique | Build a Technical Solution | Plan, design, develop, integrate, and implement infrastructure components of a solution that spans multiple disciplines and technologies. | Applied | Deep |
| ITSCID03 | Technique | Understand IT Technology | Knowledge and use of at least two technology areas: storage, servers, networking, or printing systems. Position and justify them in the scope of an overall project. | Applied in two (2) areas | Applied in three (3) areas |
| ITSCID04 | Technique | Define Capacity Plan | Define capacity criteria and forecast utilization in order to initiate and manage capacity plans. | Applied | Deep |
| ITSCID05 | Technique | Position & Justify Solution | Position and justify the infrastructure design in the scope of an overall project to a client (internal or external). | Applied | Deep |
| ITSCID06 | Method | Define Migration Plan | Develop a migration plan for upgrades and new versions of infrastructure components to maintain optimal work environment availability. | Applied | Deep |
| ITSCID07 | Method | Define Performance Plan | Develop a performance plan, applying knowledge of appropriate industry tools and lifecycle standards to improve client's business and product lifecycle performance. | Applied | Deep |
| ITSCID08 | Method | Model Performance | Use appropriate prototypes and simulation tools to model the performance of infrastructure components and adjust the infrastructure design as required. | Applied | Deep |

3.5.6 Testing

IT Specialists in this Stream will have expertise in the planning, design, management, execution, and reporting of tests using appropriate testing tools and techniques, and conforming to agreed standards, to ensure that new and amended systems, together with any interfaces, perform as specified together with the business. Typical examples of the deliverables are testing strategies, test plans, test cases, test reports, performance metrics, and quality metrics.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--|---|-------------------------------|-------------------------------|
| ITSCTE01 | Technique | Develop Test Plans | Develop comprehensive test plans based on risks and acceptance criteria agreed with the client. | Applied | Deep |
| ITSCTE02 | Strategy | Develop Test Strategies | Develop test strategies to ensure client solutions meet expected objectives. | Applied | Deep |
| ITSCTE03 | Technique | System-level Testing (SINT) | Create and execute end-to-end functionality tests at the system level. | Applied | Deep |
| ITSCTE04 | Method | Select & Use Full Lifecycle Testing Methodology Concepts | Select and use the appropriate full lifecycle testing methodology concepts, including different levels and types of tests. | Applied | Deep |
| ITSCTE05 | Technique | Build Test Cases & Test Scripts | Build test cases and test scripts, based on business requirements, which specify test inputs, execution conditions, and expected results for every component being delivered. | Applied | Deep |
| ITSCTE06 | Technique | Create Customized Test Data | Create customized test data based on system architecture and production environment (e.g., mock data, dummy data). | Applied | Deep |
| ITSCTE07 | Technique | Design a Test Environment | Design a test environment to support the test strategy. | Applied | Deep |
| ITSCTE08 | Technique | Define and/or Implement Inspections & Defect Prevention Techniques | Define and take responsibility for the implementation of inspections and defect prevention techniques to ensure the quality of the client solution. | Applied | Deep |
| ITSCTE09 | Tool | Understand Test Tool Functionality | Know the functionality of testing tools from more than one supplier and how such tools would support the testing strategy. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|------------------------------------|--|--------------------------------------|--------------------------------------|
| ITSCTE10 | Technique | Automate Test Scripts | Translate manual testing procedures and/or test specifications into automated test scripts. | Applied | Deep |
| ITSCTE11 | Tool | Use Configuration Management Tools | Use configuration/library management tools to ensure that the correct version of test target and tests are staged for testing. | Applied | Deep |
| ITSCTE12 | Tool | Use Test Management Tools | Use widely accepted test management tools in support of test selection, configuration, and execution. | Applied | Deep |
| ITSCTE13 | Tool | Use Defect Management Tools | Use widely accepted defect management tools in support of defect tracking and impact analysis. | Applied | Deep |

