GOVERNMENT NOTICE

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

No. 1114　　　　　　　　　　　　　　　　　　　　　**23 November 2007**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Information Technology and Computer Sciences

registered by Organising Field 10, Physical, Mathematical, Computer and Life Sciences, publishes the Framework for Information and Communications Technology (ICT) Qualifications for public comment.

This notice contains the 6 Domains that define the whole IT sector, their related sub domains and for each sub-domain; IT Job functions, knowledge areas and competency levels. The full detail of the Framework for each domain and related sub-domain can be accessed via the SAQA web-site at **www.saqa.org.za** as well as the ISETT SETA web-site at **www.isettseta.org.za**. Copies may also be obtained from the Directorate for Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria, and from the ETQA Division at the ISETT SETA offices, 2nd Floor Gallagher House, 19 Richards Drive, Galllagher Estates, Midrand.

Comment on the ICT Qualifications Framework should reach SAQA at the address below and *no later than 14th December 2007*. All correspondence should be marked **Standards Setting – ICT Qualifications Framework** and addressed to

The Director: Standards Setting and Development SAQA *Attention: Mr. D. Mphuthing* Postnet Suite 248 Private Bag X06 Waterkloof 0145 or faxed to 012 – 431-5144 e-mail: dmphuthing@saqa.org.za

DR. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT

INTRODUCTION:

SAQA in partnership with the ISETT Seta has developed a qualifications framework for the ITC sector that will define all the qualifications requirements and map them to NQF levels. This framework will facilitate qualifications generation across the whole sector. With this framework, learnership development, required to enhance South Africa's Human Resource Capacity in the ICT arena would be easily achievable. The development of the ICT framework had to take into account the following national initiatives, concepts and legislative issues:

- The South African Qualifications Act
- The Skills Development Act
- The Human Resource Development Strategy for South Africa
- The National Skills Development Strategy
- The South African ICT Sector Development Framework (SAITIS) from DTI and
- The ISETT SETA's economic sector skills plan

The scope of the ICT framework mirrors the scope of the ISETT sector as defined in the Government Gazette No 20192 of the 11th June 1999. It recognises that a flexible and well-understood method for continued education relating to ICT is essential, which includes the matching of qualifications to career paths. In addition the qualifications generated with the use of this framework must meet SAQA's requirements for registration on the NQF.

The development of the framework was informed by extensive international research which amongst others included a review of similar systems in use in first world countries such as the United Kingdom and the United States of America. It, however, has been specifically tailored for the South African IT industry, both in terms of the workplace realities and the overarching need for clear learning pathways that will optimise individual learner chances of realising their full potential.

The ITC framework therefore is meant as an enabling tool that will assist learners in choosing and combining appropriate knowledge into recognized qualifications within the ITC sector. The framework consists of all the functions that define the ICT sector as well as the knowledge and skills requirements that would enable these functions.

Thus the ITC framework was born, to achieve not only the specific sector skills needs but to ensure that the NQF objectives as specified in the SAQA Act are met.
What follows is an introduction to the underlying concepts that informed the development of the framework as well as the framework itself.
A more interactive and fuller version is available on the Saqa and Isett SETA web-sites.

IT QUALIFICATIONS FRAMEWORK TAXONOMY

THE IT QUALIFICATIONS FRAMEWORK (ITQF) TAXONOMY

This is understood to mean the natural relationship between the Position and Role in business and society, the depth of experience and skill required, and the underpinning knowledge areas that an individual requires in order to be competent and qualified.

STRUCTURE OF THE FRAMEWORK

The Taxonomy relationships can be demonstrated in a 3 dimensional matrix.

KNOWLEDGE AREA
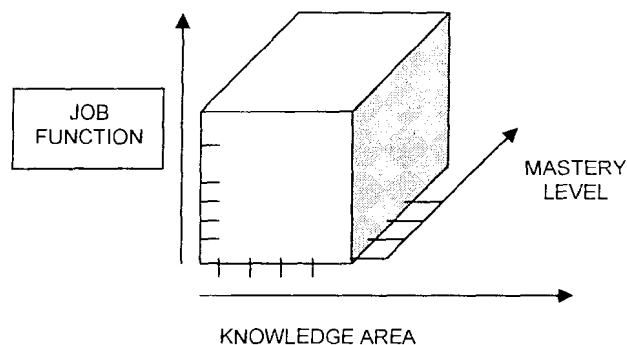
RELATIONSHIP OF ELEMENTS

Job Functions are relative to the Role in business and society and the functions that must be carried out by an individual.
Mastery Level or Depth of Experience relates to the usefulness and value to an employer.
Knowledge Areas relate to the underpinning comprehension and understanding and therefore the potential of the employee to develop further.

A Knowledge area in the IT Framework consists of Skills and Theory or a combination of both.
A Qualified IT practitioner will have combinations of the above elements.

The Taxonomy of Knowledge should be considered from the two dimensions of the framework structure in the diagram above:

Firstly from the Role and Function dimension of the framework.

Here it is used to describe the high level knowledge and skills the practitioner needs to possess before starting to carry out a particular Role or Function. By definition, these are a summation of the most important knowledge needed for competence in all the tasks that make up the Role.
In this dimension the workplace job description is usually the indicator. The full complement of roles and functions required within an IT job description vary from workplace to workplace. The IT Framework has been designed with enough flexibility to allow custom selection of these elements.

The second dimension is viewed from the underpinning Knowledge Areas required in a learning intervention.

Here the Knowledge Areas and the more specific Knowledge Items are used to describe the learning that will be grouped together to make up the design focus of the Qualification.

This focus or grouping is given a Sub-domain in keeping with the more common understanding of what a competent practitioner needs to know.
The IT Framework flexibility allows for the selection of Knowledge areas as well as the grouping of Knowledge Items.

IT PROFESSIONAL JOB DOMAINS

This is a term increasingly being used by leading institutes and other providers in describing the certification programmes that they are developing. The Gartner Institute is one such institute and has worldwide recognition and an extensive audience in IT sectors.
The Northwest Center for Emerging Technologies (NWCET) in Bellevue Washington, USA has also identified some important IT job roles the USA needs in order to further develop understanding of IT.
It is interesting to note that NWCET in reviewing their standards have identified a need for a more holistic view of the knowledge and capabilities a worker must have. To achieve success in a particular job or role standards should cover business, technical and interpersonal knowledge, with the associated skill requirements.
The NWCET findings are paralleled here in SA with the NQF standards and the documented requirements for knowledge within NQF Qualifications.
The ITQF caters for the above in a SA context.
Learning is covered in 3 major Knowledge Areas; covering Behavioural, Technical and Other IT related subjects.
The NQF also calls for critical cross-field outcomes.
The ITQ Framework is able to relate to Behavioural Knowledge. The behavioural knowledge item satisfies the NQF requirement in the Qualification design, and the knowledge classification structure built into the Framework, further defines the detail.
This will help in the development of specific outcomes within Qualification and the associated assessment criteria.

To summarise: The interrelation between the first dimension (Role/ Function) and the second (Knowledge Area) of the IT Qualifications Framework (ITQF) (see Diagram); provide an intersection on the framework for the development of Specific outcomes which in turn will develop into Unit Standards. The Knowledge Areas satisfy the needs for identifying the *Qualification Standards.*

The third dimension relates to the depth of knowledge and defines the scope for setting assessment criteria across different levels.

The field of ICT has been developing over a number of years. There are now distinct identifiable knowledge domains being used in the industry.

The IT framework has incorporated the IT domain names as recorded and being used by the Computer and Information Technology sub field in SAQA's Organizing Field 10, National Standards Body 10 and the IT and computer science Standards Generating Body.
A comparison of the Knowledge Domain names used between various groups in the industry is discussed elsewhere in this document.

The Knowledge Domains for IT included in the Framework are as follows:

> IT Management and Administration.
> IT Sales and Marketing
> IT Systems Development and Implementation.
> IT in Business (End User)
> IT Strategy and Planning.
> IT Systems Support.

