SKILLS FRAMEWORK FOR INFOCOMM TECHNOLOGY
SKILLS MAP – EMBEDDED SYSTEMS ENGINEERING MANAGER

Sector	Infocomm Technology
Track	Software and Applications
Sub-track	Embedded Systems Engineering
Occupation	Embedded Systems Engineer
Job Role	**Embedded Systems Engineering Manager**
Job Role Description	The Embedded Systems Engineering Manager plans and oversees the embedded system design, development and integration aligned with policy and standards. He/She scopes out requirement specifications, plans project life cycles and estimates resources and budgets. He communicates with stakeholders to gain buy-in and coordinates deliverables with multiple product line owners. He oversees the preparation of test procedures and performance of qualification testing as well as development of product and design documentation. He guides validation and verification of overall system design concepts and framework. He provides manufacturing and final product release support. He manages and develops junior staff. He leads a team and is responsible for managing projects and resources of the team, as well as coaching team members to build their technical capabilities. He is also an expert in microprocessor and microcontroller-based hardware components, and the interconnectivity between systems and networks. The Embedded Systems Engineering Manager manages a team of engineers and other stakeholders, he is a confident leader who can justify his decisions, put forth his ideas in a persuasive manner and engage others to gain buy-in. He should also be analytical and structured in the planning and management of embedded system design and integration projects, anticipating problems and developing solutions to them.

	Critical Work Functions	**Key Tasks**
Critical Work Functions and Key Tasks	**Implement embedded systems engineering strategy**	Lead strategic technology initiatives relating to reducing time and/or cost and improving quality of product validation
		Align embedded systems architecture priorities with longer term roadmaps for the technology landscape
		Drive common cross functional understanding of systems requirements
		Provide advice on the creation of security standards from embedded systems perspective
		Support the evaluation and introduction of new technologies, products or vendors
		Develop business plans and annual budget for embedded systems engineering function
	Identify business and user requirements	Analyse requirements and impact of changes on embedded systems architecture
		Oversee the preparation of design specifications for embedded systems
		Approve project design changes
		Recommend solutions to technical challenges
	Develop embedded systems software	Provide subject matter expertise throughout the development life cycle
		Oversee the production of fully tested, qualified and documented product design
		Guide the design, development and verification of software for embedded systems
		Participate in hardware design and security architecture reviews
		Provide guidance in issue resolution
		Oversee and manage project status updates and reports
		Oversee the documentation of all requirements, specifications and preparation of reports for each project
		Set the direction for best design practices for development and testing

	Optimise embedded systems	Review embedded systems performance to identify improvement opportunities
		Guide the development of new processes and tools to ensure continuous improvement
		Lead the development of technical guides for internal and external users
		Establish best practices and quality standards
	Integrate software and hardware	Define integration plans and hardware and software testing concepts
		Oversee integration of embedded systems with devices
		Guide end-to-end system integration, system debug and triaging to ensure integration is accordance to established design and architectural standards and practices
		Provide guidance on hardware design and the development of prototype
		Provide guidance on resolving requirement gaps and technical challenges or issues
		Approve improvements to existing integration processes
		Lead development of system tools to automate administration and support tasks
	Manage people and organisation	Manage the budget expenditure and allocation across teams and projects
		Monitor and track the team's achievements and key performance indicators
		Propose new operational plans, including targeted budgets, work allocations and staff forecasts
		Acquire, allocate and optimise the use of resources
		Develop learning roadmaps to support the professional development of the team
		Manage the performance and development process, including providing coaching and development opportunities to maximise the potential of each individual

	Technical Skills and Competencies		**Generic Skills and Competencies**	
Skills and Competencies	Applications Development	Level 5	Communication	Intermediate
	Applications Integration	Level 5	Teamwork	Intermediate
	Budgeting	Level 4	Developing People	Advanced
	Business Environment Analysis	Level 4	Virtual Collaboration	Intermediate
	Business Innovation	Level 5	Decision Making	Advanced
	Business Needs Analysis	Level 4		
	Business Performance Management	Level 4		
	Business Requirements Mapping	Level 4		
	Business Risk Management	Level 4		
	Change Management	Level 4		
	Configuration Tracking	Level 4		
	Control System Programming	Level 4		
	Embedded Systems Integration	Level 5		
	Embedded Systems Interface Design	Level 5		
	Embedded Systems Programming	Level 5		

	Emerging Technology Synthesis	Level 5
	Learning and Development	Level 4
	Manpower Planning	Level 3
	Networking	Level 4
	Network Security	Level 5
	Organisational Analysis	Level 4
	People and Performance Management	Level 3
	Performance Management	Level 5
	Problem Management	Level 4
	Project Feasibility Assessment	Level 4
	Project Management	Level 5
	Software Configuration	Level 4
	Software Design	Level 5
	Software Testing	Level 4
	Solution Architecture	Level 4
	Stakeholder Management	Level 5
	Strategy Implementation	Level 3
	Strategy Planning	Level 4
	System Integration	Level 5
	Test Planning	Level 4
	User Interface Design	Level 4
	Vendor Management	Level 4
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.