3.5.7 Business Information Management

IT Specialists in this Stream have expertise in making available, integrating, and optimizing structured and/or unstructured data in order to present or distribute information for use and analysis by the business. Specialties are Business Intelligence (BI) and Content Integration (CI). Typical examples of the deliverables are strategy maps, information models (logical, physical, dimensional, etc.), data warehouses, balanced scorecards, and reports.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--|---|-------------------------------|-------------------------------|
| ITSCBI01 | Method | Use a Development Methodology | Ability to make effective use of at least one development method relevant to the BIM stream (e.g., RUP, DSDM). | Applied | Deep |
| ITSCBI02 | Strategy | Compare BIM Tools | Advise and support clients (internal or external) with comparison and selection of BIM tools and/or products. | Applied | Deep |
| ITSCBI03 | Strategy | Identify Organizational Change | Identify and communicate the organizational changes needed for the successful implementation of BI or CI systems; for example, new roles, responsibilities, and the new organizational structures required for governance and management. | Applied | Deep |
| ITSCBI04 | Context | Identify Business Process Change | Identify and communicate the changes to business processes needed for the successful implementation of BI or CI systems. | Applied | Deep |
| ITSCBI05 | Technique | Identify Business Requirements | Identify business requirements for a BI or CI system and identify the pros and cons of different technical solutions. | Applied | Deep |
| ITSCBI06 | Strategy | Understand Concepts for Managing Information | Understand the information lifecycle and have expertise in managing information concepts such as KPI, Dashboard, BPM, Workflow, Collaboration, Search, and Retrieval. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|---|---|-------------------------------|-------------------------------|
| ITSCBI07 | Tooling | Use ISV Products, Technologies, & Methods | Know and effectively use ECM ISV products, technologies, and methodologies. (Vendors may include IBM, Microsoft, Oracle, Documentum, OpenText, etc.) (CI) Or: Know and effectively use appropriate database design, administration, and management tools for information management solutions. (BI) | Applied | Deep |
| ITSCBI08 | Technique | Use CI or BI-specific Techniques | Effective use of one or more of the (business) classification, access control, and security techniques. (CI) Or: Design Data Warehouse architectures through the effective use of at least one architecture framework. (BI) | Applied | Deep |
| ITSCBI09 | Tooling | Use Storage Models and/or Infrastructure | Effective use of relevant storage models, audit trail, and/or system infrastructure tools to manage an information solution infrastructure. | Applied | Deep |
| ITSCBI10 | Technique | Design Complex Databases | Design complex databases, using data modeling techniques like ERD, dimensional, and/or data vault modeling. | Applied | Deep |
| ITSCBI11 | Strategy | Expertise with KPIs | Define Key Performance Indicators (KPIs) in collaboration with the decision-makers within an organization. | Applied | Deep |
| ITSCBI12 | Technique | Create and Analyze Information | Expertise in the creation of reports and information analyses, based on KPI data, to meet client requirements. | Deep | Deep |
| ITSCBI13 | Tooling | Use BIM Tools | Effective use of at least one BI or CI-specific tool to meet client needs in data integration, ETL, content ingestion, and/or federation. | Deep | Deep |
| ITSCBI14 | Technique | Manage Performance | Manage performance of information management solution environments to meet clients' needs for high data volumes, (near) real-time loading, and quick analysis results. | Applied | Deep |

3.6 Solution Delivery Streams

3.6.1 Infrastructure & Application Management

IT Specialists in this Stream have expertise in managing and operating IT infrastructure (typically hardware, software, and communications) and the resources required to plan for, develop, deliver, and support properly engineered IT services and products to meet the needs of a business. This Stream includes preparation for new or changed services, management of the change process, and maintenance of regulatory, legal, and professional standards, management of performance of systems and services in relation to their contribution to business performance, and management of bought-in services including, for example, public network, virtual private network, and outsourced services. Typical examples of the deliverables are service-level reporting, risk, and contingency planning.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|---|---|-------------------------------|-------------------------------|
| ITSCSM01 | Strategy | Plan, Implement, & Customize Systems Management Functions | Plan, implement, and customize systems management functions in a client IT organization. | Applied | Deep |
| ITSCSM02 | Tool | Use System Management Tools | Use system management tools, such as those from CA, HP, and IBM, to support the systems management functions listed in ITSCSM06. Implement and configure tools for operational control, growth, planning, resiliency, and recoverability. | Applied | Deep |
| ITSCSM03 | Method | Use Industry Standard Methodologies | Use a method such as ITIL, ITPM, BSP, or any other system of best practices or mixture thereof, to support and configure the systems management functions. | Applied | Deep |
| ITSCSM04 | Strategy | Develop Systems Management Strategy | Create a strategy which allows the systems management functions to be open and flexible to future needs and changes in either business or technological directions. | Applied | Deep |
| ITSCSM05 | Technique | Define & Validate Recoverability | Define and document all operation functions and all requirements for the recovery of any component. Maintain the documentation and regularly validate recoverability. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|---|--|--|---|
| ITSCSM06 | Technique | Understand Systems Management Components (CFMG) (CHMG) (USUP) (PBMG) (AVMT) (ASMG) (CPMG) (SLMO) (SCMT) | Advise or support clients (internal or external) on System Management Components: Configuration Management Change Management Release Management Incident Management Problem Management Availability Management Asset Management Service Continuity Capacity Management Service-level Management Security Management | Applied for five (5) components General for remainder | Deep for one (1) component Applied for remainder |
| ITSCSM07 | Technique | Respond to Changes in Business or Technology | Grow and improve the management functions established in support of the client's business as it reacts to changes in business or technology. | Applied | Applied |

3.6.2 Systems & Hardware Products

IT Specialists in this Stream work with products or solutions based on any vendor hardware and/or any vendor operating system software. The Systems & Hardware Products Stream is comprised of four Sub-Streams:

- Storage Systems
- Networking Systems
- Server
- Cross Systems

3.6.2.1 Storage Systems

IT Specialists in this Sub-Stream will have expertise in one or more storage system technology areas. Examples include: disk, tape, optical, SAN, NAS, or storage software related to these technologies.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|---|--|-------------------------------|-------------------------------|
| ITSCSS01 | Strategy | Apply Competitive Knowledge | Apply knowledge of competing vendor storage systems, and what differentiates them, to solving a client's business problem. | Applied | Deep |
| ITSCSS02 | Technique | Configure Storage Systems | Configure complex storage systems for optimum performance against client needs. | Applied | Deep |
| ITSCSS03 | Technique | Perform Storage Conversion | Perform storage conversions from one or more vendor products to another. | Applied | Deep |
| ITSCSS04 | Technique | Integrate Cross-vendor Storage Systems | Integrate storage systems from more than one vendor or technology. | Applied | Deep |
| ITSCSS05 | Technique | Integrate Storage Systems in Complex Environments | Given a complex storage environment, select and apply the appropriate techniques, such as synchronous and/or asynchronous mirroring, or point-in-time copy for online backup and recovery. | Applied | Deep |
| ITSCSS06 | Method | Plan Storage Capacity | Perform capacity planning including performance analysis and preparation of documented recommendations. | Applied | Deep |
| ITSCSS07 | Technique | Advise on Storage Backup & Recovery | Advise or support client on backup and recovery procedures for storage systems. | Applied | Deep |