Knowledge domains are also used by many workplace enterprises to help identify an employment position. Thus it has been useful to structure the framework using the above names.
Knowledge areas and their generic definitions can be grouped to focus on a specific area within the IT field. Sub categories of Knowledge may also occur in more than one domain.

TECHNICAL KNOWLEDGE DOMAINS

The Technical Knowledge in IT has been split into industry recognised Domain Knowledge areas.

The Technical IT knowledge is required in all IT roles and functions in the workplace. However in many IT roles and functions there is a clear need for cross-field behavioural skills. Using the behavioural knowledge and skills these elements can be identified.

The Domains provide a relationship between the workplace activities and the underpinning knowledge required for performance at a required competency level.

The Job, Role and Function within one of the IT Domains, can be identified as the requirement for the IT Workplace.
The IT Functions relating to the Domains are set out in the ITQF Functional MindMap section of the Framework.

The IT Framework Structure has concentrated on the IT Domains listed in the table below.

TABLE: ITQF DOMAINS

IT QF DOMAINS	DESCRIPTION (all relating to IT)
IT Management and Administration	Management of IT, Contracts, Supply, Projects, Quality, Resource
IT Sales and Marketing	ICT Account development, product and service

	marketing, IT Sales, Sales technical support.
IT Systems Development and Implementation	Systems development, software development, systems integration, software porting, IT infrastructure commissioning.
IT in Business	Business –IS Alignment, Information management, Internal business user support, MIS Security, CRM Systems and Applications.
IT Strategy and Planning	Informatics consultancy, Business Strategy, Technical infrastructure strategy, Future development research,
IT Systems Support	IT Education and Training knowledge support, Infrastructure support, ICT Operations support, service level performance, Customer technical support, Client IT services and Quality

THE IT ROLE AND FUNCTION

A number of Functions exist within Information and Communications Technology (ICT) and are described in the IT Framework. A Function is considered as a distinct area of activity e.g. Project Management, Systems Design, Network Control, User Support. A Function may be performed at several professional Levels.

A Role is carried out in the workplace and is a grouping of functional activities. This grouping is aligned with the nature of the job role and the level of responsibility. The framework allows for the flexibility of having functions at different mastery levels contained within a Role.

On the MindMaps the Domain leads to the Functional groups and then to the Functions.

For ease of access, Functions are organised into a number of Function Groupings e.g. Contract/Supply Management, Project Management, and Quality.

Function Groupings reflect broad industry categories and should be familiar to most people involved in ICT. When a Function Group is selected, all the Functions within that Function Group are displayed on the next MindMap. A Function may be included in one or more Function Groupings.

POSITIONING OF AN IT QUALIFICATION

In positioning and naming an IT Qualification, one must be descriptive enough to be able to group the required Skills and Knowledge Areas applicable to the context in which it will be used. The purpose of the qualification will be to inform the learner of the context in which it useful and ensure that a competent level of learning can be assessed against realistic expectations. Both NQF qualifications and workplace requirements show a need for a person to be "well rounded" in their educational development.

The framework caters for qualification designs which, cover not only the High Technical nature of the field of IT. but also address the critical cross-field outcomes as set out in the behavioural knowledge areas.

The Framework is structured to enable the core IT focuses to be developed as the core specific outcomes within an NQF Qualification.

The Level of the IT Qualification

Job functions and the role of the individual in the workplace have a loose relationship with the documented NQF level descriptors.

The NQF Level Descriptors relate to qualifications and the positioning of qualifications on the NQF in order to facilitate assessment and equivalence with other registered qualifications across other organising fields.

Both from the Skills and Knowledge perspectives the workplace needs a method of positioning the expected outcome of a qualification to match the workplace functional requirement for practical day-to-day ability.

The level at which the IT Technical qualification is set therefore requires a full investigation of the Technical Knowledge Areas involved at the level of Learning Complexity.

KNOWLEDGE TAXONOMY

The specific outcomes from a successful assessment are the standards to which the NQF gives effect.

The NQF Qualification.

The NQF addresses the Qualification in three sections. Fundamental.
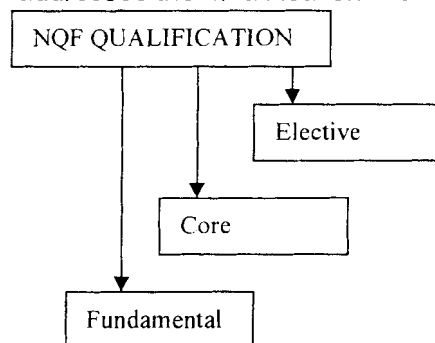
Knowledge that is fundamental to the learning, required in order to reach the successful attainment of the Qualification concerned.

Core
The Core knowledge is specific to the purpose of the qualification. In IT terms this is a grouping of Technical knowledge Areas. This grouping is given an Appellation.

Elective

The Elective is a set of knowledge elements or in NQF terms a set of Unit Standards, which allow the learner to select and concentrate on a particular specialisation.

Knowledge Taxonomy Grouping.

The ITQ Framework identifies three groups of Knowledge. These are:
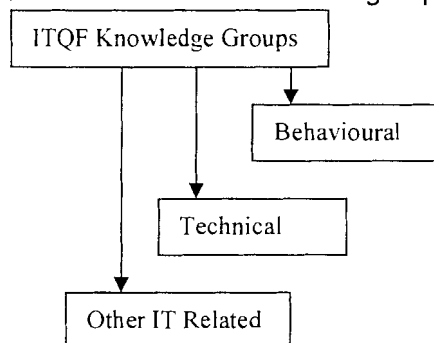
Behavioural Knowledge;
IT Technical Knowledge;
Other IT Related Knowledge.

| ITQF Knowledge Groups |
| Behavioural |
| Technical |
| Other IT Related |

Behavioural Knowledge and Skills
Knowledge areas cover: e.g. analytical
thinking, inter-personal skills, delegation,
oral expression, persistence, planning and
organisation;

IT Technical knowledge covers e.g.
application development tools, engineering, configuration management,
national/international IT standards, telecommunications protocols;

Other IT Related knowledge covers e.g. Local council rules, eliciting information, IT Job
interviewing, Presentations, progress reporting, time management.

**When designing or selecting a balanced complement of learning to satisfy the
needs of a role or function, one will find items of required skills and knowledge
which fall into one of the above knowledge area categories.**

IT Technical qualifications therefore not only have core technical subjects but must also
satisfy the NQF critical cross-field outcomes.
Using the appropriate behavioural knowledge area and its Knowledge Item we can now
identify this competency requirement, for inclusion in the qualification design.
Other IT related knowledge, could be built into the design in the same way.
Other Knowledge Items can be identified and added to the core section in a NQF
qualification to enrich the IT QF Sub-domain design, or they could be identified and put
together to form a set of electives, concentrating on a specialisation.

THE KNOWLEDGE BASE

The Categorisation of knowledge into Behavioural, Technical and Other IT related
knowledge items provides flexibility in the structuring of the design of the qualification
content as well as the differing mastery levels. This allows for the need to satisfy ever-
increasing complexity and continuous learning in the field of IT.

When considering the content for a qualification design, Knowledge and Skills gained in
lower Level workplace roles should be taken into account. This will ensure that previous
experience has been identified and will satisfy prior learning when considering the
positioning of Knowledge Areas within an NQF qualification.
Previous awareness knowledge could be enhanced to proficiency or expert at the next
level.

This allows for a flexible qualification design, which gives a "rounded" or logically balanced selection of knowledge areas.

IT KNOWLEDGE AND SKILLS

ICT Knowledge and/or Skills have been grouped against a particular IT Knowledge Domain.
This term is used to describe a group of knowledge elements (or skills) that map to the understanding required in order to satisfy a commonly understood Role or function within the IT sector. This equates to Theoretical and Practical competencies.
A Knowledge Area caters for the underpinning and wider extent of the subject matter as one develops specialization in ICT.

