SKILLS FRAMEWORK FOR INFOCOMM TECHNOLOGY
SKILLS MAP – SOFTWARE ENGINEERING MANAGER

Sector	Infocomm Technology
Track	Software and Applications
Sub-track	Software Engineering
Occupation	Software Engineer
Job Role	**Software Engineering Manager**

Job Role Description	The Software Engineering Manager focuses on operational and/or tactical responsibilities by providing management to a group of professionals. He/She implements software and platform development strategy and provides advice on security requirements. He translates user requirements into technical specifications and manages the preparation of design specifications. He oversees the development of Proof-of-Concept for solutions, and provides technical expertise on the development of software and platform features, ensuring appropriate security and risk factors are considered. He manages the implementation of software and platform solutions, and leads effort in improving the scalability, reliability and performance of software and platform. He leads a team and is responsible for managing projects and resources of the team, as well as coaching team members to build technical and leadership capabilities. He is proficient in programming languages required by the organisation. He is familiar with software development tools and standards, as well as the relevant software platforms on which the solution is deployed on. The Software Engineering Manager applies critical and analytical thinking toward developing optimal application solutions. He is a strong leader who is decisive, able to engage, influence and communicate his ideas persuasively to others.

Critical Work Functions and Key Tasks	**Critical Work Functions**	**Key Tasks**
	Develop software and platform development strategy	Assist in the development of software and platform development roadmap and business plan
		Develop models and structure changes needed to meet the evolving software and platform strategies
		Align software and platform architecture priorities with roadmaps that anticipate the changing technology landscape
		Provide advice on security requirements from a software and platform development perspective
		Drive the adoption of Agile and DevOps practices
	Analyse user and business requirements	Formulates the strategy and direction for the requirements process across projects
		Oversee the analysis of user requirements based on business needs
		Provide guidance on developing solutions and alternatives to overcome technical challenges
		Create new requirements validation and verification techniques
		Develop business cases, proposals, and communication materials
	Manage the design of software	Evaluate the effectiveness of the application of software design enabling techniques
		Determine the process, strategy and design methodology to be used in software design
		Provide guidance and advice on the use of software design strategies and methods
		Assess the effectiveness of the application of the selected software design methodology
		Evaluate the effectiveness of the software architecture
		Assess the quality of the software design
		Provide guidance and direction on the need for requirements change resulting from design review
		Select processes and models for constructing software on individual projects

	Manage software construction processes	Select frameworks, platforms, and environments for individual projects
		Establish project standards for unit test coverage, version control and configuration management
		Plan and initiate model-driven development processes
	Oversee software testing	Establish organisational procedures for testing and criteria for test completion
		Determine project test objectives, success and failure criteria for system and acceptance testing
		Design system test plan and test cases
		Conduct root cause analysis and analyse test data to determine necessity for further testing activities
		Evaluate test results to identify opportunities for process improvement
	Oversee security provisions in software	Establishes organisation coding standards to avoid security vulnerabilities
		Establishes organisation standards for security assessment processes
	Manage software management configuration (SCM)	Determine constraints and impact of constraints on SCM imposed by policies, contracts, and software development life cycle (SDLC)
		Specify the SCM measures and tools to be used
		Establish mechanisms for generating SCM audit reports
		Develop software release plans
	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	Agile Coaching	Level 4	Communication	Intermediate
	Agile Software Development	Level 4	Decision Making	Advanced
	Applications Development	Level 5	Teamwork	Intermediate
	Applications Integration	Level 5	Developing People	Advanced
	Applications Support and Enhancement	Level 4	Virtual Collaboration	Intermediate
	Budgeting	Level 4		
	Business Environment Analysis	Level 4		
	Business Innovation	Level 5		
	Business Needs Analysis	Level 4		
	Business Negotiation	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
	Continuous Integration and Continuous Deployment	Level 5
	Data Design	Level 4
	Emerging Technology Synthesis	Level 5
	Learning and Development	Level 4
	Manpower Planning	Level 3
	Networking	Level 4
	Organisational Analysis	Level 4
	People and Performance Management	Level 3
	Performance Management	Level 5
	Problem Management	Level 4
	Product Management	Level 5
	Project Feasibility Assessment	Level 4
	Project Management	Level 5
	Quality Standards	Level 5
	Software Configuration	Level 4
	Software Design	Level 5
	Software Testing	Level 4
	Stakeholder Management	Level 5
	Strategy Implementation	Level 3
	Strategy Planning	Level 4
	System Integration	Level 4
	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.