



**SKILLS FRAMEWORK  
FOR INFOCOMM TECHNOLOGY**

Enter here

**SKILLS FRAMEWORK  
FOR MEDIA**

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## INTRODUCTION

**SkillsFuture Singapore (SSG)** is a statutory board under the Ministry of Education (MOE). It drives and coordinates the implementation of the national SkillsFuture movement, promotes a culture and holistic system of lifelong learning through the pursuit of skills mastery, and strengthens the ecosystem of quality education and training in Singapore.

The Infocomm Media Development Authority (IMDA) will develop a vibrant, world-class infocomm media sector that SSG strengthen the adult training infrastructure by taking on all existing functions of the Committee for Private Education (CPE) and the Institute for Adult Learning (IAL) to enhance the capabilities and professionalism of adult educators. SSG play a key role in the quality assurance for private education institutions and adult training centres. Together with educational institutions and industry partners, SSG ensure that students and working adults have access to high quality, relevant training throughout life. SSG also bring together synergies in continuing education and training (CET) and pre-employment training (PET), so skills requirements will continue to meet the demands of different sectors of the economy.

[Click for more info](#)

[Click for more info](#)



*Click to close*



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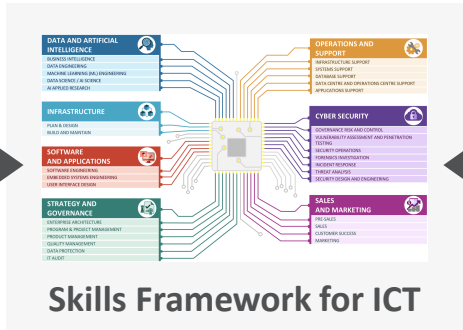
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# INTRODUCTION

SkillsFuture is a national movement to provide Singaporeans with the opportunities to develop their fullest potential throughout life, regardless of their starting points. Through this movement, the skills, passion and contributions of every individual will drive Singapore's next phase of development towards an advanced economy and inclusive society.



TechSkills Accelerator (TeSA) is an initiative for existing and non-infocomm technology (ICT) professionals to upgrade and acquire in-demand skills, to stay competitive in a fast-moving digital landscape. Employers in ICT and the other sectors can leverage on the TeSA programmes to attract fresh or mid-career professionals, or reskill existing employees.



Under the TeSA initiative, the Skills Framework (SF) for ICT is a guide for individuals, employers and training providers to promote ICT skills mastery and lifelong learning. It can be used by employers to develop career maps and articulate job requirements, used by individuals to guide their skills identification and development to stay relevant, and used by training providers to devise ICT courses. Some critical skill areas include network and infrastructure, software development and engineering, data and analytics, cyber-security.

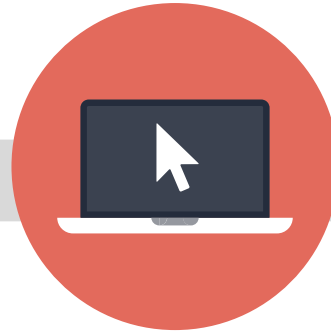


# INTRODUCTION

Integrated approach for ICT career  
planning and training



Develop mastery  
of ICT skills



*Ensure that ICT  
professionals stay  
relevant in the  
digital economy*



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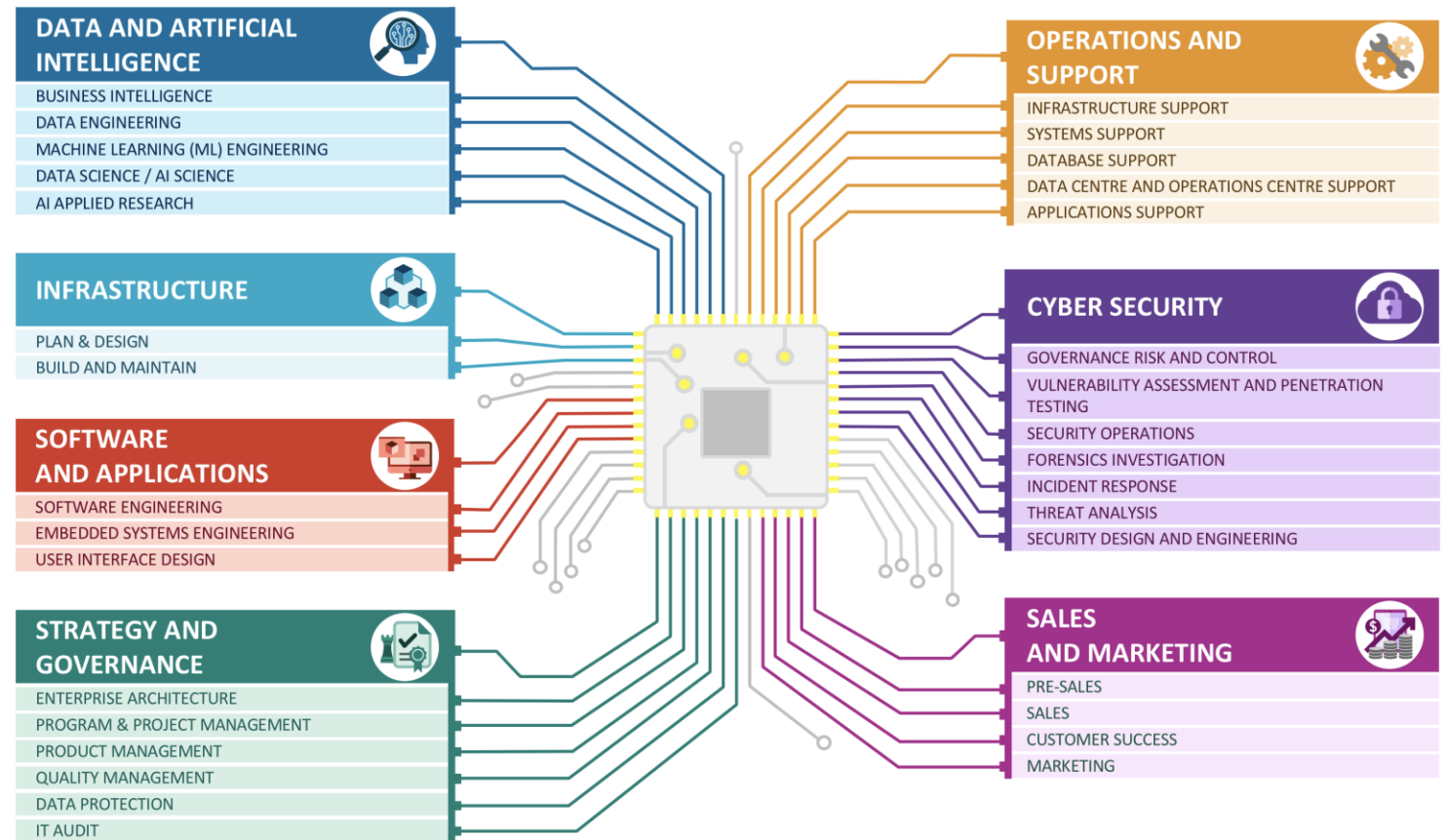
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# INTRODUCTION

The Skills Framework for ICT sector consists of

- **7 Tracks**
- **32 Sub-tracks**
- **104 individual job roles.**

The Skills Framework provides information on career pathways within and outside the Tracks as well as details of responsibilities, skills and competencies required for each role.

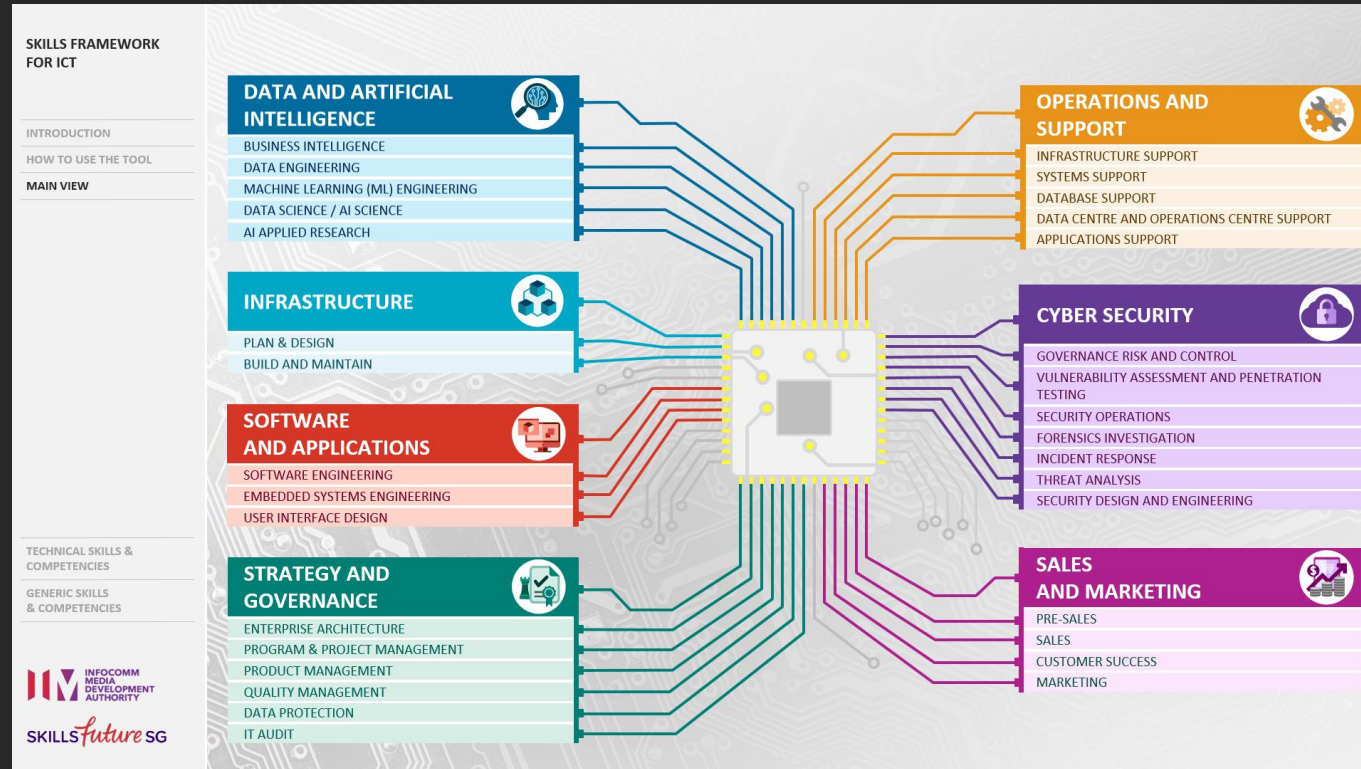


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# HOW TO USE THE TOOL

*The MAIN VIEW of the tool will show all Tracks and Sub-tracks.  
There are two ways to navigate through the tool...*



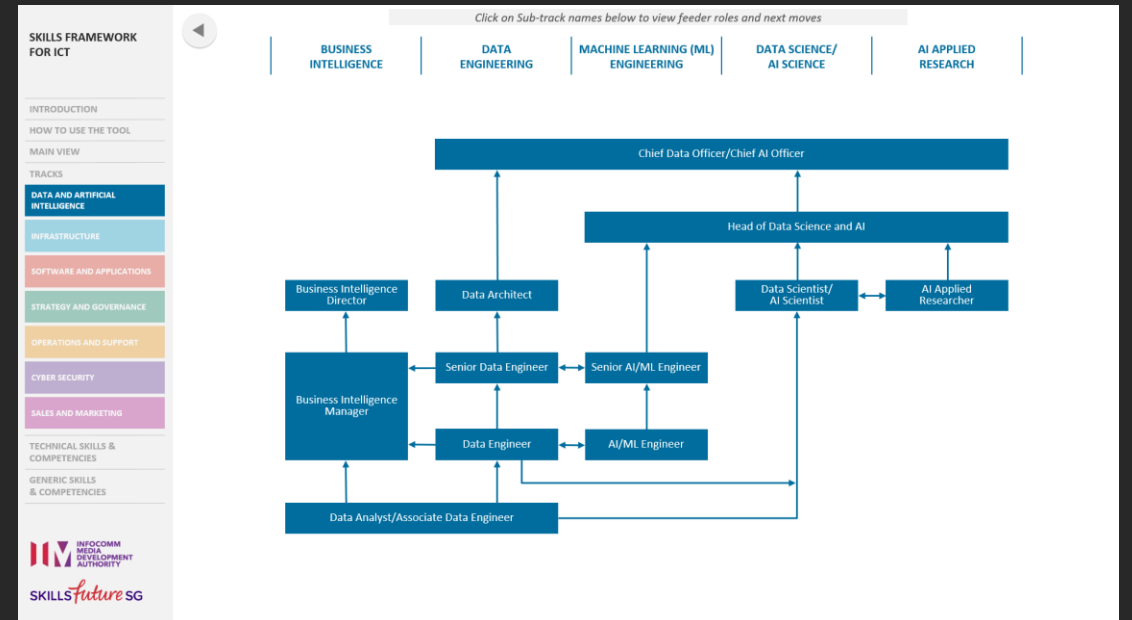
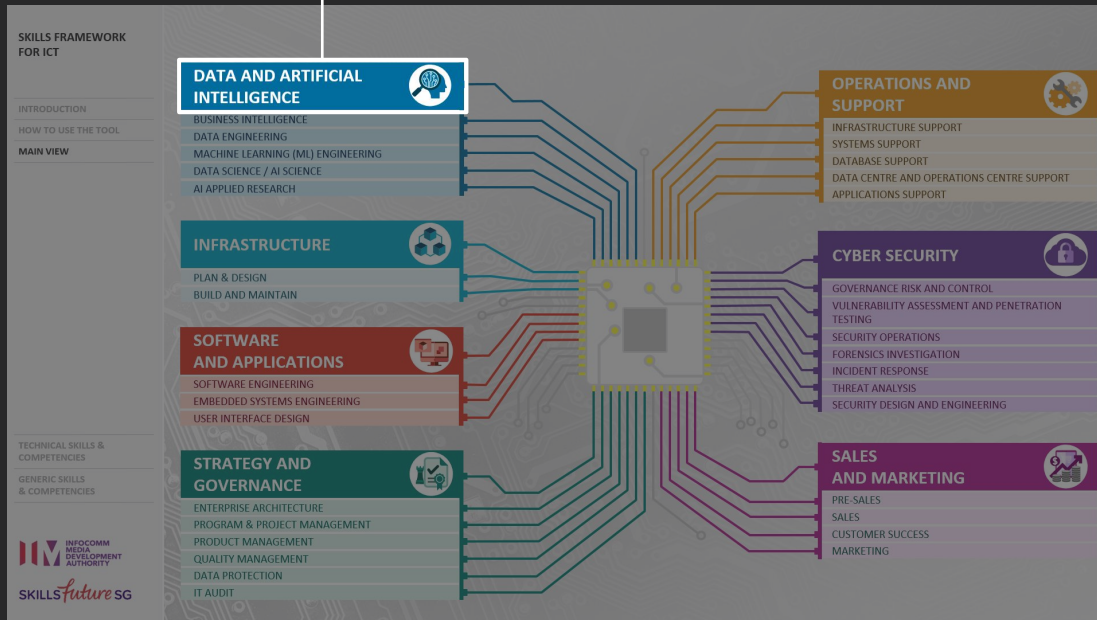
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# HOW TO USE THE TOOL

## Track VIEW OPTION

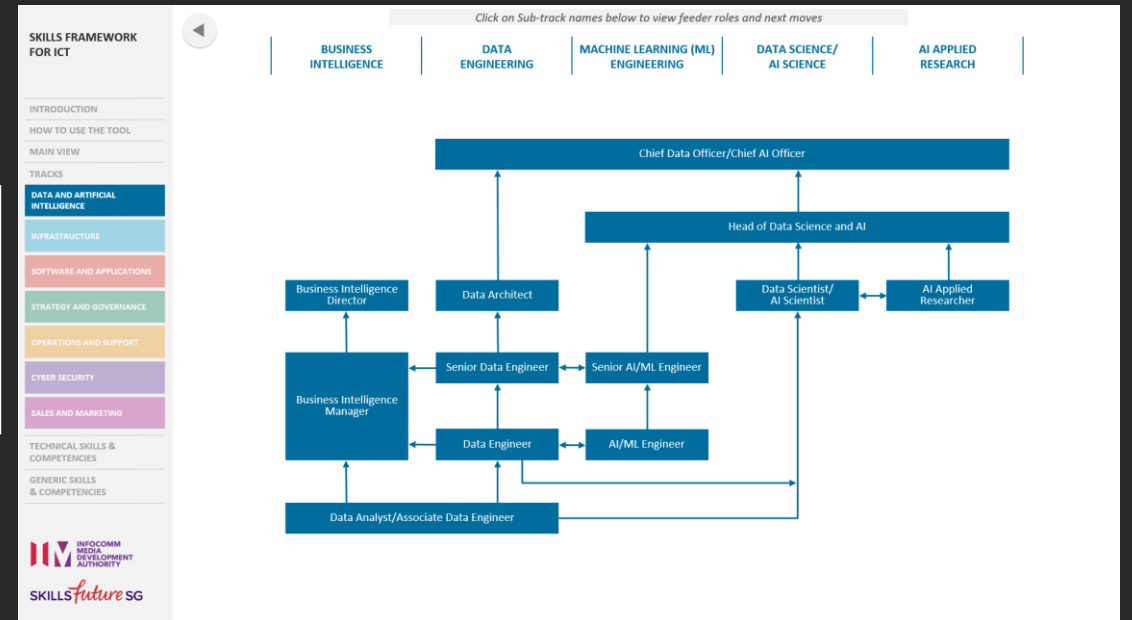
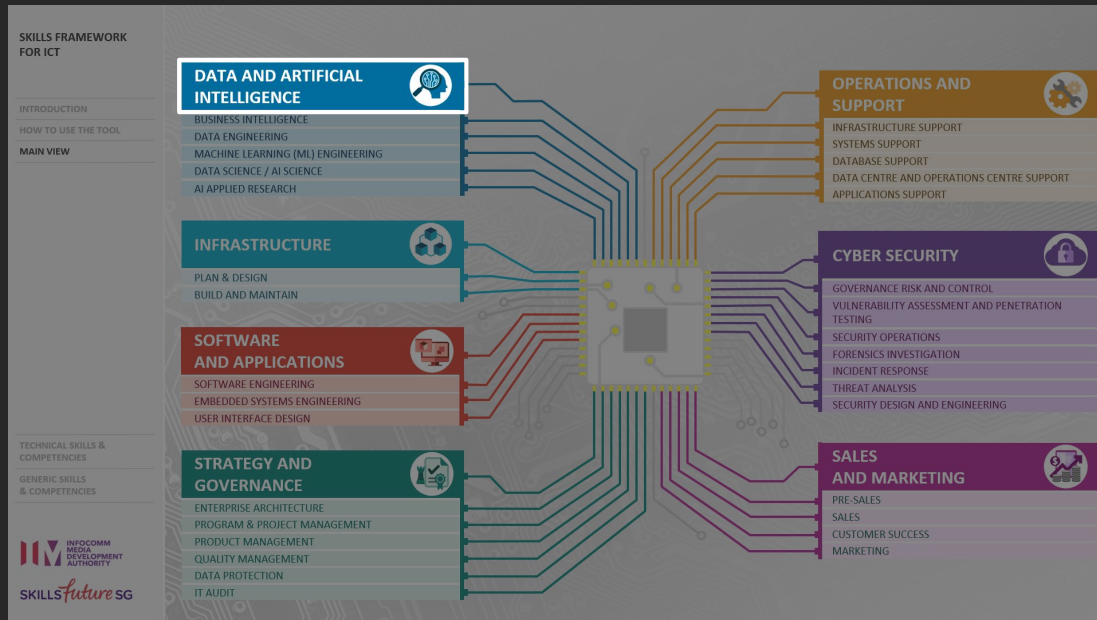
Click on a Track to view the career pathways for all Sub-tracks and job roles within it



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# HOW TO USE THE TOOL



Once in Track VIEW you can navigate to other Tracks at any point by using the menu on the left



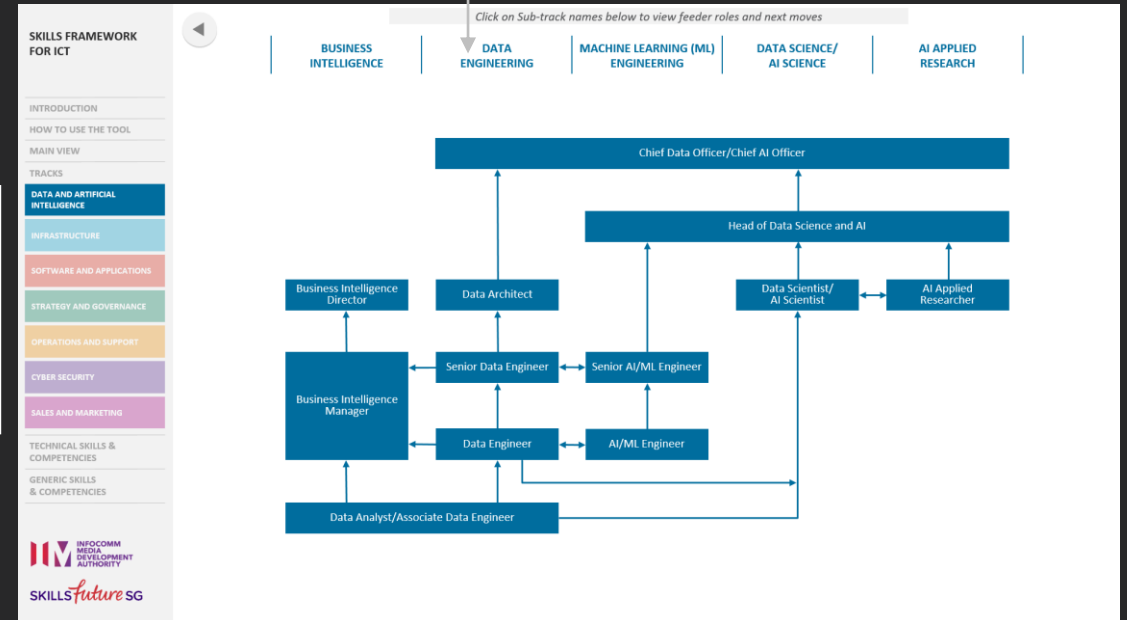
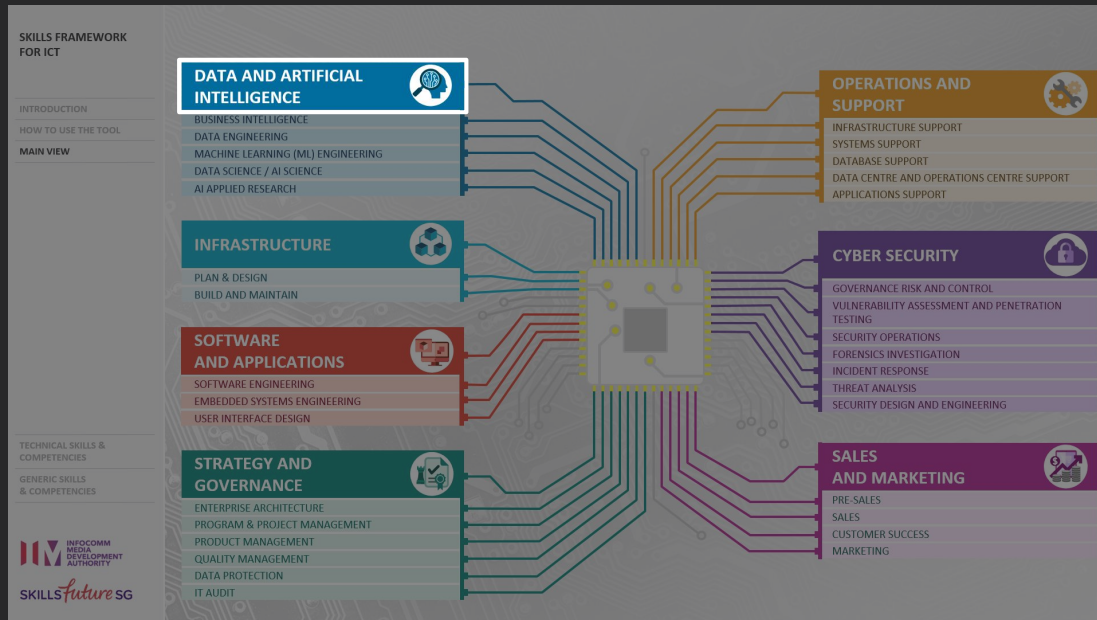
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# HOW TO USE THE TOOL

You can also navigate to the career pathway for the specific Sub-track by clicking the Sub-track title



Once in Track VIEW you can navigate to other Tracks at any point by using the menu on the left



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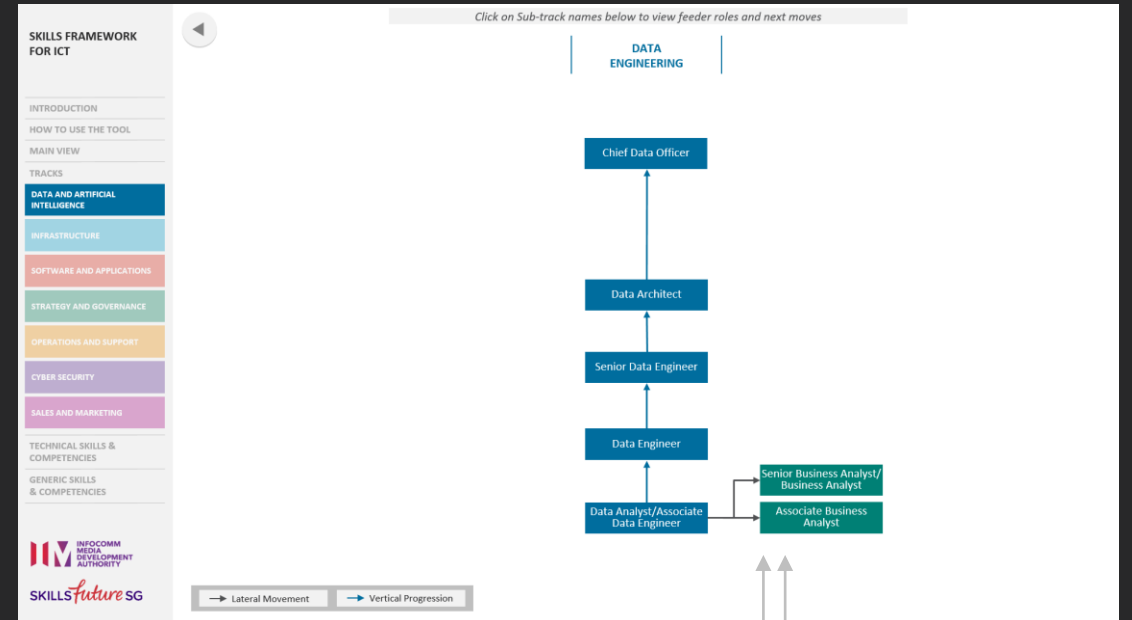
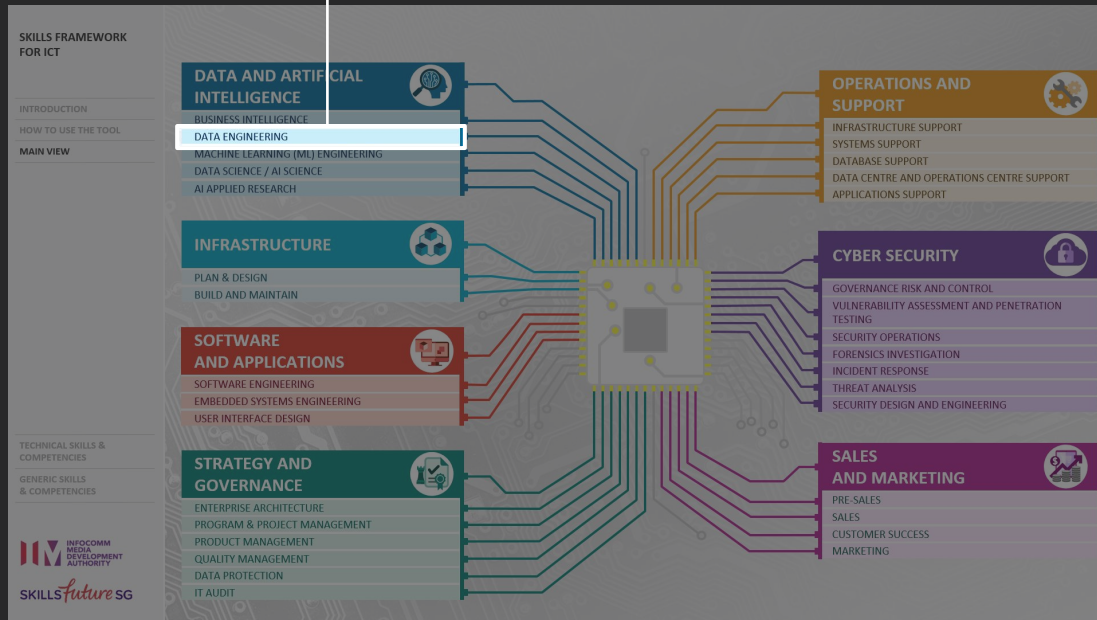
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# HOW TO USE THE TOOL

## Sub-track VIEW OPTION

Click on a Sub-track title to view the career pathways

The Sub-track view shows vertical movements within the track and lateral movements (feeder roles and potential next roles) across tracks



Feeder roles

Potential roles for next move

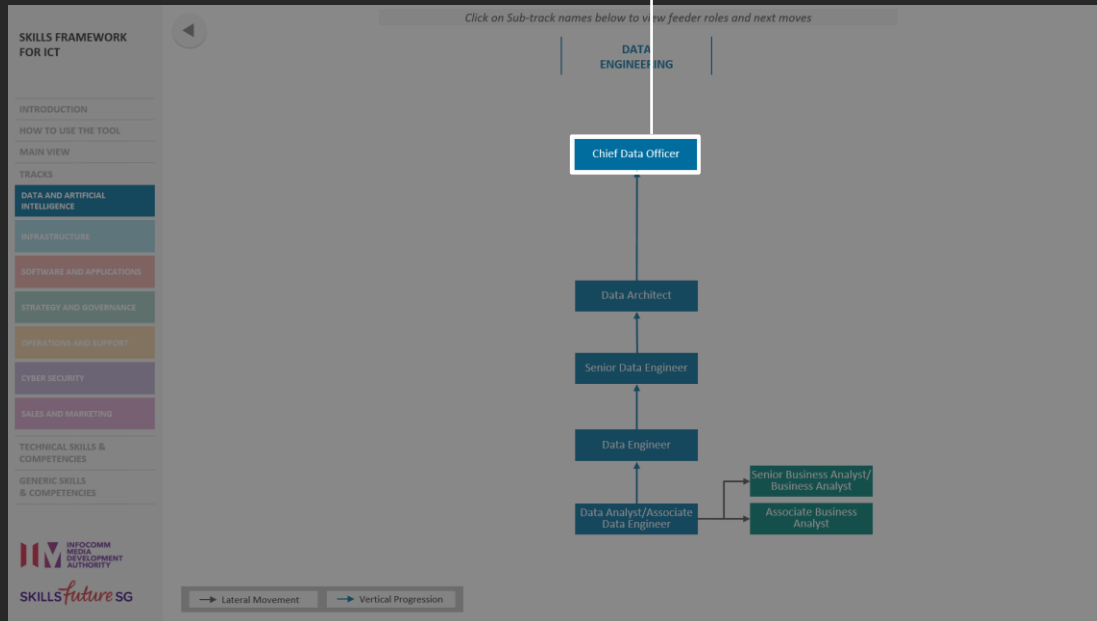


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# HOW TO USE THE TOOL

Click on a specific job role to navigate to the detailed Skills Map (description including responsibilities and required skills and competencies)



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INFOCOMM MEDIA DEVELOPMENT AUTHORITY

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Career Pathway

Click on any of the Skills and Competencies to view a detailed description

### CHIEF DATA OFFICER/CHIEF AI OFFICER

**Job Description**

The Chief Data Officer/Chief Artificial Intelligence Officer establishes the organisation's data and artificial intelligence (AI) strategy, and ethics and governance framework, fostering a culture of compliance to data privacy regulations and the Model AI Governance Framework. He/She is accountable for the quality, accessibility, analysis and management of data to inform business strategy, decision-making and drive performance.

He designs initiatives and programs to realise the optimal business value derivable from the organisation's data assets. He formulates data and AI project prioritisation and resourcing strategies and establishes performance measures to evaluate outcomes data and AI driven solutions. He identifies potential IP opportunities from analyses and insights from market intelligence reports, and advises the business on infringements against the organisation's IP related to AI solutions. He creates a shared vision and objectives on the use of data and AI in the organisation, building strategic relationships with key business and industry stakeholders to achieve business goals.

The Chief Data Officer/Chief Artificial Intelligence Officer is highly skilled in influencing and engaging stakeholders to secure their buy-in and support. He has strong business acumen, highly innovative, and is able to make calculated-risk decisions, performing effectively in a complex and difficult environment. He possesses strong leadership and management skills required to develop the organisation's data and AI capabilities.

**Technical Skills & Competencies**

Technical Skills & Competencies	Proficiency Level
Budgeting	5
Business Agility	6
Business Innovation	5
Business Continuity	6
Business Needs Analysis	5
Computational Modelling	5
Computer Vision Technology	5
Data Design	5
Data Governance	6
Data Strategy	6
Enterprise Architecture	6
Emerging Technology Synthesis	6
Intellectual Property Management	5
Intelligent Reasoning	5
Pattern Recognition	5
Performance Management	6

**Programme Management** 6

**Portfolio Management** 6

**Quality Standards** 6

**Research** 6

**Self-learning Systems** 5

**Sustainability Management** 6

**Stakeholder Management** 6

**Text Analytics** 5

**Generic Skills & Competencies (Top 5)**

Generic Skills & Competencies (Top 5)	Proficiency Level
Problem Solving	Advanced
Communication	Advanced
Interpersonal Skills	Advanced
Leadership	Advanced
Service Orientation	Advanced

**Critical Work Functions and Key Tasks** View details



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# HOW TO USE THE TOOL

Click on any of the Skills and Competencies to view a detailed description

The screenshot displays the 'SKILLS FRAMEWORK FOR ICT' interface. On the left is a navigation menu with categories like 'INTRODUCTION', 'HOW TO USE THE TOOL', 'MAIN VIEW', 'TRACKS', and 'TECHNICAL SKILLS & COMPETENCIES'. The main content area is titled 'CHIEF DATA OFFICER/CHIEF AI OFFICER' and includes a 'Job Description' section with two paragraphs of text. Below the description is a 'Critical Work Functions and Key Tasks' section with a 'View details' button. On the right, there is a 'Career Pathway' button and a table of skills and competencies. The table has two columns: 'Technical Skills & Competencies' and 'Proficiency Level'. The 'Budgeting' skill is highlighted with a white background. Below the table is a section for 'Generic Skills & Competencies (Top 5)' with a 'Proficiency Level' column.