DEFINITION OF KNOWLEDGE AREA

Knowledge Area: The knowledge that forms the core of the learning in a specific area of activity.

Knowledge areas cover the required learning in order to successfully perform defined functions which are usually grouped within an IT domain.
Knowledge is categorized and grouped within the ITQ Framework.
Inter-related knowledge areas within the ITQF are Behavioural, Technical and Other IT Related.
These three are further categorized into sub-knowledge areas.
Knowledge is further broken down into Knowledge Items that can be grouped together to cover a specific Knowledge requirement.
The Knowledge Item describes one or more specific outcomes of learning and is the link between the framework and the NQF Unit standards
This categorisation of Knowledge areas enables the structuring of a Qualification design and its component elements.
Once Categories have been established then the build of qualification content can be analysed and compared to similar designs.

THE 3 MAJOR KNOWLEDGE GROUPS

The Framework Taxonomy has split the Knowledge found in IT into 3 groups, Behavioural, Technical and Other IT Related, each with a sub-classification.

IT Technical Knowledge Areas have been further sub divided into a technical category. The different categories can be seen in the tables below.
These categories enable analysis of the focus of specific outcomes.

BEHAVIOURAL CATEGORY

Number	IT QF Code	Category
1	BF	Functional
2	BS	Social
3	BC	Communication
4	BD	Discipline (Subject Specific)

5	BP	Personal Mastery
6	BO	Organisational
7	BG	Cognitive
8	BB	Business

Behavioural Knowledge and Skills falling into the above categories have been listed in table format.

OTHER KNOWLEDGE AND SKILLS CATEGORY

Number	IT QF Code	Category
1	OF	Functional
2	OS	Social
3	OC	Communication
4	OD	Discipline (Subject specific)
5	OP	Personal Mastery
6	OO	Organisational
7	OG	Cognitive
8	OB	Business

Other Knowledge and skills related to IT can be found in table format.
The tables can be found on the CD in the folder: Printable Tables.

THE TECHNICAL KNOWLEDGE CATEGORY

IT consists of Knowledge and Skills. This equates to Theoretical and practical competencies.

The Development of the ITQ Framework uncovered a requirement for categorising the Technical Knowledge Items.
The ITQF working group established that in IT technical knowledge areas, there are a number of ways of describing a Knowledge or Skill.

Firstly: Skills are separated from Knowledge.

Secondly: IT Technical Knowledge is vast. It needs categorising as to the extent and focus. For example, general Technical Knowledge can be required in order to control an IT section within an enterprise, which is different from the same Knowledge Area when applying it in a specialised way and being accountable for the result.
The technical categories allow for differentiation between the Knowledge Items and more importantly to allow flexibility across different levels.
This was found to be particularly important when comparing between qualification designs

This then gave rise to the defining of a Technical category.
The Technical Knowledge Areas have been given "T" numbers. i.e. *T3 Programming Languages.*
These T Numbers can be found on the MindMaps.

Categories for Technical Knowledge Areas. (K A).

	Skills Category	K A Summary	K A Description
SK	Technical Skills	Manual proficiency Accomplishment, practical ability **"Doing" Hands on ability, Proficient in doing, practical activities**	Detailed competence, diagnosing s/w and h/w tech problems, implementing corrective actions, upgrading, modifying, installing, commissioning, IT product usability, developing and writing programmes, using IT products (h/w & s/w) Use of technical instruments, diagnostic tools, hand tools and specialised test programs. Fabrication and design of electronic circuits.

	Knowledge Category	K A Summary	K A Description
PR	Technical practice	Engineering Practice (strict application of the rules) Theory into practice. Use of colleagues skills Using best or benchmark practice	Use of own and other resource skills, planning corrective and preventive actions, change control, implementation of configuration changes, Supervision, team leader, monitoring, technical product specialist, program design and development. Past and present knowledge of the use and selection of appropriate IT products.
ME	Technical methods	Engineering decision making (application of IT methods) Using and selecting proven and accepted technical methods	Group skills, developing teams, leadership, system performance, System usage control methods, operating systems decisions, application system usage, configuration management, IT product introduction, information security methodology, support services, technical metrics and measurement.
TP.	Technical process	IT operations and quality performance. Special control techniques. Managing and monitoring process for incremental improvement.	Staff and team quality management, Software level performance, Agreements, Fault control and escalation, IT systems costing, Operations costing, performance metrics, Product management, data security system performance, TCO results. Services design. Total systems & process integration.
ST.	Technical Strategy. Theory, and Research	Strategic, Developing IS architecture, IS leadership, Researching IT future trends and developments.	Business processes, Technology environment analyst, Total systems portfolio, Productivity cost/performance, Enterprise management and projects, Quality management systems, TQM, Services cost/performance results, systems integration concepts and benefits. Interpreting reported technical; analysis, design, and research findings for business improvement.

The Technical Knowledge and Skills falling into the above Category Table are available in the MindMaps associated with the Knowledge Domains. Please refer to the Section on Exploring the Framework.

Knowledge Areas for the framework Domain Grouping and Specialist Functions have been summarised in a Table format.

Domain Knowledge Areas have been given a Sub-domain.

1. **Sub-domain.**

   Definition: An identifying name or title for the qualification in order to highlight or

   focus on the domain or specialisation within ICT.

2. **Grouping of Knowledge Areas:** The Qualification Level and purpose should

   provide the substance for the Core learning in the qualification. The related

   Knowledge Areas will give the detail of the Knowledge Items covered. The required

   mastery level should be compared to the qualification outcome level.

3. Knowledge areas can be grouped to cover the core, as well as the associated

   knowledge requirement. The fundamental knowledge to support the learner's ability

   to undertake the learning program should be defined in terms of knowledge areas.

   The Specialisation Knowledge area grouping should reflect a combination of

   Knowledge Items, which can be developed into a planned set of electives.

   Knowledge Areas have a reference mnemonic.

4. Mnemonic: i.e. CHMG – Change Management. This Mnemonic representation can

   be found in the MindMaps. A Table of all Menomics used in the Framework can be

   found in the Domain and Function Knowledge Area table.

5. Knowledge Items: The K I represents individual and contained learning, towards

   more detailed understanding. Knowledge items can be expressed in terms of

   Specific outcomes, and assessed according to criteria which can define the required

   depth and scope of learning.

IT Technical Knowledge and Skills Area

The following examples have been taken from the MindMap:

IT Workplace Technical grouping.   The IT Domain name
                                        i.e. IT Management and Administration.

Technical focus grouping   (Sub-domain) Core focus areas

i.e. Contract/ Supply Management
Quality Management.(QUMG)

Knowledge Area   Specialist focus area
i.e. Quality assurance (QUAS)
Quality Audits (QUAU)
Procurement Policy and Procedures (PROC)

Knowledge Items   Relate to expected specific outcome,
Mastery Level.

K I's cover Behavioural, Technical and Other IT

Related.

The Diagram below sets out an example of how the knowledge areas can be set out,

using the Knowledge Taxonomy and the relationship between the elements.

KNOWLEDGE TAXONOMY

Qualification: (Grouping of a set of Knowledge and

IT Domain

| Knowledge Domain within IT | Knowledge Domain within IT | Knowledge Domain within IT |

i.e. IT **Management and Administration**

i.e. IT **Systems Support**

Qualification Sub-Domain

| Grouping of Specialist Knowledge area | Grouping of Specialist Knowledge area | Grouping of Specialist Knowledge area |

i.e. IT **Contracts /Supply Management**

i.e. IT **Quality Management**

Framework Taxonomy Database

IT Contract Manageme

| Knowledge ITEMS | Knowledge ITEMS |

K A

IT Product / Solution Procurement

| Knowledge ITEMS | Knowledge ITEMS | Knowledge ITEMS |

K A

Other   **Behaviour**   **Technical**

Contract Monitoring

| Knowledge ITEMS | Knowledge ITEMS | Knowledge ITEMS |

K A

Category of Knowledge

NQF UNIT STANDARD

Assessment
Criteria
Specific Outcomes
Mastery Level

Grouping of Functions

The function MindMaps found in the IT Framework, are organised into a number of Function Groupings e.g. Management & Administration, IT Systems Development and Implementation, IT Systems Support, IT Strategy and Planning.
Function Groupings reflect broad industry categories and should be familiar to most people involved in ICT. The Grouping follows closely the IT SGB Domain structure as accepted by the NSB.
Functions are most important when deciding on the purpose and expected outcome for NQF Qualifications.

