

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

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			<ul style="list-style-type: none"> <li>Types of middleware and their features</li> <li>Proper usage of middleware</li> <li>Different types of platforms on which applications run</li> <li>Potential technical, compatibility or performance issues in application integration</li> <li>Functions of Application Programming Interfaces (APIs)</li> </ul>	<ul style="list-style-type: none"> <li>Key elements of an application integration plan</li> <li>Pros, cons and applications of various middleware</li> <li>Programming languages used for middleware</li> <li>Features of target environment or platforms on which applications operate</li> <li>Testing procedures to verify success of application integration</li> <li>Diagnosis and troubleshooting of application integration issues</li> <li>Principles and protocols for API-level integration</li> </ul>	<ul style="list-style-type: none"> <li>Business value and strategic considerations of enterprise application integration</li> <li>New and emerging middleware products, tools and methodologies in the industry</li> <li>Programming languages and tools that enable cross-enterprise application integration</li> <li>Feasibility of performing API-level integration</li> <li>Implications of performing API-level integration</li> </ul>	
Abilities			<ul style="list-style-type: none"> <li>Identify opportunities for creating connections among various devices, databases, software and applications</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate opportunities for creating connections among various hardware and applications</li> <li>Develop an application integration plan to bring</li> </ul>	<ul style="list-style-type: none"> <li>Establish organisational strategy for the integration of different applications across target environments and platforms</li> </ul>	

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			<ul style="list-style-type: none"> <li>• Perform feasibility scan and assessment to identify potential middleware to be used</li> <li>• Utilise middleware to integrate data and functions across application programs within an enterprise</li> <li>• Support API-level integration</li> <li>• Perform tests and checks on the connections between disparate application programs</li> <li>• Verify proper functioning of modules and applications across multiple or integrated platforms</li> <li>• Highlight technical, compatibility or performance issues following integration of applications or platforms on which they are used</li> <li>• Implement modifications to middleware or the programming process to enhance the integration and connections of application programs</li> </ul>	<p>data and functionalities of different applications together</p> <ul style="list-style-type: none"> <li>• Evaluate suitable middleware to be used for integrating existing applications</li> <li>• Program middleware or other tools to enable effective integration of applications within</li> <li>• Perform API-level integration</li> <li>• Oversee the end-to-end process of application integration to the target environment</li> <li>• Enable optimal functioning of modules or applications in newly-integrated environments and platforms</li> <li>• Develop testing procedures to ensure proper application integration and performance thereafter</li> <li>• Investigate issues or failures of application integration</li> <li>• Facilitate modifications to improve the success of integration between application programs</li> </ul>	<ul style="list-style-type: none"> <li>• Make decisions to spearhead innovative and inventive opportunities and ways to connect and integrate various types of hardware and software</li> <li>• Build a business case for the integration of multiple applications</li> <li>• Develop an application integration strategy</li> <li>• Introduce new and emerging middleware products, tools and methodologies for application integration</li> <li>• Develop new middleware products to enable cross-enterprise application integration</li> <li>• Assess feasibility of API-level integration</li> <li>• Approve modifications and enhancements to the application integration plan and approach</li> </ul>	
<b>Range of Application</b>	Types of applications may include, but are not limited to: <ul style="list-style-type: none"> <li>• Mobile/Native Applications</li> <li>• PC Applications</li> <li>• Web Applications</li> <li>• Hybrid Applications</li> </ul>					