Technical Skills & Competencies	Proficiency Level
Budgeting	5
Business Agility	6
Business Innovation	5
Business Continuity	6
Business Needs Analysis	5
Computational Modelling	5
Computer Vision Technology	5
Data Design	5
Data Governance	6
Data Strategy	6
Enterprise Architecture	6
Emerging Technology Synthesis	6
Intellectual Property Management	5
Intelligent Reasoning	5
Pattern Recognition	5
Performance Management	6
Programme Management	6
Portfolio Management	6
Quality Standards	6
Research	6
Self-learning Systems	5
Sustainability Management	6
Stakeholder Management	6
Text Analytics	5

Generic Skills & Competencies (Top 5)	Proficiency Level
Problem Solving	Advanced
Communication	Advanced
Interpersonal Skills	Advanced
Leadership	Advanced
Service Orientation	Advanced



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**SKILLS FRAMEWORK FOR ICT**

INTRODUCTION


HOW TO USE THE TOOL

**MAIN VIEW**

TECHNICAL SKILLS & COMPETENCIES

GENERIC SKILLS & COMPETENCIES




**DATA AND ARTIFICIAL INTELLIGENCE** 


- BUSINESS INTELLIGENCE
- DATA ENGINEERING
- MACHINE LEARNING (ML) ENGINEERING
- DATA SCIENCE / AI SCIENCE
- AI APPLIED RESEARCH

**INFRASTRUCTURE** 

- PLAN & DESIGN
- BUILD AND MAINTAIN

**SOFTWARE AND APPLICATIONS** 

- SOFTWARE ENGINEERING
- EMBEDDED SYSTEMS ENGINEERING
- USER INTERFACE DESIGN

**STRATEGY AND GOVERNANCE** 

- ENTERPRISE ARCHITECTURE
- PROGRAM & PROJECT MANAGEMENT
- PRODUCT MANAGEMENT
- QUALITY MANAGEMENT
- DATA PROTECTION
- IT AUDIT

**OPERATIONS AND SUPPORT** 

- INFRASTRUCTURE SUPPORT
- SYSTEMS SUPPORT
- DATABASE SUPPORT
- DATA CENTRE AND OPERATIONS CENTRE SUPPORT
- APPLICATIONS SUPPORT

**CYBER SECURITY** 

- GOVERNANCE RISK AND CONTROL
- VULNERABILITY ASSESSMENT AND PENETRATION TESTING
- SECURITY OPERATIONS
- FORENSICS INVESTIGATION
- INCIDENT RESPONSE
- THREAT ANALYSIS
- SECURITY DESIGN AND ENGINEERING

**SALES AND MARKETING** 

- PRE-SALES
- SALES
- CUSTOMER SUCCESS
- MARKETING

Click on Sub-track names below to view feeder roles and next moves

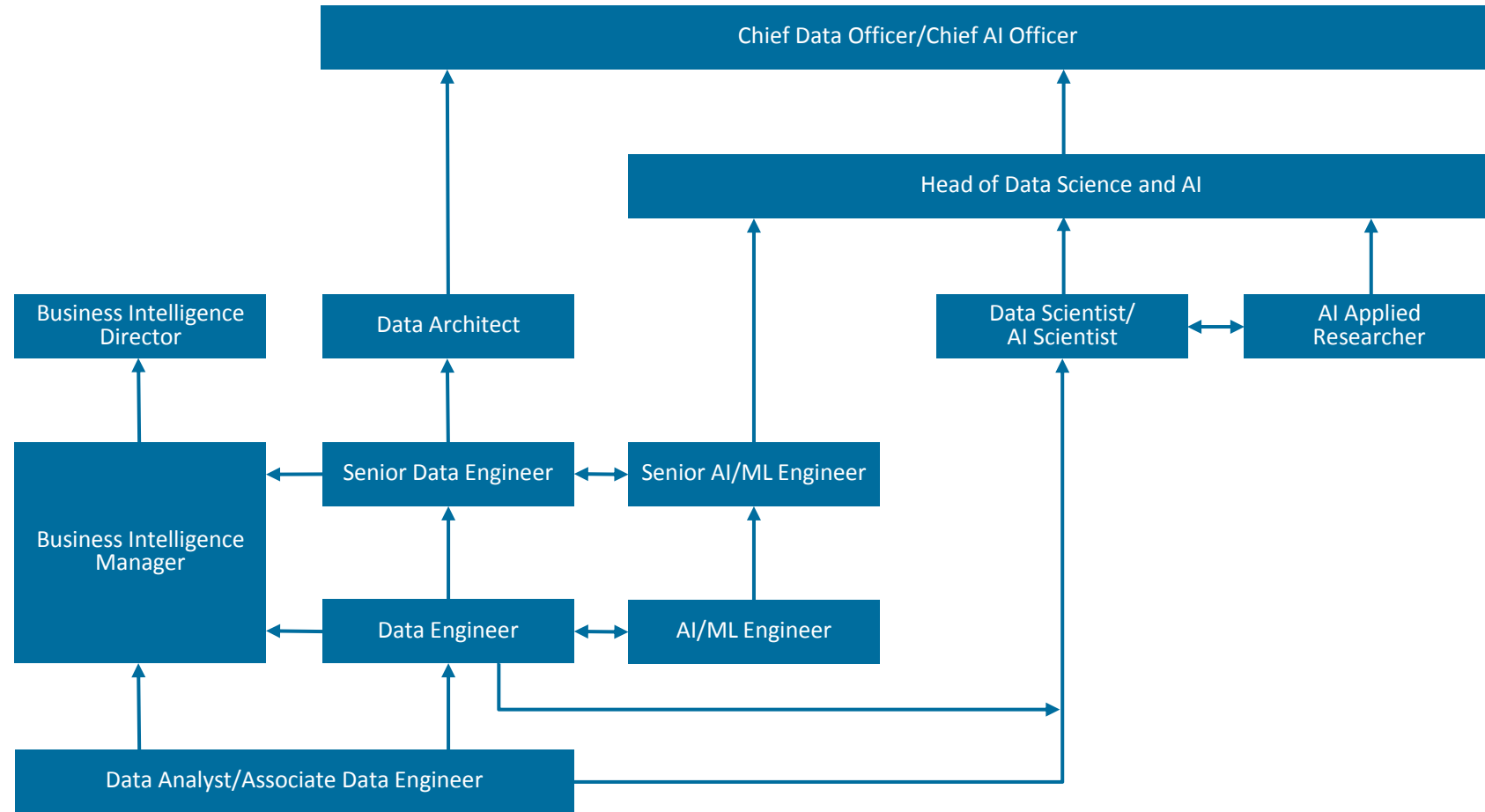
BUSINESS INTELLIGENCE

DATA ENGINEERING

MACHINE LEARNING (ML) ENGINEERING

DATA SCIENCE/ AI SCIENCE

AI APPLIED RESEARCH



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Click on Sub-track names below to view feeder roles and next moves

## BUSINESS INTELLIGENCE



→ Lateral Movement

→ Vertical Progression

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## DATA ANALYST/ASSOCIATE DATA ENGINEER

### Job Description

The Data Analyst/Associate Data Engineer blends historical data from available industry reports, public information, field reports or purchased sources, basic data cleaning and transformation, and performs analysis to support business and product decisions. He/She uses development tools to generate reports, dashboards, clean and prepare the data and analytical solutions according to business rules and specifications. He is a part of important projects and coordinates with internal teams to develop projections on outcomes of implementing business strategies that result in actionable insights. He also assists in the data collection, processing and warehousing tasks, which may also include collection, parsing, analysing and visualising large sets of data.

He works in a team setting and is proficient in the analytics tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the solution is deployed on.

The Data Analyst/Associate Data Engineer is meticulous and detailed-oriented. He enjoys working with data and displays willingness to learn. He adopts an analytical approach to solving problems and displays confidence when communicating ideas.

**Critical Work Functions  
and Key Tasks**

[View details](#)

*Click on any of the Skills and Competencies to view a detailed description*

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Budgeting	3	Leadership	Intermediate
Business Innovation	4	Developing People	Intermediate
Business Needs Analysis	2	Computational Thinking	Intermediate
Business Performance Management	3	Communication	Intermediate
Data Analytics	2,3	Creative Thinking	Intermediate
Data Engineering	2		
Data Ethics	3		
Data Visualisation	3		
Database Administration	2		
Design Thinking Practice	3		
Networking	3		
Project Management	3		
Stakeholder Management	2		



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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Identify business needs	<ul style="list-style-type: none"> <li>Identify information needs of stakeholders required for decision-making</li> <li>Assist in the translation of business needs into analytics and reporting requirements</li> <li>Recommend types of data and data sources needed to obtain the required information and insights</li> <li>Assist in identifying potential business intelligence service offerings required by the business</li> </ul>	<p>In accordance with:</p> <ul style="list-style-type: none"> <li>Model AI Governance Framework</li> <li>Personal Data Protection Act 2012</li> </ul>
Prepare and analyse data	<ul style="list-style-type: none"> <li>Gather data from internal systems and external sources</li> <li>Perform data entry tasks in data collection systems</li> <li>Clean and update databases to remove duplicated, outdated or irrelevant information</li> <li>Perform data validation and quality control checks</li> <li>Perform basic extract, transform and load related activities to prepare data for analysis or transfer</li> <li>Analyse data to identify trends, patterns and correlations to support decision-making</li> <li>Propose solutions and recommendations to address information need</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>
Present Insights	<ul style="list-style-type: none"> <li>Develop automated and logical data models and data output methods</li> <li>Translate analyses into common business language to influence business decisions or actions</li> <li>Design data reports and visualisation tools to facilitate data understanding through storytelling</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>

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## BUSINESS INTELLIGENCE MANAGER

### Job Description

The Business Intelligence Manager identifies and translates market opportunities into actionable recommendations for the organisation. He/She supervises professionals in gathering and analysing business intelligence (BI) data to help make informed business decisions. He manages the timely reporting of data analysis outcomes and effectively communicates findings, insights and recommendations to business leaders. He develops data and/or information quality metrics and researches new technology and develops business cases to support enterprise wide business intelligence solutions. He is responsible for developing guidelines on data insight reporting for the team. He is also responsible for managing BI-related projects from end to end.

He manages a team and is proficient in the analytics tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the solution is deployed on.

The BI Manager has a deep passion for analysing and resolving complex problems through a systematic approach. He displays an intellectual curiosity as well as the capability to engage with stakeholders to understand business issues.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting	4
Business Innovation	5
Business Needs Analysis	5
Business Performance Management	4
Data Analytics	4
Data Ethics	4
Data Governance	4
Data Visualisation	4
Design Thinking Practice	4
Learning and Development	4
Manpower Planning	4
Networking	4
People and Performance Management	4
Project Management	4
Stakeholder Management	3,4
Strategy Implementation	3

Strategy Planning 4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Communication	Intermediate
Problem Solving	Intermediate
Sense Making	Intermediate
Transdisciplinary Thinking	Intermediate
Creative Thinking	Intermediate

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### Critical Work Functions

### Key Tasks

### Performance Expectations

Identify business needs

- Evaluate business plans and priorities to guide the identification of information needs for decision-making
- Recommend types of data needed to measure performance, predict outcomes and make decisions
- Oversee the development of design and specification proposals including feasibility and functional studies
- Influence integration of data from across the enterprise to enhance information accessibility
- Create new BI service offerings

In accordance with:

- Model AI Governance Framework
- Personal Data Protection Act 2012

Prepare and analyse data

- Manage the problem definition and hypothesis formulation process
- Provide advice on the development of data analysis models based on project requirements
- Oversee data sourcing, acquisition, cleansing, integration, warehousing, exploration and delivery
- Provide guidance on validation methodology and criteria
- Define data and/or information quality metrics and lead data quality reviews
- Synthesis trends, patterns and correlations from analyses to formulate insights and actionable recommendations

- As above

Present Insights

- Set the guidelines for the development of end user reports
- Develop narratives to communicate key messages from analyses through storytelling
- Advise the design of complex reporting and analytical solutions
- Develop roadmaps for optimising the BI analysis insights

- As above

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

- As above

## BUSINESS INTELLIGENCE DIRECTOR

### Job Description

The Business Intelligence Director sets the strategy, vision and policy for managing the day-to-day strategic and tactical operations of the business intelligence (BI) teams. He/She holds responsibilities associated with historical data sourcing and preparation, data storage, reporting, analytics, data exploration and information delivery. He works with senior management to understand and prioritise data and information requirements. He is responsible for setting up the BI Strategy within the organisation. He oversees the development of testing methodology and criteria, standards, policies and procedures for the structure and attributes of the business intelligence tools and systems. He oversees budgeting and planning.

He manages a team and is proficient in the analytics tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the solution is deployed on.

The BI Director has the ability to adopt a broader perspective and display analytical thinking for BI solutions. He is able to influence key stakeholders and spearhead a data driven approach to resolve business issues.

**Critical Work Functions  
and Key Tasks**

[View details](#)

*Click on any of the Skills and Competencies to view a detailed description*

### Technical Skills & Competencies

### Proficiency Level

Budgeting	5
Business Innovation	6
Business Needs Analysis	5
Business Performance Management	5
Data Analytics	5
Data Ethics	5
Data Governance	5
Data Visualisation	5
Design Thinking Practice	5
Learning and Development	5,6
Manpower Planning	5
Networking	5
People and Performance Management	5
Project Management	5
Stakeholder Management	5
Strategy Implementation	4

Strategy Planning 5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Problem Solving	Advanced
Communication	Advanced
Leadership	Intermediate
Lifelong Learning	Advanced
Interpersonal Skills	Advanced

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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Set business intelligence (BI) strategy

- Outline the organisation’s business intelligence vision and strategy
- Oversee ongoing development and operations of BI architecture
- Establish approach for identifying business and information needs to enhance decision-making, policies and processes
- Provide rationale, business cases and return on investment (ROI) models to get buy-in on the BI investment
- Provide thought leadership to stakeholders in determining which BI solutions will enable the enterprise to achieve defined business goals

- In accordance with:
- Model AI Governance Framework
  - Personal Data Protection Act 2012

Define analysis process for BI

- Establish guidelines and criteria to direct historical data analytics, architecture, and technology
- Advise on processes and procedures for gathering of operational data to examine past business performance
- Set guidelines for appropriate structuring and enrichment of data

- As above

Present insights

- Provide BI insight updates and tactical, actionable recommendations to senior leaders and clients
- Determine key messages to communicate from analyses and oversee the creation of a narrative for storytelling
- Define the structure and tools to be applied in conceptualisation, design and building of visual dashboards and graphs

- As above

Establish BI standards and governance

- Develop standards, policies and procedures for the form, structure and attributes of the BI tools and systems
- Create long-term data governance initiatives that serve to improve data quality across all systems over time
- Provide guidance on best practices related to BI data governance

- As above

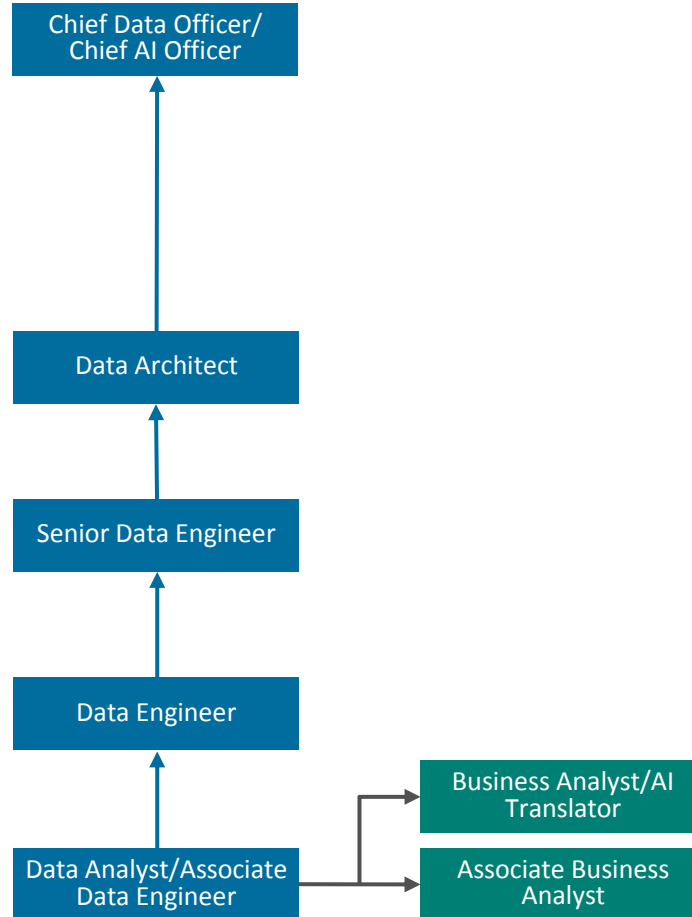
Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programs against best practices
- Implement succession planning initiatives for key management positions

- As above

Click on Sub-track names below to view feeder roles and next moves

## DATA ENGINEERING



→ Lateral Movement

→ Vertical Progression

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## DATA ENGINEER

### Job 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**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Needs Analysis

2

Change Management

3

Computational Modelling

3

Configuration Tracking

1,2

Data Design

3

Data Engineering

3

Data Ethics

4

Data Governance

4

Data Migration

3

Database Administration

3

Emerging Technology Synthesis

4

Project Management

4

Quality Standards

4

Security Architecture

3

Stakeholder Management

3

Strategy Implementation

3

System Integration

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Intermediate

Developing People

Intermediate

Communication

Intermediate

Transdisciplinary Thinking

Intermediate

Computational Thinking

Intermediate

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



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## SENIOR DATA ENGINEER

### Job Description

The Senior Data Engineer designs, implements and oversees maintenance of data flow channels and data processing systems that support the collection, storage, batch and real-time processing, and analysis of information from structured and unstructured sources in a scalable, repeatable and secure manner. He/She assists data scientists with the extraction of valuable insights from data sets to derive valuable and actionable insights and recommendations that support business requirements. He involves in rollouts, upgrades, implementation and release of data system changes as required for streamlining of internal practices.

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 Senior Data Engineer possesses natural inclination for understanding business processes and relevant data requirements. He easily builds rapport with others and is able to put forth his ideas and recommendations in a persuasive manner, to influence stakeholders and decisions.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Needs Analysis

3

Change Management

4

Computational Modelling

4

Configuration Tracking

3

Data Design

4

Data Engineering

4

Data Ethics

5

Data Governance

5

Data Migration

4

Data Strategy

5

Database Administration

4

Emerging Technology Synthesis

5

Learning and Development

4

Manpower Planning

4

People and Performance Management

3

Project Management

5

Quality Standards

4

Security Architecture

3

Stakeholder Management

4

Strategy Implementation

4

Strategy Planning

4

System Integration

5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Advanced

Developing People

Intermediate

Communication

Intermediate

Transdisciplinary Thinking

Advanced

Computational Thinking

Advanced

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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Identify business needs

- Assess the suitability of data structure to ensure availability, integrity, quality, scalability and accessibility of data
- Translate the business' data needs into technical system requirements
- Evaluate suitability of technologies and products in database and data processing for integration and storage

In accordance with:

- Model AI Governance Framework

Build and maintain data pipeline

- Build data flow channels and processing systems to extract, transform, load and integrate data
- Validate data extraction, preparation and processing systems for accuracy of data and outputs
- Create data storage plans and solutions for information storage and extraction
- Lead project rollouts, upgrades, implementation and release of data system changes
- Analyse data system performance and develop solutions for improvements
- Build a metadata system to ensure documentation and cataloguing of all available data
- Formulate data backup and fail-safe plans as part of business continuity planning
- Ensure the security, privacy and anonymity of users accessing data systems

- As above

Optimise performance of solutions

- Evaluate existing technologies and technology practices
- Resolve data integrity, performance, and availability issues
- Identify opportunities for improvements and optimisation to systems and processes
- Automate processes focusing on repeatability and reliability

- As above

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## DATA ARCHITECT

### Job Description

The Data Architect designs systems to facilitate access to and finding of information. He/She plans, designs, develops and tests internal information-delivery solutions and data models with the focus on providing positive user experience. He works with end users to specify requirements, create and implement designs to meet internal and client-facing objectives. He develops information management standards and practices, in compliance with data privacy policies and ethics and governance frameworks.

He works in a team setting and 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 Architect integrates diverse needs and perspectives from internal and external clients, and possesses a creative mind to develop new and fresh ideas and solutions. He possesses strong leadership and communication abilities and is able to influence key stakeholders and clients he interfaces with.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Needs Analysis

4

Change Management

5

Computational Modelling

5

Configuration Tracking

4

Data Design

5

Data Engineering

5

Data Ethics

6

Data Governance

6

Data Strategy

6

Database Administration

5

Emerging Technology Synthesis

4

Learning and Development

5

Manpower Planning

4

People and Performance Management

4

Project Management

6

Quality Standards

5

Security Architecture

4,5

Stakeholder Management

5

Strategy Planning

5

System Integration

6

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Advanced

Communication

Advanced

Developing People

Intermediate

Transdisciplinary Thinking

Advanced

Computational Thinking

Advanced



### Critical Work Functions

### Key Tasks

### Performance Expectations

Identify business needs

- Determine data engineering requirements across all systems, platforms and applications based on artificial intelligence solutions
- Advise the business on data requirements based on information and insights desired
- Establish and implement data ethics, privacy and security guidelines and policies for potential new business cases that involve data engineering processes
- Advise on latest machine learning libraries, strategies, and products in database and data processing software based on business requirements

In accordance with:

- Model AI Governance Framework

Design data architecture

- Define the desired state of information flow through the organisation to determine the organisation's data architecture
- Assess existing systems to evaluate their usability, usefulness, visual design and content
- Guide alignment of information management standards with the enterprise architectural plan and information security standards
- Develop strategies for seamless and low-risk migration of data between systems
- Communicate the data architecture design and recommendations to stakeholders

- As above

Bring artificial intelligence (AI)/machine learning (ML) models into production

- Formulate strategies for code compilation for model production
- Formulate AI/ML development pipeline strategies and infrastructure for the organisation
- Provide technical guidance for scaling and pre-deployment of AI/ML models

- As above

Deploy AI/ML models

- Create deployment blueprints for AI/ML models
- Provide technical guidance for deployment and optimisation of AI/ML models
- Ensure deployed AI/ML models are aligned with the organisation's core values and comply with data governance and ethics guidelines

- As above

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions

- As above

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### CHIEF DATA OFFICER/CHIEF AI OFFICER

#### Job Description

The Chief Data Officer/Chief Artificial Intelligence Officer establishes the organisation's data and artificial intelligence (AI) strategy, and ethics and governance framework, fostering a culture of compliance to data privacy regulations and the Model AI Governance Framework. He/She is accountable for the quality, accessibility, analysis and management of data to inform business strategy, decision-making and drive performance.

He designs initiatives and programs to realise the optimal business value derivable from the organisation's data assets. He formulates data and AI project prioritisation and resourcing strategies and establishes performance measures to evaluate outcomes data and AI-driven solutions. He identifies potential intellectual property (IP) opportunities from analyses and insights from market intelligence reports, and advises the business on infringements against the organisation's IP related to AI solutions. He creates a shared vision and objectives on the use of data and AI in the organisation, building strategic relationships with key business and industry stakeholders to achieve business goals.

The Chief Data Officer/Chief Artificial Intelligence Officer is highly skilled in influencing and engaging stakeholders to secure their buy-in and support. He has strong business acumen, is highly innovative, and is able to make calculated-risk decisions, performing effectively in a complex and difficult environment. He possesses strong leadership and management skills required to develop the organisation's data and AI capabilities.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Budgeting	6	Sustainability Management	6
Business Agility	6	Stakeholder Management	6
Business Continuity	6	Strategy Planning	6
Business Risk Management	6		
Change Management	6		
Data Ethics	6		
Data Governance	6		
Data Strategy	6		
Enterprise Architecture	6		
Emerging Technology Synthesis	6		
IT Governance	6		
IT Standards	6		
Organisational Analysis	6		
Performance Management	6		
Quality Standards	6		
Research	6		
		<b>Generic Skills &amp; Competencies (Top 5)</b>	<b>Proficiency Level</b>
		Problem Solving	Advanced
		Communication	Advanced
		Interpersonal Skills	Advanced
		Leadership	Advanced
		Service Orientation	Advanced

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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Establish data and artificial intelligence (AI) strategy

- Establish the organisation's data and AI strategy, data privacy policies, and the Ethics and Governance framework
- Align data and AI strategy, priorities and plans of the data function to the organisation's vision and mission
- Formulate approaches to maximise the value of data analytics capabilities and technological investments for the organisation
- Develop strategies to ensure seamless integration of technologies with workflows and processes across the organisation
- Promote the adoption of industry leading practices and new data management technologies across the organisation
- Drive the organisation's culture of compliance to data privacy policies, and relevant ethics and governance framework
- Review ethics and governance framework and measures to ensure continued relevance and effectiveness

- In accordance with:
- Model AI Governance Framework
  - Personal Data Protection Act 2012, Personal Data Protection Commission

Optimise business value from data

- Design data and AI driven initiatives to leverage the value of data assets in the organisation
- Lead the identification of high business value business opportunities through application of data and AI solutions
- Advise the team on new and innovative tools and techniques to derive greater value from data
- Determine and showcase the potential value and impact of analytics and intelligent systems on existing business processes

- As above

Formulate objectives and requirements from a business perspective

- Oversee the implementation of Business Intelligence, Data Analytics, and AI driven initiatives across the organisation
- Formulate project prioritisation and resourcing strategies for AI and Data Science projects across the organisation
- Establish performance measures to evaluate data and AI initiatives, programmes, and value derived from effective data management
- Advise the team on new and innovative tools and techniques to derive greater value from data

- As above

Manage intellectual property (IP) strategies, processes and procedures

- Review emerging trends and intelligence, and analyse technology landscape reports and analyses to identify potential IP opportunities
- Oversee systems and processes to manage IP related to AI solutions and/or models
- Act as a subject matter expert and resource person for infringements against the organisation's IP related to AI solutions and/or models

- As above

Build strategic relationships

- Build strategic relationships and alliances with key business and industry stakeholders, and partners to achieve organisational objectives and maximise the value of investments
- Develop a stakeholder management plan to create shared vision and objectives on the use of data and AI in the organisation
- Lead engagement initiatives with key leaders and senior stakeholders to obtain buy-in for data and AI initiatives
- Source for data analytics opportunities for the business and ensure data and indo compliance with business policies and external legal requirements

- As above

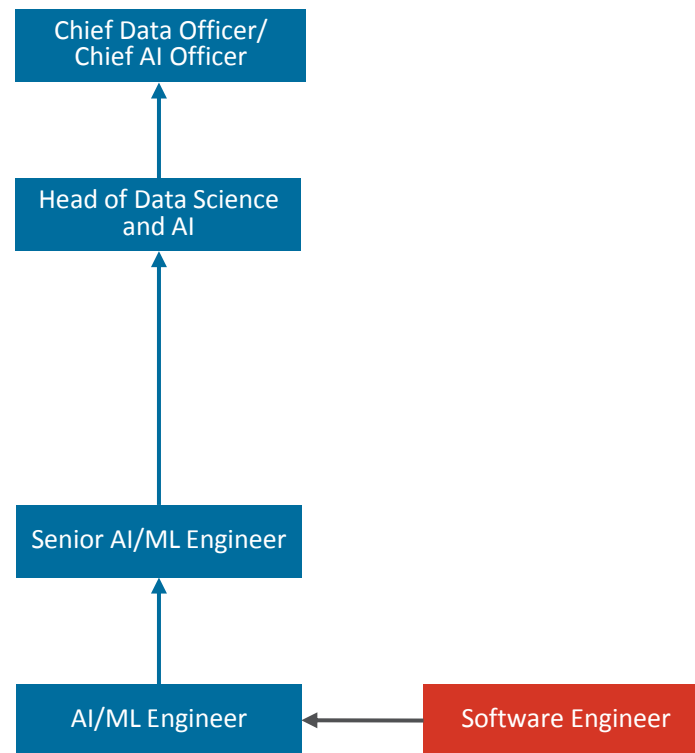
Develop organisation's data and AI capabilities

- Develop strategies and plans to build capabilities within the Data and Artificial Intelligence function
- Drive talent management initiatives to attract, motivate and retain talent for Data Science and AI teams
- Ensure AI solutions and deployment is guided by organisation's corporate values
- Lead succession planning and management for key leadership roles in the Data and Artificial Intelligence function

- As above

Click on Sub-track names below to view feeder roles and next moves

## MACHINE LEARNING (ML) ENGINEERING



→ Lateral Movement

→ Vertical Progression

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## ARTIFICIAL INTELLIGENCE/MACHINE LEARNING ENGINEER

### Job Description

The Artificial Intelligence/Machine Learning Engineer supports the production of scalable and optimised artificial intelligence (AI)/machine learning (ML) models. He/She focuses on building algorithms for the extraction, transformation and loading of large volumes of real-time, unstructured data in order to deploy AI/ML solutions from theoretical data science models. He runs experiments to test the performance of deployed models, and identifies and resolves bugs that arise in the process.

He works in a team setting and is proficient in statistics, scripting and programming languages required by the organisation. He is also familiar with the relevant software platforms in which the models are deployed. He should be knowledgeable of the requirements under the Model AI Governance Framework and the Personal Data Protection Act (PDPA) in the course of his work on AI/ML models.

The AI/ML Engineer is a determined individual who is comfortable working with large data sets, has a keen interest in problem solving and experimentation, and enjoys the iterative process of development and resolving issues.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Needs Analysis

4

Cloud Computing

3

Computational Modelling

3

Computer Vision Technology

4

Configuration Tracking

3

Data Design

4

Data Engineering

3

Data Governance

4

Data Strategy

4

Database Administration

3

Emerging Technology Synthesis

4

Intelligent Reasoning

4

Pattern Recognition Systems

4

Project Management

4

Security Architecture

3

Self-learning Systems

4

Stakeholder Management

4

System Integration

3

Test Planning

3

Text Analytics and Processing

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Intermediate

Developing People

Intermediate

Transdisciplinary Thinking

Intermediate

Computational Thinking

Intermediate

Communication

Intermediate





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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Conduct research on artificial intelligence (AI)/machine learning (ML) models and algorithms

- Research and implement machine learning algorithms and tools for AI/ML model development
- Identify appropriate algorithms based on user requirements
- Select appropriate datasets and data representation methods for analysis
- Evaluate AI/ML models for production

In accordance with:

- Model AI Governance Framework
- Personal Data Protection Act 2012, Personal Data Protection Commission

Build and assess AI/ML models

- Develop codes to package the AI/ML models for scaling
- Develop AI/ML development pipeline and infrastructure
- Develop scalable data pipelines to extract, transform, load and integrate unstructured data from various sources
- Scale AI/ML models for production
- Support continuous improvement of AI solutions

- As above

Deploy AI/ML models in solutions

- Test the operation and performance of the deployed models
- Identify bugs during deployment and create bug fixes to address issues
- Engage in code reviews to improve AI/ML models
- Perform statistical analysis and fine tuning of the model using test results
- Prepare documentation to outline data sources, models and algorithms used and developed
- Research and implement machine learning algorithms and tools for AI/ML model development

- As above

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GENERIC SKILLS &amp; COMPETENCIES

## SENIOR ARTIFICIAL INTELLIGENCE/MACHINE LEARNING ENGINEER

### Job Description

The Senior Artificial Intelligence/Machine Learning Engineer oversees projects for the production of scalable and optimised artificial intelligence (AI)/machine learning (ML) models, and ensures communication and collaboration with appropriate stakeholders. He/She is responsible for evaluating techniques or algorithms used and ensuring performance of the models deployed, and guiding or coaching the team in achieving quality in technical areas of the projects.

He works in a team setting and is proficient in statistics, 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 Senior AI/Machine Learning Engineer is passionate about delivering end-to-end data projects, from scoping and discovery to post-deployment. He is skilled in stakeholder management, possesses the ability to communicate ideas and recommendations to and influence various internal stakeholders, both within and beyond the team.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Needs Analysis

5

Change Management

4

Cloud Computing

4

Computational Modelling

4

Computer Vision Technology

5

Configuration Tracking

4

Data Design

5

Data Engineering

4

Data Governance

5

Data Strategy

5

Database Administration

4

Emerging Technology Synthesis

5

Intelligent Reasoning

5

Pattern Recognition Systems

5

Problem Management

5

Project Management

5

Security Architecture

4

Self-learning Systems

5

Stakeholder Management

5

System Integration

4

Test Planning

4

Text Analytics and Processing

5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Advanced

Developing People

Intermediate

Transdisciplinary Thinking

Advanced

Computational Thinking

Intermediate

Communication

Intermediate



### Critical Work Functions

### Key Tasks

### Performance Expectations

Develop artificial intelligence (AI)/ machine learning (ML) models for production

- Evaluate AI/ML model scaling and packaging codes for refinement
- Assess performance of production-level AI/ML models for scalability
- Manage AI/ML development pipeline and infrastructure
- Lead the extraction, transformation, loading and integration of unstructured data for modelling
- Review scaled AI/ML models to ensure desired performance can be achieved when deployed
- Drive optimisation of AI solutions to increase performance

In accordance with:

- Model AI Governance Framework
- Personal Data Protection Act 2012, Personal Data Protection Commission

Deploy AI/ML models

- Oversee the deployment of AI/ML solutions
- Create test plan for post-deployment
- Communicate deployment issues and resolution plans to stakeholders
- Lead the development and deployment of supervised and/or unsupervised techniques for problem solving

- As above

Manage AI/ML projects

- Plan the end-to-end deployment of AI/ML solutions from initial testing, deployment, to optimisation in terms of system performance and run time
- Lead project estimations and code reviews
- Set project timelines and work quality guidelines
- Apply project management tools and processes to ensure project is cost-effective
- Communicate project objectives at critical junctions to obtain buy-in from all stakeholders
- Deliver scalable AI/ML solutions

- As above

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## HEAD OF DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

### Job Description

The Head of Data Science and Artificial Intelligence formulates and implement data and artificial intelligence (AI) strategies to optimise business value derived from data assets. He/She guides the AI research direction to create new algorithms and models, and reviews the feasibility of translating research and development outcomes into data and AI solutions. He oversees the development of data and AI solutions for the business to inform strategy and planning, decision-making and drive performance. He identifies potential intellectual property commercialisation opportunities for AI solutions and/or models, and oversees the preparation and application for intellectual property rights.