3.6.2.2 Networking Systems

IT Specialists in this Stream will have expertise in one or more networking system technology areas. Examples include: routers, networking controllers, bridges, or networking software related to these technologies.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--|---|-------------------------------|-------------------------------|
| ITSCNS01 | Technique | Networking Problem Determination | Use networking problem determination skills to assess clients' network problems. | Applied | Deep |
| ITSCNS02 | Technique | High-availability Networking Principles | Understand and apply high-availability networking principles to restore clients' networks to normal levels of availability and performance, and recommend actions to prevent recurrence of problems. | Applied | Deep |
| ITSCNS03 | Technique | Network Technology Skills | Understand three or more of the following technologies: IPSec, L2TP, PPTP, public/private keys, SSL, or Virtual Private Networks (VPNs), and apply that knowledge in the technology selection, design, and implementation of clients' networks. | Applied | Deep |
| ITSCNS04 | Technique | WAN or LAN Skills | According to the Client Focus Area, either design, plan the installation, implement, and network manage WANs or LANs, or troubleshoot LAN/WAN problems in multiple environments with network management experience on at least one environment. | Applied | Deep |
| ITSCNS05 | Technique | Networking API Skills | Design and implement networking components using API's such as CPI-C, sockets, or equivalent. | Applied | Deep |
| ITSCNS06 | Strategy | Networking Performance Skills | Use appropriate tools to tune networks for optimum performance to meet client needs. | Applied | Deep |
| ITSCNS07 | Tool | Customize Network Management Tools or Conduct Problem Determination using Networking Tools | According to the Client Focus Area, either customize network management tools to build a proactive solution for network performance and health trending, with violation notification for problem identification, or troubleshoot networks using problem determination tools, such as network sniffers, etc. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|--|---|--------------------------------------|--------------------------------------|
| ITSCNS08 | Architecture | Advise or Support Clients with Network Architectures | Advise or support clients (internal or external) on network architectures including the naming and addressing methods, data formats, and protocols of the architecture such as TCP/IP, Frame Relay, ATM, OC-x or DS-x transport, and routing protocols, such as RIP, BGP, OSPF. | Applied | Deep |
| ITSCNS09 | Technique | Plan Network Capacity | Advise or support clients (internal or external) in network capacity planning, performance analysis, and preparation of documented results (WAN, LAN, or Client-Server end to end). | Applied | Deep |
| ITSCNS10 | Technique | Advise or Support Clients on IP Convergence Applications | Advise or support clients (internal or external) in at least one of the following IP convergence applications: VoIP, Unified Messaging, Real-time Collaboration, and IPTV. | Applied | Deep |

3.6.2.3 Server

IT Specialists in this Sub-Stream will have expertise in one or more mainstream server technologies. Examples include products from HP, IBM, and Sun.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--|---|-------------------------------|-------------------------------|
| ITSCSV01 | Technique | Application of Product Knowledge | Given a client business problem, select the appropriate server architecture and instance to meet client requirements. Example server architectures are those from the major server families of IBM, HP, Sun, etc. | Applied | Deep |
| ITSCSV02 | Technique | Integrate with Other Systems and Solutions | Given a customer requirement, integrate new capability with existing systems and or solutions. Examples might include integration of: Web server Firewall Authentication servers Application server Data base servers Messaging systems Back-end data extraction to data warehouse systems | Applied | Deep |
| ITSCSV03 | Technique | Configure Servers | Configure server to operate efficiently in the client environment. Show how a balanced system configuration was achieved (e.g., processors, memory, I/O, & network resources, disk, tape, switch fabric, I/O paths) and appropriately sized for the workload to be run. Show how sufficient backup and recovery capability for the requirements of the workload was achieved. | Applied | Deep |
| ITSCSV04 | Technique | Backup & Recover Servers | Advise or support clients (internal or external) in the selection and deployment of the appropriate methods, such as incremental, image copy, mirroring, cross-site, failover, and disaster recovery strategies. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|--|--|--------------------------------------|--------------------------------------|
| ITSCSV05 | Technique | Effective Use of System Management Tools | Advise or support clients (internal or external) in the effective use of mainstream system and/or operational management tools to achieve availability and operational goals. | Applied | Deep |
| ITSCSV06 | Technique | Advise or Support Server Consolidation | Advise or support a client (internal or external) on server consolidation, including sizing, configuration, planning, and covering risk management, recovery implications, and deployment options. | Applied | Deep |

3.6.2.4 Cross Systems

IT Specialists in this Stream will have expertise in two or more server or storage technologies and their interrelationship and operation.