Non-Framework Structured Qualifications

A Qualification structure, which has not been developed from the framework, can be analysed using the Framework Rules and definitions. In this case the Knowledge Areas and Knowledge items (Specific Outcomes) can be coded against the framework definitions. An analysis will then show the balance of the learning outcomes and the weighting factor for the core knowledge areas covered in the qualification
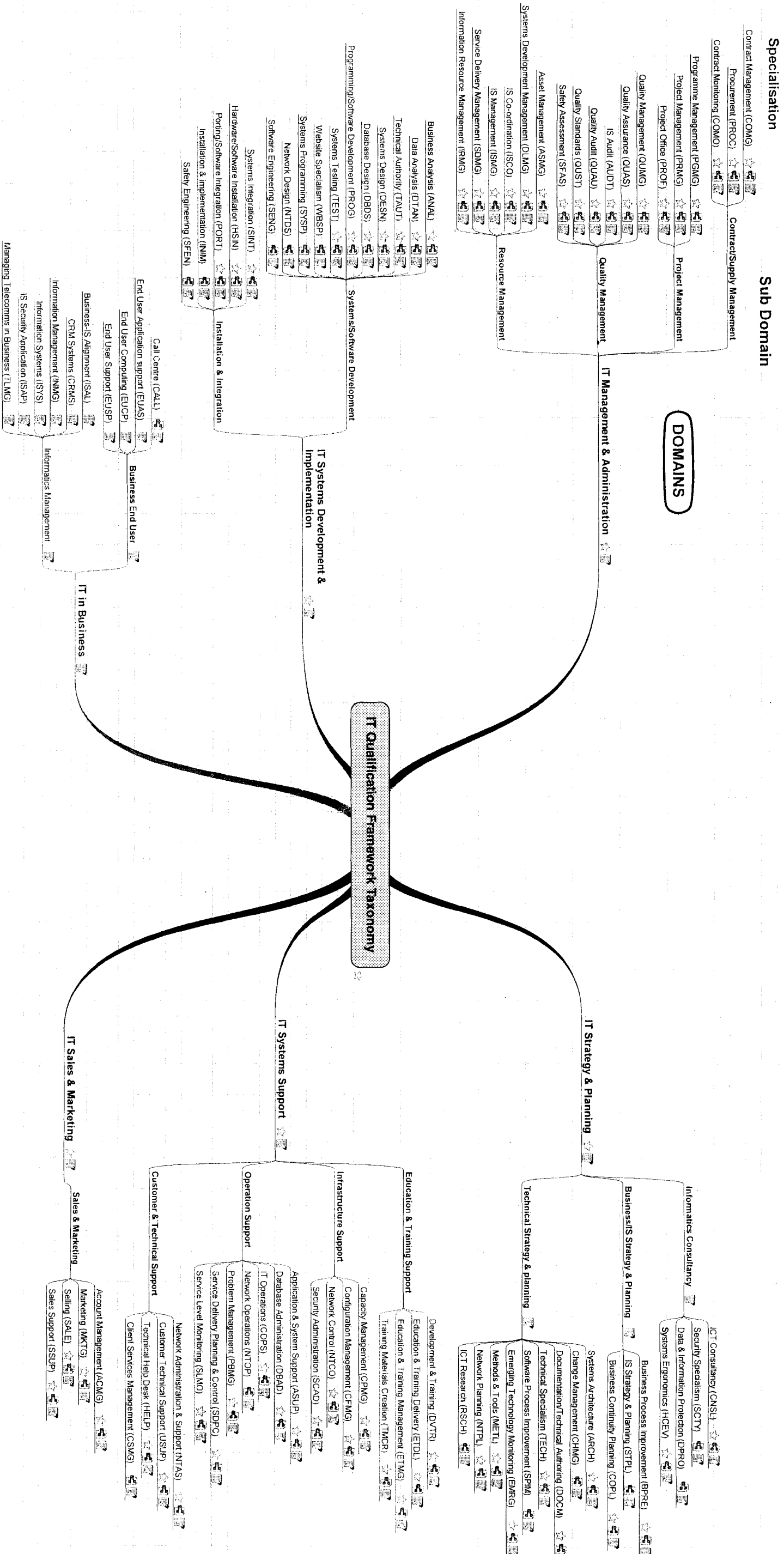
FRAMEWORK ONGOING DEVELOPMENT.

The framework has been developed from knowledge data, which is internationally used or defined. The framework allows for the inclusion of additional knowledge areas and knowledge items by categorising them and adding as an additional record into the database.

The Structure of the Framework Model allows the addition of records.

These record formats allow the Specific Knowledge Item to be defined in terms of the Knowledge Area, The Knowledge Item Mastery Level and its relationship to one or more functions.

Similarly, a specified function can be added in terms of a new record, which defines the Knowledge Areas it relates to.

The addition of records requires that the definitions and record structure be maintained. This flexibility allows for the continual development of the framework and enables "New" knowledge items to be incorporated.

IT Qualification Framework Taxonomy

Specialisation | Sub Domain | DOMAINS

IT Management & Administration

Contract/Supply Management
- Contract Management (COMG)
- Procurement (PROC)
- Contract Monitoring (COMO)

Project Management
- Programme Management (PGMG)
- Project Management (PRMG)
- Project Office (PROF)

Quality Management
- Quality Management (QUMG)
- Quality Assurance (QUAS)
- Quality Audit (QUAU)
- IS Audit (AUDT)
- Quality Standards (QUST)
- Safety Assessment (SFAS)

Resource Management
- Asset Management (ASMG)
- Systems Development Management (DLMG)
- IS Co-ordination (ISCO)
- IS Management (ISMG)
- Service Delivery Management (SDMG)
- Information Resource Management (IRMG)

IT Systems Development & Implementation

Systems/Software Development
- Business Analysis (ANAL)
- Data Analysis (DTAN)
- Technical Authority (TAUT)
- Systems Design (DESN)
- Database Design (DBDS)
- Programming/Software Development (PROG)
- Systems Testing (TEST)
- Website Specialist (WBSP)
- Systems Programming (SYSP)
- Network Design (NTDS)
- Software Engineering (SENG)

Installation & Integration
- Systems Integration (SINT)
- Hardware/Software Installation (HSIN)
- Porting/Software Integration (PORT)
- Installation & Implementation (INIM)
- Safety Engineering (SFEN)

IT in Business

Business End User
- Call Centre (CALL)
- End User Application support (EUAS)
- End User Computing (EUCP)
- End User Support (EUSP)

Informatics Management
- Business-IS Alignment (ISAL)
- CRM Systems (CRMS)
- Information Management (NNMG)
- Information Systems (ISYS)
- IS Security Application (ISAP)
- Managing Telecomms in Business (TLMG)

IT Strategy & Planning

Informatics Consultancy
- ICT Consultancy (CNSL)
- Security Specialism (SCTY)
- Data & Information Protection (DPRO)
- Systems Ergonomics (HCEV)

Business/IS Strategy & Planning
- Business Process Improvement (BPRE)
- IS Strategy & Planning (STPL)
- Business Continuity Planning (COPL)
- Systems Architecture (ARCH)
- Change Management (CHMG)
- Documentation/Technical Authoring (DOCM)