He manages a team and is proficient in statistics, 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 Head of Data Science and Artificial Intelligence is a highly effective communicator, articulating the potential value and impact of data and AI solutions on the business and influencing key business stakeholders. He is a proactive and innovative individual, possessing a strong drive to succeed amidst an evolving business environment. He develops the data and AI team's technical and leadership capabilities, and ensures compliance to the organisation's data privacy policies, ethics and governance framework, and intellectual property legislation.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting	5	Learning and Development	6
Business Agility	5	Manpower Planning	5
Business Continuity	5	Networking	5
Business Innovation	6	Organisational Analysis	5
Business Needs Analysis	5	Pattern Recognition Systems	5
Business Performance Management	6	People and Performance Management	5
Business Risk Management	5	Performance Management	5
Change Management	5	Project Management	6
Computer Vision Technology	5	Quality Standards	5
Data Design	5	Research	5
Data Engineering	5	Self-learning Systems	5
Data Ethics	5	Software Design	5
Data Governance	5	Solution Architecture	5
Data Strategy	5	Stakeholder Management	5
Emerging Technology Synthesis	5	Strategy Implementation	4
Intelligent Reasoning	5		



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## HEAD OF DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

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**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

Generic Skills & Competencies (Top 5)		Proficiency Level
Strategy Planning	5	Advanced
Sustainability Management	5	Advanced
Text Analytics and Processing	5	Advanced
Problem Solving		Advanced
Communication		Advanced
Leadership		Advanced
Interpersonal Skills		Advanced
Transdisciplinary Thinking		Advanced



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### Critical Work Functions

### Key Tasks

### Performance Expectations

Implement data and artificial intelligence (AI) strategy

- Formulate and implement strategies to identify, acquire and use appropriate data and AI models
- Guide AI research direction based on the current and future needs of the organisation
- Drive implementation of new data management technologies
- Drive the organisation's AI research and development strategy and focus
- Communicate and ensure compliance to the organisation's data privacy policies, and ethics and governance framework
- Direct engagement initiatives to communicate the potential and value of data and AI across the organisation
- Review research and development outcomes to ensure alignment with the organisation's vision, mission and values, and data and AI strategy
- Establish internal policies and processes to perform regular model tuning to cater for changes in customer behaviour over time

In accordance with:

- Model AI Governance Framework
- Personal Data Protection Act 2012, Personal Data Protection Commission

Formulate objectives and requirements from a business perspective

- Develop feasibility analysis plans for AI and Data Science Projects based on business requirements and expected outcomes
- Synthesise insights from research on emerging trends, market developments and environmental scans to support feasibility analysis
- Approve proposed AI solution for development based on an evaluation of cost-benefit, competitive and feasibility analysis
- Communicate insights of feasibility analysis and relevant success strategies with key business stakeholders for decision making
- Build partnerships with key service partners and customers within and across industries to accelerate the adoption of Data Science and AI initiatives

• As above

Manage intellectual property (IP) strategies, processes and procedures

- Identify potential IP commercialisation opportunities for AI solutions and/or models
- Liaise with external vendors on preparation and finalisation of IP applications
- Ensure compliance to IP legislation and guidelines

• As above

Present data driven business value of data science/artificial intelligence (AI) models

- Present data and AI model development outcomes to key stakeholders
- Create leading-edge resources, including playbooks, guides, blog posts, videos, to advance data and AI within the organisation and for end-users
- Present insights of data and AI model to key stakeholders
- Articulate the potential business value and commercial impact derived from data and AI solutions

• As above

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions

• As above

Click on Sub-track names below to view feeder roles and next moves

## DATA SCIENCE/ AI SCIENCE

Chief Data Officer/  
Chief AI Officer

Head of Data Science  
and AI

Data Scientist/  
AI Scientist

Data Analyst/Associate  
Data Engineer



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## DATA SCIENTIST/ARTIFICIAL INTELLIGENCE SCIENTIST

### Job Description

The Data Scientist/Artificial Intelligence Scientist plans and leads the development of new and advanced data analytic techniques, methodologies and analytical solutions from design, prototyping and testing. He/She identifies and develops core data and artificial intelligence (AI) science components for the delivery of projects, architects specialised database and computing environments, explores and visualises complex data set to provide incremental business value. He extracts and integrates data from various sources, and creates advanced models and algorithms suitable for the business use case. He conducts testing on data and AI models, interprets findings from testing, and evaluates model performance for scaling and deployment. He develops compelling and logically structured communication materials to facilitate stakeholder buy-in.

He works in a team setting and is proficient in statistics, 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 Scientist/AI Scientist has strong analytical and critical thinking skills to identify and solve problems. He is passionate about analysing and resolving complex business problems, displaying intellectual curiosity towards using data and AI to address business needs and challenges. He is a data storyteller, and is able to influence key stakeholders and spearhead a data driven approach to resolve business issues.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Innovation	5	Software Design	5
Business Needs Analysis	5	Stakeholder Management	4
Computational Modelling	5	Test Planning	5
Computer Vision Technology	4	Text Analytics and Processing	6
Data Design	5		
Data Ethics	5		
Data Governance	5		
Data Strategy	5		
Design Thinking Practice	5		
Emerging Technology Synthesis	4		
Intelligent Reasoning	5		
Pattern Recognition Systems	5		
Project Management	5		
Quality Standards	5		
Self-learning Systems	4		
Solution Architecture	5		
		<b>Generic Skills &amp; Competencies (Top 5)</b>	<b>Proficiency Level</b>
		Leadership	Advanced
		Developing People	Intermediate
		Computational Thinking	Advanced
		Communication	Intermediate
		Transdisciplinary Thinking	Advanced



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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Manage data preparation and modelling

- Define objectives and hypothesis for research on data and AI models
- Analyse the ways in which datasets may be biased and address this in safety measures and deployment strategies
- Conduct extraction and integration of data including features from different data sources
- Develop multiple models and algorithms suitable for the use case
- Perform model comparison to draw inferences on variable importance
- Select the best model based on pre-defined evaluation criteria
- Account for data ethics and policies in model selection and evaluation process
- Interpret and evaluate model performance for scaling and deployment

In accordance with:

- The Model AI Governance Framework

Build and assess models

- Conduct testing on final model in real-time business conditions prior to deployment
- Scale and deploy models in real-time business conditions for end user consumption
- Initiate autonomous monitoring to scale human oversight
- Document modelling techniques used and assumptions made against test outcomes
- Enable end user capability to use AI/ Data Science products effectively

- As above

Present data driven business value of data science/AI models

- Create reports and deliverables based on insights derived from the model results
- Develop compelling, logically structured presentations including story-telling of research and/or analytics findings to secure stakeholder commitment
- Contribute to the creation of leading-edge resources, including playbooks, guides, blog posts, videos, etc.

- As above

Click on Sub-track names below to view feeder roles and next moves

## AI APPLIED RESEARCH

Chief Data Officer/  
Chief AI Officer

Head of Data Science  
and AI

AI Applied  
Researcher



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## ARTIFICIAL INTELLIGENCE APPLIED RESEARCHER

### Job Description

The Artificial Intelligence Applied Researcher is responsible for the design and conduct of artificial intelligence (AI) research and development, synthesising insights to identify potential use cases of AI for the business. He/She presents AI research and development outcomes to senior management, business stakeholders at public forums. He determines the patentability of AI solutions and assists in the process for obtaining intellectual property rights for AI solutions.

He works in a team setting and is proficient in statistics, scripting and programming languages required by the organisation. He is also familiar with the relevant software platforms on which the solutions are deployed.

The AI Applied Researcher has a strong passion and curiosity for uncovering the possibilities of applying AI to address real-life business challenges and enhance organisation performance.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Innovation	5
Business Needs Analysis	5
Computer Vision Technology	4
Data Design	5
Data Ethics	5
Data Governance	5
Data Strategy	5
Design Thinking Practice	5
Emerging Technology Synthesis	5
Intelligent Reasoning	5
Organisational Design	5
Pattern Recognition Systems	5
Project Management	5
Quality Standards	5
Research	4
Self-learning Systems	4

Stakeholder Management	4
Text Analytics and Processing	6

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership	Advanced
Developing People	Advanced
Communication	Intermediate
Computational Thinking	Intermediate
Lifelong Learning	Intermediate

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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Conduct artificial intelligence (AI) research and development

- Plan and design AI research and development projects
- Manage project plans and timelines for all active and incoming AI research projects
- Evaluate AI research methodology and process to identify areas for improvement
- Connect with academics and institutions to collaborate and build relationships
- Review AI literature to identify emerging trends, methods, technologies and best practices
- Synthesise research to identify potential use cases and new research and development activities
- Document and present AI research and development outcomes to senior management and business stakeholders at public forums

In accordance with:

- Model AI Governance Framework
- Personal Data Protection Act 2012, Personal Data Protection Commission

Manage data collection and preparation

- Ensure quality and suitability of data for AI research and development
- Assess suitability of data extraction methods for research and development
- Explore new data sources and techniques to enhance research and development outcomes
- Analyse the ways in which datasets may be biased and address this in safety measures and deployment strategies

- As above

Build artificial intelligence (AI) models

- Design experiments to test AI models
- Lead the analysis, simulations and relevant testing procedures of AI models
- Synthesise insights across AI research projects to identify new research topics
- Lead prototype development of AI solutions for large scale deployment
- Provide guidance to the team on developing new AI models using suitable learning and modelling methods
- Enhance transparency of algorithms found in AI through concepts of explainability, repeatability and traceability

- As above

Manage intellectual property (IP) processes and procedures

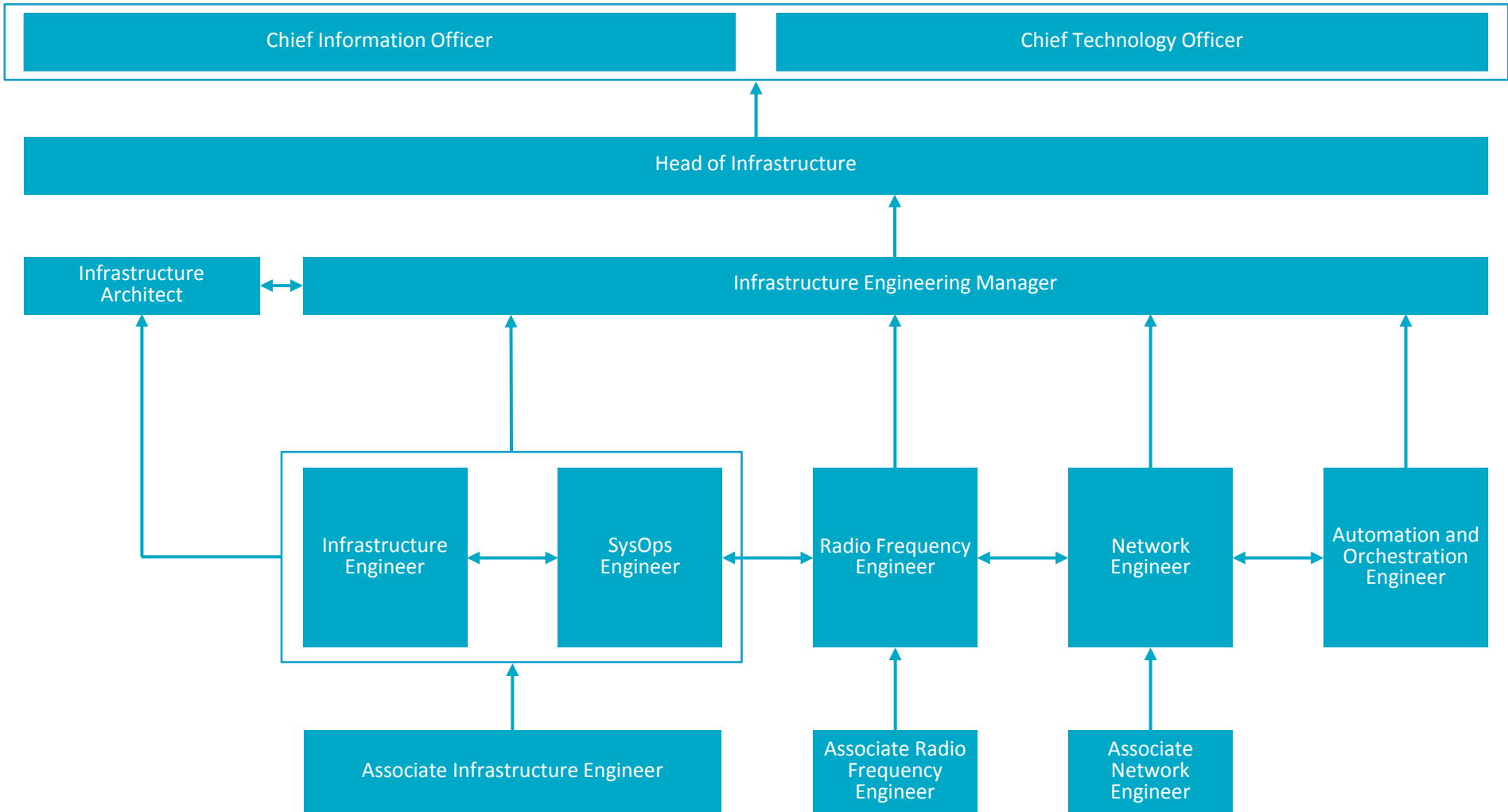
- Perform preliminary analysis on patentability of AI solutions
- Assist in the creation, application and assignment of IP legal rights for AI solutions
- Assist in IP due diligence and landscape analysis to determine new IP for AI solutions

- As above

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PLAN AND DESIGN

BUILD AND MAINTAIN



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PLAN AND DESIGN

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Architect

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COMPETENCIESGENERIC SKILLS  
& COMPETENCIES**INFRASTRUCTURE ARCHITECT****Job Description**

The Infrastructure Architect translates the overall business strategy into an infrastructure architecture strategy. He/She defines future state infrastructure architecture design considerations based on current and future business requirements. He engages business leaders and synthesises critical infrastructure gaps, current technology environment, and anticipated business and user challenges to inform architecture design. He determines design specifications of the future state infrastructure architecture, and develops the infrastructure architecture blueprint, roadmap for implementation, as well as plans for the integration of new systems architecture into existing infrastructure. He oversees the implementation of infrastructure architecture and ensures transition of current business practices and processes to enable delivery of appropriate solutions for the business. He also evaluates infrastructure performance against changing business and user requirements to inform architecture design changes.

He is familiar with enterprise architecture methodologies and frameworks, and architecture modelling tools. He is knowledgeable of various cloud, network, storage and security technologies, as well as cloud computing models and services.

The Infrastructure Architect adopts an analytical and strategic thinking approach to developing innovative infrastructure design that meets business requirements. He possesses strong communication and interpersonal skills, and is able to influence key stakeholders and build strategic relationships with partners and vendors.

**Critical Work Functions  
and Key Tasks**[View details](#)*Click on any of the Skills and Competencies to view a detailed description***Technical Skills  
& Competencies****Proficiency  
Level**

Business Continuity

4

Business Environment Analysis

4

Business Innovation

5

Business Needs Analysis

5

Business Requirements Mapping

4

Business Risk Management

4

Change Management

4

Disaster Recovery Management

5

Emerging Technology Synthesis

5

Enterprise Architecture

4

Infrastructure Design

5

Infrastructure Strategy

5

Network Administration and Maintenance

4

Network Configuration

4

Networking

4

Product Management

5

Project Management

5

Quality Standards

5

Security Architecture

4

Software Design

5

Solution Architecture

4

Stakeholder Management

5

System Integration

5

Sustainability Management

4

**Generic Skills  
& Competencies (Top 5)****Proficiency  
Level**

Communication

Intermediate

Transdisciplinary Thinking

Advanced

Decision Making

Intermediate

Sense Making

Intermediate

Creative Thinking

Advanced



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### Critical Work Functions

### Key Tasks

Formulate the organisation's architecture strategy, governance, roadmap, standards, policies and procedures

- Lead and coordinate the domain technical and business discussions
- Participate in ecosystem strategy development, environment analysis and opportunity identification
- Analyse, design and develop roadmaps and implementation plans based on a current versus future state
- Design standard configurations and patterns
- Lead and facilitate the infrastructure architecture governance process based on the enterprise architecture governance structure
- Manage exceptions to architectural standards at an infrastructure level
- Review and approve recommendations to infrastructure architectural standards

Develop architecture requirements and maintain oversight

- Analyse and develop infrastructure architectural requirements
- Align architectural requirements with IT strategy
- Assess near-term needs to establish business priorities
- Ensure compatibility with existing solutions, infrastructure, services and strategic requirements
- Coordinate architecture implementation and modification activities
- Assist in post-implementation and continuous improvement efforts to enhance performance and provide increased functionality
- Ensure conceptual completeness of the technical solution

Manage quality and continuous improvement of architecture

- Analyse the current architecture to identify weaknesses and develop opportunities for improvement
- Identify and propose variances to the architecture to accommodate project needs
- Perform ongoing architecture quality review activities

Research emerging technologies

- Consults with clients and IT teams on infrastructure architecture solutions
- Analyses cost versus benefits, risks, impact and technology priorities
- Provide recommendations on emerging technology to senior management
- Develop a communication plan for infrastructure architecture
- Lead the research and evaluation of emerging technology, industry and market trends to assist in project development
- Identify organisational requirements for resources

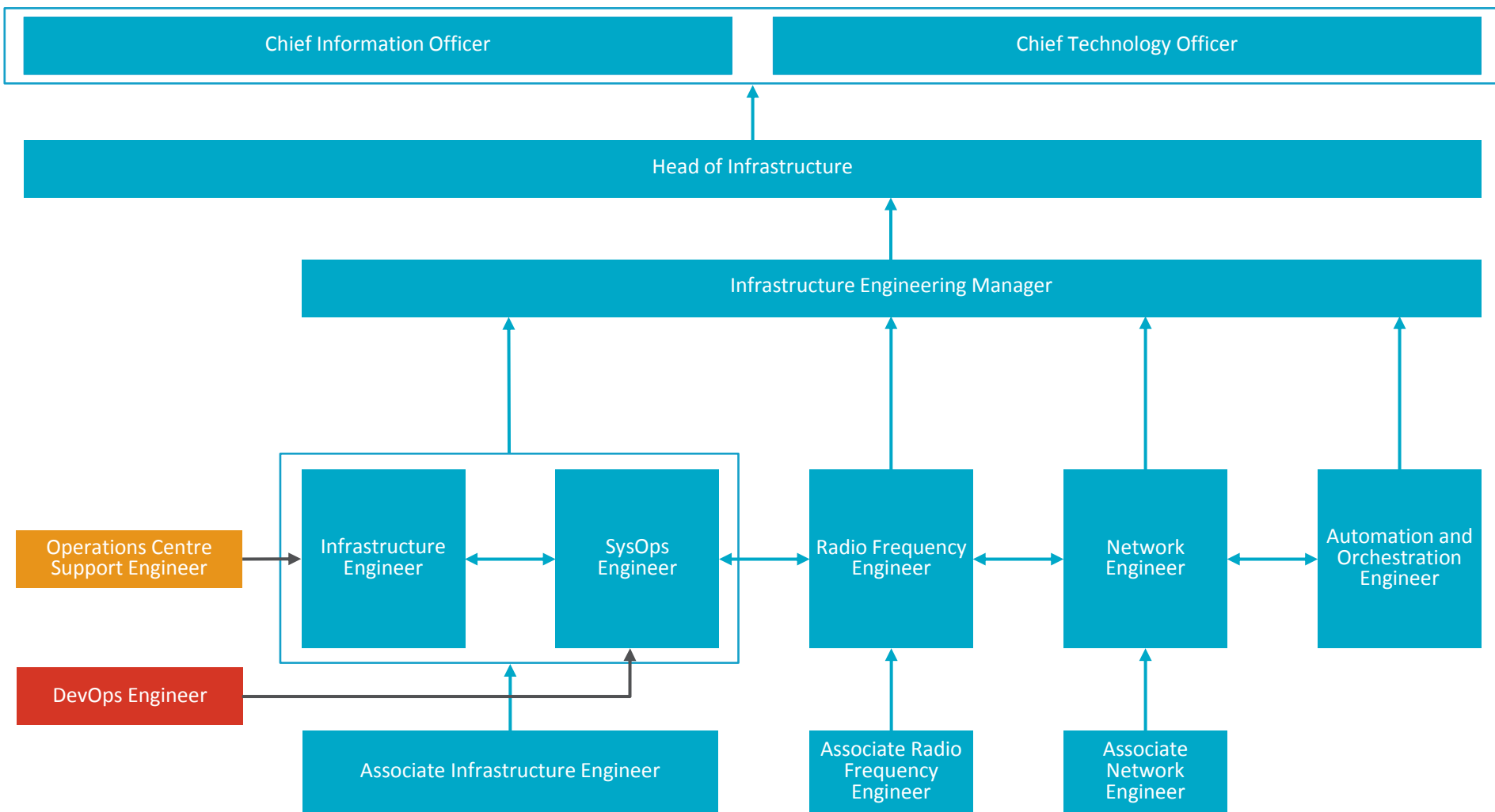
Design infrastructure architecture

- Oversee the development of infrastructure architecture based on business requirements and IT strategies
- Approve and modify infrastructure designs and architecture
- Manage the assessment of capacity and resource utilisation of organisational infrastructure
- Define the principles that guide infrastructure decisions for the organisation
- Oversee and facilitate the evaluation and selection of infrastructure technology and the design of configuration standards



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## ASSOCIATE INFRASTRUCTURE ENGINEER

### Job Description

The Associate Infrastructure Engineer assists with infrastructure deployment and maintenance. He/She supports the configuration and integration of infrastructure, and acts as a liaison with third-party vendors. He assists with technical infrastructure performance analysis to identify problems and risks, makes improvement recommendations and supports implementation of preventive solutions. He troubleshoots infrastructure problems and incidents and takes appropriate corrective action where possible, in accordance to procedures, processes and quality standards.

He possesses knowledge of and is willing to gain experience across multiple infrastructure platforms and systems.

The Associate Infrastructure Engineer displays a natural curiosity for investigating issues and applying an analytical approach to solutions development and implementation. He has effective interpersonal skills to work well with internal and external stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Environment Analysis

2

Business Needs Analysis

2

Cloud Computing

3

Cyber and Data Breach Incident Management

3

Data Analytics

2

Emerging Technology Synthesis

3

Infrastructure Deployment

1,2

Infrastructure Design

3

Infrastructure Support

1,2

IT Asset Management

2

Network Administration and Maintenance

1,2

Network Configuration

2

Network Security

3

Problem Management

3

Process Improvement and Optimisation

3

Procurement

2

Project Management

3

Service Level Management

3

Stakeholder Management

2

Test Planning

2

Vendor Management

3

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Service Orientation

Basic

Problem Solving

Intermediate

Resource Management

Basic

Teamwork

Basic

Sense Making

Basic

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### Critical Work Functions

### Key Tasks

Oversee infrastructure deployment

- Assist in the configuration of infrastructure such as computer hardware, systems software, and applications software
- Assist with infrastructure testing and implementation
- Research emerging cloud and infrastructure technologies
- Assist with piloting of new tools, technologies, and/or processes
- Coordinate with third-party vendors for integration of cloud technologies
- Execute infrastructure operations activities and installation of infrastructure systems according to design specifications
- Adhere to security requirements and report security issues with infrastructure

Optimise infrastructure performance  
and systems

- Collate performance and data performance statistics for capacity planning and reporting of existing infrastructure
- Monitor infrastructure traffic and performance in accordance with defined operational metrics
- Assist in infrastructure capacity workload modelling and availability analysis
- Maintain documentation of infrastructure operations activities, maintenance procedures and tests, and infrastructure optimisation

Resolve infrastructure-related incidents

- Troubleshoot escalated server, storage and maintenance issues
- Simulate user problems to resolve operating difficulties
- Suggest improvements to infrastructure resolution methods and techniques
- Monitor compliance to procedures and policies for infrastructure-related incidents

Manage infrastructure upgrades

- Assist with the implementation of agreed infrastructure changes and maintenance routines
- Document infrastructure change requests and maintenance routines
- Coordinate planned maintenance and system back-up processes

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## INFRASTRUCTURE ENGINEER

### Job Description

The Infrastructure Engineer is responsible for the implementation, testing, optimisation and virtualisation of infrastructure across on-premise, cloud and network infrastructure. He/She performs activities pertaining to infrastructure deployment and performance to ensure delivery of infrastructure solutions in alignment with service standards. He oversees major maintenance and troubleshooting issues, and is responsible for executing upgrades to infrastructure systems.

He is familiar with various types of infrastructure systems and platforms, including networks, servers, systems and applications.

The Infrastructure Engineer takes a critical and methodical approach towards implementing infrastructure projects performance monitoring. He also maintains high standards of quality and collaborates with team members to resolve complex issues.

**Critical Work Functions  
and Key Tasks**

View details

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Applications Integration

4

Budgeting

3

Business Environment Analysis

3

Business Innovation

4

Business Needs Analysis

3

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Cloud Computing

4

Configuration Tracking

3

Contract Management

3

Cyber and Data Breach Incident  
Management

4

Emerging Technology Synthesis

4

Infrastructure Deployment

4

Infrastructure Design

4

Infrastructure Support

4

Network Administration and  
Maintenance

3

Network Configuration

3

Network Security

4

Partnership Management

3

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

3

Procurement

3

Quality Engineering

4

Security Administration

3

Service Level Management

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Software Configuration

3

Solution Architecture

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Stakeholder Management

3



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**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

**Technical Skills & Competencies**

**Proficiency Level**

**Generic Skills & Competencies (Top 5)**

**Proficiency Level**

Test Planning

3

Service Orientation

Intermediate

Vendor Management

4

Problem Solving

Advanced

Resource Management

Intermediate

Teamwork

Basic

Sense Making

Intermediate



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### Critical Work Functions

### Key Tasks

Oversee infrastructure deployment

- Assist in the design and implementation of infrastructure solutions across on-premise and cloud infrastructure that adhere to current architecture standards
- Evaluate the feasibility of integrating or adopting emerging cloud and infrastructure technologies
- Lead the testing of implemented infrastructure solutions to ensure requirements are met
- Manage the integration of third-party technologies into cloud infrastructure
- Develop documentation on administration, installation, configuration and troubleshooting
- Develop system and service deployment scripts
- Conduct technical analysis of complex software, hardware and infrastructure equipment
- Oversee adherence to security requirements for infrastructure operations

Optimise infrastructure performance and systems

- Monitor metrics for performance, reliability, availability, security and billing of infrastructure systems to proactively right-size infrastructure load
- Analyse and present findings on infrastructure capabilities and limitations
- Tune infrastructure and cloud systems to ensure optimal performance
- Conduct technical analyses to determine the extent to which solutions perform 'as required' to ensure that future solutions meet anticipated demand
- Support initiatives to improve the infrastructure systems and service delivery through automation and virtualisation
- Develop reports on performance, reliability and availability of infrastructure systems by review of service uptime, utilisation and throughput

Resolve infrastructure-related incidents

- Resolve escalations or major issues relating to infrastructure operations
- Simulate user problems to perform end-to-end diagnosis for infrastructure incidents
- Assist senior management in disaster recovery planning and testing
- Implement improvements to infrastructure resolution methods and techniques
- Maintain controls and documentation to ensure compliance with audit requirements
- Analyse audit trails to detect systematic security violations related to infrastructure
- Oversee compliance to procedures and policies for infrastructure-related incidents
- Guide and train team members to resolve infrastructure-related incidents

Manage infrastructure upgrades

- Identify key infrastructure operations issues and maintenance priorities
- Manage the implementation of agreed infrastructure change requests and maintenance routines
- Organise schedules for planned maintenance and system back-up processes
- Oversee improvements to maintenance capability by using automation for upgrades, enterprise back-up and storage

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## INFRASTRUCTURE ENGINEERING MANAGER

### Job Description

The Infrastructure Engineering Manager drives the implementation of strategy for infrastructure operations and maintenance to ensure availability of stable and secure systems and networks. He/She manages project resource allocation and develops infrastructure implementation, operations and maintenance engineers; scopes out policies and sets performance expectations. He identifies problems and presents new methodologies/solutions to key stakeholders to enhance and improve the delivery of infrastructure operations and maintenance services.

He has expertise in the planning, implementation and maintenance of infrastructure systems across cloud, on-premise, server and network infrastructure. He is familiar with the infrastructure deployment and IT service management processes, tools and methodologies. He is knowledgeable in both technical and business aspects of the organisation's IT infrastructure to bridge gaps and enhance collaboration between IT and functional teams.

The Infrastructure Engineering Manager is able to address multi-faceted issues effectively to ensure systems are stable and secure. He adopts a methodical approach to managing project resources and communicates well to his team and key stakeholders on the solutions developed.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Audit and Compliance	3	Infrastructure Design	5
Budgeting	4	Infrastructure Strategy	4
Business Environment Analysis	4	IT Asset Management	4
Business Innovation	5	IT Governance	4
Business Needs Analysis	4	IT Standards	4
Business Negotiation	4	IT Strategy	4
Business Performance Management	4	Learning and Development	4
Business Requirements Mapping	5	Manpower Planning	3
Business Risk Management	4	Network Administration and Maintenance	4
Change Management	4	Networking	4
Cloud Computing	5	Organisational Analysis	4
Contract Management	4	Partnership Management	4
Cyber and Data Breach Incident Management	5	People and Performance Management	3
Disaster Recovery Management	4	Performance Management	5
Emerging Technology Synthesis	5	Problem Management	4
Infrastructure Deployment	4		



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**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Project Feasibility Assessment

4

Decision Making

Intermediate

Project Management

5

Leadership

Intermediate

Quality Engineering

5

Communication

Advanced

Security Administration

4

Resource Management

Intermediate

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5

Service Orientation

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3

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Critical Work Functions

Key Tasks

Establish infrastructure strategy and design

- Develop roadmaps to achieve desired future-state IT infrastructure for the organisation
- Advise the business on infrastructure operations and maintenance related issues
- Recommend process, product or service improvements, resource optimisation and cost savings
- Partner with stakeholders to define infrastructure operations and maintenance requirements for new technology implementations
- Anticipate internal and/or external business challenges and/or regulatory issues
- Forecast financial, physical, and human resource needs to meet established objectives
- Evaluate trends and new technologies in engineering to enhance infrastructure and orchestration

Manage infrastructure Implementation and optimisation

- Integrate solutions with other applications and platforms based on engineering requirements
- Develop new alerts and monitoring techniques based on engineering requirements
- Forecast utilisation patterns and identifies modifications or upgrades
- Conduct capacity workload modelling and availability analysis for platforms and environments
- Recommend changes and/or enhancements for improved systems availability, reliability and performance
- Recommend and implement software or hardware changes to rectify problems or address improvement opportunities
- Assist in the design, implementation and execution of back-up and disaster recovery plans for infrastructure

Establish and oversee standards and governance

- Monitor infrastructure availability and performance to ensure compliance with Service Level Agreements (SLAs)
- Assist in development of SLAs, metrics and key performance indicators
- Ensure adherence to security requirements
- Ensure regulatory and legal compliance in infrastructure operations and maintenance activities

Manage partners and vendors

- Evaluate and qualify key infrastructure partners, vendors and technology providers
- Manage contracts with key partners and vendors
- Assess performance of key partners and vendors according to defined service delivery metrics

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

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## HEAD OF INFRASTRUCTURE

### Job Description

The Head of Infrastructure establishes organisation's overall IT infrastructure strategy and roadmap to transition the organisation towards its future-state IT infrastructure. He/She advises on the development of IT infrastructure standards and governance policies and processes for operations, as well as capabilities and constraints of the IT infrastructure environment. He establishes governance policies, standards, procedures and guidelines to ensure that IT infrastructure architecture, solutions, and technologies are aligned with the organisation's vision and strategy. He builds strong partnership with key stakeholders from a strategic and operational perspective to ensure alignment with business requirements and expectations.

He is an proficient with enterprise architecture methodologies and frameworks, architecture modelling tools, as well as product development methodologies. He is knowledgeable of various cloud, network, storage and security technologies, as well as cloud computing models and services.

The Head of Infrastructure is an influential leader with a broad sense of perspective to be able to drive decisions with key internal and external stakeholders. He is strategic in his approach to managing resources and developing capabilities within the team.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Audit and Compliance	4	IT Governance	5
Budgeting	5	IT Standards	5
Business Environment Analysis	5	IT Strategy	5
Business Innovation	6	Learning and Development	5
Business Needs Analysis	5	Manpower Planning	4
Business Negotiation	5	Networking	5
Business Performance Management	5	Organisational Analysis	5
Business Risk Management	5	Partnership Management	5
Change Management	5	Performance Management	6
Cloud Computing	6	Project Feasibility Assessment	5
Contract Management	5	Project Management	6
Cyber and Data Breach Incident Management	6	Security Architecture	6
Disaster Recovery Management	5	Stakeholder Management	5
Emerging Technology Synthesis	6	Strategy Implementation	4
Enterprise Architecture	4	Strategy Planning	5
Infrastructure Strategy	6		



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**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Sustainability Management

5

Test Planning

5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Advanced

Communication

Advanced

Decision Making

Intermediate

Resource Management

Advanced

Global Mindset

Advanced



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### Critical Work Functions

### Key Tasks

Establish infrastructure strategy and design

- Establish organisation's overall IT infrastructure strategy
- Guide the formulation of a roadmap to transition the organisation towards its future-state IT infrastructure
- Determine the short-term and long-term IT infrastructure needs for current and future business requirements
- Advise on the design for an agile, scalable and secured IT infrastructure with built-in automation tools and workflows
- Provide overall IT infrastructure architecture thought leadership
- Define desired performance standards for IT infrastructure

Manage infrastructure implementation and optimisation

- Solicit buy-in from senior management on the implementation of IT infrastructure strategy and architecture
- Advise stakeholders on capabilities and constraints of the IT infrastructure environment
- Oversee the development of disaster recovery and contingency plans
- Assess performance of IT infrastructure against defined standards and business requirements
- Ensure IT infrastructure architecture, solutions, and technologies are aligned with the organisation's vision and strategy
- Recommend new technologies for security, IT operations and service quality improvement, as well as for cost optimisation

Establish and oversee standards and governance

- Establish metrics, key performance indicators (KPIs), Service Level Agreements (SLAs) and protocols
- Establish governance policies, standards, procedures and guidelines based upon business strategy
- Advise on the development of IT infrastructure standards and governance policies and processes for operations
- Ensure regulatory and legal compliance of both physical and digital infrastructure design

Manage partners and vendors

- Build strategic relationships with key infrastructure partners, vendors and technology providers
- Lead negotiations with external partners and vendors
- Oversee performance of key partners and vendors in the delivery of services

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions

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## SYSOPS ENGINEER

### Job Description

The SysOps Engineer is responsible for the configuration, reliability and efficiency of systems. He/She optimises the capacity and performance of infrastructure, using knowledge of coding and scripting to automate the resolution of recurring issues and elimination of tasks, as well as enabling scalable and distributed systems. He also supports system installation and upgrades, performs continuous monitoring of infrastructure and ensures security and compliance in leveraging cloud platforms.