Note: There is no Level 1 certification for this Stream.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--|---|-------------------------------|---|
| ITSCCS01 | Technique | Apply Multi-server, Storage, & O/S Knowledge | Advise and support clients (internal or external) with several heterogeneous server, operating system, and storage systems. | N/A | Deep |
| ITSCCS02 | Technique | Propose End-to-end Solutions using Multiple Technologies | Design, present, and propose server, operating system, and storage solutions with focus on cross-system technologies. | N/A | Deep |
| ITSCCS03 | Technique | Perform as a Solution Designer | Perform as a solution designer: Analyze client business and IT challenges Design a comprehensive solution integrating into the client's environment | N/A | Deep |
| ITSCCS04 | Technique | Evaluate & Adapt Solutions into Complex Environments | Evaluate and adapt the sub-specialty area solutions to different and complex environments. | N/A | Deep |
| ITSCCS05 | Technique | Heterogeneous Technology Consultative Skills | Demonstrate sales, planning, and consulting skills in servers and storage products, covering both hardware and key system software elements. | N/A | Applied in four (4) areas, one of which must be Storage |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|-------------------------|--|-------------------------------|-------------------------------------|
| ITSCCS06 | Technique | Complex Solution Design | <p>Demonstrate consultative skills in three (3) of the solution areas listed below in multiple customer environments:</p> <ul style="list-style-type: none"> Server Virtualization technologies Storage Virtualization technologies Infrastructure Simplification and Consolidation strategies Middleware implementations as they relate to server and storage products Business Continuity, High Availability, and Disaster Recovery Cross-system Disciplines (e.g., Security, Clustering, Network Connectivity, Database Placement, Data Connectivity, or Systems Management) <p>Examples must include analysis and design of cost-justified solutions using common metrics; e.g., TCO, TCA (Acquisition), QoS (Quality of Service), and TTM/C (Time-to-market/ Customer).</p> | N/A | Applied in three (3) Solution Areas |

3.6.3 Software

IT Specialists in this Stream work with products or solutions based on any vendor software or open source software products. Software products specialists are grouped into five Sub-Streams:

- Application Development Products
- Application Integration Middleware
- Data Management
- Content Management
- Portal and Collaboration

3.6.3.1 Application Development Products

IT Specialists in this Stream will have expertise in one or more application development-based software product areas. Examples include: IBM Rational Suite, Microsoft .Net, and Sun Development Software.

These IT Specialists typically specialize in one or more of the following areas: Process & Portfolio Management, Requirements Definition & Management, Architecture Management, and Quality Management.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|--|---|-------------------------------|-------------------------------|
| ITSCDP01 | Method | Use Application Development Products & Methodologies | Understand the proper application of development methodologies and the appropriate tools used in the software development lifecycle. Be able to apply the different areas of the methodology to the phases in the lifecycle and identify the appropriate tool(s) to perform the development activity. | Applied | Deep |
| ITSCDP02 | Technique | Advise or Support Clients on the Value of the Entire Application Development Lifecycle | Demonstrate and articulate the value of the entire application development lifecycle, including all of the areas involved and how they are interrelated. Specifically understand and explain the value of an integrated development lifecycle. | Applied | Deep |
| ITSCDP03 | Tool | Select & Install Tools | Given a client requirement and development environment, select and install the appropriate development tool. | Applied | Deep |
| ITSCDP04 | Method | Understand Industry Standards | Demonstrate knowledge of industry standards in the area of specialization (i.e., UMA for PPM specialization, UML for ADC specialization) to meet a customer's development process requirements. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|--|---|--------------------------------------|--------------------------------------|
| ITSCDP05 | Tool | Configure & Customize Tools | Identify requirements for configuration and customization in order for the development tool to work optimally in the identified development environment. This may include special security needs, special process needs, distributed access needs, or automation extensions. | Applied | Deep |
| ITSCDP06 | Technique | Integrate Application Development Tools | Support the full lifecycle development approach by integration between your tool of specialization and the relevant tools in other areas (i.e., between requirements and testing). | Applied | Deep |
| ITSCDP07 | Technique | Support Client Application Development Framework | Advise or support client (internal or external) application development groups in best practices on following their development methodology and in the proper way to use/configure the development tools. This includes mentoring on which tools should be used by which roles to perform which actions at its simplest, or actually extending the products via their extensibility interfaces at its most complex. | Applied | Deep |

3.6.3.2 Application & Integration Middleware

IT Specialists in this Stream will have expertise in one or more application and integration middleware-based software product areas.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|-----------|---|--|-------------------------------|-------------------------------|
| ITSCAI01 | Technique | Understand Adapter Interfaces | Advise or support clients (internal or external) on adapter interfaces to provide system interconnectivity. | Applied | Deep |
| ITSCAI02 | Technique | Understand Data Interchange Standards | Advise or support clients (internal or external) on data interchange across disparate systems (e.g., XML, SOAP). | Applied | Deep |
| ITSCAI03 | Method | Understand Application Integration Methodologies | Advise or support clients (internal or external) on application integration methodologies and architectures, such as SOA and web services. | Applied | Deep |
| ITSCAI04 | Technique | Advise or Support Clients on Program-to-program Interfaces | Advise or support clients (internal or external) on program-to-program interfaces across disparate systems (e.g., APPC, DPL, and RPC). | Applied | Deep |
| ITSCAI05 | Technique | Use Application Integration Products to Facilitate SOA Enablement | Given a set of client requirements, select and advise or support on the installation and configuration of application integration products that facilitate the enablement of SOA. | Applied | Deep |
| ITSCAI06 | Technique | Understand Product Configuration | Advise and support product configuration based on a complete understanding of the client environment. | Applied | Deep |
| ITSCAI07 | Technique | Advise & Support on Recoverability | Advise and support clients (internal or external) in determining the need for logging, recovery, and backup and demonstrate how best to implement the appropriate tools and techniques to meet these requirements. | Applied | Deep |
| ITSCAI08 | Technique | Advise & Support on Deployment Techniques & Best Practices | Advise and support clients (internal or external) on appropriate deployment techniques and best practices to ensure optimal performance and capability. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|--|--|--------------------------------------|--------------------------------------|
| ITSCAI09 | Technique | Advise & Support on Performance & Capacity | Advise and support customers on optimal solution configurations to meet their requirements for performance and capacity. | Applied | Deep |
| ITSCAI10 | Technique | Advise & Support on Failover & Redundancy Capability | Advise and support on high-availability solutions covering failover capability and redundancy techniques. | Applied | Deep |