Technical Strategy & planning
- Technical Specialism (TECH)
- Software Process Improvement (SPIM)
- Emerging Technology Monitoring (EMRG)
- Methods & Tools (METL)
- Network Planning (NTPL)
- ICT Research (RSCH)

IT Systems Support

Education & Training Support
- Development & Training (DVTR)
- Education & Training Delivery (ETDL)
- Education & Training Management (ETMG)
- Training Materials Creation (TMCR)

Infrastructure Support
- Capacity Management (CPMG)
- Configuration Management (CFMG)
- Network Control (NTCO)
- Security Administration (SCAD)
- Application & System Support (ASUP)
- Database Administration (DBAD)

Operation Support
- IT Operations (COPS)
- Network Operations (NTOP)
- Problem Management (PBMG)
- Service Delivery Planning & Control (SDPC)
- Service Level Monitoring (SLMO)
- Network Administration & Support (NTAS)

Customer & Technical Support
- Customer Technical Support (USUP)
- Technical Help Desk (HELP)
- Client Services Management (CSMG)

IT Sales & Marketing

Sales & Marketing
- Account Management (ACMG)
- Marketing (MKTG)
- Selling (SALE)
- Sales Support (SSUP)

IT Qualifications Framework Taxonomy

1 IT Strategy & Planning

Informatics consultancy, Business Strategy, Technical infrastructure strategy, Future development research.

1.1 Informatics Consultancy

The function of providing, commonly from an outside source, strategic advice and high level assistance in the strategy, policy, architechture, technology, procurement, management techniques, development methods, definition, design, construction, installation, use and service delivery activities of Informatics. The function embraces a wide variety of specialised applications and technical fields and their integration into business as IT solutions.

1.1.1 ICT Consultancy (CNSL)
See document: CNSL - Consultancy.mmp

The provision of advice, assistance, and leadership in the principles, processes and practices associated with consultancy in the ICT environment, covering any area associated with the procurement, provision, delivery, maintenance or effective use of information and communications technology in the business world. The Practitioner can be expert in consultancy or technical specialism, dealing with one specific aspect of ICT, or it can be wide ranging and address many aspects or it can be of a strategic nature.

1.1.2 Security Specialism (SCTY)
See document: SCTY - Security Specialism.mmp

The management of, and provision of expert advice on, the selection, design, justification, implementation and operation of technology and information security controls and security management techniques relating to any aspect of information systems.

1.1.3 Data & Information Protection (DPRO)
See document: DPRO - Data Protection.mmp

The knowledge and ability to provide of advice and support regarding the development of policies, procedures, working practices and training to comply with the requirements of legislation regulating the holding, use and disclosure of personal information such as, the Data Protection Act, Computer Misuse Act, Freedom of Information Act.

1.1.4 Systems Ergonomics (HCEV)
See document: HCEV - Systems Ergonomics.mmp

The Knowledge Area covering theapplication of evaluation skills to the assessment of the software and hardware ergonomics, usability, and quality management, being evident in the use of an information systems product or service. This includes the selection of an appropriate evaluation approach, the synthesis of test tasks to be performed (from statement of user needs

and user interface specification), the detailed design of an evaluation programme, the selection of user samples, the analysis of performance, and the documentation of the evaluation.

1.2 Business/IS Strategy & Planning

The Knowledge required by the Enterprise management in developing strategies and plans to ensure that the information systems strategy supports the business strategy. Includes multi enterprise IS business solutions and the strategic effect on extending operational boundaries and technology strategy. Covers line of business, human resource strategy, ICT infrastructure, TQM, business and corporate culture and IS integration.

1.2.1 Business Process Improvement (BPRE)
See document: BPRE - Business Process Re-Engineering.mmp

The identification and development of new and alternative approaches to performing business activities that are made possible by the availability of information and communications technology. This includes: understanding the underlying technology and its application, assessment of the costs and potential benefits of the new approaches considered and, where appropriate, change management and assistance with implementation.

1.2.2 IS Strategy & Planning (STPL)
See document: STPL - IS Strategy & Planning.mmp

The development of an information and communications strategy to support the forecast or known business needs of an organisation.

1.2.3 Business Continuity Planning (COPL)
See document: COPL - Business Continuity Planning.mmp

The provision of business continuity planning and support within the ICT environment. This includes the identification of information systems which support critical business processes, the assessment of risks to those systems' availability, integrity and confidentiality and the co-ordination of planning, designing, testing and maintenance procedures and contingency plans to address exposures and maintain agreed levels of continuity. This Function should be performed as part of, or in close co-operation with, the function which plans business continuity for the whole organisation.

1.3 Technical Strategy & planning

The knowledge required to undertake a complex technical development using available and future trends in ICT. Knowledge Areas will cover the Information Systems architecture and the part it plays in the business architecture. Will also cover the lower level of the part Information Systems have on business system processes and the technical integration of solutions which allow operational systems to respond to the wider enterprise environment.

1.3.1 Systems Architecture (ARCH)
See document: ARCH - Systems Architecture.mmp

The design, development, evaluating and integration of systems architecture to describe the complete set of technical components and interfaces that make up a Total Business System solution to a specified Enterprise requirement. The specification, ICT product selection and design processes will inter-alia, encompass information warehousing, data mining, networking solutions and cover project planning, strategic development and development of architectural standards.

1.3.2 Change Management (CHMG)
See document: CHMG - Change Management.mmp

The strategic planning and implementation management of all changes to the components of a live IT total system solution. Controlling the change process, including planning developmental improvements to the infrastructure. The methodology to ensure continued support for operational availability of the system.

1.3.3 Documentation/Technical Authoring (DOCM)
See document: DOCM - Documentation.mmp

The planning, design, preparation and production of technical documentation in paper or electronic form, supporting strategy and development, the promotion, use and maintenance of information systems. This includes all forms of guidance material intended to facilitate the use of the total solution. Also includes the quality assurance process for documentary items.

1.3.4 Technical Specialism (TECH)
See document: TECH - Technical Specialism.mmp

The in-depth strategic knowledge of a specific technical specialist knowledge area, covering information systems or information and communications technology. Providing expert advice regarding aspects of the specialist Knowledge Area, and its application. The ability to undertake the execution or supervision of specialised tasks, and the performance of related quality assurance activities directly involved in the specialist Knowledge Area. The specialist technical Knowledge Area can be any high technology specialist product, service, technique, method, or application.

1.3.5 Software Process Improvement (SPIM)
See document: SPIM - Software Process Improvement.mmp

The combining of investigative analytical and software engineering skills to provide strategic advice, assistance and leadership in improving the quality of software development. Supervision and development of complex business technical solutions. Software process improvement encompasses changing approaches and working practices, typically using recognised improvement, i.e. Software Process Improvement and Capability dEtermination Model (SPICE).

1.3.6 Emerging Technology Monitoring (EMRG)
See document: EMRG - Emerging Technology Monitoring.mmp

The identification of new and emerging hardware and software technologies and products and ICT methods and techniques and the on-going assessment of their relevance and potential value to the organisation. The maintenance of emerging technology awareness amongst ICT management.

1.3.7 Methods & Tools (METL)
See document: METL - Methods & Tools.mmp

The knowledge of the process for ensuring that organised and documented sets of techniques and tools, intended to facilitate the structured development of applications and systems are adopted and used effectively throughout the organisation. Expert knowledge in Application Development Methods, Techniques and Standards.

1.3.8 Network Planning (NTPL)
See document: NTPL - Network Planning.mmp

The design, creation, development and maintenance of overall network plans, encompassing data, voice, text, e-mail, facsimile and image, to underpin ICT strategies in the support of an organisation's business strategy. This includes participation in the planning of all aspects of infrastructure necessary to ensure the secure provision of network services to meet business needs.