He possesses a high level of proficiency in scripting and programming languages. He is familiar with cloud platforms, scaling and management of infrastructure. He works well with a variety of internal and external stakeholders. He is able to work on an on-call and shift basis, with the ability to prioritise effectively and operate under pressure.

The SysOps Engineer enjoys hands-on problem-solving and is driven by investigating challenging, complex problems. He is a resourceful and self-directed individual who performs independently with minimal guidance. He is also an analytical thinker who demonstrates strong interpersonal skills in cross-team collaboration.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Coaching

4

Application Development

4

Applications Integration

4

Budgeting

3

Business Agility

4

Business Environment Analysis

3

Business Innovation

4

Business Needs Analysis

3

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Cloud Computing

4

Configuration Tracking

3

Continuous Integration and Continuous Deployment

3

Contract Management

3

Cyber and Data Breach Incident Management

4

Emerging Technology Synthesis

4

Infrastructure Deployment

4

Infrastructure Design

4

Infrastructure Support

4

Network Administration and Maintenance

3

Network Configuration

3

Network Security

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Problem Solving

Advanced

Service Orientation

Intermediate

Resource Management

Intermediate

Teamwork

Basic

Sense Making

Intermediate



Critical Work Functions

Key Tasks

Develop infrastructure architecture and standards

- Develop processes and standards for system or application reliability in areas of availability, performance, latency, capacity, emergency response, capacity planning, change management, security and monitoring
- Translate business needs into cloud architectural requirements
- Design scalable, robust systems using cloud architecture
- Create procedures and documentation for site reliability and incident management

Configure and deploy infrastructure

- Build and run large-scale, massively distributed and fault-tolerant systems
- Perform provisioning of cloud resources
- Configure infrastructure environment for software development and prototyping
- Conduct pre-deployment testing of systems to ensure reliability
- Implement operational cost control mechanisms for cloud infrastructure
- Identify and resolve deployment issues

Monitor infrastructure and resolve issues

- Oversee configuration of operational systems to ensure alignment with technical and security requirements
- Conduct measurement and monitoring of overall performance, system health, system availability, and latency
- Provide proactive updates or alerts on infrastructure availability to relevant stakeholders
- Address gaps in performance or availability based on identified metrics
- Carry out testing and release procedures to ensure rigour of infrastructure and services
- Resolve service operation issues and prevent recurrence using automation
- Perform regular tuning of infrastructure and services

Automate infrastructure operations and optimise performance

- Conduct capacity planning for cloud infrastructure and systems performance analysis
- Identify opportunities to enhance operational workflows, systems and processes through automated deployment
- Develop tools and scripts to automate deployments and optimise performance
- Create an operating environment for monitoring, alerting, self-healing and automated recovery

Embed scalability into infrastructure

- Devise strategies and roadmap for scaling of infrastructure operations
- Design and write code for scalable systems
- Scale systems through automation to manage recurring tasks
- Propose suggestions to enhance infrastructure architecture

Manage data, security and compliance

- Configure cloud platforms and applications in alignment with organisational cyber security policies
- Implement identity and access management controls
- Execute procedures to ensure data protection and encryption
- Monitor compliance of data management and retention processes

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## ASSOCIATE RADIO FREQUENCY ENGINEER

### Job Description

The Associate Radio Frequency Engineer is responsible for supporting the planning, operations and optimisation of wireless networks and systems. He/She configures the network infrastructure necessary for wireless communications, and monitors and troubleshoots issues to maintain the quality and performance of wireless networks. He also ensures that wireless network activities are documented appropriately and in compliance with the required procedures and standards.

He is familiar with wireless networking technologies, and proficient in the use of simulation software, programming languages and database servers.

The Associate Radio Frequency Engineer is detail-oriented and enjoys problem solving or troubleshooting. He works well in teams and is able to prioritise tasks effectively.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Environment Analysis

2

Business Needs Analysis

2

Cyber and Data Breach Incident Management

3

Emerging Technology Synthesis

3

Infrastructure Deployment

1,2

Infrastructure Support

1,2

IT Asset Management

2

Network Administration and Maintenance

1,2

Network Configuration

2

Problem Management

3

Process Improvement and Optimisation

3

Procurement

2

Project Management

3

Radio Frequency Engineering

3

Service Level Management

3

Stakeholder Management

2

Test Planning

2

Vendor Management

3

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Problem Solving

Basic

Communication

Basic

Computational Thinking

Basic

Sense Making

Basic

Teamwork

Intermediate

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### Critical Work Functions

### Key Tasks

Design wireless network and infrastructure

- Conduct site surveys and gather requirements for the expansion or setup of wireless networks
- Draft technical proposals and propose recommendations for deployment of wireless networks
- Document wireless network infrastructure and design
- Conduct research on new technologies for wireless networking and radio frequency transmission

Deploy wireless networks and infrastructure

- Configure and install wireless network equipment
- Conduct interference analysis
- Identify potential defects in wireless network infrastructure and software
- Perform routine backups and administer disaster recovery protocols as required
- Prepare technical specifications and documents to procure wireless network equipment

Optimise wireless network performance

- Support the planning and execution of radio frequency tests and measurements
- Prepare reports on radio network drive tests
- Conduct performance monitoring for wireless networks and ensure alignment with defined metrics

Manage wireless network security

- Monitor radio frequency signals and traffic for irregularities
- Track and document network security incidents
- Coordinate and configure network access and controls

Troubleshoot wireless communication issues

- Identify and troubleshoot wireless network issues in accordance with standards and procedures
- Coordinate with field engineers to rectify wireless network issues
- Document wireless network issues and resolution



## RADIO FREQUENCY ENGINEER

### Job Description

The Radio Frequency Engineer is responsible for designing, implementing and maintaining wireless networks and systems. He/She installs equipment required for wireless communication, tests and troubleshoots radio networks to ensure quality and performance. He works in conjunction with core and cloud network teams for integrated functioning of the organisation's networks.

He possesses deep expertise and knowledge in wireless networking technologies and has the ability to translate business requirements into technical specifications for the design and implementation of wireless networks. He is proficient in the use of simulation software, programming languages and database servers.

The Radio Frequency Engineer is an analytical thinker and a problem-solver. He has excellent communication skills and readily establishes collaborative working relationships across teams.

**Critical Work Functions  
and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting

3

Business Environment Analysis

3

Business Innovation

4

Business Needs Analysis

3

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Contract Management

3

Cyber and Data Breach Incident  
Management

4

Emerging Technology Synthesis

4

Network Administration and Maintenance

3

Network Configuration

3

Network Security

4

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

3

Procurement

3

Radio Frequency Engineering

4

Security Administration

3

Service Level Management

3

Software Configuration

3

Stakeholder Management

3

Test Planning

3

Vendor Management

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Problem Solving

Intermediate

Communication

Intermediate

Computational Thinking

Intermediate

Sense Making

Intermediate

Decision Making

Basic



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### Critical Work Functions

### Key Tasks

Design wireless network and infrastructure	<ul style="list-style-type: none"> <li>• Develop proposals for the expansion of radio networks and systems based on business requirements</li> <li>• Design radio frequency schematic for the construction of wireless networks</li> <li>• Define technical specifications and resource requirements necessary for wireless networks</li> <li>• Conduct technical evaluation and proof-of-concept for new technologies in wireless networking and radio frequency transmission</li> </ul>
Deploy wireless networks and infrastructure	<ul style="list-style-type: none"> <li>• Evaluate data from site surveys to determine suitability for optimal deployment of wireless networks</li> <li>• Manage the installation and maintenance of wireless network equipment</li> <li>• Analyse functionality of and recommend upgrades to existing wireless network equipment</li> <li>• Perform simulations for radio frequency network design</li> <li>• Implement solutions or techniques to mitigate radio frequency interference</li> <li>• Provide technical advice on the procurement of wireless network equipment</li> <li>• Develop operating processes and protocols for disaster recovery of wireless network infrastructure</li> </ul>
Optimise wireless network performance	<ul style="list-style-type: none"> <li>• Conduct radio network drive tests to obtain information on network coverage and performance</li> <li>• Review logs and reports from radio network drive tests and monitor network performance</li> <li>• Analyse key performance indicators to identify problem areas in wireless communication systems and network performance</li> <li>• Implement measures and tune network parameters to improve wireless communication systems and network performance</li> </ul>
Manage wireless network security	<ul style="list-style-type: none"> <li>• Plan and coordinate network security measures for wireless network infrastructure</li> <li>• Assess the security of wireless protocols and radio networks to identify vulnerabilities or interceptions</li> <li>• Prioritise and resolve wireless network security incidents, and escalate where necessary</li> <li>• Conduct audit of wireless networks and design to ensure compliance to regulatory standards</li> </ul>
Troubleshoot wireless communication issues	<ul style="list-style-type: none"> <li>• Resolve defects in wireless network infrastructure and software</li> <li>• Oversee the resolution of wireless network issues</li> <li>• Establish standards and procedures for troubleshooting and resolution of wireless network issues</li> <li>• Implement automation workflow for the management of repeated network issues</li> </ul>

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## ASSOCIATE NETWORK ENGINEER

### Job Description

The Associate Network Engineer is responsible for supporting the deployment and operations of network infrastructure. He/She assists with the installation, monitoring, troubleshooting and testing of network systems and solutions. He monitors and configures network components to ensure security, and resolves network incidents. He also ensures that network activities are documented appropriately and in compliance with the required procedures and standards.

He is familiar with core networking technologies and trends, network standards and network routing protocols. He may be required to work on a rotational on-call or shift basis.

The Associate Network Engineer is a motivated team player and is driven by results. He also possesses analytical skills and works well in a fast-paced environment.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Business Environment Analysis	2	Problem Solving	Basic
Business Needs Analysis	2	Communication	Basic
Cyber and Data Breach Incident Management	3	Computational Thinking	Basic
Emerging Technology Synthesis	3	Sense Making	Basic
IT Asset Management	2	Teamwork	Intermediate
Network Administration and Maintenance	1,2		
Network Configuration	2		
Problem Management	3		
Process Improvement and Optimisation	3		
Procurement	2		
Project Management	3		
Service Level Management	3		
Stakeholder Management	2		
Test Planning	2		
Vendor Management	3		

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### Critical Work Functions

### Key Tasks

Configure and administer networks

- Update network diagrams and documentation for design and planning of network communication systems
- Determine impact of network requirements on existing architecture, work processes and systems
- Draft technical documents for processes, technology and devices
- Assist in determining infrastructure systems specifications, input/output (I/O) processes and working parameters for hardware and/or software compatibility
- Configure, test, automate, integrate, model and analyse the Software Defined Network (SDN) infrastructure within the IT ecosystem
- Provide suggestions on the direction for Local Area Network (LAN) and/or Wide Area Network (WAN), internet, wireless and remote access services
- Participate in technical design reviews of applicable solutions

Optimise network utilisation and performance

- Consolidate network data based on key parameters or metrics
- Assist in the development of capacity planning models, load-balance and/or redundancy solutions
- Administer tuning of networks for optimisation
- Review facility bandwidth requirements and system inter-dependencies
- Document network activities in accordance with organisational policies
- Monitor network activity and log technical issues
- Maintain awareness of emerging software and/or hardware solutions

Support network operations

- Conduct regular maintenance, patches and upgrades to the network
- Prepare technical specifications and documents to procure network equipment
- Perform routine backups and administer disaster recovery protocols
- Assist in the development of disaster recovery plans

Manage network security

- Monitor indicators of compromise or breach in network security
- Track and document network security incidents
- Configure network security across software and/or hardware components
- Coordinate and configure network access and controls

Resolve network incidents

- Classify and prioritise network incidents for troubleshooting
- Document network incidents and resolution methods
- Troubleshoot, diagnose and resolve network issues

## NETWORK ENGINEER

### Job Description

The Network Engineer is responsible for the design, installation, configuration and maintenance of Software Defined Network (SDN) infrastructure. His primary responsibilities include the design and build of network infrastructure components, and integrating technologies from various virtualised servers and storage vendors. He/She manages and optimises complex core networks, and configures network equipment and software to ensure alignment with defined network performance levels and security standards and regulations. He collaborates across network and orchestration teams to ensure the smooth delivery of end-to-end network slicing and automation solutions.

He is knowledgeable in the use of networking systems and devices, firewalls, wireless controls and technology, network standards including 5G, and network routing protocols. He may be required to work on a rotational on-call or shift basis.

The Network Engineer is organised with strong analytical and troubleshooting skills. He has a passion for innovation and new technologies, and is adaptable to dynamic environments.

**Critical Work Functions  
and Key Tasks**

[View details](#)

*Click on any of the Skills and Competencies to view a detailed description*

#### Technical Skills & Competencies

#### Proficiency Level

Budgeting	3	Problem Management	3
Business Environment Analysis	3	Process Improvement and Optimisation	3
Business Innovation	4	Procurement	3
Business Needs Analysis	3	Security Administration	3
Business Requirements Mapping	3	Solution Architecture	3
Business Risk Management	3	Stakeholder Management	3
Change Management	3	Systems Design	4
Configuration Tracking	3	Test Planning	3
Contract Management	3	Vendor Management	4
Cyber and Data Breach Incident Management	4		
Emerging Technology Synthesis	4		
Infrastructure Design	4		
Network Administration and Maintenance	3		
Network Configuration	3		
Network Security	4		
Performance Management	4		

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Problem Solving	Advanced
Service Orientation	Intermediate
Sense Making	Intermediate
Teamwork	Basic
Decision Making	Basic

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### Critical Work Functions

### Key Tasks

Configure and administer networks

- Design cost-effective network systems and services that meet product specifications and comply to standards and best practices
- Prepare and execute test plans including integration, performance, coverage and capacity verification
- Review technical documents for processes, technology and devices
- Designate the direction for Local Area Network (LAN) and/or Wide Area Network (WAN), internet, wireless, and remote access services
- Validate the Software Defined Network (SDN) infrastructure within the IT ecosystem
- Oversee the installation, upgrading, operation, control, maintenance and effective use of LAN and/or WAN for the communication of data, voice, text or images
- Perform technical evaluation and proof-of-concept of new technologies for network infrastructure
- Review releases, upgrades and fixes available from systems software and supplies and identify those which merit action

Manage network operations and incidents

- Manage network infrastructure to ensure alignment of technical requirements
- Provide technical inputs on the procurement of network equipment and ensure compliance with procurement policies
- Develop the disaster recovery plan, processes and protocols for disaster recovery of network infrastructure
- Ensure disaster recovery plan testing activities are performed and technical criteria are met
- Perform network fault troubleshooting and root cause analysis to locate sources of network issues
- Develop and verify recovery solutions in test environments and execute in production network
- Implement automation workflow for the management of repeated network issues in collaboration with relevant teams
- Plan and coordinate network security measures for network infrastructure, software and data

Manage network security

- Review compliance with information security policies and standards
- Assess configurations and security procedures for adherence to legal and regulatory requirements
- Investigate and assess the risks of network attacks and recommend remedial action
- Prioritise and resolve security incidents, and escalate where necessary

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## AUTOMATION AND ORCHESTRATION ENGINEER

### Job Description

The Automation and Orchestration Engineer is responsible for the design, development and deployment of end-to-end network operations. He/She formulates network requirements in partnership with customers, and creates the network blueprint and provisions network slices in alignment with defined service level agreements (SLAs). He monitors the deployment and operations of the network to manage network performance, and orchestrates resource sourcing, consumption allocation to ensure that service delivery meets defined standards. He also configures, scales and deploys infrastructure components and algorithms, and automates network operations to minimise human intervention.

He is knowledgeable in networking and virtualisation technologies and is acquainted with infrastructure architecture and high-level design. He has experience in managing a multi-vendor system integration and is able to perform in a large enterprise network environment. He is able to work well with external stakeholders, such as service vendors and users of network slices.

The Automation and Orchestration Engineer is a creative problem solver, who is driven and is able to work independently. He bears a strong mindset in quality and timeline adherence. He possesses excellent written and verbal communication skills, and is skilled in negotiation and persuasion. He is also a strong advocate of collaborating across teams and the organisation.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Budgeting

3

Business Environment Analysis

3

Business Innovation

4

Business Needs Analysis

3

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Contract Management

3

Configuration Tracking

3

Cyber and Data Breach Incident Management

4

Emerging Technology Synthesis

4

Network Administration and Maintenance

3

Network Configuration

3

Network Security

4

Network Slicing

4

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

3

Procurement

3

Radio Frequency Engineering

4

Security Administration

3

Service Level Management

3

Software Configuration

3

Stakeholder Management

3

System Integration

3,4

Test Planning

3

Vendor Management

4



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## AUTOMATION AND ORCHESTRATION ENGINEER

### Job Description

The Automation and Orchestration Engineer is responsible for the design, development and deployment of end-to-end network operations. He/She formulates network requirements in partnership with customers, and creates the network blueprint and provisions network slices in alignment with defined service level agreements (SLAs). He monitors the deployment and operations of the network to manage network performance, and orchestrates resource sourcing, consumption allocation to ensure that service delivery meets defined standards. He also configures, scales and deploys infrastructure components and algorithms, and automates network operations to minimise human intervention.

He is knowledgeable in networking and virtualisation technologies and is acquainted with infrastructure architecture and high-level design. He has experience in managing a multi-vendor system integration and is able to perform in a large enterprise network environment. He is able to work well with external stakeholders, such as service vendors and users of network slices.

The Automation and Orchestration Engineer is a creative problem solver, who is driven and is able to work independently. He bears a strong mindset in quality and timeline adherence. He possesses excellent written and verbal communication skills, and is skilled in negotiation and persuasion. He is also a strong advocate of collaborating across teams and the organisation.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

**Generic Skills & Competencies (Top 5)**

**ProficiencyLevel**

Service Orientation

Intermediate

Resource Management

Intermediate

Problem Solving

Advanced

Sense Making

Intermediate

Teamwork

Basic





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### Critical Work Functions

### Key Tasks

Model services using a standardised data modelling language that can be manipulated programmatically

- Derive data models to encapsulate the services that need to be orchestrated and the device that needs to be configured
- Create workflows to instantiate network slicing across network resources
- Create instances of the service model with customer-specific parameters
- Add new service models to the system ensuring no impact to the non-stop operations of the system
- Re-use service models against devices from different vendors

Manage the service lifecycle to create a desired final state of service

- Automate the launch, change or tear down of customer-facing services across networks
- Create and maintain the set of workflows and templates pertaining to deployment and/or modification and/or deletion
- Monitor responses to services and re-run service deployment workflows from virtual or physical networks
- Orchestrate the provisioning-related activities involved in the fulfilment of customer orders or service control requests

Monitor service and manage service level agreements (SLAs)

- Define service key performance indicators (KPIs) as part of the service models
- Model the SLA thresholds and configuration parameters for each service
- Measure KPIs at service end points and gather accurate, real-time data on the service
- Run activation tests to ensure a service instance delivers on its KPIs
- Ensure that the service is 'assurable' from the moment of instantiation
- Predict and trend service growth for the network based on service fulfilment, control and usage information

Oversee the programmatic configuration of services across physical and virtual network domains

- Manage the fulfilment of end-to-end services across physical and/or virtual networks
- Optimise the placement of virtual network functions whilst ensuring availability of resources and connectivity
- Manage the protection of management and control mechanisms and ensure controlled access to network and service-related traffic
- Control the integration of new software with existing components and adjust the configuration parameters of existing elements

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## CHIEF INFORMATION OFFICER

### Job Description

The Chief Information Officer leads the IT function and provides strategic directions, solutions and policies to support business goals. He/She develops the information strategy and services to meet business requirements including training and upgrading of systems and/or technology knowledge and skills of all staff to improve productivity through information systems. He directs and promotes governance policies and standards in relation to security, quality, risk and project management. He leads important innovation initiatives and has ultimate accountability for the function. He provides the highest level of advice and recommendations to the heads of organisations or business units. He has the ability to leverage on new and innovative technology to develop strategic directions for the IT functions alignment with the organisation objectives.

He is able to propose solutions and influence key stakeholders to drive commitment for initiatives across the organisation.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting	6	Organisational Design	6
Business Continuity	6	Partnership Management	6
Business Risk Management	6	People and Performance Management	5
Business Performance Management	5	Performance Management	6
Cyber and Data Breach Incident Management	6	Stakeholder Management	6
Cyber Risk Management	6	Strategy Planning	5
Disaster Recovery Management	6	Sustainability Management	5
Enterprise Architecture	6		
Infrastructure Design	6		
Infrastructure Strategy	6		
IT Governance	6		
IT Standards	6		
IT Strategy	6		
Learning and Development	6		
Networking	5		
Organisational Analysis	6		

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership	Advanced
Developing People	Advanced
Creative Thinking	Advanced
Transdisciplinary Thinking	Advanced
Communication	Advanced



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### Critical Work Functions

### Key Tasks

Establish information strategy

- Establish the whole-of-enterprise IT vision and strategy
- Define the IT roadmap
- Build an IT landscape responsive to business changes
- Secure investments for IT initiatives to enable business operations
- Communicate the organisation's information strategy to partners, management, investors and employees
- Advise senior leaders on technology trends to influence the formulation of business strategy
- Establish systems that facilitate data analytics throughout the organisation

Develop IT policies and standards

- Establish organisation-wide IT policies and governance framework
- Establish plans for the off-shoring and outsourcing of IT service delivery
- Set direction for the development and maintenance of Service Level Agreements (SLAs), policies and standards
- Establish objectives and Key Performance Indicators (KPI) for the IT function

Facilitate continuous improvement through technology

- Endorse opportunities for automation and/or streamlining of IT processes
- Develop high-level strategy and guidelines for roll out of IT process changes and/or improvements
- Foster an environment conducive to innovation and technological change
- Foster IT awareness and savviness within the organisation

Manage IT development and operation risk

- Establish organisation wide risk assessment and management frameworks
- Review results from risk assessments for mitigation
- Guide risk management strategies, disaster recovery and business continuity efforts
- Advise policy reviews in line with evolving internal and external environments

Manage stakeholders

- Build strategic relationships and alliances with stakeholders to achieve common goals
- Manage internal and external stakeholders expectations
- Inspire stakeholders to pursue the organisation's technology vision
- Drive the organisation's technology alignment with business needs
- Guide the dissemination of IT information throughout the organisation

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilization
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions
- Advise stakeholders toward reaching compromises and agreeing on expectations

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## CHIEF TECHNOLOGY OFFICER

### Job Description

The Chief Technology Officer oversees all technical aspects of the organisation and partners with key stakeholders within the business to evaluate new IT opportunities and use them as an enabler for growth. He/She approves the deployment of new technologies to enhance or develop new services and products offerings. He devises and implements long-term strategies focused on both current and new technology that can help an organisation go to market more effectively and in turn increase revenue through technological enhancements.

He is an inspiring leader with a futuristic mind-set with an ability to drive innovative enhancements in the organisation. He is able to foresee connections across diverse areas and influence key stakeholder decisions.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting

6

Business Agility

6

Business Continuity

6

Business Risk Management

6

Change Management

6

Emerging Technology Synthesis

6

Enterprise Architecture

6

IT Strategy

6

Learning and Development

6

Networking

5

Organisational Analysis

6

Organisational Design

6

Partnership Management

6

People and Performance Management

5

Performance Management

6

Portfolio Management

6

Product Management

6

Quality Standards

6

Solution Architecture

6

Software Design

6

Stakeholder Management

6

Strategy Planning

6

Sustainability Management

6

System Integration

6

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Advanced

Developing People

Advanced

Service Orientation

Advanced

Transdisciplinary Thinking

Advanced

Communication

Advanced



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Critical Work Functions

Key Tasks

Establish technology strategy

- Develop enterprise wide digital strategy
- Develop a technology roadmap to align to the organisation's overall strategy and growth plans
- Influence strategic decisions on future business initiatives related to technology
- Provide leadership in identifying, assessing and managing technology needs within an organisation
- Advise senior leadership on business opportunities arising from technology developments

Develop technology solutions

- Provide leadership in the design and development of major technical initiatives
- Guide the final decisions on the feasibility of use of a technology solution for business implementation

Manage portfolio of technology solutions

- Govern the integration of all solutions to ensure smooth and efficient flow of information within the organisation
- Set objectives for IT investments, projects, services and activities to meet current and future business needs

Enable innovation to improve  
organisation's goal

- Act as a Technology Evangelist to explore and adopt appropriate technology
- Foster an environment conducive to innovation and technological change
- Set the direction for research as well as a framework for measuring innovation research outcomes
- Evaluate new approaches to redesign IT systems or optimise performance, quality and speed of services and/or products

Manage stakeholders

- Build strategic relationships and alliances with stakeholders to achieve common goals
- Manage internal and external stakeholders expectations
- Inspire stakeholders to pursue the organisation's technology vision
- Drive the organisation's technology alignment with business needs

Manage people and organisation

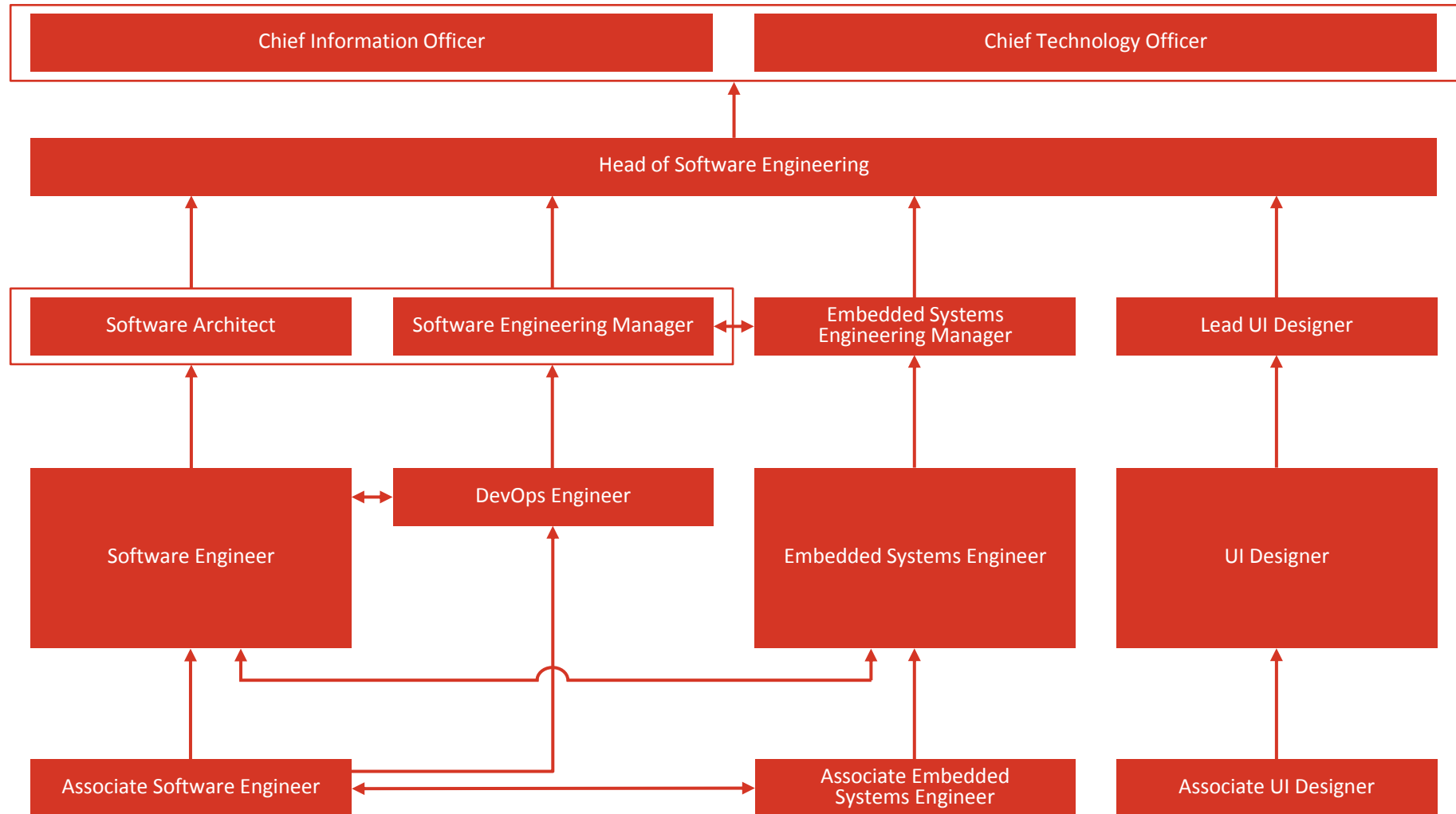
- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilization
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions
- Advise stakeholders toward reaching compromises and agreeing on expectations

Click on Sub-track names below to view feeder roles and next moves

### SOFTWARE ENGINEERING

### EMBEDDED SYSTEMS ENGINEERING

### USER INTERFACE DESIGN



→ Lateral Movement

→ Vertical Progression

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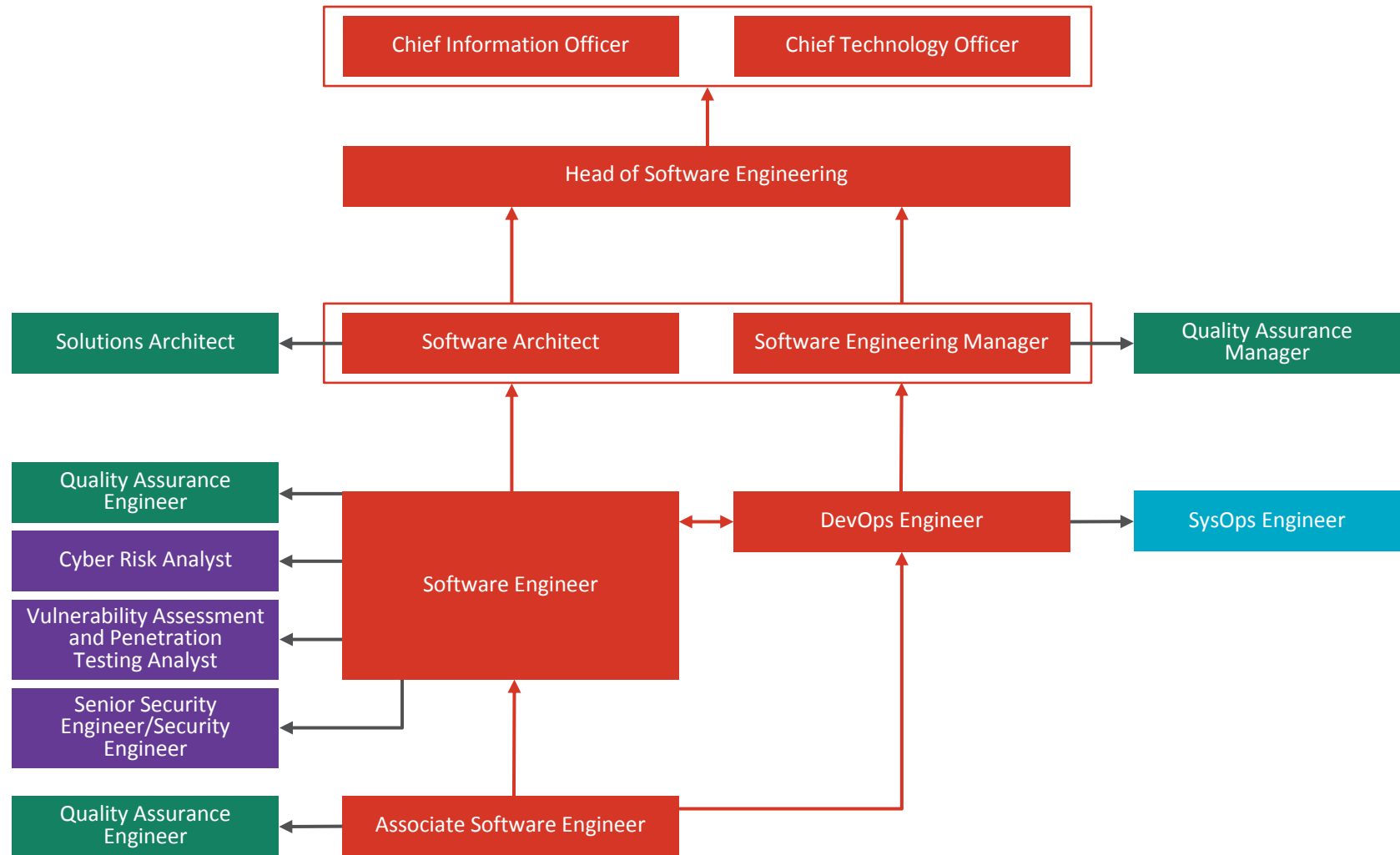
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Click on Sub-track names below to view feeder roles and next moves

## SOFTWARE ENGINEERING



→ Lateral Movement

→ Vertical Progression

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### ASSOCIATE SOFTWARE ENGINEER

#### Job Description

The Associate Software Engineer applies subject matter knowledge in applications development, possessing well-developed skills in design, development, testing, debugging and implementing software applications or specialised utility programs in support of end users' needs on platforms. He/She supports regular updates and recommends improvements to existing applications. He works under limited supervision to effectively deal with unfamiliar issues, and follows recommended coding standards and secure-coding principles to avoid security vulnerabilities. He provides technical support to the quality testing teams.