3.6.3.3 Data Management

IT Specialists in this Stream will have expertise in one or more relational and/or non-relational data management-based software products.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|--------------|--|---|-------------------------------|-------------------------------|
| ITSCDM01 | Tool/ Method | Data Management Tools, Technologies, & Methods | Given a set of client priorities and constraints, effectively use information management tools, technologies, and methods (e.g., content management software, data management software, and their related administration and design tools and methods) to meet the needs of the client. | Applied | Deep |
| ITSCDM02 | Technique | Advise & Support on Data Compatibility Issues Across Disparate Systems | Advise and support clients (internal or external) in identifying and resolving incompatibility issues in heterogeneous data environments. | Applied | Deep |
| ITSCDM03 | Technique | Advise & Support on Data Models | Advise and support clients (internal or external) about the appropriate data models and data requirements for sources and targets. | Applied | Applied |
| ITSCDM04 | Tool | Advise & Support on Data Migration or Conversion | Advise and support clients (internal or external) about data migration, the issues involved, and the tools, procedures, and products required to migrate or convert data stores as appropriate. | Applied | Deep |
| ITSCDM05 | Technique | Advise & Support on Data Management Product Features | Advise and support clients (internal or external) on new versions of data management products, including advice on the value of new features and functions, upgrade processes, and product pre-requisites. | Applied | Deep |
| ITSCDM06 | Technique | Advise & Support on Product Configuration | Advise and support clients on product configuration based on the client environment. | Applied | Deep |
| ITSCDM07 | Technique | Advise & Support on Data Mining Techniques | Given a client requirement, advise and support the client (internal or external) on the current data mining techniques and tools that would meet the requirement. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|--|--|--------------------------------------|--------------------------------------|
| ITSCDM08 | Technique | Advise & Support on Data Management Solutions Available | Advise clients (internal or external) on the requirements for data management solutions and support the client in the matching of requirements with product capabilities using approved methodologies. | Applied | Deep |
| ITSCDM09 | Technique | Advise & Support on Recoverability | Advise and support clients (internal or external) in determining the need for logging, recovery, and backup and how best to implement the appropriate tools and techniques to meet these requirements. | Applied | Deep |
| ITSCDM10 | Technique | Advise & Support on Deployment Techniques & Best Practices | Advise and support clients (internal or external) on appropriate deployment techniques and best practices to meet client needs. | Applied | Deep |
| ITSCDM11 | Technique | Configure Product to Optimize Performance & Capacity | Advise and support clients (internal or external) on optimal solution configurations to meet client needs for performance and capacity (e.g., use clustering, mobile and web access, replication, and multilingual). | Applied | Deep |
| ITSCDM12 | Technique | Advise & Support on Failover & Redundancy Capability | Advise and support clients (internal or external) on high-availability solutions covering failover capability and redundancy techniques. | Applied | Deep |

3.6.3.4 Content Management

IT Specialists in this Stream will have expertise in one or more areas of content management software. Content management software captures, stores, manages, integrates, and delivers all forms of digital content across a company’s entire value chain to create real business value. Content management systems and integrated processes provide the unified approach for managing multiple content types.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|--------------|--|--|-------------------------------|-------------------------------|
| ITSCCM01 | Tool/ Method | Use Content Management Tools, Technologies, & Methodologies | Use content management tools, technologies, and methodologies to ensure optimal operations that meet the client needs. | Applied | Deep |
| ITSCCM02 | Technique | Advise & Support on Data Compatibility Issues Across Disparate Systems | Advise and support clients (internal or external) in identifying and resolving incompatibility issues in heterogeneous data environments. | Applied | Deep |
| ITSCCM03 | Technique | Advise & Support on Records Management Concepts | Based on understanding the pain points across the client's organization, provide advice and support on records management concepts. | Applied | Deep |
| ITSCCM04 | Technique | Advise & Support on Search Techniques & Applications | Advise and support clients (internal or external) on search techniques and applications for content management. | Applied | Deep |
| ITSCCM05 | Technique | Advise & Support on Document-centric Routing & Workflow | Advise and support clients (internal or external) on document-centric routing and workflow, including identifying user roles and user access levels. | Applied | Deep |
| ITSCCM06 | Tool | Advise & Support on Migration or Conversion Tools | Advise or support clients (internal or external) on the migration or conversion tools, procedures, and products required to migrate or convert to or between content management solutions. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|--|---|--------------------------------------|--------------------------------------|
| ITSCCM07 | Technique | Advise & Support on New Product Features & Relationship to Content Management Solution | Advise and support clients (internal or external) on new versions of content management products, including advice on the value of new features and functions, upgrade processes, and product pre-requisites, including any limitations on the use of the content in downstream applications. | Applied | Deep |
| ITSCCM08 | Technique | Advise & Support on Product Configuration | Advise and support clients (internal or external) on content management product configuration to run in the client environment. | Applied | Deep |
| ITSCCM09 | Technique | Advise & Support on Recoverability Capabilities | Advise and support clients (internal or external) on content management product logging, recovery, and backup capabilities. | Applied | Deep |
| ITSCCM10 | Technique | Advise & Support on Deployment Techniques & Best Practices of Solutions or Products | Advise and support clients (internal or external) on content management product deployment techniques and best practices. | Applied | Deep |
| ITSCCM11 | Technique | Configure Product to Meet the Client's Requirements for Performance & Capacity | Configure content management product to meet the client's requirements for performance and capacity (e.g., use clustering, mobile and web access, replication and mail routing, multilingual, etc.). | Applied | Deep |
| ITSCCM12 | Technique | Advise & Support on Failover Capability & Redundancy | Advise and support clients (internal or external) on content management failover capability and redundancy. | Applied | Deep |

