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

TSC Category	Operations and User Support					
TSC Title	Database Administration					
TSC Description	Perform Installation, coordination and upgrading of databases and database servers, performance monitoring and troubleshooting. This includes monitoring user access to database and optimisation of database performance, planning for backup and recovery, archived data maintenance and reporting					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
		ICT-OUS-2006-1.1	**ICT-OUS-3006-1.1**	**ICT-OUS-4006-1.1**	**ICT-OUS-5006-1.1**	
		Conduct basic installation, configuration and upgrade of databases and servers, and perform routine data backup and recovery activities	Monitor and maintain databases, and troubleshoot database errors faced, and ensure appropriate levels of user access to databases	Plan for installation, configuration and upgrading of databases and oversee database maintenance, troubleshooting, back up and recovery activities	Establish strategy and guidelines for database management and administration, directing processes, resources and IT investments to optimise database performance	
Knowledge		• Basic steps in installation, configuration and upgrading of databases and servers • Usage of basic database management system software and tools • Performance indicators of databases • Basic processes in data backup, recovery and reporting	• Principles and processes in installation, configuration and upgrading of databases • Processes involved in data storage, extraction and troubleshooting • Computing languages for database systems • Security and business considerations and implications on database user access • Database performance analysis • Processes in database backup and maintenance	• Data migration and database management system software and tools - their applications, pros and cons • Principles and processes for more complex data storage, extraction and troubleshooting • Key components and considerations in database user access roadmap • Performance metrics for database performance • Business objectives and plan formulation for data back-up and recovery	• Industry standards for database performance • Industry best practices in database management and optimisation • Strategy development for database maintenance, back up and recovery	
Abilities		• Conduct basic installation, configuration and upgrade of databases and servers according to standard guidelines and methodologies • Perform simple maintenance as well as data storage, updates	• Perform installation, configuration and upgrading of large or complex databases and data servers as required • Maintain databases, in ensuring that data is updated, stored and extracted accurately and	• Assess the business need and plan for installation, configuration and upgrading of databases • Determine appropriate database management tools and system software to be used, in	• Develop organisational standards and guidelines for the installation, configuration and upgrading of databases, in line with business requirements • Establish strategy and plan processes for maintenance, monitoring	

		and extraction, using appropriate database management system software and tools • Grant user access to database based on the appropriate levels of access given to users • Utilise basic system software and tools to track and consolidate performance statistics of databases • Perform routine data backup and recovery activities • Document upcoming and completed data back-ups and archiving activities	according to set protocols • Troubleshoot database errors or problems faced in database administration activities • Monitor user access to databases to ensure that users have the appropriate levels of access based on security clearance, organisational guidelines and business needs • Analyse performance statistics and highlight potential areas of improvements to the database • Conduct data backup and recovery activities for internal or external customers, based on the business requirement • Implement regular data maintenance or archiving to inform relevant stakeholders	ensuring they are fit for organisational purposes • Manage database maintenance, monitoring and troubleshooting to resolve complex or unforeseen problems • Develop a user access roadmap in collaboration with other key stakeholders, assigning appropriate levels of database access based on the role of users, data security and privacy policies • Evaluate database performance statistics and user feedback, and recommend ways to optimise database performance in line with business requirements and cost considerations • Develop an action plan for data backup and recovery procedures, archived data maintenance and reporting for a range of databases, in ensuring appropriate levels of frequency, storage capacity and system availability.	and troubleshooting of databases • Review database user access roadmap in line with the privacy and security policies of the organisation • Review recommendations and direct data-related processes, resources and IT investments to optimise database performance, based on business needs and industry best practices • Establish an organisation-wide strategy for data backup and recovery, archived data maintenance and reporting procedures for databases, balancing business demands with financial and operational costs.	
Range of Application	Illustrative examples of database systems: Hadoop, Oracle Database, Microsoft SQL System, NoSQLetc.					