1.3.9 ICT Research (RSCH)
See document: RSCH - Research.mmp

The advancement of knowledge in one or more fields of information and communications technology by innovation, experimentation, evaluation and dissemination, carried out in pursuit of a predetermined set of research goals.

2 IT Systems Support
IT Education and Training knowledge support, Infrastructure support, ICT Operations support, service level performance, Customer technical support, Client IT services and quality.

2.1 Education & Training Support

2.1.1 Development & Training (DVTR)
See document: DVTR - Development & Training.mmp

The management of, or provision of expertise in, the development and training of ICT practitioners, including determination of training and development needs in line with organisation or business requirements, production of training plans, design and delivery of training, liaison with external training providers, and evaluation of the benefits of training and development activities.

2.1.2 Education & Training Delivery (ETDL)
See document: ETDL - E&T Delivery.mmp

The teaching of knowledge, instruction in techniques and training in skills to help students fulfil ICT roles.

2.1.3 Education & Training Management (ETMG)
See document: ETMG - E&T Management.mmp

The overall management responsibility for the development and provision of a teaching/training service, covering all levels and any areas of expertise within the scope of the IT Framework.

2.1.4 Training Materials Creation (TMCR)
See document: TMCR - Training Materials Creation.mmp

The creation of materials for use by teachers or students as training aids. Training materials covering any subject within the scope of ICT are relevant to this Function.

2.2 Infrastructure Support

2.2.1 Capacity Management (CPMG)
See document: CPMG - Capacity Management.mmp

The matching of hardware, software, network and overall system capability and capacity to meet current and predicted requirements for information system services in a cost effective manner.

2.2.2 Configuration Management (CFMG)
See document: CFMG - Configuration Management.mmp

The systematic management of documentation, software, hardware and firmware assets in terms of their identification as configuration items (CIs), together with the definition of their structures and relationships. Includes the storage, access, problem reporting and change control of those CIs and the application of status accounting and auditing, often in line with acknowledged external criteria such as the ISO 9000 standards, throughout all stages of their life cycle.

2.2.3 Network Control (NTCO)
See document: NTCO - Network Control.mmp

The day-to-day support, operation and control of all equipment within an organisation's network infrastructure.

2.2.4 Security Administration (SCAD)
See document: SCAD - Security Administration.mmp

The authorisation and monitoring of access to any part of the IS facilities or infrastructure in accordance with established organisational policy. Includes investigation of unauthorised access, and the performance of other administrative duties relating to security management.

2.3 Operation Support

2.3.1 Application & System Support (ASUP)
See document: ASUP - Application & System Support.mmp

The provision of support services relating to specific application systems. Support may be provided both to users of the systems and to service delivery functions such as computer operations and help desk. Support typically takes the form of investigating and resolving problems and providing information about the systems. It may also include monitoring their performance. Problems may be resolved by providing advice or training to users about the application systems' functionality, correct operation or constraints, by devising work-arounds, by correcting faults, by making general or site- specific modifications, by updating system documentation, by manipulating data, or by defining enhancements - often in close collaboration with the systems' developers.

2.3.2 Database Administration (DBAD)
See document: DBAD - Database Administration.mmp

The installation, configuration, upgrade, administration, monitoring and maintenance of database(s) and associated software products, in support of operational system(s) and the development environment.

2.3.3 IT Operations (COPS)
See document: COPS - Computer Operations.mmp

The administration of computer hardware and software in support of the delivery of an agreed IT service. Responsibility includes: incident handling, availability and performance monitoring, routine start-up and close-down, and the maintenance of operating plans and schedules.

2.3.4 Network Operations (NTOP)
See document: NTOP - Network Operations.mmp

The day-to-day management and operation of all systems used for the transmission of data, voice, text facsimile, image and video, within an organisation's communications network infrastructure. The provision or co-ordination of responses to customers of the services, including the operation of incident, problem and change management. Management of network performance, capacity, service quality and the provision, as required, of direct or indirect labour resources to enhance, maintain, or repair operational systems.

2.3.5 Problem Management (PBMG)
See document: PBMG - Problem Management.mmp

The controlled resolution of incidents and problems (deviations from planned or expected information system behaviour) throughout the information system life cycle including: classification, prioritisation and initiation of action, documentation of root causes and implementation of remedies. This also includes: close liaison with the Configuration Management (CM) and Help Desk Functions, in-depth knowledge and use of the configuration

management system, the drawing in of specialised expertise wherever appropriate, and the provision of advice and information aimed at minimising the occurrence and impact of service incidents through process improvement.

2.3.6 Service Delivery Planning & Control (SDPC)
See document: SDPC - Service Delivery Planning & Control.mmp

The planning, introduction and control of service provision to clients or users. This includes the negotiation and execution of service level agreements, and the dynamic planning, scheduling, measurement and control of operational facilities to provide the agreed levels of service, taking account of changes in both supply and demand and seeking continuously and proactively to improve services for the benefit of clients or users.

2.3.7 Service Level Monitoring (SLMO)
See document: SLMO- Servive Level Monitoring.mmp

The monitoring and reporting of actual service levels compared with the targets set in service level agreements (SLAs). The use of tools, as required, to capture, analyse, store and report accurate service quality details.

2.4 Customer & Technical Support

2.4.1 Network Administration & Support (NTAS)
See document: NTAS - Network Admin & Support.mmp

The provision of day-to-day network administration and support, including resolution of network user problems, data backup and restore, production of network performance statistics, provision of network diagnostic information, and site surveys.

2.4.2 Customer Technical Support (USUP)
See document: USUP- User Support.mmp

The response to and resolution of incidents involving information systems and related equipment used at the workplace. The provision of assistance to users to enable them to make effective use of such systems and equipment.

2.4.3 Technical Help Desk (HELP)
See document: HELP - Help Desk.mmp

The receipt of problems reported by users and the co-ordination of rapid and appropriate responses, including: channelling requests for help to appropriate functions for resolution, monitoring progress, and keeping users appraised of progress. The maintenance of an inventory of equipment supported by the Help Desk together with logs of user details, problems and resolutions, for administration and planning purposes.

2.4.4 Client Services Management (CSMG)
See document: CSMG - Client Sevices Management.mmp

Management and control of one or more client service functions, including strategy, support for business development, quality of service and operations.

3 IT Sales & Marketing

ICT Account development, product and service marketing, IT Sales, Sales technical support.

3.1 Sales & Marketing

3.1.1 Account Management (ACMG)
See document: ACMG - Account Management.mmp

On behalf of an organisation supplying ICT products and services, the co-ordination of marketing, selling and delivery activities to one or more customer organisations, to achieve satisfaction for the customer and an acceptable business return for the supplier; provision of assistance to the customer organisation to ensure that it gains maximum benefit from the products and services supplied and available.

3.1.2 Marketing (MKTG)
See document: MKTG - Marketing.mmp

The research, analysis and stimulation of potential or existing markets for ICT products and services, both to provide a sound basis for their development and to generate a satisfactory flow of sales enquiries.

3.1.3 Selling (SALE)
See document: SALE - Selling.mmp

The identification of sales prospects, the development of customer interest, and the preparation, execution and monitoring of sales of any ICT product or service into an external or internal market.

3.1.4 Sales Support (SSUP)
See document: SSUP - Sales Support.mmp

The provision of technical advice and assistance to sales force, sales agents, reseller/distributor staff, prospective or actual users of ICT products or services (collectively - the customers), either in support of customer development or sales activity or in fulfilment of sales obligations.

4 IT in Business

The Knowledge the Business User requires understanding, using, applying, improving, IT within the enterprise. Includes specialist application use, shared applications, personal user applications and information, as required to meet the demands of the enterprise and its Information workers. Covers informatics and the incremental improvements to systems efficiency. The Knowledge area embraces the use of a wide variety of specialised applications and technology fields and their integration into business as Total System solutions.

4.1 Business End User

The Enterprise End User knowledge area covers the frameworks and principles on which networks, systems, equipment and resources are based.