He works in a team setting and 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 Associate Software Engineer is a keen learner, and able to apply structured, analytical thinking to develop applications. He is a strong team player, who communicates his ideas and gets along with others easily.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Agile Software Development

3

Applications Development

3

Applications Integration

3

Applications Support and Enhancement

1,2

Business Environment Analysis

2

Business Needs Analysis

2

Configuration Tracking

1,2

Data Design

3

Emerging Technology Synthesis

3

Problem Management

3

Project Management

3

Software Configuration

2

Software Design

3

Software Testing

2

Stakeholder Management

2

System Integration

3

Test Planning

2

User Interface Design

3

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Computational Thinking

Intermediate

Problem Solving

Intermediate

Lifelong Learning

Intermediate

Communication

Basic

Teamwork

Intermediate



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**Critical Work Functions**

**Key Tasks**

Analyse user and business requirements	<ul style="list-style-type: none"> <li>Participate in discussions with stakeholders to understand user requirements</li> <li>Conduct requirements analysis based on user requirements</li> <li>Prepare requirements documentation, descriptions of interfaces, and functional and non-functional requirements</li> <li>Assist in writing proposals and communication materials to pitch ideas</li> <li>Propose new technologies for cutting edge platform development</li> </ul>
Manage the design of software	<ul style="list-style-type: none"> <li>Assist in the installation and use of tools for a project's designated design strategy and methodology</li> <li>Assist in architectural design tasks associated with use of standard notations, diagramming techniques, models, and patterns</li> <li>Apply selected software design pattern to the design of software components or modules</li> <li>Participate in software design reviews</li> <li>Carry out static analysis tasks to evaluate design quality</li> <li>Assist in development and use of simulation and prototypes to evaluate software design quality</li> </ul>
Manage software construction processes	<ul style="list-style-type: none"> <li>Perform integration testing as part of the integration process</li> <li>Collect standard measures of code quality and size</li> <li>Generate codes and systems from models</li> <li>Create and execute unit tests for delivered codes</li> <li>Achieve test coverage goals set by project and organisation standards</li> </ul>
Oversee software testing	<ul style="list-style-type: none"> <li>Identify unit and integration testing success and failure criteria</li> <li>Adhere to software test plans</li> <li>Assist with the development of the test plans and test cases</li> <li>Implement the test environment and unit test cases, and integration and system test cases</li> <li>Collect and analyse test execution results</li> </ul>
Oversee security provisions in software	<ul style="list-style-type: none"> <li>Follow recommended coding standards and secure-coding principles to avoid security vulnerabilities</li> <li>Adhere to project standards in the collection of security assessment metrics</li> <li>Perform code reviews to identify security vulnerabilities</li> </ul>
Manage software management configuration (SCM)	<ul style="list-style-type: none"> <li>Assist in determining impact of constraints on SCM imposed by policies, contract, and software development life cycle</li> <li>Provides measurement data for SCM measures</li> <li>Assists in identifying software configuration items (SCIs)</li> <li>Generate, classify and manage problem reports</li> </ul>

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## SOFTWARE ENGINEER

### Job Description

The Software Engineer leads important projects and possesses capability to make breakthroughs in design, development, testing, debugging and implementing software applications or specialised utility programs in support of end users' needs on platforms. He/She plans and coordinates regular updates and recommends improvements to existing applications. He identifies and resolves issues which have organisation wide and long-term impact. He identifies security risks, creates requirements to capture security issues, and performs initial threat modelling to ensure coding standards meets security requirements. He develops and maintains the software configuration management plan and oversees the building, verification and implementation of software releases. He provides guidance and technical support to the quality testing teams.

He works in a team setting and 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 Engineer is imaginative and creative in exploring a range of application designs and solutions. He is able to engage and support others in the team, readily put forth his ideas in a clear and compelling manner.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Applications Development	4	Product Management	4
Applications Integration	4	Project Management	4
Applications Support and Enhancement	3	Quality Standards	4
Budgeting	3	Software Configuration	3
Business Environment Analysis	3	Software Design	4
Business Needs Analysis	3	Software Testing	3
Business Negotiation	3	Solution Architecture	3
Business Requirements Mapping	3	Stakeholder Management	3
Business Risk Management	3	System Integration	3
Change Management	3	Test Planning	3
Configuration Tracking	3	User Interface Design	4
Data Design	3		
Database Administration	4		
Emerging Technology Synthesis	4		
Performance Management	4		
Problem Management	3		



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**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

**Generic Skills & Competencies (Top 5)**

**Proficiency Level**

Computational Thinking

Intermediate

Problem Solving

Intermediate

Lifelong Learning

Intermediate

Communication

Basic

Teamwork

Intermediate





Critical Work Functions

Key Tasks

Analyse user and business requirements	<ul style="list-style-type: none"> <li>• Validate user requirements and design specifications</li> <li>• Translate user requirements into technical specifications</li> <li>• Formulate software requirement specifications</li> <li>• Recommend approaches that balance security, stability, and performance needs</li> <li>• Provide technical guidance on proposed solutions and alternatives</li> </ul>
Manage the design of software	<ul style="list-style-type: none"> <li>• Design software components and modules</li> <li>• Determine design alternatives and perform trade-off analysis</li> <li>• Create multiple views of the software system and design high-level organisation of a software system</li> <li>• Facilitate software design reviews</li> <li>• Lead static analysis tasks to evaluate design quality</li> <li>• Develop and use simulation and prototypes to evaluate software design quality</li> </ul>
Manage software construction processes	<ul style="list-style-type: none"> <li>• Assist in the selection of processes, models, languages and tools for software construction</li> <li>• Perform code re-factoring</li> <li>• Review detailed designs and code to ensure quality requirements are met</li> <li>• Establish project standards for designs and codes</li> <li>• Leads code reviews and inspections</li> </ul>
Oversee software testing	<ul style="list-style-type: none"> <li>• Identify stakeholders participating in testing activities</li> <li>• Design software test plan and criteria for regression testing</li> <li>• Design the test environment and test case scenarios</li> <li>• Specify test cases for the selected testing technique</li> <li>• Analyse defect arrival rate and failure intensity data</li> </ul>
Oversee security provisions in software	<ul style="list-style-type: none"> <li>• Identify security risks and create requirements to capture security issues</li> <li>• Perform initial threat modelling</li> <li>• Model threats and associated risks of new and modified systems</li> <li>• Identify the attack surface of new and modified systems</li> <li>• Establish project coding standards to avoid security vulnerabilities</li> <li>• Review and approve coding standards to avoid security vulnerabilities</li> </ul>
Manage software management configuration (SCM)	<ul style="list-style-type: none"> <li>• Develop and maintain the SCM plan</li> <li>• Assist in specifying the SCM measures to be used</li> <li>• Procure SCM tools</li> <li>• Develop and tailor tools for generating SCM audit reports</li> <li>• Maintain mechanisms for recording and reporting SCM information</li> <li>• Oversee the building, verification and implementation of software releases</li> <li>• Ensure the execution and documentation of approved changes</li> </ul>

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## SOFTWARE ARCHITECT

### Job Description

The Software Architect analyses, designs and develops roadmaps and implementation plans based on a current versus future state business architecture, and reviews recommendations to software architectural standards for approval. He/She leads and facilitates the software architecture governance process based on the enterprise architecture governance structure, and manages exceptions to architectural standards at a software level. He assesses near-term needs to establish business priorities and aligns architectural requirements with IT strategy. He consults with clients and IT teams on software architecture solutions and provides recommendations on emerging technology to senior management. He oversees the development of guidelines and standards to be used in software development and integration, and formulates the conceptual and detailed architecture for the development of applications.

The Software Architect is imaginative and creative, drawing connections from diverse disciplines to develop application architectures and solutions. He enjoys the challenge of analysing, resolving complex issues and is able to interact effectively with others to gain buy-in where required.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Applications Development

5

Applications Integration

5

Business Environment Analysis

4

Business Innovation

5

Business Needs Analysis

5

Business Requirements Mapping

4

Business Risk Management

4

Change Management

4

Data Design

4

Embedded Systems Interface Design

5

Emerging Technology Synthesis

5

Enterprise Architecture

4

Infrastructure Design

4

Networking

4

Product Management

5

Project Management

5

Quality Standards

5

Security Architecture

4

Software Design

5

Solution Architecture

4

Stakeholder Management

5

System Integration

5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Communication

Intermediate

Interpersonal Skills

Intermediate

Creative Thinking

Intermediate

Transdisciplinary Thinking

Advanced

Computational Thinking

Advanced

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### Critical Work Functions

### Key Tasks

Formulate the organisation's architecture strategy, roadmap, standards, policies and procedures, and governance

- Lead and coordinate the domain technical and business discussions
- Participate in ecosystem strategy development, environment analysis and opportunity identification
- Analyse, design and develop roadmaps and implementation plans based on a current versus future state
- Design standard configurations and patterns
- Lead and facilitate the software architecture governance process based on the enterprise architecture governance structure
- Manage exceptions to architectural standards at a software level
- Review and approve recommendations to software architectural standards

Develop architecture requirements and maintain oversight

- Analyse and develop software architectural requirements
- Align architectural requirements with IT strategy
- Assess near-term needs to establish business priorities
- Ensure compatibility with existing solutions, infrastructure, services and strategic requirements
- Coordinate architecture implementation and modification activities
- Assist in post-implementation and continuous improvement efforts to enhance performance and provide increased functionality
- Ensure conceptual completeness of the technical solution

Manage quality and continuous improvement of architecture

- Analyse the current architecture to identify weaknesses and develop opportunities for improvement
- Identify and propose variances to the architecture to accommodate project needs
- Perform ongoing architecture quality review activities

Research emerging technologies

- Consults with clients and IT teams on software architecture solutions
- Analyses cost versus benefits, risks, impact and technology priorities
- Provide recommendations on emerging technology to senior management
- Develop a communication plan for software architecture
- Lead the research and evaluation of emerging technology, industry and market trends to assist in project development
- Identify organisational requirements for resources

Manage software architecture design

- Oversee the development of guidelines and standards to be used in software development and integration
- Formulate the conceptual and detailed architecture for the development of applications
- Manage the software architecture governance process
- Define transition steps and strategy from current to the future software architecture
- Develop methods to integrate systems that interact and extend across organisational and functional lines

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## HEAD OF SOFTWARE ENGINEERING

### Job Description

The Head of Software Engineering defines the software development vision and strategy and ensure alignment with the organisation's architecture. He/She anticipates the impact of external technological developments on the organisation's software architecture and strategy, and ensures that the software development strategy and processes keeps pace with the latest data protection and cyber security practices and guidelines. He maintains oversight on the organisation's software deployment strategy, facilitates the seamless implementation and integration of software, and oversees the translation of business requirements to software development initiatives and projects. He also evaluates viability of recommended changes in software development methodologies, processes and standards for implementation.

He works in a team setting and is proficient in programming languages required by the organisation. He is familiar with the relevant platforms and embedded systems on which the software solution is deployed on. He is also knowledgeable of microprocessor and microcontroller based hardware components.

The Head of Software Engineering liaises and negotiates with external suppliers and sets operating policies. He displays a forward-looking perspective, inspirational and decisive in envisioning the future of software and applications. He is an influential leader who is able to communicate his ideas persuasively and engage with team members and other stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Coaching

5

Agile Software Development

5

Applications Development

5

Applications Integration

5

Budgeting

5

Business Innovation

6

Business Needs Analysis

5

Business Performance Management

5

Emerging Technology Synthesis

5

Enterprise Architecture

4

IT Strategy

5

Learning and Development

6

Manpower Planning

5

Networking

5

Partnership Management

5

People and Performance Management

5

Performance Management

5

Product Management

6

Project Management

6

Quality Standards

5

Software Design

6

Solution Architecture

5

Stakeholder Management

5

Strategy Implementation

5

Strategy Planning

5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Advanced

Communication

Advanced

Resource Management

Advanced

Developing People

Advanced

Interpersonal Skills

Advanced

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**Critical Work Functions**

**Key Tasks**

Develop software development strategy

- Define software development vision and strategy and ensure alignment with the organisation’s architecture
- Oversee the organisation’s investments in software development
- Ensure that the software development strategy and processes keeps pace with the latest data protection and cyber security practices and guidelines
- Anticipate the impact of external technological developments on the organisation's software architecture and strategy
- Define the organisation’s DevOps strategy, guidelines and standards

Oversee software development

- Explore new methodologies in software development
- Facilitate the seamless implementation and integration of software
- Evaluate processes and design methodologies to be used in software design
- Act as a subject matter expert in software design, development, and deployment
- Maintain oversight on the organisation’s software deployment strategy
- Forecast new and emerging software requirements and changes to software based on evolving business requirements
- Oversee the translation of business requirements to software development initiatives and projects
- Direct commercial discussions and negotiations with partners and vendors involved in the development of software products
- Drive the adoption of new and novel methodologies in software design and development

Establish standards and governance for software engineering

- Formulate the organisation’s software development governance framework and processes
- Establish Key Performance Indicators (KPIs) and Service Level Agreements (SLAs) for the implementation and monitoring of software
- Evaluate the suitability of best practices in software development for implementation in the organisation
- Evaluate viability of recommended changes in software development methodologies, processes and standards for implementation

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions
- Advise stakeholders toward reaching compromises and agreeing on expectations



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## DEVOPS ENGINEER

### Job Description

The DevOps Engineer is responsible for the design and implementation of applications' build, release, deployment and configuration activities, and is a team member for the agile development process. He/She builds the continuous integration and continuous deployment pipeline and prioritises development items in the pipeline. He develops Proof-of-Concepts to evaluate feasibility of the software application and tools for the development team, and develops suitable application and tools. He determines specifications and features for the next iteration of software application development based on user needs and feedback, continuously integrates code changes, and conducts various automated testing to ensure the software application remains functional. He also performs continuous deployment through automating the deployment process, and manages the releases of software application versions and features.

He works with internal business partners to gather requirements, prototyping, architecting, implementing and/or updating solutions, building and executing test plans, performing quality reviews, managing operations, and triaging and fixing operational issues. He works in a fast-paced environment and must be able to adjust to constant business change, evolving goals and strategies, and emerging technologies. He is proficient in programming languages required by the organisation, and is familiar with continuous integration and deployment tools, relevant platforms, automated testing tools, and configuration management tools. He is also knowledgeable of crypto primitives, authentication protocols and authorisation standards.

The DevOps Engineer is innovative and analytical in nature, possessing strong communication and interpersonal skills to engage with stakeholders. He is a team player with the ability to perform independently with minimal guidance, and thrives in a dynamic environment. He is also a resourceful and self-motivated individual.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Coaching

4

Network Configuration

3

Agile Software Development

3

Performance Management

4

Applications Development

4

Problem Management

3

Applications Integration

4

Project Management

4

Applications Support and Enhancement

3,4

Quality Standards

4

Business Agility

4

Security Administration

3

Business Environment Analysis

3

Software Configuration

4

Business Needs Analysis

4

Software Design

4

Business Requirements Mapping

3

Software Testing

4

Business Risk Management

3

Stakeholder Management

4

Change Management

4

Systems Design

3

Configuration Tracking

3

System Integration

4

Continuous Integration and Continuous Deployment

3

Test Planning

4

Data Design

4

User Interface Design

4

Database Administration

4

Emerging Technology Synthesis

4



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Click on any of the Skills and Competencies to view a detailed description

**Generic Skills  
& Competencies (Top 5)**

**Proficiency  
Level**

Computational Thinking

**Advanced**

Problem Solving

**Advanced**

Lifelong Learning

**Intermediate**

Communication

**Basic**

Teamwork

**Intermediate**





### Critical Work Functions

### Key Tasks

Assess user needs and requirements

- Determine software application and feature enhancement requirements based on business needs and user feedback
- Gather, analyse and document client needs and business requirements
- Draft technical and functional specifications
- Formulate solutions, alternatives and design specifications that supports business and technical objectives
- Analyse client operations to understand strengths and weaknesses to uncover opportunities for improvement

Develop applications and tools for development teams

- Translate business and technical requirements to test cases, test scenarios and scripts
- Build IT solutions to meet business requirements and develops reusable components
- Install and configure software solutions
- Integrate solutions with other applications and platforms
- Develop program codes and logic for existing and/or new software applications and tools
- Perform script maintenance and updates to accommodate changes in requirements and/or implementation
- Build automation frameworks for the deployment, management, and monitoring of software applications and features
- Review software modules for quality assurance
- Set up and maintain test environment for manual and automated testing

Perform continuous integration of application features and enhancements

- Determine specifications and features for the next iteration of application development
- Build automated deployments using configuration management technology
- Automate security and risk management processes to enable continuous and consistent integration
- Deploy security algorithms, protocols and self-healing features into the system infrastructure to reduce security breaches
- Develop requirements, methods and procedures for routine maintenance
- Perform security vulnerability and relevant automated testing to ensure the software application remains functional
- Troubleshoot existing information systems to identify errors or deficiencies and develop solutions

Perform continuous deployment of enhanced applications

- Build automated deployment using configuration management technology
- Deploy new modules, upgrades and fixes to the production environment
- Perform continuous monitoring of applications and its features
- Perform automated and/or load tests to address issues
- Evaluate existing applications and platforms and propose recommendations for improving performance by conducting gap analysis, identifying feasible alternative solutions, and assisting in the scope of modifications
- Document and complete knowledge transfer to production support

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## SOFTWARE ENGINEERING MANAGER

### Job 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**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Coaching	4	Data Design	4
Agile Software Development	4	Emerging Technology Synthesis	5
Applications Development	5	Learning and Development	4
Applications Integration	5	Manpower Planning	3
Applications Support and Enhancement	4	Networking	4
Budgeting	4	Organisational Analysis	4
Business Environment Analysis	4	People and Performance Management	3
Business Innovation	5	Performance Management	5
Business Needs Analysis	4	Problem Management	4
Business Negotiation	4	Product Management	5
Business Performance Management	4	Project Feasibility Assessment	4
Business Requirements Mapping	4	Project Management	5
Business Risk Management	4	Quality Standards	5
Change Management	4	Software Configuration	4
Configuration Tracking	4	Software Design	5
Continuous Integration and Continuous Deployment	5		



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### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Software Testing

4

Communication

Intermediate

Stakeholder Management

5

Decision Making

Advanced

Strategy Implementation

3

Teamwork

Intermediate

Strategy Planning

4

Developing People

Advanced

System Integration

4

Virtual Collaboration

Intermediate

Test Planning

4

User Interface Design

4

Vendor Management

4





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**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

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## CHIEF INFORMATION OFFICER

### Job Description

The Chief Information Officer leads the IT function and provides strategic directions, solutions and policies to support business goals. He/She develops the information strategy and services to meet business requirements including training and upgrading of systems and/or technology knowledge and skills of all staff to improve productivity through information systems. He directs and promotes governance policies and standards in relation to security, quality, risk and project management. He leads important innovation initiatives and has ultimate accountability for the function. He provides the highest level of advice and recommendations to the heads of organisations or business units. He has the ability to leverage on new and innovative technology to develop strategic directions for the IT functions alignment with the organisation objectives.

He is able to propose solutions and influence key stakeholders to drive commitment for initiatives across the organisation.

**Critical Work Functions  
and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting	6
Business Continuity	6
Business Risk Management	6
Business Performance Management	5
Cyber and Data Breach Incident Management	6
Cyber Risk Management	6
Disaster Recovery Management	6
Enterprise Architecture	6
Infrastructure Design	6
Infrastructure Strategy	6
IT Governance	6
IT Standards	6
IT Strategy	6
Learning and Development	6
Networking	5
Organisational Analysis	6

Organisational Design	6
Partnership Management	6
People and Performance Management	5
Performance Management	6
Stakeholder Management	6
Strategy Planning	5
Sustainability Management	5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership	Advanced
Developing People	Advanced
Creative Thinking	Advanced
Transdisciplinary Thinking	Advanced
Communication	Advanced



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**Critical Work Functions**

**Key Tasks**

Establish information strategy

- Establish the whole-of-enterprise IT vision and strategy
- Define the IT roadmap
- Build an IT landscape responsive to business changes
- Secure investments for IT initiatives to enable business operations
- Communicate the organisation's information strategy to partners, management, investors and employees
- Advise senior leaders on technology trends to influence the formulation of business strategy
- Establish systems that facilitate data analytics throughout the organisation

Develop IT policies and standards

- Establish organisation-wide IT policies and governance framework
- Establish plans for the off-shoring and outsourcing of IT service delivery
- Set direction for the development and maintenance of Service Level Agreements (SLAs), policies and standards
- Establish objectives and Key Performance Indicators (KPI) for the IT function

Facilitate continuous improvement through technology

- Endorse opportunities for automation and/or streamlining of IT processes
- Develop high-level strategy and guidelines for roll out of IT process changes and/or improvements
- Foster an environment conducive to innovation and technological change
- Foster IT awareness and savviness within the organisation

Manage IT development and operation risk

- Establish organisation wide risk assessment and management frameworks
- Review results from risk assessments for mitigation
- Guide risk management strategies, disaster recovery and business continuity efforts
- Advise policy reviews in line with evolving internal and external environments

Manage stakeholders

- Build strategic relationships and alliances with stakeholders to achieve common goals
- Manage internal and external stakeholders expectations
- Inspire stakeholders to pursue the organisation's technology vision
- Drive the organisation's technology alignment with business needs
- Guide the dissemination of IT information throughout the organisation

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilization
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions
- Advise stakeholders toward reaching compromises and agreeing on expectations



## CHIEF TECHNOLOGY OFFICER

### Job Description

The Chief Technology Officer oversees all technical aspects of the organisation and partners with key stakeholders within the business to evaluate new IT opportunities and use them as an enabler for growth. He/She approves the deployment of new technologies to enhance or develop new services and products offerings. He devises and implements long-term strategies focused on both current and new technology that can help an organisation go to market more effectively and in turn increase revenue through technological enhancements.

He is an inspiring leader with a futuristic mind-set with an ability to drive innovative enhancements in the organisation. He is able to foresee connections across diverse areas and influence key stakeholder decisions.

**Critical Work Functions  
and Key Tasks**

[View details](#)

*Click on any of the Skills and Competencies to view a detailed description*

### Technical Skills & Competencies

### Proficiency Level

Budgeting	6	Product Management	6
Business Agility	6	Quality Standards	6
Business Continuity	6	Solution Architecture	6
Business Risk Management	6	Software Design	6
Change Management	6	Stakeholder Management	6
Emerging Technology Synthesis	6	Strategy Planning	6
Enterprise Architecture	6	Sustainability Management	6
IT Strategy	6	System Integration	6
Learning and Development	6		
Networking	5		
Organisational Analysis	6		
Organisational Design	6		
Partnership Management	6		
People and Performance Management	5		
Performance Management	6		
Portfolio Management	6		
		<b>Generic Skills &amp; Competencies (Top 5)</b>	<b>Proficiency Level</b>
		Leadership	Advanced
		Developing People	Advanced
		Service Orientation	Advanced
		Transdisciplinary Thinking	Advanced
		Communication	Advanced



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**Critical Work Functions**

**Key Tasks**

Establish technology strategy

- Develop enterprise wide digital strategy
- Develop a technology roadmap to align to the organisation's overall strategy and growth plans
- Influence strategic decisions on future business initiatives related to technology
- Provide leadership in identifying, assessing and managing technology needs within an organisation
- Advise senior leadership on business opportunities arising from technology developments

Develop technology solutions

- Provide leadership in the design and development of major technical initiatives
- Guide the final decisions on the feasibility of use of a technology solution for business implementation

Manage portfolio of technology solutions

- Govern the integration of all solutions to ensure smooth and efficient flow of information within the organisation
- Set objectives for IT investments, projects, services and activities to meet current and future business needs

Enable innovation to improve  
organisation's goal

- Act as a Technology Evangelist to explore and adopt appropriate technology
- Foster an environment conducive to innovation and technological change
- Set the direction for research as well as a framework for measuring innovation research outcomes
- Evaluate new approaches to redesign IT systems or optimise performance, quality and speed of services and/or products

Manage stakeholders

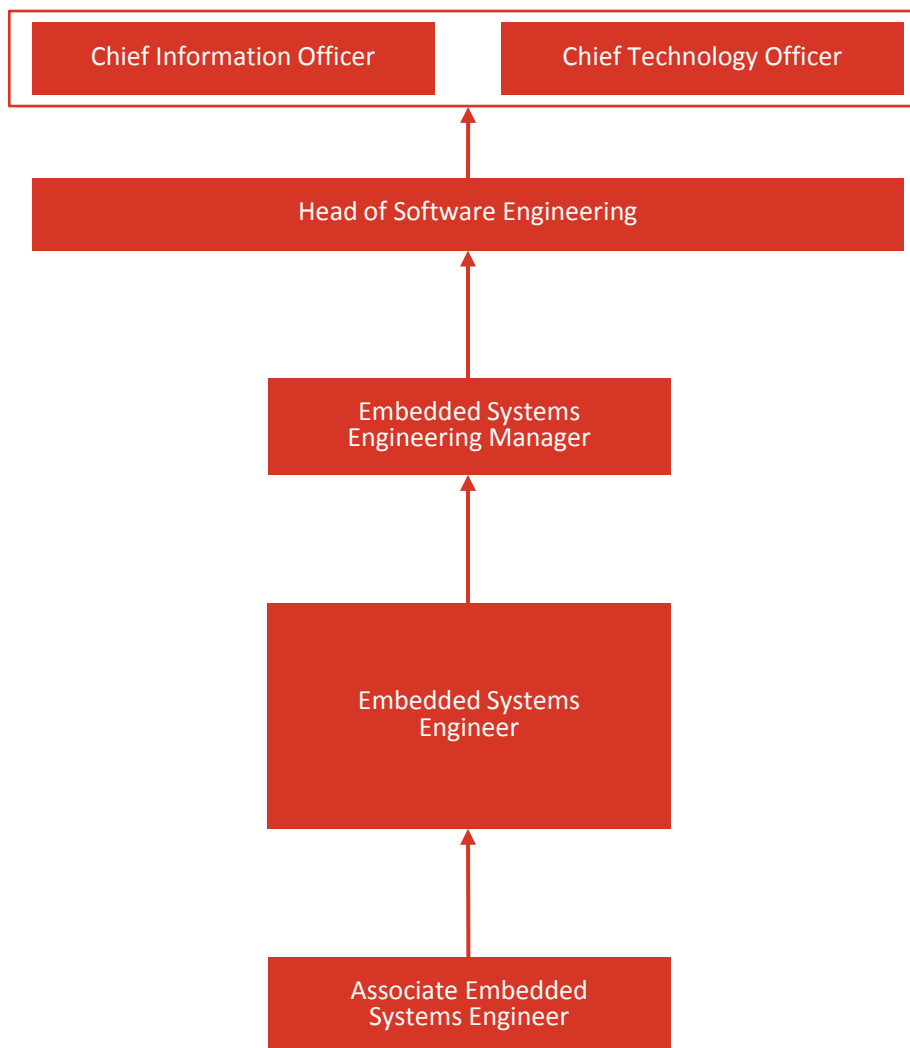
- Build strategic relationships and alliances with stakeholders to achieve common goals
- Manage internal and external stakeholders expectations
- Inspire stakeholders to pursue the organisation's technology vision
- Drive the organisation's technology alignment with business needs

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilization
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
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- Advise stakeholders toward reaching compromises and agreeing on expectations

Click on Sub-track names below to view feeder roles and next moves

## EMBEDDED SYSTEMS ENGINEERING



→ Lateral Movement

→ Vertical Progression

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### ASSOCIATE EMBEDDED SYSTEMS ENGINEER

#### Job Description

The Associate Embedded Systems Engineer performs software design, development and implementation of embedded systems in a product development environment. He/She programs embedded systems to perform specific tasks in real-time and within the device which it serves. He specifies and prototypes new products and solutions. He develops embedded systems testing and simulation tools aligned with security standards. He tests new products and documents results. He identifies systems issues, performs root cause analysis and develops solutions to increase embedded systems reverse engineering resilience. He migrates embedded software stack across platforms.

He works in a team setting and is familiar in programming languages required by the organisation. He is also knowledgeable of microprocessor and microcontroller based hardware components.

The Associate Embedded Systems Engineer is eager to learn and is keen to try his hand at developing, testing and implementing embedded systems prototypes, displaying curiosity and resilience when he encounters problems. He enjoys the camaraderie of a team environment and readily shares his views and ideas when working with others.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Applications Development

3

Applications Integration

3

Applications Support and Enhancement

1,2

Business Environment Analysis

2

Business Needs Analysis

2

Business Risk Management

3

Configuration Tracking

1,2

Control System Programming

2

Emerging Technology Synthesis

3

Network Configuration

2,3

Project Management

3

Software Configuration

2

Software Design

3

Software Testing

2

Stakeholder Management

2

System Integration

3

Test Planning

2

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Computational Thinking

Intermediate

Lifelong Learning

Intermediate

Problem Solving

Intermediate

Communication

Basic

Teamwork

Intermediate

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### Critical Work Functions

### Key Tasks

Identify business and user requirements

- Support discussions with stakeholders to understand business needs and user requirements
- Support the conduct of requirements analysis
- Support the formulation of specifications of embedded systems
- Support proposal writing for embedded systems design

Develop embedded systems software

- Contribute to the design, development and testing of embedded systems
- Develop software modules in line with coding standard
- Assist in tracking and peer code review
- Assist in the evaluation and testing of hardware and software platforms
- Obtain regular feedback from users
- Evaluate embedded platforms under specific feature requirements

Optimise embedded systems

- Collect user feedback and generate system report on embedded systems performance
- Support development of new processes and tools to speed up the testing process
- Integrate new features of the embedded systems
- Identify ways to improve performance and robustness
- Write technical guides for internal and external users

Integrate software and hardware

- Migrate embedded systems software stack across platforms
- Inspect test and assembly processes to ensure quality
- Diagnose technical problems in embedded systems software
- Troubleshoot performance bottlenecks in embedded systems software
- Ensure embedded systems software meets performance and specifications

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### EMBEDDED SYSTEMS ENGINEER

#### Job Description

The Embedded Systems Engineer envisions, designs, implements, tests, and delivers embedded systems in a product development environment. He/She contributes to the definition of requirement, product, design specifications and collaborates with hardware team throughout the software development lifecycle. He defines innovative approaches to embedded systems development and integration of security aspects. He develops prototypes, creates software tools for test and automation, and evaluates latest technologies.

He works with a team setting and is proficient in programming languages required by the organisation. He is also knowledgeable of microprocessor and microcontroller based hardware components.

The Embedded Systems Engineer is methodical in the development and integration of embedded systems, and also creative in exploring ways to enhance embedded system solutions further. He works effectively in a team, guides junior team members and is able to engage others when presenting his ideas to both internal and external stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Applications Development

4

Applications Integration

4

Budgeting

3

Business Environment Analysis

3

Business Needs Analysis

3

Business Negotiation

3

Business Risk Management

3

Change Management

3

Configuration Tracking

3

Control System Programming

3

Embedded Systems Integration

3

Embedded Systems Interface Design

4

Embedded Systems Programming

4

Emerging Technology Synthesis

4

Network Configuration

4

Network Security

4

Performance Management

4

Project Management

4

Software Configuration

3

Software Design

4

Software Testing

3

Solution Architecture

3

System Integration

3

Test Planning

3

Vendor Management

3

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Computational Thinking

Advanced

Lifelong Learning

Intermediate

Problem Solving

Advanced

Teamwork

Intermediate

Communication

Intermediate



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**Critical Work Functions**

**Key Tasks**

Identify business and user requirements

- Determine user requirements based on business needs
- Perform requirements analysis
- Formulate specifications on delivery platforms for embedded systems
- Develop understanding of hardware schematics and datasheets
- Determine approaches that balance security, stability, and performance needs
- Identify system-level traceability requirements and tools
- Develop project documentation, business cases, proposals, and communication materials

Develop embedded systems software

- Lead the design of specific modules for development of software for embedded systems
- Generate design specification and test cases and/or scripts
- Define test frameworks and environments
- Create software tools for tests and automation
- Participate in hardware design and security architecture reviews
- Evaluate software resilience against reverse engineering
- Define best design practices for development and testing

Optimise embedded systems

- Analyse and enhance efficiency, stability and scalability of system and resources
- Optimise codes for implementation in various platforms
- Develop new processes and tools to speed up the testing process
- Recommend ways to improve performance and robustness
- Oversee the development of technical guides for internal and external users
- Support software quality assurance to optimise I/O performance

Integrate software and hardware

- Test software and hardware interactions from prototype to manufacturing release
- Validate the integration of software with hardware
- Review codes and design to propose improvements
- Diagnose and rectify technical problems in embedded software
- Evaluate failed system scenarios

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## EMBEDDED SYSTEMS ENGINEERING MANAGER

### Job 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

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Applications Development	5	Learning and Development	4
Applications Integration	5	Manpower Planning	3
Budgeting	4	Networking	4
Business Environment Analysis	4	Network Security	5
Business Innovation	5	Organisational Analysis	4
Business Needs Analysis	4	People and Performance Management	3
Business Performance Management	4	Performance Management	5
Business Requirements Mapping	4	Problem Management	4
Business Risk Management	4	Project Feasibility Assessment	4
Change Management	4	Project Management	5
Configuration Tracking	4	Software Configuration	4
Control System Programming	4	Software Design	5
Embedded Systems Integration	5	Software Testing	4
Embedded Systems Interface Design	5	Solution Architecture	4
Embedded Systems Programming	5	Stakeholder Management	5
Emerging Technology Synthesis	5		





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**Critical Work Functions and Key Tasks**

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### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Strategy Implementation

3

Communication

Intermediate

Strategy Planning

4

Teamwork

Intermediate

System Integration

5

Developing People

Advanced

Test Planning

4

Virtual Collaboration

Intermediate

User Interface Design

4

Decision Making

Advanced

Vendor Management

4



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### 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

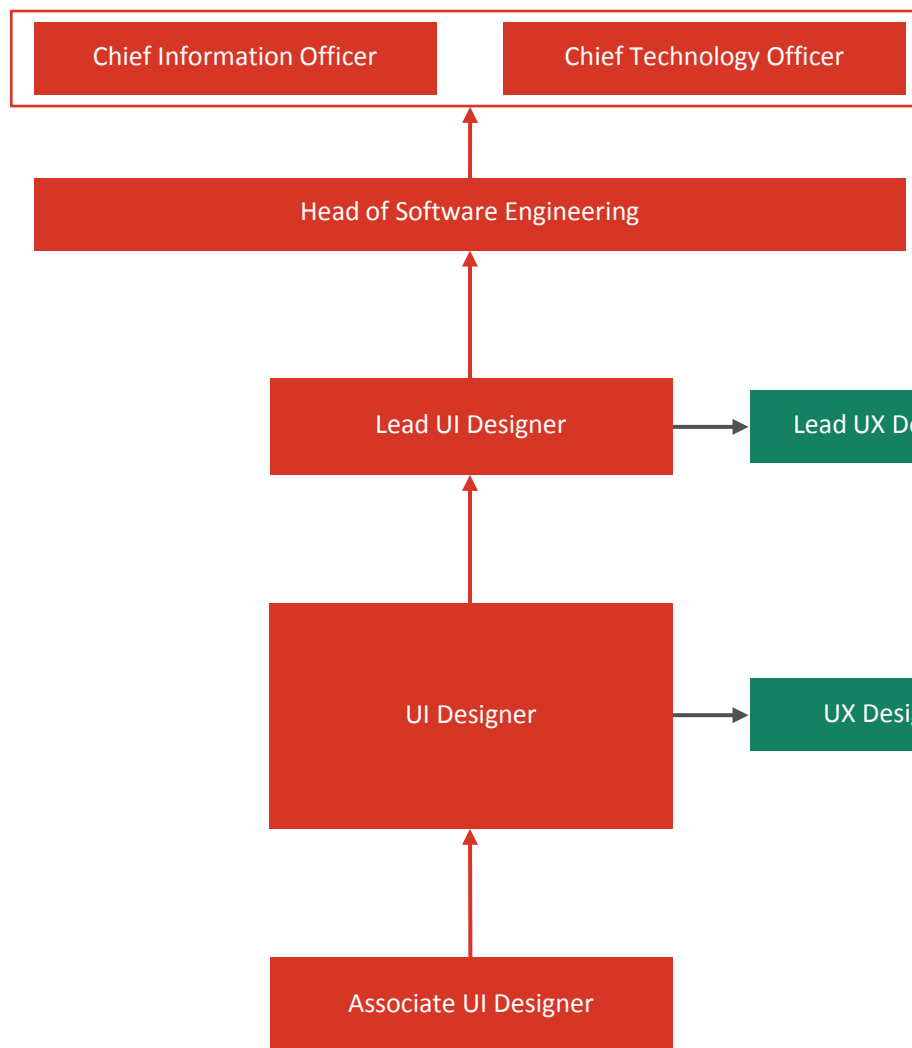
- Define integration plans and hardware and software testing concepts
- Oversee integration of embedded systems with devices
- Guide end-to-end system integration, system debug and triaging to ensure integration is accordance to established design and architectural standards and practices
- Provide guidance 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

Click on Sub-track names below to view feeder roles and next moves

## USER INTERFACE DESIGN



→ Lateral Movement

→ Vertical Progression

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### ASSOCIATE UI DESIGNER

#### Job Description

The Associate User Interface Designer performs requirements analysis for the design of user interfaces (UIs) and drafts technical specifications for the design of UIs. He/She assists in the development and programming of intuitive and responsive UIs for each screen or page with which a user interacts. He assists in developing prototypes for UIs, conducts usability testing for validation, and supports the evaluation of the effectiveness of the UI. He prepares reports on UI design performance indicators, proposes, modifications in the design of user interface based on user feedback, as well as solutions to address design issues.