3.6.3.5 Portal & Collaboration

IT Specialists in this Stream will have expertise in one or more areas of portal and collaboration software.

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|-----------|---------------|---|---|-------------------------------|-------------------------------|
| ITSCPC01 | Tool / Method | Use Workplace-related Tools, Technologies, & Methodologies | Given a set of client priorities and constraints, use portal and collaboration-related tools, technologies, and methods to meet client needs. | Applied | Deep |
| ITSCPC02 | Technique | Advise & Support on Migration or Conversion Tools | Advise and support clients (internal or external) on migrating or converting to a new portal and collaboration solution. | Applied | Deep |
| ITSCPC03 | Technique | Advise & Support on New Portal & Collaboration Product Versions | Advise and support clients (internal or external) on new versions of portal and collaboration products, including advice on the value of new features and functions, upgrade processes, and product pre-requisites. | Applied | Deep |
| ITSCPC04 | Technique | Advise & Support on Product Configuration | Advise and support clients (internal or external) on portal and collaboration product configuration to run in the client environment. | Applied | Deep |
| ITSCPC05 | Technique | Advise & Support on Available Solution Options or Products | Advise and support clients (internal or external) on portal and collaboration solutions. | Applied | Deep |
| ITSCPC06 | Technique | Advise & Support on Product Recoverability Features | Advise and support clients (internal or external) on portal and collaboration logging, recovery, and backup capabilities. | Applied | Deep |
| ITSCPC07 | Technique | Advise & Support on Deployment Techniques & Best Practices | Advise and support clients (internal or external) on deployment techniques and best practices of portal and collaboration solutions or products. | Applied | Deep |
| ITSCPC08 | Technique | Advise & Support on Product Performance & Capacity | Advise and support on portal and collaboration product configuration to meet the client's requirements for performance and capacity. | Applied | Deep |

| Reference | Category | Skill | Description | Required Skill Level: Level 1 | Required Skill Level: Level 2 |
|------------------|-----------------|--|---|--------------------------------------|--------------------------------------|
| ITSCPC09 | Technique | Advise & Support on Product Failover & Redundancy Capability | Advise and support clients (internal or external) on portal and collaboration failover capability and redundancy. | Applied | Deep |

3.7 Working Experience

Certified IT Specialists must be able to demonstrate that they have at least the following experience:

| Experience Category | Requirement: Level 1 | Requirement: Level 2 | How Documented by the Candidate for Initial Certification at Each Level |
|---|---|--|---|
| <p>EC01: Experience in the IT Industry</p> | <p>Candidates should have sufficient experience in the IT industry to demonstrate repeated success in meeting the Core Foundation Skills. Typically, this requires five (5) years of work experience in IT in the last eight (8) years (excluding time spent under tuition). Experience cited in a Certification Package to demonstrate each of the Core Foundation Skills should all be within the last eight (8) years and at least one example should be from the last three (3) years.</p> | <p>Candidates should have sufficient experience in the IT industry to demonstrate repeated success in meeting the Core Foundation Skills. Typically, this requires eight (8) years of work experience in IT in the last 12 years (excluding time spent under tuition). Experience cited in a Certification Package to demonstrate each of the Core Foundation Skills should all be within the last eight (8) years and at least one example should be from the last three (3) years.</p> | <p>Application Package must contain Candidate's work history in IT.</p> |
| <p>EC02: Experience in Technical Focus/Stream</p> | <p>Candidates should have sufficient experience as IT Specialists in their chosen Stream to demonstrate repeated success in meeting the Stream specific criteria. Typically, this requires three (3) years of work experience in their Stream in the last five (5) years (excluding time spent under tuition). Experience cited in a Certification Package to demonstrate each of the Stream-specific skills should all be within the last five (5) years and at least one example should be from the last three (3) years.</p> | <p>Candidates should have sufficient experience as IT Specialists in their chosen Stream to demonstrate repeated success in meeting the Stream-specific criteria. Typically, this requires three (3) years of work experience in their Stream in the last five (5) years and five (5) years of experience in projects involving two or more Streams in the last eight (8) years (excluding time spent under tuition). Experience cited in a Certification Package to demonstrate each of the Stream-specific skills should all be within the last five (5) years and at least one example should be from the last three (3) years.</p> | <p>Application Package must contain a list of Candidate's experiences with start and end dates of involvement. Candidates should endeavor to provide references that can validate their participation in listed experiences. For direct certification, references may be customers/clients or Master Certified IT Specialists who are not the Candidate's immediate manager. For indirect certification, references may be managers, customers/clients, or Master Certified IT Specialists. Reference may be made to the projects in the Experience Profiles (described below).</p> |

