|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **TSC Category** | Development and Implementation | | | | | |
| **TSC Title** | Applications Integration | | | | | |
| **TSC Description** | Integrate data or functions from one application program with that of another application program - involves development of an integration plan, programming and the identification and utilisation of appropriate middleware to optimise the connectivity and performance of disparate applications across target environments | | | | | |
| **TSC Proficiency Description** | **Level 1** | **Level 2** | **Level 3** | **Level 4** | **Level 5** | **Level 6** |
|  |  | **ICT-DIT-3003-1.1** | **ICT-DIT-4003-1.1** | **ICT-DIT-5003-1.1** |  |
|  |  | Integrate data and functions across application programs, and perform follow up tests to verify proper functioning | Oversee end-to-end process of application integration, determining suitable middleware and testing procedures and resolving issues that arise | Establish a business case for application integration and introduce new middleware tools and methodologies to enable both intra- and inter-enterprise application integration |  |
| **Knowledge** |  |  | * Types of middleware and their features * Proper usage of middleware * Different types of platforms on which applications run * Potential technical, compatibility or performance issues in application integration * Functions of Application Programming Interfaces (APIs) | * Key elements of an application integration plan * Pros, cons and applications of various middleware * Programming languages used for middleware * Features of target environment or platforms on which applications operate * Testing procedures to verify success of application integration * Diagnosis and troubleshooting of application integration issues * Principles and protocols for API-level integration | * Business value and strategic considerations of enterprise application integration * New and emerging middleware products, tools and methodologies in the industry * Programming languages and tools that enable cross-enterprise application integration * Feasibility of performing API-level integration * Implications of performing API-level integration |  |
| **Abilities** |  |  | * Identify opportunities for creating connections among various devices, databases, software and applications * Perform feasibility scan and assessment to identify potential middleware to be used * Utilise middleware to integrate data and functions across application programs within an enterprise * Support API-level integration * Perform tests and checks on the connections between disparate application programs * Verify proper functioning of modules and applications across multiple or integrated platforms * Highlight technical, compatibility or performance issues following integration of applications or platforms on which they are used * Implement modifications to middleware or the programming process to enhance the integration and connections of application programs | * Evaluate opportunities for creating connections among various hardware and applications * Develop an application integration plan to bring data and functionalities of different applications together * Evaluate suitable middleware to be used for integrating existing applications * Program middleware or other tools to enable effective integration of applications within * Perform API-level integration * Oversee the end-to-end process of application integration to the target environment * Enable optimal functioning of modules or applications in newly-integrated environments and platforms * Develop testing procedures to ensure proper application integration and performance thereafter * Investigate issues or failures of application integration * Facilitate modifications to improve the success of integration between application programs | * Establish organisational strategy for the integration of different applications across target environments and platforms * Make decisions to spearhead innovative and inventive opportunities and ways to connect and integrate various types of hardware and software * Build a business case for the integration of multiple applications * Develop an application integration strategy * Introduce new and emerging middleware products, tools and methodologies for application integration * Develop new middleware products to enable cross-enterprise application integration * Assess feasibility of API-level integration * Approve modifications and enhancements to the application integration plan and approach |  |
| **Range of Application** | Types of applications may include, but are not limited to:  • Mobile/Native Applications  • PC Applications  • Web Applications  • Hybrid Applications | | | | | |