The Business User is able to relate to Total IT business solutions and interact with IT supplier organisations in the selection of appropriate Solutions for the particular business.

Ability to propose, discusses and evaluates potential solutions with external IT Service providers and agreed System upgrades and modifications. Proficient in the Enterprise IT operation and its Architectural design characteristics.

4.1.1 Call Centre (CALL)
See document: CALL - Call Centre.mmp

FUNCTION: The receipt of problems reported by users and the co-ordination of rapid and appropriate responses, including: channeling requests for help to appropriate functions for resolution, monitoring progress, and keeping users appraised of progress. The maintenance of an inventory of equipment supported by the Help Desk together with logs of user details, problems and resolutions, for administration and planning purposes.

The Knowledge area covering the Management and supervision of IT call centre agents, tele-workers and systems that supply responses to business inquiries. Problem resolutions can be automated from knowledge databases, or from tele interaction with call agents. Call centre service can range from advice and guidance to detailed technical support. Skills in problem and conflict resolution in a non-face to face situation. Process and procedure knowledge. Making judgment calls based on Organisational knowledge, critical business processes, product knowledge, business development knowledge and related client satisfaction requirements. Knowledge of client satisfaction metrics, clients survey techniques, telephone techniques, and behavioral issues. Includes an element of tele-Sales.

4.1.2 End User Application support (EUAS)

FUNCTION: The provision of support services relating to specific application systems. Support may be provided both to users of the systems and to service delivery functions such as computer operations and help desk. Support typically takes the form of investigating and resolving problems and providing information about the systems. It may also include monitoring their performance. Problems may be resolved by providing advice or training to users about the application systems' functionality, correct operation or constraints, by devising work-arounds, by correcting faults, by making general or site-specific modifications, by updating system documentation, by manipulating data, or by defining enhancements - often in close collaboration with the systems' developers.

The Knowledge required within a broad area of competence, to investigate software application problems and determines appropriate actions to take.

Specialist knowledge and skills with particular applications to provide correct responses to requests for support by, developing work-arounds or site-specific enhancements, manipulating data, reconfiguring systems, developing and testing Programme modifications, changing operating procedures, training users or operations staff, and producing additional documentation. Escalating requests to systems development staff or software suppliers. Knowledge of documentation standards, software engineering methods and procedures.

4.1.3 End User Computing (EUCP)

The End User Skills and Knowledge required in order making effective use of IT infrastructure, components and products. Includes personal software application usability, system applications, use of database, data mining and analysis programmes, off line / on line processing, workstation rules of access and usage, remote and intranet (LAN). The Knowledge required optimising system operational performance. Auditing a computer information system. Understanding change management for computer systems and operations. Safeguards for computer system usage, and operational availability.

4.1.4 End User Support (EUSP)

The knowledge area covers response to and resolution of incidents involving information systems and related equipment used at the workplace. The provision of assistance to users to enable them to make effective use of such systems and equipment. The support covers specialised enterprise applications, integrated solutions, change control management, infrastructure upgrade, introducing new users on to the network, system security access, and end user education. Includes the measurement of system availability to users. Knowledge of IT asset auditing and control, hardware compatibility, software release control, software backup retrieval and disaster recovery. Database management.

4.2 Informatics Management

The Knowledge required for effective management of all enterprise resources required to plan, deliver, introduce and monitor properly software engineered IT business solutions and services. Covers the scheduling and controlling and quality improvement to informatics services within the business enterprise.

Managing all aspects of IT Service provision in house, and to external clients. Developing Service level criteria and implementing and monitoring service level performance agreements with in house end users and client users of the enterprise business service.

4.2.1 Business-IS Alignment (ISAL)

Applying investigative skills and knowledge to business or organizational problems. Transforming business performance data into actionable information. Ability to determine, prepare, ensure the validity of IT system specifications meet the need of the stated business requirements. Able to ensure that the standards, conventions, rules and processes used in the solution effectively supports the enterprise. Ability to take into account the environment in which the technology is to be used, including the human involvement in the management, use and maintenance of the resulting information System.

4.2.2 CRM Systems (CRMS)

The knowledge area covering customer relationship management system solutions. Knowledge of multi channels interaction, integration of customers into an enterprise demand chain, the importance of an analytical infrastructure for the derivation of performance metrics.

Knowledge of system designs to integrate CRM systems with supply chain and administrative application solutions. Application of E commerce, an Internet and WEB solution to client management services

4.2.3 Information Management (INMG)

The management of, and provision of expert advice on, the selection, justification, implementation and operation of technology, to ensure the need to maintain, integrate, and organise structured and unstructured information for improved accessibility within the business enterprise. How to layer analytic components to support strategic business processes. Advice on how information is handled securely effectively and stored to enable efficient recovery. Includes management of internal IT staff, including client end user access to information.

4.2.4 Information Systems (ISYS)

This Knowledge covers the application of evaluation skills, to the assessment of the Information System infrastructure (software and hardware), its usability, performance quality and cost issue. Management advice, in the use, consolidation and selection of an information systems product or service. This includes the selection of an appropriate evaluation approach, the synthesis of test tasks to be performed from a prepared statement of user needs and user interface specifications. The detailed design of an evaluation Programme, the selection of samples relating to the Enterprise business, the analysis of performance, and the documentation of the evaluation results.

Will have specialist knowledge of some Systems solutions, i.e. ERP, JIT, and CRM.

4.2.5 IS Security Application (ISAP)

The knowledge and ability to provide advice and support regarding the development of policies, procedures, working practices and training to comply with the Enterprise requirements of legislation regulating the holding, use and disclosure of personal information such as, the Data Protection Act, Computer Misuse Act, Freedom of Information Act. Knowledge of information protection, security controls and security management techniques relating to any aspect of information systems.

4.2.6 Managing Telecomms in Business (TLMG)

The Knowledge the internal business enterprise Management requires in maintaining effective overall network performance: encompassing data, voice, text, e-mail, facsimile and image, to underpin Telecommunication strategies in the support of an organisations business strategy. This includes participation in the planning of all aspects of infrastructure necessary to ensure the secure provision of network services to meet business needs. Includes knowledge of Industry international norms and standards.

5 IT Systems Development & Implementation

Systems development, software development, systems integration, software porting, IT infrastructure commisioning.

5.1 Systems/Software Development

5.1.1 Business Analysis (ANAL)
See document: ANAL - Business Analysis.mmp

The methodical investigation, analysis and documentation of all or part of a business in terms of business functions and processes, and the information they use. The definition of requirements for improving any aspect of the processes and systems. The creation of viable specifications in preparation for the construction of information systems.

5.1.2 Data Analysis (DTAN)
See document: DTAN - Data Analysis.mmap

The function of providing specialist expertise and practical assistance in the investigation, evaluation and interpretation of data in order to ensure its coherence, availability, accuracy and security to meet information systems requirements.

5.1.3 Technical Authority (TAUT)
See document: TAUT - Technical Authority.mmp

The provision of direction and guidance on all technical aspects of the development of, and modifications to, information systems to ensure that they take account of relevant IS technical strategies, policies, standards and practices and that they are compatible with existing and planned information systems and IS infrastructure.

This Function usually serves a single project or a programme of related projects, and only exists for the duration of the project or programme. However, it may also be found as a permanent entity within some systems development and maintenance departments.

5.1.4 Systems Design (DESN)
See document: DESN Systems Design.mmp

The specification and design of IS solutions to meet defined business needs.

5.1.5 Database Design (DBDS)
See document: DBDS - Database Design.mmp

The specification, design and maintenance of database structures to support IS solutions to business information needs.

5.1.6 Programming/Software Development (PROG)
See document: PROG - Programming & Software Development.mmp

The design, creation, testing and documentation of new and amended programs from supplied specifications in accordance with agreed standards.

5.1.7 Systems Testing (TEST)
See document: TEST - Systems Testing.mmp

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 software, together with any interfaces, performs as specified and intended.

