SKILLS FRAMEWORK FOR INFOCOMM TECHNOLOGY
TECHNICAL SKILLS & COMPETENCIES (TSC) REFERENCE DOCUMENT

TSC Category	Design and Architecture					
TSC Title	Systems Design					
TSC Description	Design systems to meet specified business and user requirements that are compatible with established system architectures, as well as organisational and performance standards					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
				ICT-SYS-4008-1.1	**ICT-SYS-5008-1.1**	**ICT-SYS-6008-1.1**
				Design systems and components based on determined specifications	Evaluate and review systems designs	Formulate the organisation's policies, standards, guidelines and methods for systems design
Knowledge				• Elements that make up a system in the design process • System design approaches and processes • Business and user requirements of the system • Current and required system functions • System security control features and tools • Process, thread and memory management • Types of fault tolerance technologies • Data management structures, processes, standards and tools • Protocols in information asset management • Software design blueprint requirements • Technical requirements for integrating current and new systems or system components • Software and hardware products, features, and capabilities	• System architecture development, implementation and evaluation methods • System design principles and specification standards • Systems design lifecycle models • Organisation data architecture and data structure design • Information and data flows of a business • Software design principles • Consideration factors for system integration feasibility • Predictive plan-driven and adaptive iterative and agile approaches • Concepts and operating principles of software and hardware components • Enterprise wired and wireless networking technologies, concepts and applications	• New and emerging trends in systems design • Best practices and external regulations in systems design standards and practices • Organisation IT architecture models • Data architecture, data structure design and data management strategies • Industry standards and best practices in enterprise-level data governance, control and policies • Process to determine software design principles • Technical and business impacts of system integration in the short and long term • Industry best practices in designing secure systems and emerging system security threats

				• Networked server administration and configuration methods, techniques and processes • Quality assurance practices for installing, testing and evaluating systems • Types of system security technologies, functions and features	• Quality audit frameworks, methodologies and processes • Criteria for determining system security controls • Factors affecting technology trade-off during system design	
Abilities				• Determine systems design specification for the development of system components and modules • Develop blueprints of data flows within the organisation and requirements for data input, output, processing and storage • Design system components aligned to established architectures, and design standards • Define system interface requirements based on design characteristics • Identify functional specifications of software programs to address business and user needs of the system • Formulate system security technical specifications • Analyse the strengths and weaknesses of alternative design options	• Develop system architectures and system design characteristics • Evaluate advantages and disadvantages of architecture characteristics • Assess the design of system components, modules and interfaces • Evaluate the logic design to ensure alignment with data management framework, structures, processes and standards • Develop design principles to guide the definition and detailing of software blueprints • Determine system security requirements and respective secure technologies, functions or features • Review impact analyses on business-critical design options and trade-offs to determine risks	• Advise on system architecting, design principles and the selection of system design lifecycle models • Establish system design strategies • Ensure the system design is in alignment with data architecture, structure and management strategy • Anticipate future business and user requirements, and the implications on software design, features and capabilities • Evaluate system design blueprints to ensure data, software, and security requirements are accounted for in the design • Adopt predictive or adaptive approaches in system design • Ensure adherence to organisational policies, standards and strategies in system design

				• Analyse impact of major design options and trade-offs to identify potential risks • Create multiple design options to address functional and non-functional requirements • Identify technical requirements for integration of system and system components • Develop prototypes of proposed system components • Provide suggestions to improve system design	• Assess and mitigate identified risks in design options • Review system designs to assess suitability of selected technology and integration of multiple systems and technology • Analyse system designs to ensure a balance between functional and non-functional requirements • Develop system design policies and standards	• Oversee systems design activities for strategic systems development programmes • Articulate strategic value and needs for integration of systems and/or system components • Advise on the adoption of new technologies, frameworks and processes in designing systems
Range of Application						