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

TSC Category	Development and Implementation					
TSC Title	Computational Modelling					
TSC Description	Develop, select and apply algorithms and advanced computational methods to enable systems or software agents to learn, improve, adapt and produce desired outcomes or tasks. This also involves the interpretation of data, including the application of data modelling techniques to explore and address a specific issues or requirements					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
			ICT-DIT-3001-1.1	**ICT-DIT-4001-1.1**	**ICT-DIT-5001-1.1**	
			Identify and utilise appropriate statistical algorithms and data models to test hypotheses and derive patterns or solutions	Develop and utilise new algorithms and advanced statistical models to enable the production of desired outcomes	Design advanced statistical and computational models, and spearhead the application of algorithms and modelling techniques to new domains	
Knowledge			• Types of algorithms and advanced computational methods • Range and application of various statistical algorithms • Range and application of various types of data models • Usage of analytics platforms and tools • Statistical modelling techniques • Coding languages for programming of algorithms and signals • Potential reasons for unintended outcomes	• Range of statistical and advanced computational modelling techniques • Advanced mathematical models and theories • Elements of various algorithms • Features and applicability of various data models • Features, pros and cons of various statistical approaches, algorithms and tools • Testing procedures to evaluate statistical models • Impact of changes to algorithms and models on performance outcomes	• Industry developments and trends in analytics, algorithms and statistical modelling • New and emerging data analytics and modelling tools and methodologies • Broad range of algorithms and advanced programming techniques • Elements of complex or advanced algorithms and computational models • Applicability of various data analytics methodologies and techniques to address different business issues	
Abilities			• Identify appropriate statistical algorithms and data models to test hypotheses or theories • Use appropriate analytics platforms and analytical tools given	• Evaluate prospective analytical tools and platforms for their functional capabilities and ability to meet requirements of the analytic environment	• Direct data analytics and statistical modelling efforts across the organisation • Make decisions on appropriate data analytics and computational	

			specific analytics and reporting requirements • Utilise a range of statistical methods and analytics ap proaches to data • Conduct statistical modelling of data to derive patterns and/or solutions • Perform coding and configuration of software agents or programs based on a selected model or algorithm • Conduct tests on the actions taken and outcomes to assess effectiveness of the model • Diagnose unintended outcomes produced by analytical models • Propose changes or updates to the model or algorithms applied • Implement changes to the coding and configuration of software agents or programs • Draw relevant trends and insights from data analysis to support decisions	• Develop new algorithms to enable the learning, improvement, adaptation or reproduction of outcomes • Develop regression models, including linear, multiple and logistic regression models • Develop mathematical models to isolate trends and optimise data-driven decision making • Create learning models with a discrete set of environment states, actions and reinforcement signals • Develop testing procedures to evaluate the data model • Analyse root causes of any issues highlighted • Facilitate changes to statistical models, to optimise performance and yield intended outcomes • Apply complex and advanced statistical analysis and modelling techniques • Uncover underlying relationships among different variables	methodologies to the problem • Design complex or advanced statistical and computational models • Evaluate a broad range of algorithms and advanced computational methods to determine suitability for business context • Spearhead the application of algorithms, models and computational techniques to new domains • Establish guidelines for the creation and selection of effective algorithms and statistical models • Synthesise critical findings and insights to address a significant business need or problem	
Range of Application	Types or sub-specialties of algorithms and advanced computational methods may include, but are not limited to: • Machine learning • Natural language processing • Geospatial algorithms • IoT time series • Deep learning • Reinforcement learning models					