SKILLS FRAMEWORK FOR INFOCOMM TECHNOLOGY SKILLS MAP – EMBEDDED SYSTEMS ENGINEER		
Sector	Infocomm Technology	
Track	Software and Applications	
Sub-track	Embedded Systems Engineering	
Occupation	Embedded Systems Engineer	
Job Role	**Embedded Systems Engineer**	
Job Role Description	The Embedded Systems Engineer envisions, designs, implements, tests, and delivers embedded systems in a product development environment. He/She contributes to the definition of requirement, product, design specifications and collaborates with hardware team throughout the software development lifecycle. He defines innovative approaches to embedded systems development and integration of security aspects. He develops prototypes, creates software tools for test and automation, and evaluates latest technologies. He works with a team setting and is proficient programming languages required by the organisation. He is also knowledgeable of microprocessor and microcontroller based hardware components. The Embedded Systems Engineer is methodical in the development and integration of embedded systems, and also creative in exploring ways to enhance embedded system solutions further. He works effectively in a team, guides junior team members and is able to engage others when presenting his ideas to both internal and external stakeholders.	
Critical Work Functions and Key Tasks	**Critical Work Functions**	**Key Tasks**
	Identify business and user requirements	Determine user requirements based on business needs
		Perform requirements analysis
		Formulate specifications on delivery platforms for embedded systems
		Develop understanding of hardware schematics and datasheets
		Determine approaches that balance security, stability, and performance needs
		Identify system-level traceability requirements and tools
		Develop project documentation, business cases, proposals, and communication materials
	Develop embedded systems software	Lead the design of specific modules for development of software for embedded systems
		Generate design specification and test cases and/or scripts
		Define test frameworks and environments
		Create software tools for tests and automation
		Participate in hardware design and security architecture reviews
		Evaluate software resilience against reverse engineering
		Define best design practices for development and testing
	Optimise embedded systems	Analyse and enhance efficiency, stability and scalability of system and resources
		Optimise codes for implementation in various platforms
		Develop new processes and tools to speed up the testing process
		Recommend ways to improve performance and robustness
		Oversee the development of technical guides for internal and external users
		Support software quality assurance to optimise I/O performance

	Integrate software and hardware	Test software and hardware interactions from prototype to manufacturing release
		Validate the integration of software with hardware
		Review codes and design to propose improvements
		Diagnose and rectify technical problems in embedded software
		Evaluate failed system scenarios

	Technical Skills and Competencies		**Generic Skills and Competencies**	
Skills and Competencies	Applications Development	Level 4	Computational Thinking	Advanced
	Applications Integration	Level 4	Lifelong Learning	Intermediate
	Budgeting	Level 3	Problem Solving	Advanced
	Business Environment Analysis	Level 3	Teamwork	Intermediate
	Business Needs Analysis	Level 3	Communication	Intermediate
	Business Negotiation	Level 3		
	Business Risk Management	Level 3		
	Change Management	Level 3		
	Configuration Tracking	Level 3		
	Control System Programming	Level 3		
	Embedded Systems Integration	Level 4		
	Embedded Systems Interface Design	Level 4		
	Embedded Systems Programming	Level 4		
	Emerging Technology Synthesis	Level 4		
	Network Configuration	Level 4		
	Network Security	Level 4		
	Performance Management	Level 4		
	Project Management	Level 4		
	Software Configuration	Level 3		
	Software Design	Level 4		
	Software Testing	Level 3		
	Solution Architecture	Level 4		
	System Integration	Level 3		
	Test Planning	Level 3		
	Vendor Management	Level 3		

Programme Listing	For a list of Training Programmes available for the ICT sector, please visit: www.skillsfuture.sg/skills-framework/ict

The information contained in this document serves as a guide.

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