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| **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 and Key Tasks** | **Critical Work Functions** | **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 | | | | |
| **Skills and Competencies** | **Technical Skills and Competencies** | | | **Generic 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 | | | | | |
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| The information contained in this document serves as a guide. | | | | | | |