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| **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 | | | | |
| **Manage software construction processes** | Select processes and models for constructing software on individual projects | | | | |
| 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 | | | | |
| **Skills and Competencies** | **Technical Skills and Competencies** | | | **Generic 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 | | | | | |
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| The information contained in this document serves as a guide. | | | | | | |