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

TSC Category	Design and Architecture					
TSC Title	Data Design					
TSC Description	Specify and create a data structure or database model, including the setting of various parameters or fields that can be modified to suit different structured or unstructured data requirements, the design of data flow, as well as the development of mechanisms for maintenance, storage and retrieval of data based on the business requirements					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
			ICT-DES-3001-1.1	**ICT-DES-4001-1.1**	**ICT-DES-5001-1.1**	
			Identify data requirements and support the design of database models, incorporating parameters, fields and mechanisms for the maintenance, storage and retrieval of data	Design data models and data flow diagrams and mechanisms to optimise the flow, maintenance, storage and retrieval of data	Establish a strategy for the creation of large-scale data models and structures and spearhead the implementation of database technology, architectures, software and facilities	
Knowledge			• Different kinds of data and their requirements • Elements of database schemas • Various fields and components of database models • Mechanisms and processes for data maintenance, storage and retrieval • Data warehousing processes	• Data design principles and strategies • Database modelling techniques • Functions and implications of data parameters and fields • Processes for development of database schemas • Data warehousing concepts and methodologies	• Database technology and their applications • Principles of data flow within and beyond the enterprise • Critical components in data warehouse blueprints • Application of various database architectures, software and facilities	

Abilities			• Identify requirements of various structured and unstructured data • Draft database schemas within design constraints, to meet business / information needs • Incorporate parameters and fields for database models • Implement mechanisms for the maintenance, storage and retrieval of data from database models • Perform data warehousing, aggregating data from multiple specified sources • Translate project specifications, objects and data models into database structures	• Design data models based on analysis of data requirements and project objectives • Determine the parameters and fields to be set for data models • Review developed database schemas • Formulate data flow diagrams to model processes in information systems • Develop mechanisms and processes to optimise flow, maintenance, storage and retrieval of data to meet organisation objectives • Direct the construction of data warehouses, identifying multiple sources of data to be integrated	• Establish strategy for the creation of large-scale / enterprise-wide data models and structures • Spearhead the use of database technology where appropriate, considering the complex interconnections between different hardware and software • Commission the use and implementation of database architectures, software and facilities • Direct data flow and processes within and beyond the enterprise • Endorse design specifications of database models, ensuring alignment with business objectives • Conceptualise data warehouse blueprints, taking into account any specialist requirements	
Range of Application	Types of database models may include, but are not limited to: • Hierarchical database model • Network model • Relational model • Entity–attribute–value model NoSQL database model					