5.1.8 Website Specialism (WBSP)
See document: WBSP - Website Specialism.mmp

The design, creation, testing, implementation and support of new and amended collections of pages of information on the World-Wide-Web or an organisation's intranet or extranet.

5.1.9 Systems Programming (SYSP)
See document: SYSP -Systems Programming.mmp

The provision of specialist technical expertise in installing, testing, tuning, upgrading and maintaining both externally and internally supplied systems software such as operating systems, data management products, office automation products, and other utility enabling software.

5.1.10 Network Design (NTDS)
See document: NTDS - Network design.mmp

The production of network designs and design policies, strategies, architectures and documentation, covering voice, data, text, e-mail, facsimile and image, to support the requirements and strategy of an organisation's business. This may incorporate all aspects of the communications infrastructure, internal and external, mobile, public and private, Internet/Intranet and call centres.

5.1.11 Software Engineering (SENG)
See document: SENG - Software Engineering.mmp

The analysis, definition, design, construction, testing, installation and modification of properly engineered information systems, containing software as the major component, to meet agreed business needs.

NOTE: Other Functions within the Systems Development and Maintenance Function Group provide more detailed coverage of specific stages of and specialisms in the systems development lifecycle.

5.2 Installation & Integration

5.2.1 Systems Integration (SINT)
See document: SINT - Systems Integration.mmp

The incremental and logical integration and testing of software sub-systems and their interfaces in order to form complete systems to operate in target hardware environments.

5.2.2 Hardware/Software Installation (HSIN)
See document: HSIN - Hardware & Software Installation.mmp

The installation and/or removal of hardware and/or software, following plans and instructions and in accordance with agreed standards. The testing of hardware and software components affected, resolving malfunctions found and recording the results. The reporting of details of hardware and software installed and removed so that the organisation's configuration management records can be updated.

5.2.3 Porting/Software Integration (PORT)
See document: PORT - Porting-Software Integration.mmp

The integration of software products into existing software environments to produce new platform-specific versions of the software products.

5.2.4 Installation & implementation (INIM)
See document: INIM - Installation & Implementation.mmp

The installation, testing, implementation and removal of cabling, wiring, equipment, hardware and appropriate software in a communications environment to provide Information Communication Technology (ICT) services.

5.2.5 Safety Engineering (SFEN)
See document: SFEN - Safety Engineering.mmp

The application of appropriate methods to assure safety during all lifecycle phases of safety-related systems developments, including maintenance and re-use. These include safety hazard and risk analysis, safety requirements specification, safety-related system architectural design, formal method design, safety validation and verification, and safety case preparation.

6 IT Management & Administration
Management of IT, Contracts, Supply, Projects, Quality, Resource.

6.1 Contract/Supply Management

6.1.1 Contract Management (COMG)
See document: COMG - Contract Management.mmp

The executive responsibility for the management of third party contracts involving the delivery of ICT products and services.

6.1.2 Procurement (PROC)
See document: PROC - Procurement.mmp

The management or provision of advice on all ICT-specific aspects of the procurement of ICT goods and services.

6.1.3 Contract Monitoring (COMO)
See document: <u>COMO - Contract Monitoring.mmp</u>

The monitoring, on behalf of a customer organisation, of the execution of third party contracts for the delivery of ICT products and services.

6.2 Project Management

6.2.1 Programme Management (PGMG)
See document: <u>PCMG - Programme Management.mmp</u>

The selection and planning of a programme of projects and related activities to achieve a set of business objectives; the management of the programme within a controlled environment such that it maximises the associated business benefits.

6.2.2 Project Management (PRMG)
See document: <u>PRMG - Project Management.mmp</u>

The management of projects to meet identified business needs, acquiring and utilising the necessary resources and skills, within agreed parameters of cost, timescales, and quality.

6.2.3 Project Office (PROF)
See document: <u>PROF - Project Office.mmp</u>

The provision of support and guidance on project management processes, procedures, tools and techniques to programme managers, project managers and their teams. The use of project management software. The development, production and maintenance of plans (including time, resource, cost and exception plans). The tracking and reporting of progress and performance of one or more ICT projects (including those performed by third parties under contract). The maintenance of programme and/or project files. The servicing of project control boards, project assurance teams and quality review meetings. The analysis of performance and the maintenance of metric data and estimating models. The administration of project change control, including use of configuration management systems. This function may also include the performance of Business Assurance Co-ordinator (BAC) and Technical Assurance Co-ordinator (TAC) roles.

6.3 Quality Management

6.3.1 Quality Management (QUMG)
See document: <u>QUMG - Quality Management.mmp</u>

The management of or provision of advice on, the application of appropriate quality management techniques to any aspect of an ICT function. The achievement and maintenance of compliance against, national and international standards, if appropriate.

6.3.2 Quality Assurance (QUAS)
See document: <u>QUAS - Quality Assurance.mmp</u>

The process of ensuring that the agreed quality standards within an organisation are adhered to and that best practice is promulgated throughout the organisation.

6.3.3 IS Audit (AUDT)
See document: AUDT - IS Audit.mmp

The independent appraisal of existing ICT mechanisms, enhancements, new developments or management processes to verify that all aspects comply with either agreed standards, best practice, or specified requirements. Broad coverage includes (for example) PC asset management, network security tools, firewalls and internet security, real time systems, application design.

6.3.4 Quality Audit (QUAU)
See document: QUAU - Quality Audit.mmp

The independent, third party assessment of the quality of any ICT activity, process, deliverable, product or service against recognised criteria such as ISO 9000.

6.3.5 Quality Standards (QUST)
See document: QUST - Quality Standards.mmp

The development, maintenance, control and distribution of ICT Quality Standards.

6.3.6 Safety Assessment (SFAS)
See document: SFAS - Safety Assessment.mmp

The assessment of safety related software systems to determine compliance with standards and required levels of safety integrity. This involves making professional judgements on software engineering approaches, including the suitability of design, testing, and validation and verification methods, as well as the identification and evaluation of risks and the means by which they can be reduced. The establishment, maintenance and management of an assessment framework and practices may also be included.

6.4 Resource Management

6.4.1 Asset Management (ASMG)
See document: ASMG - IT Asset Management.mmp

The management of the inventory of ICT assets (hardware, software, IS and user intellectual) held within an organisation, aiming to optimise the total cost of ownership of all ICT assets, by minimising operating costs, improving investment decisions and capitalising on potential opportunities.

6.4.2 Systems Development Management (DLMG)
See document: DLMG - Systems Development Management.mmp

The management of resources in order to plan estimate and carry out programmes of systems development work to time, budget and quality targets and in accordance with appropriate standards.

6.4.3 IS Co-ordination (ISCO)
See document: ISCO - IS Coordination.mmp

The co-ordination of IS matters where the adoption of a common approach would benefit the organisation. This could be within a large organisation in which the IS function is devolved to autonomous units, or within a collaborative enterprise of otherwise independent organisations.

6.4.4 IS Management (ISMG)
See document: ISMG - IS Management.mmp

The overall management of the resources required to plan for, develop, deliver and support properly engineered information system services and products to a customer or customers, including the management of change and the maintenance of professional standards.

6.4.5 Service Delivery Management (SDMG)
See document: SDMG - Service Delivery Management.mmp

The overall management and control of resources required to provide an efficient and cost-effective information systems delivery service to users/customers/clients, which is continuously responsive to changing business and user requirements. Will typically include responsibility for ensuring that effective relationships exist and are monitored, measured and reported upon with both internal and external users/customers/clients and vendors/suppliers and that appropriate resource control is exercised.

6.4.6 Information Resource Management (IRMG)
See document: IRMG - Information Resource Management.mmp

The overall management of organised data in order to ensure its coherence, availability, accuracy and security so that the information needs of the organisation, which will typically be complex with multiple departments and information systems, can be met.