He works in a team and is familiar with programming languages used by the organisation to design and develop UIs. He is familiar with graphic designing tools, and is also knowledgeable of Universal Principles of Design as well as commonly used design methods.

The Associate UI Designer adopts a broad perspective to user interface design concepts, and is open to exploring new possibilities in the development of user interface of software products. He is adept at interpreting data and using it to propose recommendations that may enhance the user experience.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Brand Management	3
Business Environment Analysis	2
Business Innovation	4
Business Needs Analysis	2
Business Requirements Mapping	3
Customer Experience Management	2
Data Analytics	2
Design Thinking Practice	3
Emerging Technology Synthesis	3
Process Improvement and Optimisation	3
Product Management	3
Project Management	3
Research	3
Software Design	3
Software Testing	2
Stakeholder Management	2,3

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

User Experience Design	2
User Interface Design	3
User Testing and Usability Testing	3

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Computational Thinking	Basic
Creative Thinking	Intermediate
Lifelong Learning	Intermediate
Communication	Basic
Service Orientation	Basic

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### Critical Work Functions

### Key Tasks

Gather and evaluate user requirements

- Assist with identifying business needs and user requirements for user interface (UI) design
- Perform requirements analysis for the design of UIs
- Conduct research to identify new and/or innovative user interface design concepts based on requirements
- Draft technical specifications for design of UI

Design UI architecture and strategy

- Assist in the development of intuitive and responsive UIs
- Identify branding elements, standards and guidelines in the design of UIs
- Assist in the design of each screen or page with which a user interacts
- Assist in the programming of UIs
- Develop a cohesive style guide to ensure that a consistent design language is applied across the product
- Identify emerging technologies or methodologies to design UIs

Conduct usability testing on UIs

- Assist in developing prototypes for UIs
- Conduct usability testing to validate the UI prototype
- Assist in the implementation of UIs
- Support the evaluation of user interface effectiveness to visually guide the user through a product's interface across all platforms
- Propose modifications in the design of user interface based on usability test findings

Optimise UI designs

- Prepare reports on UI design performance indicators
- Propose solutions to address UI design issues
- Support the conduct of quantitative analysis
- Measure outcomes of UI design improvements using metrics and benchmarking criteria

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## UI DESIGNER

### Job Description

The User Interface Designer determines business needs and user requirements for user interface (UI) design and formulates technical specifications and delivery platform requirements for UI. He/She translates content and layout into an intuitive and responsive experience for users, and manages the design of UI elements for projects to ensure consistency and alignment to overall concept. He ensures that the UI visually communicates the path that a user experience designer has laid out. He oversees the conduct of usability testing to validate UIs, implementation of UIs, and analyses design audits for improvements.

He works in a team and is proficient in programming languages required by the organisation to design and develop UIs. He is familiar with various graphic designing tools, as well as Universal Principles of Design and commonly used Design Methods.

The UI Designer is imaginative and innovative in designing new and improved user interfaces. He adopts a structured approach when managing projects and performing testing. He keeps an open mind and leverages varying sources of information and data analytics to derive trends and identify potential design improvements. He is able to communicate his ideas to team members and other stakeholders in a clear and compelling manner.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Brand Management	4	Software Testing	3
Budgeting	3	Solution Architecture	4
Business Environment Analysis	3	Stakeholder Management	4
Business Innovation	5	User Experience Design	3
Business Needs Analysis	3	User Interface Design	4
Business Performance Management	3	User Testing and Usability Testing	4
Business Requirements Mapping	4		
Customer Experience Management	3		
Data Analytics	3		
Design Thinking Practice	4		
Emerging Technology Synthesis	4		
Process Improvement and Optimisation	4	<b>Generic Skills &amp; Competencies (Top 5)</b>	<b>Proficiency Level</b>
Product Management	4	Computational Thinking	Basic
Project Management	4	Creative Thinking	Intermediate
Research	3	Lifelong Learning	Intermediate
Software Design	4	Teamwork	Intermediate
		Service Orientation	Basic

**Critical Work Functions**

**Key Tasks**

Gather and evaluate user requirements

- Determine business needs and user requirements for user interface (UI) design
- Synthesise findings from requirements analysis for the design of UIs
- Ensure that specification requirements for UI design are aligned with business needs and user requirements
- Evaluate user research to identify potential UI design enhancements
- Formulate technical specifications and delivery platform requirements for UI

Design UI architecture and strategy

- Manage the design of UI elements for projects to ensure consistency and alignment to overall concept
- Develop processes to incorporate industry standards and best practices for design of UIs
- Translate content and layout into an intuitive and responsive interface experience for users
- Develop designs of interface layers while adhering to branding elements, standards and guidelines
- Program UIs to accomplish specific tasks
- Ensure that the UI visually communicates the path that a user experience designer has laid out
- Review style guides and make enhancements to ensure that a consistent design language is applied across products
- Propose emerging technologies or methodologies to design UIs

Conduct usability testing on UIs

- Develop prototypes for UIs
- Oversee the conduct of usability testing to validate UIs
- Oversee the implementation of UIs
- Prepare documentations for UI design implementation and compliance
- Evaluate the effectiveness of UIs in meeting business and user needs and requirements
- Recommend modifications in the design of UI based on usability test findings

Optimise UI designs

- Analyse the performance of UI designs based on performance indicators and propose recommendations
- Oversee UI design audits
- Develop solutions to solve UI design issues
- Design frameworks for quantitative analysis
- Analyse outcomes of UI design audits for improvements

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## LEAD UI DESIGNER

### Job Description

The Lead User Interface Designer reviews requirements for user interfaces (UIs) and provides advice on design aspects. He/She evaluates overall user experience concept and design specifications, and advises stakeholders on feasibility of UI solutions and recommend alternatives. He oversees the direction of UI designs to ensure alignment with branding elements, standards and guidelines. He also provides technical inputs for the transfer of content and layout into an intuitive and responsive interface for users, as well as synthesises findings and insights from research and feedback to develop design iterations. He develops UI design performance indicators, reviews frameworks and reporting standards and oversees enhancements of UIs.

He leads a team and is an expert in UI and programming languages. He also explores new graphic designing tools, and is consulted as a subject matter expert in the Universal Principles of Design and commonly used Design Methods.

The Lead User Interface Designer draws on a broad range of knowledge and perspectives to drive user-centric ideas for an interface, and translates these ideas into technical systems and components that yield the optimal user experience. He is a persuasive communicator and is able to gain others' agreement and support for his creative and innovative designs.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Brand Management	5	Product Management	5
Budgeting	4	Project Management	5
Business Innovation	6	Research	4
Business Needs Analysis	4	Software Design	5
Business Performance Management	4	Software Testing	4
Business Requirements Mapping	5	Solution Architecture	4
Customer Experience Management	4	Stakeholder Management	5
Data Analytics	4	Strategy Implementation	3
Design Thinking Practice	4	Strategy Planning	4
Emerging Technology Synthesis	5	User Experience Design	4
Learning and Development	4	User Interface Design	5
Manpower Planning	3	User Testing and Usability Testing	5
Networking	4		
Organisational Analysis	4		
People and Performance Management	3		
Process Improvement and Optimisation	5		





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## LEAD UI DESIGNER

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He leads a team and is an expert in UI and programming languages. He also explores new graphic designing tools, and is consulted as a subject matter expert in the Universal Principles of Design and commonly used Design Methods.

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**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

**Generic Skills & Competencies (Top 5)**

**Proficiency Level**

Resource Management

Intermediate

Decision Making

Advanced

Developing People

Advanced

Interpersonal Skills

Intermediate

Teamwork

Advanced





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Critical Work Functions

Key Tasks

Gather and evaluate user requirements

- Review requirements for user interfaces (UIs) and provide advice on design aspects
- Evaluate overall user experience concept and design specifications to inform UI design
- Advise stakeholders on feasibility of UI solutions and recommend alternatives
- Oversee the preparation of UI design specifications
- Advice on the application of new and/or innovative UI concepts

Design UI architecture and strategy

- Oversee the direction of UI design to ensure alignment with branding elements, standards and guidelines
- Develop strategies for UI design and development to ensure business and user needs and requirements are met
- Advise on the design of user interfaces for varied platforms or applications
- Provide technical inputs for the transfer of content and layout into an intuitive and responsive interface experience for users
- Explore and drive the adoption of new technologies or methodologies to design UIs
- Formulate organisational UI design guidelines, best practices and standards
- Synthesise findings and insights from research and feedback to develop design iterations
- Establish a user testing lab for the design and testing of UIs

Conduct usability testing on UIs

- Determine modifications in UI designs based on usability test findings
- Approve UI designs

Optimise UI designs

- Develop UI design performance indicators, review frameworks and reporting standards
- Explore the enhancement of UI designs based on new and innovative technologies
- Oversee enhancements to UI designs based on user feedback and design audits
- Oversee the design and execution of quantitative analysis
- Develop methods and procedures for process control, process improvement, sampling, testing, inspection and training

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

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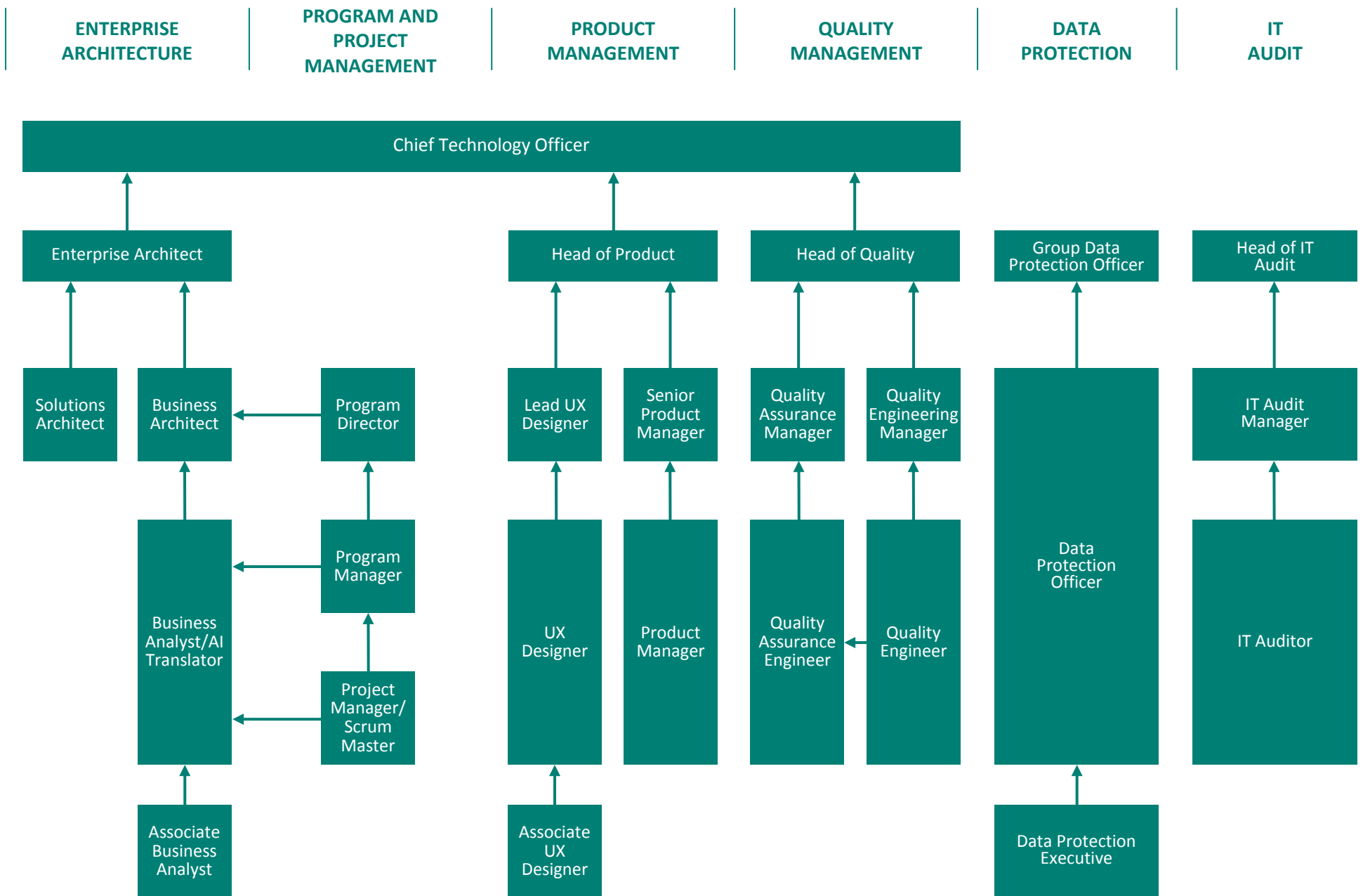
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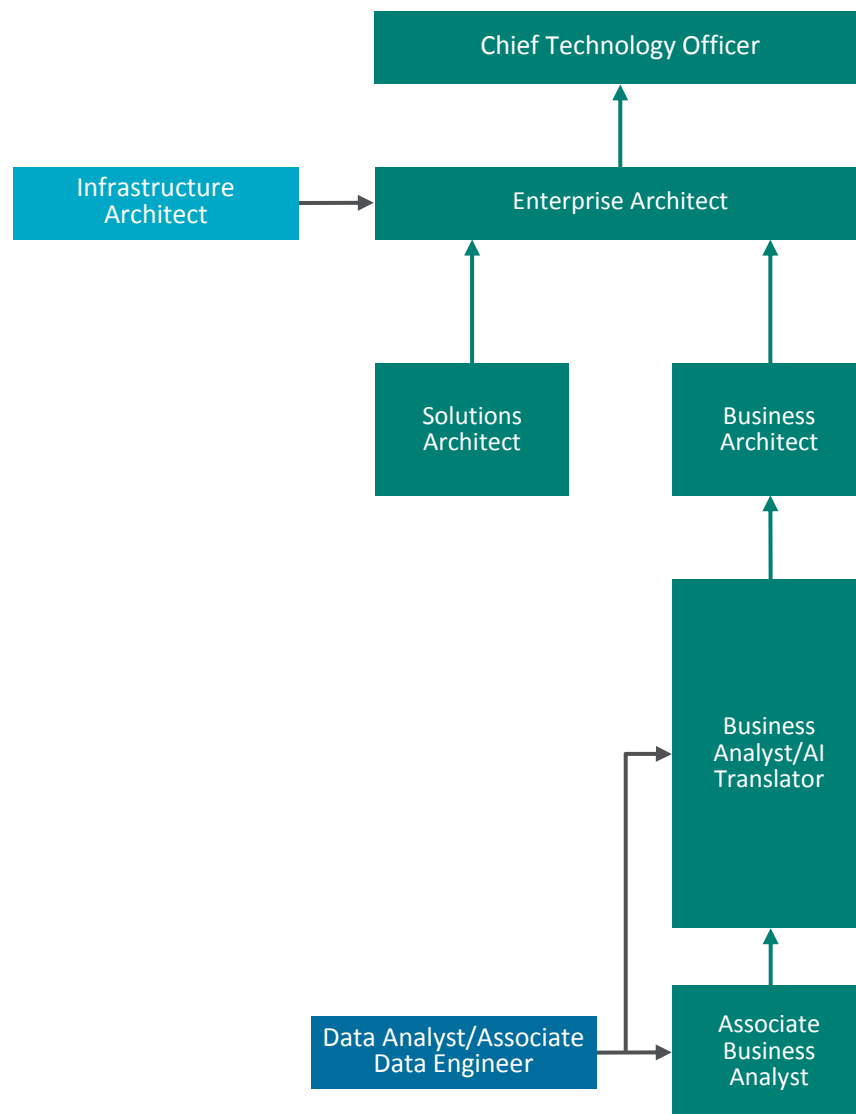


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## ENTERPRISE ARCHITECTURE



→ Lateral Movement

→ Vertical Progression

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## ASSOCIATE BUSINESS ANALYST

### Job Description

The Associate Business Analyst assists in the identification and analysis of business requirements and systems specifications. He/She conducts feasibility studies and analysis on the risk and benefits of proposed solutions. He analyses systems and processes to identify enhancement opportunities to resolve system gaps, evaluates the ability of an existing system to support proposed changes, and identifies systems deficiencies and performance gaps. He assists with translating business requirements into functional specifications, and documents specifications and interfaces between legacy and new systems, and systems enhancements and detailed specifications. He supports users on change control and systems updates and User Acceptance Testing and integration testing in accordance with the implementation plan.

He is knowledgeable of techniques to elicit and manage requirements, as well as software development models including Agile methodologies. He is also familiar with requirements life cycle management, analysis planning and monitoring, requirements analysis and design definition.

The Associate Business Analyst possesses an analytical mind, and is able to see interlinkages with system solutions and usability. He adopts a systematic approach in handling ambiguous or complex issues, and actively discusses his perspectives to arrive at effective solutions.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Business Environment Analysis	2	Problem Solving	Intermediate
Business Needs Analysis	2	Lifelong Learning	Intermediate
Business Requirements Mapping	3	Transdisciplinary Thinking	Intermediate
Change Management	3	Virtual Collaboration	Intermediate
Data Visualisation	3	Decision Making	Intermediate
Partnership Management	3		
Process Improvement and Optimisation	3		
Project Management	3		
Software Testing	2		
Stakeholder Management	3		
System Integration	3		
Technical Sales Support	2		
Test Planning	2		

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### Critical Work Functions

### Key Tasks

Identify business needs, systems and requirements

- Assist in identifying business needs and system requirements
- Assist in the in-depth analysis of the business requirements and systems specifications
- Conduct feasibility studies on proposed solutions
- Provide analysis to support the development of business cases
- Support the preparation of proposals for modified or replacement systems
- Conduct analysis on the risk and benefits for the proposed solutions

Analyse systems and propose solutions

- Analyse systems and processes to identify enhancement opportunities to resolve system gaps
- Evaluate the ability of an existing system to support proposed changes and identify systems deficiencies and performance gaps
- Ensure proposed solutions and/or enhancements are aligned with user needs and requirements
- Identify and conduct feasibility analysis of proposed solutions and/or enhancements to systems
- Prepare proposals for proposed solutions and/or enhancements to systems

Develop technical specifications

- Assist with translating business requirements into functional specifications
- Document specifications and interfaces between legacy and new systems, and systems enhancements and detailed specifications
- Act as the liaison between users and technical staff throughout the solution implementation cycle

Manage the implementation of new solutions and/or enhancements

- Develop test plans and test cases
- Support users on change control and systems updates and escalate issues to relevant team members for resolution
- Document post-test evidence of expected results or defects
- Coordinate training for new users
- Prepare progress reports and training documents
- Develop technical documentation of the design documents, coding documents and user manuals
- Coordinate User Acceptance Testing (UAT) and integration testing in accordance with the implementation plan
- Ensure adherence to project plan to ensure deliverables are completed on time and in accordance with user and system requirements

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## BUSINESS ANALYST/ARTIFICIAL INTELLIGENCE TRANSLATOR

### Job Description

The Business Analyst/Artificial Intelligence (AI) Translator serves as the liaison between the business and technical teams in translating complex business needs into technological solutions. He/She analyses business technology requirements and specifications against value and risk of potential solutions, and conducts cost-benefit and risk assessment analysis for proposed solutions to determine suitability of solutions. He examines interactions between systems elements, systems performance and issues, and designs the solution blueprint for the specific area of expertise with the consideration of implications for integration across the entire solution. He translates business requirements and user needs into functional and technical specifications, ensuring that business requirements are incorporated into the solution design. He develops multi-disciplinary technical expertise to support senior management in complex projects, as well as reviews work at critical milestones with team leader or sponsor to maintain their commitment and support.

He is knowledgeable of techniques to elicit and manage requirements, as well as software development models including Agile methodologies. He is also familiar with requirements life cycle management, analysis planning and monitoring, requirements' analysis and design definition.

The Business Analyst/AI Translator is able to see connections between business and IT needs of an organisation in order to develop and communicate effective system solutions. He thrives and easily draws trends from ambiguous circumstances, and addresses complex issues with sound judgement and decisions.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Environment Analysis

3

Business Innovation

4

Business Needs Analysis

3,4

Business Process Re-engineering

4

Business Requirements Mapping

4

Business Risk Management

4

Change Management

4

Data Visualisation

4

Data Strategy

4

Design Thinking Practice

3

Emerging Technology Synthesis

3

Networking

3

Organisational Analysis

4

Organisational Design

4

Partnership Management

4

Performance Management

4

Process Improvement and Optimisation

4

Project Management

4

Software Testing

3

Solution Architecture

4

Stakeholder Management

4

Strategy Implementation

3

System Integration

4

Technical Sales Support

3,4

Test Planning

3

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Decision Making

Intermediate

Interpersonal Skills

Intermediate

Leadership

Advanced

Lifelong Learning

Intermediate

Problem Solving

Intermediate



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### Critical Work Functions

### Key Tasks

Identify business needs, systems and requirements

- Analyse business technology requirements and specifications against value and risk of potential solutions
- Translate business needs and requirements into potential Artificial Intelligence (AI) and/or analytics problems
- Scope Proof-of-Concepts for AI and analytics related use cases and projects
- Identify suitable technological solutions for the business
- Balance requests and competing priorities from key stakeholders to maximise the value delivered to the organisation
- Conduct cost-benefit and risk assessment analyses for proposed solutions to determine suitability of solutions
- Present business cases defining potential benefits and solutions to increase efficiencies of business processes and associated risks

Analyse systems and propose solutions

- Examine interactions between systems elements, performance and issues
- Recommend proposed solutions and/or enhancements to improve and optimise processes, workflows, performance and systems
- Identify opportunities where AI and analytics can address business and user needs and create value
- Design the solution blueprints for the specific areas of expertise with the consideration of implications for integration across the entire solution
- Oversee the evaluation of proposed solutions and/or enhancements to ensure its feasibility, viability and efficiency
- Evaluate the feasibility, viability and implications of proposed solutions and/or enhancements to systems on the current and future business environment
- Oversee the development of different components within the proposed solutions and/or enhancements
- Analyse inter-dependencies and inter-linkages of systems and processes across the organisation

Develop technical specifications

- Translate business requirements and user needs into functional and technical specifications
- Develop a roadmap to translate existing system specifications into future-state systems requirements
- Function as the liaison between users and technical team throughout the implementation cycle
- Ensure that business requirements are incorporated into the solution design
- Manage risks associated with new solutions and/or proposed enhancements
- Guide the design and development teams towards smooth solutions integration

Manage the implementation of new solutions and/or enhancements

- Apply multi-disciplinary technical expertise to support senior management in complex projects
- Devise procedures to solve complex operational issues
- Oversee the translation of requirements documentation to systems requirement specifications
- Manage the conduct of change management programmes and initiatives to drive the adoption of new and/or enhanced technologies including AI related solutions
- Act as the main point of contact for escalated issues
- Review technical documentation of the design documents, coding documents and user manuals
- Oversee the conduct of User Acceptance Testing (UAT) and integration testing
- Develop dashboards and provide regular status reports to project managers
- Review work at critical milestones with team leader or sponsor to maintain their commitment and support



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## BUSINESS ARCHITECT

### Job Description

The Business Architect analyses, designs and develops roadmaps and implementation plans based on a current versus future state business architecture, and review the architecture standards for approval. He/She leads and facilitates the business architecture governance process based on the enterprise architecture governance structure, and manages exceptions to architectural standards at a business level. He assesses near-term needs to establish business priorities and aligns architectural requirements with IT strategy. He consults with clients and IT teams on business architecture solutions and provides recommendations on emerging technology to senior management.

He works in a dynamic and evolving business environment. He is knowledgeable of relevant enterprise architecture methodologies, frameworks and modelling tools. He is also familiar with organisational design frameworks and tools.

The Business Architect effectively synthesises diverse needs of the business unit, and has strong situational analysis, problem solving and decision making abilities. He possesses excellent communication skills and is able to influence key stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Agility	4	Organisational Design	4
Business Environment Analysis	4	Partnership Management	5
Business Innovation	5	Performance Management	5
Business Needs Analysis	5	Process Improvement and Optimisation	5
Business Performance Management	4	Project Feasibility Assessment	4
Business Process Re-engineering	5	Project Management	5
Business Requirements Mapping	5	Solution Architecture	5
Business Risk Management	5	Stakeholder Management	5
Change Management	5	Strategy Implementation	4
Data Visualisation	5	Strategy Planning	4
Design Thinking Practice	4	Sustainability Management	4
Emerging Technology Synthesis	4		
Enterprise Architecture	4,5		
IT Strategy	4		
Networking	4		
Organisational Analysis	5		



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**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Decision Making

Advanced

Interpersonal Skills

Advanced

Leadership

Advanced

Problem Solving

Advanced

Resource Management

Advanced



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### Critical Work Functions

### Key Tasks

Formulate the organisation's architecture strategy, roadmap, standards, policies and procedures, and governance

- Lead and coordinate the domain technical and business discussions
- Participate in ecosystem strategy development, environment analysis and opportunity identification
- Analyse, design and develop roadmaps and implementation plans based on a current versus future state
- Design standard configurations and patterns
- Lead and facilitate the business architecture governance process based on the enterprise architecture governance structure
- Manage exceptions to architectural standards at a business level
- Review and approve recommendations to business architectural standards

Develop architecture requirements and maintain oversight

- Analyse and develop business architectural requirements
- Align architectural requirements with IT strategy
- Assess near-term needs to establish business priorities
- Ensure compatibility with existing solutions, infrastructure, services and strategic requirements
- Coordinate architecture implementation and modification activities
- Assist in post-implementation and continuous improvement efforts to enhance performance and provide increased functionality
- Ensure conceptual completeness of the technical solution

Manage quality and continuous improvement of architecture

- Analyse the current architecture to identify weaknesses and develop opportunities for improvement
- Identify and propose variances to the architecture to accommodate project needs
- Perform ongoing architecture quality review activities

Research emerging technologies

- Consult with clients and IT teams on business architecture solutions
- Analyse cost versus benefits, risks, impact and technology priorities
- Provide recommendations on emerging technology to senior management
- Develop communication plans for business architecture
- Lead the research and evaluation of emerging technology, industry and market trends to assist in project development
- Identify organisational requirements for resources

Drive business architecting

- Oversee the definition of future-state and current-state business architecture
- Explore methods to apply new technology to, and reuse existing technology, for business processes
- Owns the stewardship duties of business architecture artefacts
- Design business processes, functions and organisational structures

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## SOLUTIONS ARCHITECT

### Job Description

The Solutions Architect analyses, designs and develops roadmaps and implementation plans based on a current versus future state solutions architecture. He/She leads and facilitates the solutions architecture governance processes based on the enterprise architecture governance structure and manages exceptions to architectural standards at a solutions level. He assesses near-term needs to establish business priorities, analyses and develop solutions architectural requirements, and ensures alignment of architectural requirements with the IT strategy. He analyses the current architecture to identify weaknesses and identifies opportunities for improvement, and performs ongoing architecture quality review activities.

He works in a dynamic and evolving business environment. He is familiar with enterprise architecture methodologies and frameworks, architecture modelling tools, as well as product development methodologies. He is knowledgeable about digital product development of industrial Internet of Things, applications and web services. He is also familiar with international telecommunications standards and protocols.

The Solutions Architect is recognised as the most experienced and knowledgeable resources within the field in the organisation. He collaborates with other departments on architecting solutions design, and integrating diverse needs and perspectives to develop fresh ideas and solutions. He possesses strong leadership and communication abilities, is creative and innovative in nature, and is able to influence key stakeholders.

### Critical Work Functions and Key Tasks

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Agile Software Development

5

IT Strategy

4

Applications Integration

5

Networking

4

Business Agility

4

Organisational Analysis

5

Business Environment Analysis

4

Organisational Design

4

Business Innovation

5

Partnership Management

5

Business Needs Analysis

5

Performance Management

5

Business Performance Management

4

Process Improvement and Optimisation

5

Business Process Re-engineering

5

Project Feasibility Assessment

4

Business Requirements Mapping

5

Project Management

5

Business Risk Management

5

Software Design

5

Change Management

5

Solution Architecture

5

Data Visualisation

5

Stakeholder Management

5

Design Thinking Practice

4

Strategy Implementation

4

Embedded Systems Interface Design

5

Strategy Planning

4

Emerging Technology Synthesis

4

Enterprise Architecture

4,5



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## SOLUTIONS ARCHITECT

### Job Description

The Solutions Architect analyses, designs and develops roadmaps and implementation plans based on a current versus future state solutions architecture. He/She leads and facilitates the solutions architecture governance processes based on the enterprise architecture governance structure and manages exceptions to architectural standards at a solutions level. He assesses near-term needs to establish business priorities, analyses and develop solutions architectural requirements, and ensures alignment of architectural requirements with the IT strategy. He analyses the current architecture to identify weaknesses and identifies opportunities for improvement, and performs ongoing architecture quality review activities.

He works in a dynamic and evolving business environment. He is familiar with enterprise architecture methodologies and frameworks, architecture modelling tools, as well as product development methodologies. He is knowledgeable about digital product development of industrial Internet of Things, applications and web services. He is also familiar with international telecommunications standards and protocols.

The Solutions Architect is recognised as the most experienced and knowledgeable resources within the field in the organisation. He collaborates with other departments on architecting solutions design, and integrating diverse needs and perspectives to develop fresh ideas and solutions. He possesses strong leadership and communication abilities, is creative and innovative in nature, and is able to influence key stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Sustainability Management

4

System Integration

5

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Decision Making

Advanced

Interpersonal Skills

Intermediate

Problem Solving

Intermediate

Leadership

Advanced

Resource Management

Intermediate



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### Critical Work Functions

### Key Tasks

Formulate the organisation's architecture strategy, roadmap, standards, policies and procedures, and governance

- Lead and coordinate the domain technical and business discussions
- Participate in ecosystem strategy development, environment analyses and opportunity identification
- Analyse, design and develop roadmaps and implementation plans based on a current versus future state
- Design standard configurations and patterns
- Lead and facilitate the solutions architecture governance process based on the enterprise architecture governance structure
- Manage exceptions to architectural standards at a solutions level
- Review and approve recommendations to solutions architectural standards

Develop architecture requirements and maintain oversight

- Analyse and develop solutions architectural requirements
- Align architectural requirements with IT strategy
- Assess near-term needs to establish business priorities
- Ensure compatibility with existing solutions, infrastructure, services and strategic requirements
- Coordinate architecture implementation and modification activities
- Assist in post-implementation and continuous improvement efforts to enhance performance and provide increased functionality
- Ensure conceptual completeness of the technical solution

Manage quality and continuous improvement of architecture

- Analyse the current architecture to identify weaknesses and develop opportunities for improvement
- Identify and propose variances to the architecture to accommodate project needs
- Perform ongoing architecture quality review activities

Research emerging technologies

- Consults with clients and IT teams on solutions architecture
- Analyses cost versus benefits, risks, impact and technology priorities
- Provide recommendations on emerging technology to senior management
- Develop communication plans for solutions architecture
- Lead the research and evaluation of emerging technology, industry and market trends to assist in project development
- Identify organisational requirements for resources

Drive implementation of solutions architecture

- Formulate the solutions viewpoint in which business, information and technology viewpoints are synthesised into solutions
- Design and lead the implementation of the solution architecture
- Define repeatable rules for the implementation of solutions in repeatable or reusable ways

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## ENTERPRISE ARCHITECT

### Job Description

The Enterprise Architect leads the ecosystem-wide technical and business discussions in respect to future enterprise direction, aligning architecture strategy with organisational goals. He/She leads and facilitate the development of governing principles to guide enterprise architecture decision making, and formulates the enterprise architectural requirements. He develops plans and assess improvement options and oversees the quality activities within the organisation. He establishes a technology research strategy and roadmap, oversees the research and evaluation of emerging technology, industry and emerging trends, and advises on options, risks, costs versus benefits, system impact and technology priorities.

