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| **SKILLS FRAMEWORK FOR INFOCOMM TECHNOLOGY SKILLS MAP – DATA ENGINEER** | | | | | |
| **Sector** | Infocomm Technology | | | | |
| **Sub-sector** | Data and Artificial Intelligence | | | | |
| **Track** | Data Engineering | | | | |
| **Occupation** | Data Engineer | | | | |
| **Job Role** | **Data Engineer** | | | | |
| **Job Role Description** | The Data Engineer supports the design, implementation and maintenance of data flow channels and data processing systems that support the collection, storage, batch and real-time processing, and analysis of information in a scalable, repeatable and secure manner. He/She focuses on defining optimal solutions to data collection, processing and warehousing. He designs, codes and tests data systems and works on implementing those into the internal infrastructure. He focuses on collecting, parsing, managing, analysing and visualising large sets of data to turn information into insights accessible through multiple platforms.  He is proficient in database systems, scripting and programming languages required by the organisation. He is also familiar with the relevant software platforms on which the solution is deployed on.  The Data Engineer is passionate about numbers and works with large data sets. He has a keenness for understanding business processes and resolving challenges in order to provide solutions with the help of clean and interlinked databases and architectures. | | | | |
| **Critical Work Functions and Key Tasks** | **Critical Work Functions** | **Key Tasks** | | | |
| **Identify business needs** | Identify suitable data structures based on business needs to ensure availability and accessibility of data | | | |
| Determine technical system requirements based on data needs | | | |
| Keep abreast of latest technologies and products in database and data processing software, and technologies | | | |
| **Build and maintain data pipeline** | Assist in building scalable data pipelines to extract, transform, load and integrate data | | | |
| Develop codes and scripts to process structured and unstructured data in real-time from a variety of data sources | | | |
| Test data pipelines for scalability and reliability to process high data volume, variety and velocity | | | |
| Consolidate and create data storage solutions for storage and retrieval of information | | | |
| Develop prototypes and Proof-of-Concepts for data solutions | | | |
| Monitor data system performance | | | |
| Support the handling and logging of errors | | | |
| Develop backup data archiving systems to ensure system continuity | | | |
| Implement and monitor data security and privacy measures on existing data solutions | | | |
| **Optimise solution performance** | Assist in the integration of data systems with existing infrastructure | | | |
| Develop tools to improve data flows between internal and/or external systems and the data warehouse | | | |
| Automate the data collection and analysis processes, data releasing and reporting tools | | | |
| Test data system configurations to increase efficiency | | | |
| **Skills and Competencies** | **Technical Skills and Competencies** | | | **Generic Skills and Competencies** | |
| Business Needs Analysis | | Level 2 | Leadership | Intermediate |
| Change Management | | Level 3 | Developing People | Intermediate |
| Computational Modelling | | Level 3 | Communication | Intermediate |
| Configuration Tracking | | Level 1, Level 2 | Transdisciplinary Thinking | Intermediate |
| Data Design | | Level 3 | Computational Thinking | Intermediate |
| Data Engineering | | Level 3 |  | |
| Data Ethics | | Level 4 |
| Data Governance | | Level 4 |
| Data Migration | | Level 3 |
| Database Administration | | Level 3 |
| Emerging Technology Synthesis | | Level 4 |
| Project Management | | Level 4 |
| Quality Standards | | Level 4 |
| Security Architecture | | Level 3 |
| Stakeholder Management | | Level 3 |
| Strategy Implementation | | Level 3 |
| System Integration | | 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. | | | | | |