| Experience Category | Requirement: Level 1 | Requirement: Level 2 | How Documented by the Candidate for Initial Certification at Each Level |
|---|---|---|--|
| EC03: Experience in the Client Focus Area | Candidates should have sufficient experience as IT Specialists in their chosen Client Focus Area to demonstrate repeated success in meeting the Client Focus Area-specific criteria. Typically, this requires three (3) years of work experience in their Client Focus Area in the last five (5) years (excluding time spent under tuition). Experience cited in a Certification Package to demonstrate each of the Client Focus Area-specific skills should all be within the last five (5) years and at least one example should be from the last three (3) years. | Candidates should have sufficient experience as IT Specialists in their chosen Client Focus Area to demonstrate repeated success in meeting the Client Focus Area-specific criteria. Typically, this requires three (3) years of work experience in their Client Focus Area in the last five (5) years (excluding time spent under tuition). Experience cited in a Certification Package to demonstrate each of the Client Focus Area-specific skills should all be within the last five (5) years and at least one example should be from the last three (3) years. | Application Package must contain a list of Candidate's experiences with start and end dates of involvement. Candidates should endeavor to provide references that can validate their participation in listed experiences. For direct certification, references may be customers/clients or Master Certified IT Specialists who are not the Candidate's immediate manager. For indirect certification, references may be managers, customers/clients, or Master Certified IT Specialists. Reference may be made to the projects in the Experience Profiles (described below), or by reference to evidence provided in response to EC02. |
| EC04: Experience with Successful Project/Engagement Delivery | Candidates must have acted in the role of IT Specialist within their Stream in at least two (2) successful engagements. The deliverables produced by the Candidate must have contributed to the engagement meeting its acceptance criteria. | Candidates must have acted in a leadership role in at least three (3) engagements. At least two of the three engagements must have been in connection with projects that met their acceptance criteria. | Application Package must include a set of Experience Profiles, each of which demonstrates that the Candidate satisfies the stated criteria. Reference may be made to sections within the Experience Profiles, or the Candidate may provide a detailed description of a work effort that demonstrates compliance with this criterion. |

3.8 Professional Development

| Reference | Description | Requirement: Level 1 | Requirement: Level 2 |
|-----------|--|---|---|
| PD01 | Training in Project Management | Attendance at a taught course, or through self-study within the last three (3) years. | Attendance at a taught course, or through self-study within the last three (3) years. |
| PD02 | Knowledge of the technology, trends, and techniques in the IT industry | Candidates are required to develop and maintain their knowledge of the technology, trends, and techniques in the IT industry. | Candidates are required to maintain their knowledge of the technology, trends, and techniques in the IT industry. |
| PD03 | Training in Technical Focus/ Stream and/or Client Focus Area | 40 hours/year of training at a taught course or through self study in the Candidate's Focus Areas. | 40 hours/year of training at a taught course or through self study in the Candidate's Focus Areas. |

3.9 Community Contribution

| Reference | Description | Requirement: Level 1 | Requirement: Level 2 |
|-----------|---|----------------------|--|
| CC01 | Contributions to the IT Specialist profession | No requirement. | Candidates must make contributions to the IT Specialist profession; for example, mentoring, publications, teaching, research collaboration, or participation in professional organizations. |
| CC02 | Contribution to the IT Specialist community | No requirement. | As part of their contribution to the community, Master Certified IT Specialists are expected to be available to serve from time to time on Direct Certification Boards at the request of the Certification Authority. Such participation will be evaluated positively at re-certification. |

4. APPLICATION FOR CERTIFICATION

When applying for initial certification, or for certification at a new (higher) level, Candidates are required to create a Certification Package.

For *direct* certification, applications must be made using the ITSC Certification Package Template and web site.

For *indirect* certification, applications must be made using the templates, forms, and processes of the Accredited Certification Program (ACP). The information required by an ACP may be a superset of the ITSC Certification Package Template in order to support the extended requirements of an ACP.

In either case, the Certification Package will be made up of one or more templates that the Candidate will use to document how they meet the Core Foundation Skills and Experience Criteria described in this document.

For Level 2 certification, the Certification Package will also contain at least three (3) Experience Profiles, which will be the primary means by which a Candidate will demonstrate their experience. For Level 1 certification, the Certification Package will also contain at least two (2) Experience Profiles, which will be the primary means by which a Candidate will demonstrate their experience.

All applications must be readable, complete, and consistent.

4.1 Experience Profiles

An Experience Profile is a coherent written description of a project or technical engagement that provides Candidates with the opportunity to show how they perform as an IT Specialist within their Client and Technical Focus Areas, and enables a Certification Board to understand and question Candidates' thought processes and decisions.