He works in a dynamic and evolving business environment. He is knowledgeable of relevant enterprise architecture methodologies, frameworks and modelling tools, as well as information technology architectures and technologies. He is also familiar with organisational design frameworks, and process mapping tools.

The Enterprise Architect effectively synthesises diverse enterprise needs and perspectives, and is able to put forth original and fresh ideas, solutions and recommendations. He possesses superior leadership and communication abilities and is able to influence key stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Software Development

6

Business Agility

5

Business Environment Analysis

5

Business Innovation

6

Business Performance Management

5

Business Risk Management

6

Change Management

6

Design Thinking Practice

5

Enterprise Architecture

6

IT Strategy

5

Networking

5

Organisational Analysis

6

Organisational Design

5

Partnership Management

6

Performance Management

6

Project Feasibility Assessment

5

Project Management

6

Solution Architecture

6

Stakeholder Management

6

Strategy Planning

5

Sustainability Management

5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Decision Making

Advanced

Interpersonal Skills

Advanced

Leadership

Advanced

Problem Solving

Advanced

Resource Management

Advanced

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### Critical Work Functions

### Key Tasks

Formulate the organisation's architecture strategy, roadmap, standards, policies and procedures, and governance

- Lead the ecosystem-wide technical and business discussions in respect to future enterprise direction
- Align architecture strategy with organisational goals
- Define principles that guide technology decisions and the relationship between industry and market trends and specified technology
- Develop and communicate ecosystem-wide policies, standards, guidelines and procedures
- Lead and facilitate the development of governing principles to guide enterprise architecture decision making
- Manage exceptions to architectural standards at an enterprise level
- Lead the enterprise architecture ecosystem-wide governance processes

Develop architecture requirements and maintain oversight

- Formulate the enterprise architectural requirements
- Identify reuse goals, opportunities and related explorations
- Lead the development of software and data delivery platforms with reusable components that can be orchestrated together into different methods for different business

Manage quality and continuous improvement of architecture

- Develop plans and assess improvement options
- Approve modification of enterprise architecture to meet project needs
- Oversee ongoing quality activities within the organisation
- Champion improvement-related initiatives

Research emerging technologies

- Advise on options, risks, costs versus benefits, system impact and technology priorities
- Determine business requirements and the impact of technology trade-offs on strategy
- Ensure projects are aligned with enterprise architecture
- Develop communication plans for enterprise architecture
- Establish a technology research strategy and roadmap
- Oversee the research and evaluation of emerging technology, industry and emerging trends
- Review and approve organisational requirements for resources and structures necessary to support initiatives







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**Critical Work Functions**

**Key Tasks**

Establish technology strategy

- Develop enterprise wide digital strategy
- Develop a technology roadmap to align to the organisation's overall strategy and growth plans
- Influence strategic decisions on future business initiatives related to technology
- Provide leadership in identifying, assessing and managing technology needs within an organisation
- Advise senior leadership on business opportunities arising from technology developments

Develop technology solutions

- Provide leadership in the design and development of major technical initiatives
- Guide the final decisions on the feasibility of use of a technology solution for business implementation

Manage portfolio of technology solutions

- Govern the integration of all solutions to ensure smooth and efficient flow of information within the organisation
- Set objectives for IT investments, projects, services and activities to meet current and future business needs

Enable innovation to improve  
organisation's goal

- Act as a Technology Evangelist to explore and adopt appropriate technology
- Foster an environment conducive to innovation and technological change
- Set the direction for research as well as a framework for measuring innovation research outcomes
- Evaluate new approaches to redesign IT systems or optimise performance, quality and speed of services and/or products

Manage stakeholders

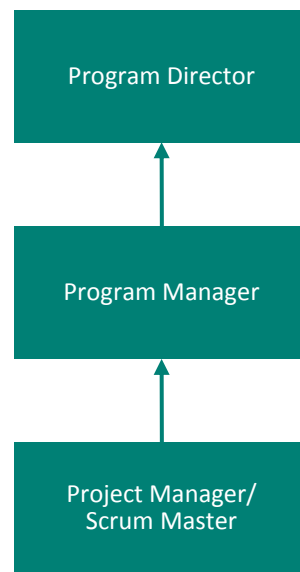
- Build strategic relationships and alliances with stakeholders to achieve common goals
- Manage internal and external stakeholders expectations
- Inspire stakeholders to pursue the organisation's technology vision
- Drive the organisation's technology alignment with business needs

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilization
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions
- Advise stakeholders toward reaching compromises and agreeing on expectations

Click on Sub-track names below to view feeder roles and next moves

**PROGRAM AND  
PROJECT  
MANAGEMENT**



→ Lateral Movement

→ Vertical Progression

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## PROJECT MANAGER/SCRUM MASTER

### Job Description

The Project Manager/Scrum Master plans projects and takes ownership of the successful implementation and achievement of project objectives. He/She defines project resources, manages project progress, and facilitates interaction and tasks of various parties to reduce the risk of overall failure. He develops and identifies advances/opportunities in project management to improve timely delivery of projects and efficient use of resources. He ensures the adoption of Scrum process framework and practices.

He works in a team setting and is knowledgeable of Agile practices and methodology, project management methodologies and tools, as well as Scrum process framework.

The Project Manager/Scrum Master is an effective team player who manages project timelines, stakeholders, deliverables and resources in a structured manner. He adopts an analytical and strategic approach in developing and communicating solutions that meet project objectives and stakeholder needs.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Coaching

4

Budgeting

3

Business Agility

4

Business Environment Analysis

2,3

Business Needs Analysis

2,3

Business Performance Management

3

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Contract Management

3

Data Analytics

2,3

Data Visualisation

3

Design Thinking Practice

3

Emerging Technology Synthesis

3

Learning and Development

4

Manpower Planning

3

Networking

3

Partnership Management

3

People and Performance Management

3

Process Improvement and Optimisation

3

Project Management

3,4

Solution Architecture

4

Stakeholder Management

2,3

Strategy Implementation

3

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Transdisciplinary Thinking

Advanced

Interpersonal Skills

Intermediate

Sense Making

Advanced

Resource Management

Advanced

Virtual Collaboration

Advanced

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& COMPETENCIES

### Critical Work Functions

### Key Tasks

Develop project plans

- Conduct cost-benefit analysis and develop project plan
- Review project plans to determine time frame, funding limitations, procedures for accomplishing projects
- Estimate budgetary needs based on the project scope and anticipate future budget challenges
- Assess consolidated project plans for dependencies, gaps and continued business value

Oversee program implementation

- Plan and manage project compliance requirements and adherence to governance structures
- Evaluate and address external business environment changes for impact on project scope
- Plan and manage project closure and/or transitions
- Conduct project reviews to recommend changes to project schedules, cost or resource requirements
- Document and track project scope, changes, issues and risks that affect implementation
- Facilitate the daily stand-up to achieve team consensus
- Eliminate conflicts and assist in developing solutions to manage roadblocks
- Refine and manage the product backlog

Manage people and organisation

- Manage project budget, work allocations, manpower and resourcing needs for the team
- Develop team members through ongoing coaching, mentoring and career discussions
- Drive performance management practices within the team in accordance with organisational policies and procedures
- Develop initiatives to support the continuing competence and professional development of the team
- Facilitate discussions, problem solving and conflict resolution

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## PROGRAM MANAGER

### Job Description

The Program Manager plans and oversees multiple inter-dependent programs spanning multiple years that impact one or more business units or one larger project. He/She oversees all aspects of assigned programs throughout program lifecycles to ensure completion within the defined scope, quality, time and cost constraints. He ensures accurate allocations of resources throughout the program. He leads multi-disciplinary teams, composed of various levels of personnel, vendors, and clients to create and deploy successful programs. He coaches team members on Agile practices and values, and Scrum process framework.

He is proficient in Agile practices and methodology, project management methodologies and tools, as well as Scrum process framework.

The Program Manager is confident and decisive in leading projects, overseeing the completion and integration of inter-dependent programs and parts. He has excellent communication skills, capable of effectively influencing various internal and external stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Coaching

5

Learning and Development

5

Budgeting

4

Manpower Planning

4

Business Agility

4

Networking

4

Business Environment Analysis

4

Organisational Analysis

4

Business Innovation

4

Organisational Design

4

Business Needs Analysis

4

Partnership Management

4

Business Performance Management

4

People and Performance Management

4

Business Process Re-engineering

4

Portfolio Management

4

Business Requirements Mapping

4

Process Improvement and Optimisation

4

Business Risk Management

4

Project Management

5

Change Management

4

Solution Architecture

4

Contract Management

4

Stakeholder Management

4

Data Analytics

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Strategy Implementation

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Data Visualisation

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Strategy Planning

4

Design Thinking Practice

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Emerging Technology Synthesis

4



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**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

**Generic Skills & Competencies (Top 5)**

**Proficiency Level**

Interpersonal Skills

Intermediate

Resource Management

Intermediate

Transdisciplinary Thinking

Advanced

Developing People

Intermediate

Decision Making

Intermediate





### Critical Work Functions

### Key Tasks

Establish the organisation's program management framework

- Define the program objectives, requirements, and risks to ensure program alignment with the organisation's strategic plan, objectives, priorities, vision, and mission statement
- Define the high-level road map and/or framework to set a baseline for program definition, planning, and execution
- Develop program and project management standards and structures using industry best practices and organisational standards to drive efficiency and consistency among projects and deliver program objectives.
- Solicit management's approval for the program by presenting the program charter with its high-level costs, milestone schedule and benefits
- Create and refine the product vision between stakeholders and the team

Develop program plans

- Develop a program charter to initiate and design program and benefits
- Develop milestone, accountability matrix and standard measurement criteria for program
- Identify opportunities to improve utilisation of manpower, information and material and/or technology for program implementation
- Develop key performance indicators to implement scope and quality management system within the program
- Establish and communicate expectations for periodic and milestone reviews including status reports, program risk identification and other dashboards
- Identify, review and level resource requirements to gain efficiencies and maximise productivity

Oversee program implementation

- Conduct program kick-off with key stakeholders and communicate deliverables and expectations
- Develop the transition and/or integration and/or closure plan by defining exit criteria
- Ensure all administrative, commercial and contractual obligations are met upon program completion
- Review project managers' performance in executing the project in accordance with the project plan in order to maximise their contribution to achieving program goals
- Manage risks in accordance with risk management plans
- Oversee adherence to schedules, budget, manpower and technical quality targets
- Oversee the documentation of scope, changes, issues and risks that affect implementation
- Conduct impact assessments for program changes to propose recommendations
- Oversee the conduct of daily stand-ups, requirement estimation, sprint and release planning
- Facilitate product backlog refinement sessions with stakeholders and/or team members

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
- Coach team members on Agile practices and values



## PROGRAM DIRECTOR

### Job Description

The Program Director leads and sets the direction for executing cross-functional and regional programs from initiation to completion. He creates portfolio roadmaps, defines and/or modifies portfolio processes and procedures, develop the portfolio risk management plan, and monitors performance of portfolios. He/She partners with business leaders and determines program goals that support business objectives and strategies. He directs a team of professionals and third-party vendors or service providers towards reaching organisational goals related to programs. He manages risks that affect the delivery of outcomes. He designs, develops and implements operating policies. He also drives the adoption of Agile practices and values for projects and programs within the organisation, including the implementation of Scrum process framework.

He works in a team setting and is knowledgeable of Agile practices and methodology, project management methodologies and tools, as well as Scrum process framework.

As one who directs multiple programs, the Program Director adopts a broad, global perspective and is confident in making critical decisions and handles competing resource needs with implications on various projects and stakeholders. He is an excellent leader who has a passion for mentoring and developing professionals in the team.

### Critical Work Functions and Key Tasks

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Coaching

6

Learning and Development

6

Budgeting

5

Manpower Planning

5

Business Agility

5

Networking

5

Business Environment Analysis

5

Organisational Analysis

5

Business Innovation

5

Organisational Design

5

Business Needs Analysis

5

Partnership Management

5

Business Performance Management

5

People and Performance Management

5

Business Process Re-engineering

5

Portfolio Management

5

Business Requirements Mapping

5

Process Improvement and Optimisation

5

Business Risk Management

5

Project Management

6

Change Management

5

Solution Architecture

5

Contract Management

5

Stakeholder Management

5

Data Analytics

5

Strategy Implementation

5

Data Visualisation

5

Design Thinking Practice

5

Emerging Technology Synthesis

5



## PROGRAM DIRECTOR

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**Critical Work Functions  
and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Interpersonal Skills

**Advanced**

Resource Management

**Advanced**

Transdisciplinary Thinking

**Advanced**

Leadership

**Advanced**

Developing People

**Advanced**





Critical Work Functions

Key Tasks

Establish the organisation's program management framework

- Act as Subject Matter Expert on program management by defining framework, templates, tools and systems to deliver on cost, time and quality metrics
- Create portfolio roadmaps prioritisation, inter-dependency analysis, and organisational constraints to validate and communicate the portfolio components sequencing, dependencies, and strategic alignment
- Develop systems to measure conformance of the application for program management framework and take the necessary corrective action
- Define and establish a governance model and structure, policies, and decision-making roles, responsibilities, rights and authorities to support decision-making and achieve strategic goals

Develop program plans

- Monitor the portfolio performance using reports, conversations, dashboards, and auditing techniques
- Evaluate portfolio effectiveness and efficiency and maintain strategic alignment
- Set expectations for periodic milestone reviews including status reports, program risk identification and other dashboards
- Oversee the adoption of Agile practices and values for projects and programs
- Analyse and optimise the consolidated allocation and/or re-allocation of capacity using supply and/or demand management and scenario analysis techniques to ensure

Oversee program implementation

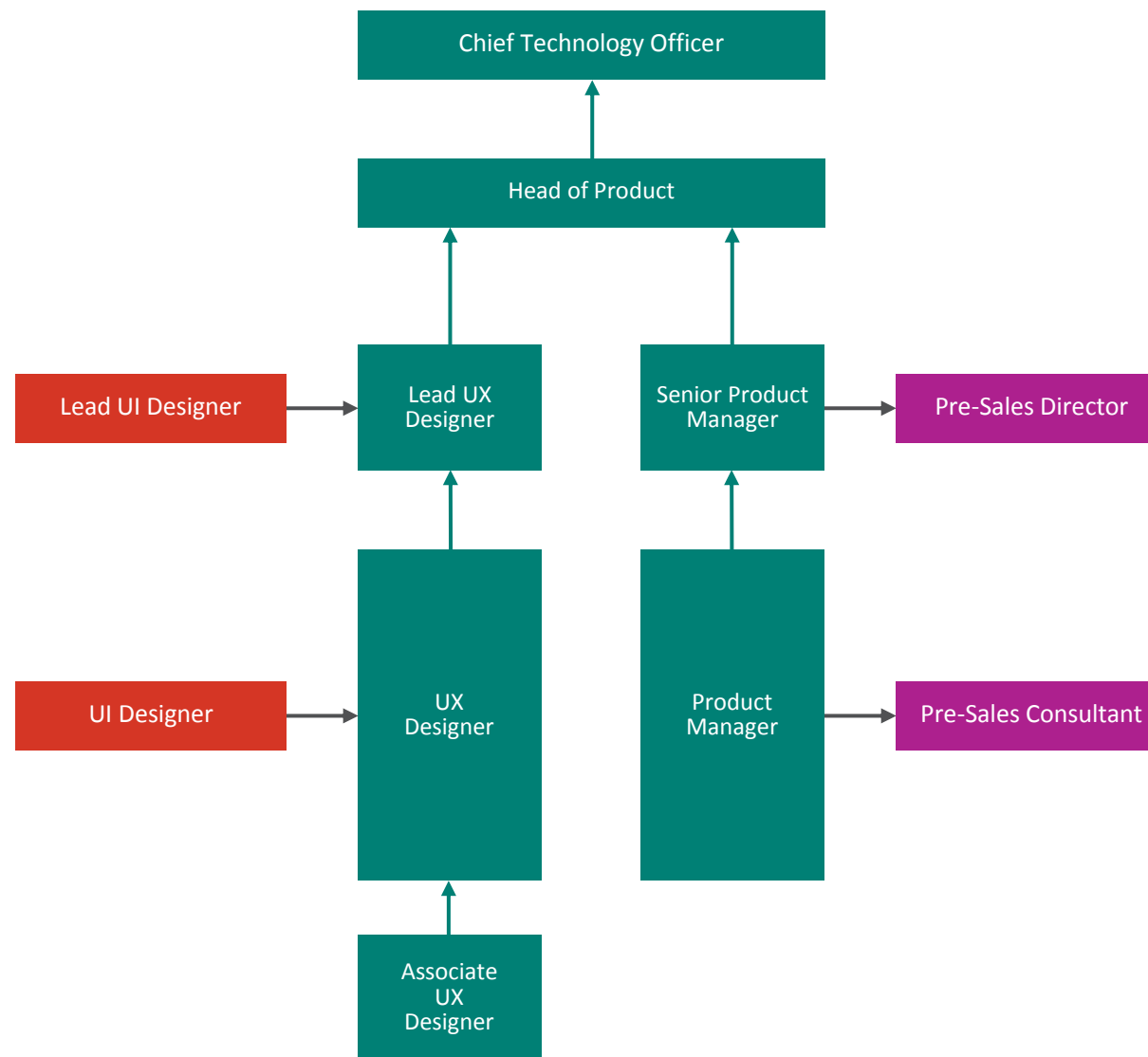
- Develop the portfolio risk management plan, using governance risk guidelines, processes, and procedures and other organisational assets to capitalise on opportunities and respond to risks
- Develop, monitor, and maintain portfolio-level risk register, strategic goals and objectives, to business value, and escalated from portfolio components, using risk management processes
- Resolve escalated issues to ensure deliverables meet with program objectives
- Manage and escalate issues by communicating recommended actions to decision makers for timely approval and implementation of proposed solution(s)

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions

Click on Sub-track names below to view feeder roles and next moves

## PRODUCT MANAGEMENT



→ Lateral Movement

→ Vertical Progression

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## ASSOCIATE UX DESIGNER

### Job Description

The Associate User Experience Designer assists in the design of user journeys and development of wireframes, ensuring design work is consistent with design and brand standards, analytics insights and customer feedback. He/She coordinates consultation sessions with stakeholders to gather requirements and needs, conducts research on user needs and behaviours, market and industry trends, as well as comparable experiences to support development of user experience (UX). He assists in usability assessments and tests, and analyses the pros and cons of refinements and iterations.

He works under supervision to effectively deal with unfamiliar issues. He is knowledgeable of user experience design methodologies and familiar with relevant design tools and software.

The Associate UX Designer is analytical in the evaluation of user feedback and offers new and fresh perspectives and suggestions to optimise the user experience. He is articulate and comfortable with brainstorming and putting forth his ideas to team members and other stakeholders to co-create an ideal user experience.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Brand Management	3	Communication	Advanced
Budgeting	3	Computational Thinking	Advanced
Business Needs Analysis	2,3	Creative Thinking	Advanced
Business Performance Management	3	Global Mindset	Intermediate
Business Requirements Mapping	3	Sense Making	Intermediate
Customer Experience Management	2		
Design Thinking Practice	3		
Market Research	2		
Process Improvement and Optimisation	3		
Product Management	3		
Stakeholder Management	2,3		
Test Planning	2,3		
User Experience Design	2		
User Testing and Usability Testing	3		

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### Critical Work Functions

### Key Tasks

Gather and evaluate user requirements

- Coordinate consultation sessions with stakeholders to gather requirements and needs
- Conduct research on market, industry trends, competitors, and comparable experiences
- Conduct research on user needs and behaviour
- Support the identification of verbal and non-verbal challenges
- Support the development of personas and usage scenarios

Design user experience (UX)  
architecture and strategy

- Assist in the design of user journeys and development of wireframes to enable effortless navigation
- Ensure design work is consistent with design and brand standards, analytics insights and customer feedback
- Document design standards, design wireframes, mock-ups, specifications and patterns across channels and products
- Implement interaction models, user task flows, and user interface specifications

Conduct usability testing

- Assist in usability assessments and tests
- Analyse the pros and cons of refinements and iterations based on usability assessments and tests
- Identify and troubleshoot issues during usability assessments and tests

Optimise user experience

- Collect user feedback on user experience with application sites
- Implement application site improvements to functionalities, design and navigation to enhance user experience

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## UX DESIGNER

### Job Description

The User Experience Designer creates user stories, personas and storyboards, and develops wireframes and task flows based on user needs to develop the user experience (UX). He/She gathers stakeholders' requirements and needs, and provides recommendations for user experience solutions. He conducts usability assessments and tests of prototypes and interactive systems, recommend refinements and iterations to achieve the 'optimum' user experience, and explores alternative approaches to ensure logical product flows. He analyses user feedback to propose improvements to the quality of interaction between the customer and product, as well as the overall user experience.

He works in a team setting and is familiar with user experience design methodologies, as well as relevant design tools and software.

The UX Designer is open-minded to multiple perspectives and methodical in the translation of user and business needs into critical functionalities that optimise user experience. He is creative and is able to present innovative design strategies and ideas to co-workers and stakeholders in a clear and engaging manner.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Brand Management

4

Budgeting

4

Business Innovation

4

Business Needs Analysis

4

Business Performance Management

3

Business Requirements Mapping

4

Customer Experience Management

3

Design Thinking Practice

3

Market Research

3

Networking

3

Process Improvement and Optimisation

4

Product Management

4

Project Management

4

Stakeholder Management

4

Test Planning

4

User Experience Design

3

User Interface Design

3

User Testing and Usability Testing

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Communication

Advanced

Computational Thinking

Advanced

Creative Thinking

Advanced

Global Mindset

Advanced

Sense Making

Advanced



Critical Work Functions

Key Tasks

Gather and evaluate user requirements

- Facilitate consultation sessions to gather stakeholders’ requirements and needs
- Provide recommendations for user experience solutions
- Design and execute studies into user behaviour and attitudes
- Generate early stage ideas on user experiences
- Plan and conduct interviews, user surveys, card sorting and usability tests

Design user experience (UX) architecture and strategy

- Develop wireframes and task flows based on user needs
- Create user stories, personas and storyboards
- Design graphic user interface elements
- Ensure optimisation of user journeys, development of site maps and construction of wireframes
- Design appropriate level of specification needed to ensure high quality development
- Work with creative directors and visual designers to incorporate a visual or brand identity for the user experience

Conduct usability testing

- Conduct usability assessments and tests of prototypes and interactive systems to gather feedback
- Recommend refinements and iterations based on usability testing results to achieve the ‘optimum’ user experience
- Explore alternative approaches to resolve user issues while ensuring logical product flows

Optimise user experience

- Analyse user feedback to propose improvements to enhance user experience
- Improve the quality of interaction between the customer and product through user experience
- Develop metrics to measure customer satisfaction and loyalty



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## LEAD UX DESIGNER

### Job Description

The Lead User Experience Designer defines the user experience (UX) vision and roadmap, as well as standards for user-centric design, information architecture and usability for consistency. He/She engages stakeholders and users to determine their goals, needs and requirements, defining interaction models, user task flows, and user experience (UX) specifications. He oversees all phases of usability testing, determines refinements and iterations, and recommends alternative approaches to ensure product flows are logical. He also oversees improvements to functionality, design and navigation of application sites.

He works in a team setting and is proficient in the application of user experience design methodologies, as well as relevant design tools and software.

The Lead UX Designer has a broad, global mindset and integrates varying perspectives to envision the optimal user experience and develop new, innovative, high-level design strategies. He is also persuasive and compelling when communicating his ideas and vision to stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Brand Management	5	Solution Architecture	4
Budgeting	4	Stakeholder Management	5
Business Innovation	5	Strategy Implementation	3
Business Needs Analysis	4	Strategy Planning	4
Business Performance Management	4	Test Planning	5
Business Requirements Mapping	5	User Experience Design	4
Customer Experience Management	4	User Interface Design	4
Design Thinking Practice	4	User Testing and Usability Testing	5
Learning and Development	4		
Manpower Planning	3		
Market Research	4		
Networking	4		
People and Performance Management	3		
Process Improvement and Optimisation	5		
Product Management	5		
Project Management	5		
		<b>Generic Skills &amp; Competencies (Top 5)</b>	<b>Proficiency Level</b>
		Communication	Advanced
		Computational Thinking	Advanced
		Creative Thinking	Advanced
		Global Mindset	Advanced
		Sense Making	Advanced

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### Critical Work Functions

### Key Tasks

Gather and evaluate user requirements

- Develop consultation process to engage stakeholders and users to determine their goals, needs and requirements
- Communicate insights to shape long-term product strategy
- Develop guidelines for researching of market, industry trends, competitors, and comparable experiences
- Evaluate user research findings
- Define interaction models, user task flows, and user interface specifications
- Review data to analyse user behaviour and interaction

Design user experience (UX) architecture and strategy

- Define the UX vision and roadmap
- Define standards for user-centric design, information architecture and usability
- Communicate scenarios, end-to-end experiences, interaction models, and screen designs to stakeholders to get buy-in
- Ensure consistency with design and brand standards, analytics insight and customer feedback
- Deliver appropriate level of specification needed to ensure high quality development
- Approve design standards, design wireframes, mock-ups, specifications and patterns across channels and products

Conduct usability testing

- Oversee all phases of usability testing
- Determine refinements and iterations based on usability testing results to create the 'optimum' user experience
- Recommend alternative approaches to resolving user problems and ensure that product flows are logical

Optimise user experience

- Oversee improvements to functionality, design and navigation of application sites
- Drive the focus on customer loyalty and satisfaction when optimising user experience

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

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## PRODUCT MANAGER

### Job Description

The Product Manager manage the product line life cycle from strategic planning to tactical activities, acting as a liaison to support product positioning and customer demand. He/She guides product development from conception to launch, evaluating product functionalities and performance, and proposing enhancements and/or improvements to products based on market feedback. He analyses potential partner relationships for the product, and generate innovative ideas to grow market share, improve customer experience and drive growth.

He works with various teams across the organisation. He is familiar with product development life cycles and management tools, as well as various product positioning approaches. He is also knowledgeable of new and emerging consumer trends in the market.

The Product Manager is able to see inter-connections and anticipate issues across all phases of the product life cycle and develop creative strategies to address them. He is an articulate and influential communicator to both internal and external stakeholders and is able to work well in a team environment.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting	3	Project Management	3
Business Development	3	Stakeholder Management	2,3
Business Environment Analysis	3	Strategy Implementation	3
Business Needs Analysis	3	User Experience Design	2,3
Business Performance Management	3	User Interface Design	3
Customer Experience Management	2,3		
Data Analytics	2,3		
Demand Analysis	3		
Design Concepts Generation	3		
Design Thinking Practice	3		
Emerging Technology Synthesis	3		
Market Research	3		
Partnership Management	3		
Portfolio Management	4		
Pricing Strategy	3		
Product Management	3		
		<b>Generic Skills &amp; Competencies (Top 5)</b>	<b>Proficiency Level</b>
		Computational Thinking	Basic
		Communication	Intermediate
		Global Mindset	Intermediate
		Teamwork	Intermediate
		Virtual Collaboration	Intermediate

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### Critical Work Functions

### Key Tasks

Formulate and implement product development strategy and plans

- Manage the product line life cycle from strategic planning to tactical activities
- Prepare and maintain the organisation's product roadmap
- Coordinate internal and external product launches
- Analyse reports on revenue and profitability to meet revenue and profitability goals
- Act as a liaison to support product positioning and customer demand

Drive product development

- Guide product development from conception to launch
- Evaluate product functionalities and performance based on market feedback
- Propose enhancements and/or improvements to products based on market feedback

Develop and grow business

- Conduct market research to determine market requirements for current and future products
- Analyse potential partner relationships for the product
- Draft a feature roadmap based on business opportunities and market research
- Drive volume and value from specific markets in collaboration with the sales and marketing team
- Draft business proposals for new opportunities
- Generate innovative ideas to grow market share, improve customer experience and drive growth

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## SENIOR PRODUCT MANAGER

### Job Description

The Senior Product Manager develops the product portfolio roadmap, pricing and launch strategies and financial projections. He/She oversees the development for a suite of products, evaluates products to identify gaps, issues with product interface, performance and product functionalities based on market feedback, and prioritises the development of product features against strategic goals and initiatives. He drives market research studies to explore new technology, and Oversees the development of business proposals for new opportunities.

He works with various teams across the organisation. He is knowledgeable of product development and management tools, as well as various product positioning and pricing methodologies. He is also knowledgeable of new and emerging consumer and industry trends.

The Senior Product Manager adopts a broad perspective when distilling market trends and synthesising opportunities for growth. He is able to put forth fresh perspectives and innovative strategies to drive product portfolios. He is an influential leader who communicates well and sustains strong, positive relationships with his team and clients, articulating the value of the organisation's products engagingly and compellingly.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting	4	Networking	4
Business Agility	4	Partnership Management	4
Business Development	4	People and Performance Management	4
Business Environment Analysis	4	Performance Management	4
Business Innovation	4	Portfolio Management	5
Business Needs Analysis	4	Pricing Strategy	4
Business Performance Management	4	Product Management	4
Customer Experience Management	4	Project Management	4
Data Analytics	4	Stakeholder Management	4
Demand Analysis	4	Strategy Implementation	4
Design Concepts Generation	4	Strategy Planning	4
Design Thinking Practice	4	User Experience Design	4
Emerging Technology Synthesis	4	User Interface Design	4
Learning and Development	5		
Manpower Planning	4		
Market Research	4		



## SENIOR PRODUCT MANAGER

### Job Description

The Senior Product Manager develops the product portfolio roadmap, pricing and launch strategies and financial projections. He/She oversees the development for a suite of products, evaluates products to identify gaps, issues with product interface, performance and product functionalities based on market feedback, and prioritises the development of product features against strategic goals and initiatives. He drives market research studies to explore new technology, and Oversees the development of business proposals for new opportunities.

He works with various teams across the organisation. He is knowledgeable of product development and management tools, as well as various product positioning and pricing methodologies. He is also knowledgeable of new and emerging consumer and industry trends.

The Senior Product Manager adopts a broad perspective when distilling market trends and synthesising opportunities for growth. He is able to put forth fresh perspectives and innovative strategies to drive product portfolios. He is an influential leader who communicates well and sustains strong, positive relationships with his team and clients, articulating the value of the organisation's products engagingly and compellingly.

**Critical Work Functions  
and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Computational Thinking

Basic

Communication

Intermediate

Global Mindset

Intermediate

Teamwork

Intermediate

Virtual Collaboration

Intermediate



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### Critical Work Functions

### Key Tasks

Formulate and implement product development strategy and plans

- Create feature descriptions for the organisation's products
- Develop product portfolio roadmap, pricing and launch strategies and financial projections
- Anticipate internal and/or external business challenges and/or regulatory issues
- Present product portfolio performance to senior stakeholders

Drive product development

- Oversee development for a suite of products
- Evaluate products to identify gaps, issues with product interface, performance and product functionalities based on market feedback
- Integrate feedback and requests in the ideation and development of products
- Validate detailed specifications and development costing against market potential and future revenue
- Prioritises the development of product features against strategic goals and initiatives
- Define the requirements for each feature and desired user experience
- Determine the timeline for development, implementation and release process for the product

Develop and grow business

- Develop marketing tactics and pricing strategies
- Drive market research studies to explore new technology
- Drive sales volume from specific target markets in collaboration with sales and marketing team
- Oversee the development of business proposals for new opportunities
- Identify potential partner relationships for the product

Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- Monitor and track the achievement of 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 and allocation 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

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## HEAD OF PRODUCT

### Job Description

The Head of Product defines the organisation's product development vision and strategy, and ensures alignment of the product roadmap with the strategy and vision. He/She anticipates the impacts of internal and external business challenges and market conditions on the organisation's product development roadmap. He oversees the organisation's product development process, and enhancements to product portfolios to improve their commercial performance. He guides development teams on issues related to the product design, development and deployment for the product portfolio, and development of differentiated strategies across the lines of business. He distils insights and competitive intelligence with various market analyses to grow the organisation's business.

He works with various teams across the organisation. He is knowledgeable of product development and management practices and tools, as well as product branding and pricing methodologies. He is also knowledgeable of new and emerging consumer and industry trends.

The Head of Product adopts a global mindsets and integrates trends and knowledge from varying sources to chart a compelling vision for the future of product portfolios. He is a charismatic leader who inspires others toward common goals.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting	5	Networking	5
Business Agility	5	Partnership Management	5
Business Development	5	People and Performance Management	5
Business Environment Analysis	5	Performance Management	5
Business Innovation	5	Portfolio Management	6
Business Needs Analysis	5	Pricing Strategy	5
Business Performance Management	5	Product Management	5
Customer Experience Management	5	Project Management	5
Data Analytics	5	Stakeholder Management	5
Demand Analysis	5	Strategy Planning	5
Design Concepts Generation	5	User Experience Design	5
Design Thinking Practice	5	User Interface Design	5
Emerging Technology Synthesis	5	User Testing and Usability Testing	5
Learning and Development	6		
Manpower Planning	5		
Market Research	5		





## HEAD OF PRODUCT

### Job Description

The Head of Product defines the organisation's product development vision and strategy, and ensures alignment of the product roadmap with the strategy and vision. He/She anticipates the impacts of internal and external business challenges and market conditions on the organisation's product development roadmap. He oversees the organisation's product development process, and enhancements to product portfolios to improve their commercial performance. He guides development teams on issues related to the product design, development and deployment for the product portfolio, and development of differentiated strategies across the lines of business. He distils insights and competitive intelligence with various market analyses to grow the organisation's business.