Candidates must provide three (3) Experience Profiles (for Level 2 certification), or two (2) Experience Profiles (for Level 1 certification) describing projects undertaken within the five (5) years preceding an application, at least two of which must have been undertaken in the last three (3) years. Projects over two (2) years long may be used for multiple Experience Profiles under either of the following conditions:

- The project had clearly-defined work efforts which took place in parallel, each with their own solution development and design activities and their own deliverables.
- The project had clearly-defined phases that were executed in succession, each with its own solution development and design activities and deliverables. Note that a second project phase that constructs and implements the solution developed by the first phase does not meet this requirement.

In either case, each profiled project entity must meet all of the Experience Profile criteria defined in the table below.

Each Experience Profile must include:

- A concise summary of the client need
- A concise description of the project
- The Candidate's period of involvement

Table 2 defines the attributes that must be present within Experience Profiles for the two levels of certification, and against which the Experience Profiles will be evaluated.

| Ref | Experience Profile Attribute | Description: Level 1 | Description: Level 2 |
|-------|---|---|---|
| EXP01 | Technical Expertise in his/her Technical and Client Focus Areas | The Experience Profiles must show that Candidates possess a deep set of business and technical skills which are leveraged during their work. | The Experience Profiles must show that Candidates possess a deep set of business and technical skills which are leveraged during their work. |
| EXP02 | Key Decisions Made | Experience Profiles must contain a summary of the key technical decisions made by the Candidate, the reasons for the decisions, and the alternatives that were considered. | Experience Profiles must contain a summary of the key technical decisions made by the Candidate, the reasons for the decisions, and the alternatives that were considered. |
| EXP03 | Demonstrated Success | Candidates must have acted in their role of IT Specialist in at least two (2) engagements or projects. At least one (1) of the two engagements must have been in connection with projects that met their acceptance criteria. | Candidates must have acted in their role of IT Specialist in at least three (3) engagements or projects. At least two (2) of the three engagements must have been in connection with projects that met their acceptance criteria. |
| EXP04 | Perform as a Lead IT Specialist | N/A | Performed as a Technical Lead IT Specialist in the development, implementation, and/or management of a major project or subsystem. |
| EXP05 | Address the Client Need | Experience Profiles must demonstrate that the Candidate's work contributed to meeting the stated requirements of the client. | Experience Profiles must demonstrate that the Candidate's work contributed to meeting the stated requirements of the client. |

Table 2: Required Attributes for Experience Profiles

4.2 Evaluation Process

The Evaluation shall be conducted through a combination of audit of written documentation and a Certification Board interview.

4.2.1 Evaluation of Core Foundation Skills

The Candidate must supply a written self-assessment of the level of their Core Foundation Skills as listed in Section 3.3.

Candidates must be able to substantiate their self-assessment at a Certification Board interview.

4.2.2 Evaluation of Technical Focus and Client Focus Conformance Requirements

Candidates must provide evidence supporting their claim of meeting Technical Focus Area/Stream and Client Focus Area Conformance Requirements.

Candidates must be able to substantiate their documented statements during the Certification Board interview process.

4.2.3 Evaluation of Experience Profiles

Candidates must provide evidence supporting their claim of meeting Experience Conformance Requirements.

Level 2 Candidates must also submit three (3) Experience Profiles (two Experience Profiles for Level 1) that document the Candidate's role in the development of an IT solution that addresses the stated business problem. Each of the submitted Experience Profiles must include specific reference to the Experience Conformance Requirements listed in Section 3.7 and must meet Required Attributes for Experience Profiles defined in Section 4.1.

Candidates must be able to describe their roles and substantiate their claims at a Certification Board interview.

4.2.4 Evaluation of Professional Development

Candidates must provide a written description of their training or self-study. To demonstrate maintenance of their IT knowledge and to demonstrate their development of skills and knowledge in their chosen Technical Focus Area/Stream, Candidates are required to provide a written description of the activities they undertake to these ends.

Examples of qualifying activities are conference attendance, personal reading, formal education, being mentored, attending training courses, and/or related professional memberships.

4.2.5 Evaluation of Contributions to the IT Specialist Community

Candidates must provide a written description of their contributions to the IT Specialist community.

5. APPLICATION FOR RE-CERTIFICATION

Although compliance with the applicable skill requirements continues at all times to be a Conformance Requirement of the Program, Candidates for re-certification are not required to demonstrate their continued compliance to the applicable skill requirements when re-certifying.

Candidates for re-certification must supply sufficient information to assure the Certification Authority and the Certification Board members that the applicable ITSC Conformance Requirements continue to be met and that they have continued to practice as an IT Specialist since their initial certification or last re-certification.

When applying for re-certification, Candidates are required to create and submit a Re-Certification Package.

For *direct* re-certification, applications must be made using the ITSC Re-Certification Package Template and web site.

For *indirect* re-certification, applications must be made using the templates and forms provided by the Accredited Certification Program (ACP). The information required by an ACP may be a superset of the ITSC Re-Certification Package Template in order to support the extended requirements of an ACP.

In either case, the Re-Certification Package will be made up of one or more templates that the Candidate will use to document how they have continued to practice as an IT Specialist and continued professional development activities since the initial certification or since the previous re-certification, as applicable.

5.1 Evaluation Process

The Evaluation shall be conducted through a combination of audit of written documentation and a Certification Board evaluation, as defined in the ITSC Certification Policy. All applications must be readable, complete, and consistent.