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**Critical Work Functions  
and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Communication

Basic

Computational Thinking

Basic

Service Orientation

Intermediate

Managing Diversity

Intermediate

Creative Thinking

Intermediate



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### Critical Work Functions

### Key Tasks

Formulate and implement product development strategy and plans

- Define product development vision and strategy
- Create strategies to leverage on or adapt technology to meet market needs and drive buy/build decisions
- Oversee the development and alignment of the product roadmap with the adopted strategy and vision
- Anticipate the impacts of internal and external business challenges and market conditions on the organisation's product development roadmap
- Develop the organisation's go-to-market strategy for the products

Drive product development

- Oversee the organisation's product development process
- Spearhead research and analyses on products and product markets
- Oversee enhancements to product portfolios to improve their commercial performance
- Guide development teams on issues related to the product design, development and deployment for the product portfolio
- Champion the organisation's products and act as a subject matter expert in product markets
- Articulate the business value of the product to the product team

Develop and grow business

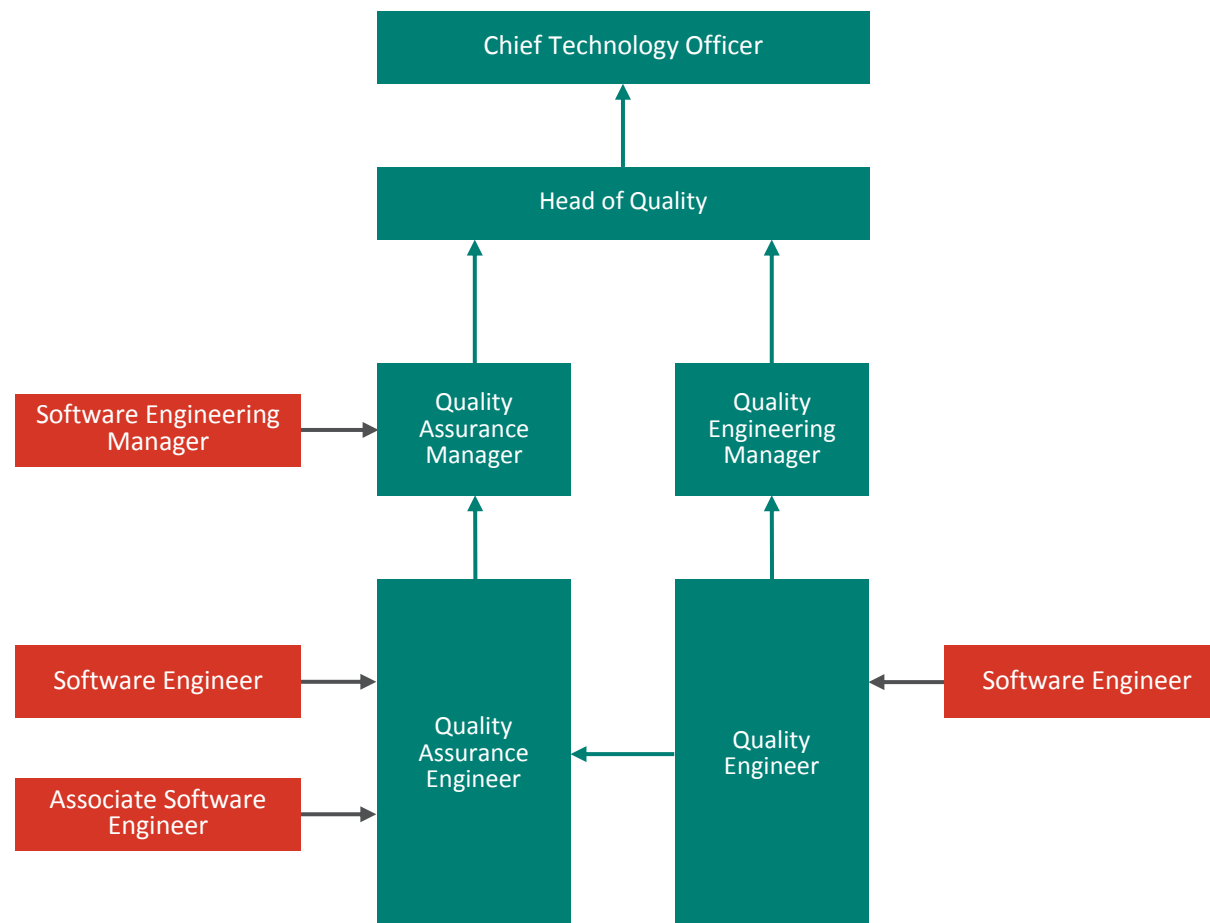
- Distil insights and competitive intelligence with various market analyses to grow the organisation's business
- Establish guidelines for marketing tactics and pricing strategies
- Foster relationships with key clients, business partners and industry stakeholders to drive business growth
- Guide the team to develop a differentiated strategies across the lines of business
- Sign off business proposals for new opportunities

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions

Click on Sub-track names below to view feeder roles and next moves

## QUALITY MANAGEMENT



→ Lateral Movement

→ Vertical Progression

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## QUALITY ASSURANCE ENGINEER

### Job Description

The Quality Assurance Engineer monitors the software development process to ensure design quality and adherence to standards. He/She is involved in tasks that include software design, source code development, review and control, configuration management and integration of software. He participates in a wide range of quality assurance testing and analyses to ensure that product meets or exceeds specified quality standards and end-user requirements before release.

He works in a team setting and is proficient in programming languages required by the organisation. He is familiar with international quality standards and processes, as well as applicable test automation tools.

The Quality Assurance Engineer takes pride in delivering quality service to internal stakeholders and is meticulous in conducting tests to ensure product quality requirements are met. He should be able to anticipate problems in the development process, and develop and articulate innovative and effective solutions to address them and prevent re-occurrence.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Applications Development	3	Global Mindset	Basic
Budgeting	3	Sense Making	Basic
Business Needs Analysis	3	Leadership	Basic
Business Performance Management	3	Interpersonal Skills	Basic
Configuration Tracking	1,2	Teamwork	Basic
Networking	3		
Partnership Management	3		
Problem Management	3		
Process Improvement and Optimisation	3		
Project Management	3		
Quality Assurance	3		
Quality Standards	4		
Software Design	3		
Software Testing	2,3		
Stakeholder Management	2,3		
Strategy Implementation	3		
Test Planning	2,3		



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**Critical Work Functions**

**Key Tasks**

Develop plans to execute quality testing

- Obtain technical documents to understand user requirements, product specifications and intended outcomes
- Identify relevant features for quality testing
- Develop test plans
- Develop quality testing approach and steps to satisfy test objectives
- Create test scenarios that complies with established testing procedures and guidelines
- Work with relevant teams to plan for quality testing based on established testing procedures and guidelines

Perform quality testing

- Conduct quality assurance tests against design requirements, and specifications
- Analyse results from quality assurance tests to determine if the product fulfils performance standards and functional requirements as detailed in design requirements and specifications
- Identify issues that arise from quality assurance tests
- Apply existing procedures to solve routine or standard problems
- Trace issues to relevant development stage and teams
- Document quality assurance testing outcomes
- Automate quality assurance testing for suitable types of tests and test processes
- Keep track of improvements made to enhance quality of products

Optimise quality processes

- Identify opportunities to decrease time and cost spent on system quality assurance processes
- Propose improvements to optimise quality assurance testing process
- Conduct research on industry best practices and new methodologies, practices and technologies to optimise quality assurance processes

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## QUALITY ASSURANCE MANAGER

### Job Description

The Quality Assurance Manager manages the conduct of various quality assurance tests and analyses to ensure that the product meets or exceeds specified quality standards and end-user requirements. He/She determines quality assurance testing objectives and reviews test plans to ensure alignment of quality testing governance framework and standards. He ensures that system tests are completed, documented and all problems are resolved before release to users. He anticipates internal and/or external business challenges and/or regulatory issues, and recommends process, product or service improvements. He may lead projects or project steps within a broader project or have accountability for ongoing activities or objectives.

He works in a team setting and is proficient in programming languages required by the organisation. He is familiar with international quality standards and processes, as well as applicable test automation tools.

The Quality Assurance Manager champions high service standards in ensuring products are issue-free and is methodical in performing quality assurance testing, anticipating problems and resolving issues that occur. He is able to apply knowledge from multiple disciplines to develop innovative improvement solutions, and communicates his improvement recommendations effectively.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Applications Development

4

Budgeting

4

Business Agility

4

Business Needs Analysis

4

Business Performance Management

4

Configuration Tracking

3

Learning and Development

5

Manpower Planning

4

Networking

4

Partnership Management

4

People and Performance Management

4

Performance Management

4

Problem Management

4

Process Improvement and Optimisation

4

Project Management

4

Quality Assurance

4

Quality Engineering

4

Quality Standards

5

Software Design

4

Software Testing

4

Stakeholder Management

4

Strategy Implementation

4

Strategy Planning

4

Test Planning

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Global Mindset

Intermediate

Service Orientation

Intermediate

Computational Thinking

Intermediate

Decision Making

Advanced

Resource Management

Intermediate

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### Critical Work Functions

### Key Tasks

Develop plans to execute quality testing

- Evaluate user requirements, product specifications and intended outcomes
- Determine quality testing objectives, assumptions and hypotheses based on features to be tested and design specifications
- Determine timelines, test environment, tools and approaches required, work allocation and responsibilities in quality testing
- Review test plans and make refinements to ensure robustness of testing
- Review test scenarios for compliance with established testing procedures and guidelines

Perform quality testing

- Oversee the conduct of quality assurance tests to validate fulfilment of product design requirements and specifications
- Evaluate findings from quality assurance testing to validate achievement of quality standards and product functionalities based on design requirements and specifications
- Manage investigation into quality issues for resolution
- Recommend solutions to address quality issues
- Validate resolution of quality issues
- Develop reports documenting quality testing outcomes for the relevant development teams
- Manage the automation of quality assurance testing for suitable types of tests
- Review final products to ensure adherence to quality standards

Optimise quality processes

- Evaluate the efficiency of existing quality assurance processes
- Review recommendations to optimise quality assurance testing processes
- Assess new quality assurance testing processes for implementation

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

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## QUALITY ENGINEER

### Job Description

The Quality Engineer identifies user requirements and expectations to inform quality standards for end-products, and analyses product development processes to identify relevant quality standards. He/She incorporates relevant and suitable international standards into product development processes, quality standards and testing processes. He identifies quality-testing types and variations based on business needs and requirements and develops testing processes. He identifies suitable measures of quality for testing, and contributes to the development of test scenarios and plans. He conducts various quality tests, and analyses data to identify operating and usage conditions in which performance of quality measures starts to decline. He also automates quality testing for applicable and suitable tests.

He works in a team setting and is proficient in programming languages required by the organisation. He is familiar with international quality standards, test automation frameworks and tools, as well as applicable quality testing and analysis tools.

The Quality Engineer possesses strong analytical ability with excellent communication and interpersonal skills. He is highly meticulous in nature, curious and is able to work in a dynamic environment.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Software Development

3

Applications Development

3

Budgeting

3

Business Needs Analysis

3

Business Performance Management

3

Failure Analysis

3

Networking

3

Partnership Management

3

Problem Management

3

Process Improvement and Optimisation

3

Process Validation

3

Project Management

3

Quality Engineering

4

Quality Standards

4

Software Design

3

Software Testing

2,3

Stakeholder Management

2,3

Strategy Implementation

3

Test Planning

2,3

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Problem Solving

Intermediate

Communication

Basic

Teamwork

Basic

Decision Making

Basic

Digital Literacy

Intermediate



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### Critical Work Functions

### Key Tasks

Develop quality standards

- Analyse product development processes to identify quality standards at each stage of the process
- Identify user requirements and expectations to develop quality standards for end products
- Develop quality standards that incorporates international standards and best practices in quality
- Identify matrices to assess for quality
- Develop user guides on quality standards to define requirements, specifications, guidelines, and characteristics of processes and products
- Analyse compliance level to quality standards and identify areas for change
- Conduct assessments of existing quality standards against evolving user requirements, business needs and regulatory changes

Develop quality testing processes

- Identify quality testing types and variations for each phase of the product development process or lifecycle based on business needs and requirements
- Identify objectives of quality tests for each phase of the development process or lifecycle
- Outline steps in the quality test process required to achieve test objectives
- Identify applicable and relevant international standards and practices
- Develop quality testing processes for each phase of the development process or lifecycle

Develop plans to execute quality testing

- Identify suitable quality measures for testing based on product attributes valued most by users
- Develop test plans
- Develop quality testing approaches and steps to satisfy test objectives
- Create test scenarios that complies with established testing procedures and guidelines
- Work with relevant teams to plan for quality testing based on established testing procedures and guidelines

Perform quality testing

- Conduct quality tests across phases of the product development process or lifecycle to assess performance of quality measures under different operational and usage conditions
- Analyse data from quality tests to determine optimal operational and usage conditions
- Utilise tools to test and analyse factors leading to failure of quality standards
- Identify operating and usage conditions in which performance of quality measures drops
- Document quality testing outcomes
- Provide suggestions to improve performance of quality measures
- Develop tools to automate quality testing for suitable types of tests
- Implement automated test cases and codes for quality testing
- Conduct applicable security testing with relevant functional teams
- Address quality issues and impediments to achieving quality standards in an Agile environment

Optimise quality processes

- Identify opportunities to optimise time and cost spent on system quality processes
- Propose improvements to optimise quality testing process and improve the quality systems
- Conduct research on industry best practices and new methodologies, practices and tools to optimise quality processes

## QUALITY ENGINEERING MANAGER

### Job Description

The Quality Engineering Manager establishes suitable quality standards at each stage of the development process, and evaluates suitability of matrices to assess quality. He/She determines types and variations of quality tests to fulfil business needs and requirements, as well as ensures that testing processes comply with applicable regulatory and relevant quality testing requirements. He synthesises product performance against user feedback to prioritise quality measures for testing, and manages the conduct of quality tests on quality measures under different operational and usage conditions. He recommends new technologies, tools and infrastructures, practices and changes to processes, as well as guides the automation of quality testing.

He works in a team setting and is proficient in programming languages required by the organisation. He is familiar with international quality standards, test automation frameworks and tools, as well as applicable quality testing and analysis tools.

The Quality Engineering Manager possesses strong analytical ability with excellent communication and interpersonal skills. He is highly meticulous in nature, curious and is able to work in a dynamic environment.

### Critical Work Functions and Key Tasks

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Coaching	4	Process Improvement and Optimisation	4
Agile Software Development	4	Process Validation	4
Applications Development	4	Project Management	4
Budgeting	4	Quality Engineering	4
Business Agility	4	Quality Standards	5
Business Needs Analysis	4	Software Design	4
Business Performance Management	4	Software Testing	4
Failure Analysis	4	Stakeholder Management	4
Learning and Development	5	Strategy Implementation	4
Manpower Planning	4	Strategy Planning	4
Networking	4	Test Planning	4
Partnership Management	4		
People and Performance Management	4		
Performance Management	4		
Product Management	4		
Problem Management	4		



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## QUALITY ENGINEERING MANAGER

### Job Description

The Quality Engineering Manager establishes suitable quality standards at each stage of the development process, and evaluates suitability of matrices to assess quality. He/She determines types and variations of quality tests to fulfil business needs and requirements, as well as ensures that testing processes comply with applicable regulatory and relevant quality testing requirements. He synthesises product performance against user feedback to prioritise quality measures for testing, and manages the conduct of quality tests on quality measures under different operational and usage conditions. He recommends new technologies, tools and infrastructures, practices and changes to processes, as well as guides the automation of quality testing.

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**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

### Generic Skills & Competencies (Top 5)

### Proficiency Level

[Leadership](#)
**Intermediate**
[Communication](#)
**Advanced**
[Teamwork](#)
**Advanced**
[Decision Making](#)
**Intermediate**
[Problem Solving](#)
**Advanced**




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**Critical Work Functions**

**Key Tasks**

Develop quality standards	<ul style="list-style-type: none"> <li>• Determine quality standards at each stage of the development process to ensure quality of outputs</li> <li>• Synthesise user requirements and expectations to determine suitable quality standards for end products</li> <li>• Determine the suitability of including international standards and best practices in quality standards</li> <li>• Evaluate suitability of quality matrices</li> <li>• Oversee the development of user guides on quality standards</li> <li>• Address issues of non-compliance with quality standards and specifications</li> <li>• Review appropriateness and suitability of quality standards in the development process and for end products</li> </ul>
Develop quality testing processes	<ul style="list-style-type: none"> <li>• Determine types and variations of quality tests for each phase of the product development process or lifecycle to fulfil business needs and requirements</li> <li>• Assess objectives of quality tests for feasibility and relevancy to each phase of the development process or lifecycle</li> <li>• Review steps in the quality test process against test objectives</li> <li>• Ensure quality testing processes complies with regulatory and other relevant requirements</li> <li>• Develop quality systems for the organisation</li> </ul>
Develop plans to execute quality testing	<ul style="list-style-type: none"> <li>• Synthesise product performance against user feedback to prioritise quality measures for testing</li> <li>• Determine quality testing objectives, assumptions and hypotheses</li> <li>• Determine timelines, test environment, tools and approaches required, work allocation and responsibilities in quality testing</li> <li>• Review test plans and make refinements to ensure robustness of testing</li> <li>• Review test scenarios for compliance with established testing procedures and guidelines</li> </ul>
Perform quality testing	<ul style="list-style-type: none"> <li>• Manage the conduct of quality tests across phases of the product development process or lifecycle on quality measures under different operational and usage conditions</li> <li>• Provide technical inputs on quality gaps to the development team to improve product quality</li> <li>• Develop quality systems to mitigate or prevent failure from occurring or to enable early detection of failure</li> <li>• Validate operating and usage conditions in which performance of quality measures drops</li> <li>• Develop reports documenting quality testing outcomes for the relevant development teams</li> <li>• Recommend new technologies, tools and infrastructures, as well as practices and changes to processes</li> <li>• Guide the development of tools to automate quality testing for suitable types of tests</li> <li>• Evaluate automated test cases and codes for enhancements</li> <li>• Ensure the conduct of applicable security tests with relevant functional teams</li> <li>• Manage the resolution of quality issues to ensure achievement of quality standards in an Agile Environment</li> </ul>
Optimise quality processes	<ul style="list-style-type: none"> <li>• Evaluate the efficiency and outcomes of existing quality processes</li> <li>• Review recommendations to optimise quality testing processes and improve quality systems</li> <li>• Assess new quality testing processes, practices and tools for implementation to enhance quality systems</li> </ul>
Manage people and organisation	<ul style="list-style-type: none"> <li>• Manage the budget expenditure and allocation across teams and projects</li> <li>• Monitor and track the team's achievements and key performance indicators</li> <li>• Propose new operational plans, including targeted budgets, work allocations and staff forecasts</li> <li>• Acquire, allocate and optimise the use of resources</li> <li>• Develop learning roadmaps to support the professional development of the team</li> <li>• Manage the performance and development process, including providing coaching and development opportunities to maximise the potential of each individual</li> <li>• Coach team members on Agile practices and values</li> </ul>

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## HEAD OF QUALITY

### Job Description

The Head of Quality is responsible for development a quality strategy that addresses all phases of product development, as well as governance frameworks for managing quality and test automation. He/She reviews quality management policies and standards to ensure compliance with regulatory requirements and international standards. He defines the approaches and procedures in the identification, selection and assessment of quality standards for adoption, documentation for test reporting, and review of quality standards. He provides technical inputs on approaches and conduct of quality testing, and recommend solutions to resolve significant quality lapses. He also reviews quality test reports and outcomes to approve product.

He works in a team setting and is proficient in programming languages required by the organisation. He is familiar with international quality standards and processes, as well as applicable test automation tools.

The Head of Quality manages the quality of infocomm technology products from end to end, he is able to readily integrate and apply knowledge from multiple disciplines. He is able to develop innovative and effective solutions to issues encountered, communicate his plans and advice in a clear and compelling manner that inspires action.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Agile Coaching

5

Process Improvement and Optimisation

5

Agile Software Development

5

Process Validation

5

Applications Development

5

Project Management

5

Budgeting

5

Quality Assurance

5

Business Agility

5

Quality Engineering

5

Business Needs Analysis

5

Quality Standards

6

Business Performance Management

5

Software Design

6

Failure Analysis

5

Software Testing

4

Learning and Development

6

Stakeholder Management

5

Manpower Planning

5

Strategy Planning

5

Networking

5

Test Planning

5

Partnership Management

5

People and Performance Management

5

Performance Management

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Product Management

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Problem Management

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### Critical Work Functions and Key Tasks

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Service Orientation

Intermediate

Creative Thinking

Intermediate

Computational Thinking

Intermediate

Leadership

Advanced

Decision Making

Advanced



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### Critical Work Functions

### Key Tasks

Manage the organisation's quality strategy

- Formulate quality strategies to address all phases of product development
- Develop governance frameworks for managing quality and test automation
- Review quality management policies and standards to ensure compliance with regulatory requirements and international standards
- Drive the application of new technologies, compliance and security standards
- Act as the organisation's advocate for quality and excellence
- Anticipate new quality tests required based on organisational strategy and product development trends
- Develop roadmaps for the implementation of Agile methodologies and practices in a quality testing function

Develop quality standards

- Define the approach and procedures in the identification, selection and assessment of quality standards for implementation
- Advise on the selection of quality standards to ensure quality of outputs at each stage of the process
- Align quality standards with best practices, industry standards and organisational goals
- Establish processes and mechanisms to inspect and report quality issues
- Develop policies and procedures for documentation of end-user experience
- Formulate the approach to review and enhance organisational quality standards
- Approve new solutions, best practices, design approaches and technologies in quality management

Perform quality testing

- Lead the design and implementation of quality and quality assurance testing frameworks, procedures, test infrastructure and tools
- Oversee the execution of quality and quality assurance testing including end-user experience tests
- Provide technical inputs on approaches and conduct of quality testing
- Advise on recommend solutions to resolve significant quality lapses
- Drive the achievement of higher quality standards
- Evaluate outcomes of quality test reports to determine product approval
- Advise on the development of automated test cases and codes for applicable types of quality tests
- Develop guidelines on the selection of quality tests to automate and the implementation of automated quality tests

Optimise quality processes

- Drive continuous improvement in quality and quality assurance testing processes
- Develop sustainable quality and quality assurance testing processes
- Endorse improvements to optimise quality and quality assurance testing processes
- Establish quality improvement programs to detect, address and prevent quality issues in processes
- Secure buy-in for new investments in quality and quality assurance testing tools to enhance testing performance

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions
- Establish roles and responsibility of the quality testing function in an Agile environment

Click on Sub-track names below to view feeder roles and next moves

## DATA PROTECTION



→ Lateral Movement

→ Vertical Progression

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## DATA PROTECTION EXECUTIVE

### Job Description

The Data Protection Executive assists in executing data governance policies and procedures. He/She is responsible for handling queries, complaints and disputes on the organisation's management of personal data. He collaborates with business and project teams to support business objectives and strategies and align them with the organisations's data protection guidelines and policies. He manages risks and data breach incidents. He is also responsible for driving awareness of the Personal Data Protection Act requirements in the organisation.

He works in a team setting and is knowledgeable of data governance, compliance and data protection policies and frameworks. He is also well versed in data breach mitigation techniques and procedures. He should be familiar with the requirements of the Personal Data Protection Act 2012.

As one who is responsible for handling queries, complaints and disputes on the organisation's management of personal data, the Data Protection Executive is confident in making critical decisions and providing quick and impactful resolutions.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Audit and Compliance	3	Leadership	Intermediate
Business Negotiation	3	Transdisciplinary Thinking	Intermediate
Business Risk Management	3	Digital Literacy	Intermediate
Crisis Management	3	Creative Thinking	Intermediate
Cyber and Data Breach Incident Management	2	Virtual Collaboration	Basic
Data Ethics	3		
Data Protection Management	3		
Data Sharing	3		
Design Thinking Practice	3		
IT Standards	4		
Project Management	3		
Stakeholder Management	3		



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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Ensure organisation's compliance to Personal Data Protection Act (PDPA)

- Monitor and ensure the organisation's compliance with the PDPA
- Ensure data requests are logged in accordance with organisational procedures
- Update and maintain a register of data owners for the organisation's data sets
- Carry out data flow reviews and create data flow maps for the organisation's data life cycle and data processing activities
- Maintain data flow maps for processes across the organisation's data lifecycle and data processing activities
- Maintain data protection policies and procedures

In accordance with:

- Personal Data Protection Act 2012 by the Personal Data Protection Commission

Manage data breaches

- Report all suspected and/or confirmed data breaches in accordance with the data breach management plan
- Prepare notifications to affected individuals, senior management and regulatory authorities in the event of data breaches
- Document data breach incidents and post-breach responses in accordance with the data breach response plan
- Support the data incident response and data breach notification procedures
- Assist in the conduct of investigations relating to data protection breaches

- As above

Drive awareness of PDPA requirements in the organisation

- Promote continuous training to maintain the organisation's awareness of PDPA requirements
- Keep abreast of PDPA requirements and amendments to regulations and guidelines
- Provide advice to staff on the organisation's data protection procedures and policies
- Participate in simulation exercises to test the data breach response plans
- Manage programmes to raise awareness of and training to deliver compliance to foster a data protection culture
- Promote and create awareness on due diligence policies and frameworks across teams in the organisations

- As above

Handle queries, complaints and disputes on the organisation's management of personal data

- Respond to queries that may arise in the organisation's collection, use and/or disclosure of personal data
- Maintain logs of queries, complaints and disputes relating to the organisation's collection, use and/or disclosure of personal data
- Escalate complaints and disputes relating to the organisation's collection, use and/or disclosure of personal data

- As above

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## DATA PROTECTION OFFICER

### Job Description

The Data Protection Officer executes data governance policies and procedures. He/She ensures the Data Protection Act is implemented and enforced in the organisation, and amongst the respective teams and users. He collaborates with business and project teams in projects and ensures alignment and compliance with the organisations's data protection guidelines and policies, and with industry standards and guidelines. He also directs a team of professionals and third-party vendors or service providers to achieve organisational goals in accordance with the data governance and data protection policies. He manages risks and data breach incidents.

The Data Protection Officer is knowledgeable in areas of data governance, compliance and data protection policies and frameworks, and works within and across teams to mitigate data breaches. He is expected to be proficient in the requirements under the Personal Data Protection Act 2012.

The Data Protection Officer adopts a broad and global perspective in his work, and is confident in making critical decisions and handling competing resource needs that may have implications on various projects and stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Audit and Compliance

4

Budgeting

4

Business Agility

4

Business Negotiation

4

Business Performance Management

4

Business Risk Management

4

Crisis Management

4

Cyber and Data Breach Incident Management

4

Data Ethics

4

Data Governance

5

Data Protection Management

4

Data Sharing

4

Design Thinking Practice

4

IT Standards

4

Learning and Development

4

Manpower Planning

4

Networking

4

People and Performance Management

4

Project Management

5

Stakeholder Management

4

Strategy Implementation

3

Strategy Planning

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Lifelong Learning

Intermediate

Interpersonal Skills

Intermediate

Leadership

Intermediate

Resource Management

Intermediate

Virtual Collaboration

Intermediate

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### Critical Work Functions

### Key Tasks

### Performance Expectations

Ensure organisation's compliance to Personal Data Protection Act (PDPA)

- Develop a Data Protection Management Programme (DPMP) to ensure organisation's compliance to PDPA
- Assess data protection audit findings and recommendations to introduce changes to ensure continued compliance with PDPA
- Evaluate the organisation's data lifecycle and data processing activities to determine compliance and gaps in data protection
- Provide updates on data protection compliance to senior management
- Create roadmaps to implement new requirements of data protection regulations
- Monitor the handling of personal data across the organisation
- Oversee the maintenance of records required to demonstrate data protection compliance

In accordance with:

- Personal Data Protection Act 2012, Personal Data Protection Commission

Manage risks associated with collection, use, disclosure and storage of personal data

- Conduct Data Protection and Impact Assessments (DPIA) to identify, assess and address business risks, based on the organisation's functions, needs and processes
- Propose measures to manage risks associated with the collection, use, disclosure and storage of personal data
- Act as the organisation's liaison for laws and guidelines concerning data collection and usage
- Propose cloud and on-site storage practices that ensure the protection of data from threats

• As above

Manage data breaches

- Oversee the conduct of simulation exercises to test the data breach response plans to ensure operational readiness
- Conduct in-depth assessment of the data breaches to mitigate and address risks
- Report data breaches to regulatory authorities and senior management
- Consult with key departments in the event of PDPA breaches
- Conduct investigations into data protection breach incidents

• As above

Drive awareness of PDPA requirements in the organisation

- Develop training programmes to educate staff on personal data protection policies and processes
- Oversee activities to foster personal data protection awareness within the organisation
- Foster a culture of personal data protection within the organisation
- Ensure employees are aware of their roles and responsibilities in managing data breaches
- Oversee the implementation and efficiency of the due diligence policies and frameworks across the organisation

• As above

Handle queries, complaints and disputes on the organisation's management of personal data

- Act as the organisation's key point of contact with PDPA regulatory authorities and to data subjects when exercising their individual data rights
- Analyse complaints relating to the organisation's management of personal data and respond with remedial action
- Provide advice on data protection, privacy and compliance
- Maintain oversight over access and correction requests to personal data
- Propose and implement measures to safeguard data based on the vulnerability and criticality of the types of data sources

• As above

Advise on data innovation projects in the organisation

- Ensure a balanced approach in resolving data protection and data innovation issues
- Participate in data innovation projects to provide guidance on regulatory and compliance requirements
- Act as the organisation's subject matter expert in data protection matters
- Ensure compliance with the PDPA and other regulations when sharing data
- Act as a liaison for data protection and privacy during the entire data-related product development lifecycle

• As above

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

• As above

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## GROUP DATA PROTECTION OFFICER

### Job Description

The Group Data Protection Officer executes data governance policies and procedures. He/She ensures the Data Protection Act is implemented and enforced within the respective teams and users within the organisation. He partners with business and project teams to support business objectives and strategies and align them with the organisations's data protection guidelines and policies. He directs a team of professionals and third-party vendors or service providers towards reaching organisational goals in accordance with the data governance and data protection policies. He manages risks and data breach incidents.

The Group Data Protection Officer is an expert in local and regional data protection practices and legislative requirements, as well as the Personal Data Protection Act 2012. He also provides expert advice to the organisation on the potential implications of data protection on the organisation's policies, procedures and projects.

The Group Data Protection Officer is an expert in understanding the nuances data protection laws, and keeps abreast of the changing landscape to be able to advise and guide the organisation towards compliance. He is an expert in communicating across cultures and domains, and is able to drive the organisation's data protection culture.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

[Audit and Compliance](#)

5

[Budgeting](#)

5

[Business Agility](#)

5

[Business Negotiation](#)

5

[Business Performance Management](#)

5

[Business Risk Management](#)

5

[Crisis Management](#)

5

[Cyber and Data Breach Incident Management](#)

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5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

[Interpersonal Skills](#)

Advanced

[Developing People](#)

Advanced

[Resource Management](#)

Advanced

[Lifelong Learning](#)

Advanced

[Communication](#)

Advanced

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### Critical Work Functions

### Key Tasks

### Performance Expectations

Ensure organisation's compliance to Personal Data Protection Act (PDPA)

- Drive the development of the organisation's regional Data Protection Management Programme (DPMP)
- Endorse the organisation's data protection policies and DPMP
- Oversee the assignment of roles and responsibilities to ensure compliance with the PDPA
- Oversee data transfer activities and provide advice on personal data protection law in other countries
- Establish a group and/or regional-level data governance strategy, and audit and compliance strategy to strengthen internal controls
- Advise on data ethics and data governance, and facilitate business functions in their strategic utilisation of data assets to generate business value for the organisation
- Inform and advise on data protection laws and the organisation's policies

In accordance with:

- Personal Data Protection Act 2012, Personal Data Protection Commission

Manage risks associated with collection, use, disclosure and storage of personal data

- Oversee measures for the safeguarding of data protection for internal data sources
- Develop remediation actions to minimise the risk of personal data protection breach, and managing data breach incidents at group/regional level
- Commission the conduct of Data Protection Impact Assessments (DPIA)
- Approve the DPIA plan and proposed action plans and solutions arising from the DPIA
- Develop strategies and guidelines on ethical data collection and usage practices
- Establish guidelines for cloud and on-site storage practices that would ensure protection of data from threats

- As above

Manage data breaches

- Evaluate the organisation's response to the data breach incident
- Oversee the conduct of investigations into data breaches
- Lead in public communication of data breaches to regulatory authorities and stakeholders

- As above

Drive awareness of PDPA requirements in the organisation

- Champion the organisation's data protection culture
- Act as a subject matter expert in cross-border data protection compliance
- Collaborate with regional offices to ensure compliance with cross border data protection requirements
- Manage the assignment of responsibilities to deliver compliance with data protection laws and policies of the organisation
- Formulate strategies and standards on due diligence policies and frameworks for the entire organisation

- As above

Handle queries, complaints and disputes on the organisation's management of personal data

- Oversee requests for disclosure of data to public agencies, courts, and law enforcement agencies
- Represent the organisation in cross-border disputes relating to data protection
- Act as the point of contact for International and Regional Regulations that govern Data Protection and Privacy
- Oversee the necessary safeguard measures for data protection for the internal data sources

- As above

Advise on data innovation projects in the organisation

- Determine the need to value the organisation's data to gain competitive advantage
- Generate potential use cases of data from the ecosystem the organisation operates in
- Keep abreast of evolving data innovation needs and expectations and its impact on the organisation
- Explore new ways to harness data in delivering innovative products and/or services
- Formulate data protection and privacy strategies during the entire data-related product development lifecycle

- As above

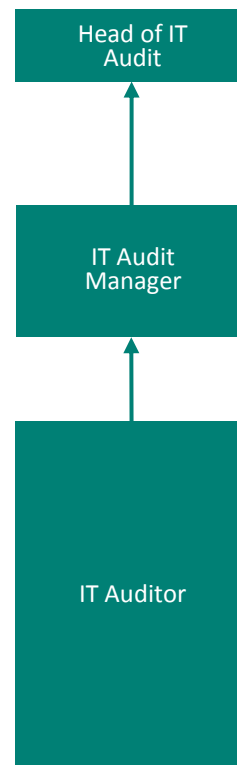
Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions

- As above

Click on Sub-track names below to view feeder roles and next moves

## IT AUDIT



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SKILLS *future* SG

→ Lateral Movement

→ Vertical Progression

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## IT AUDITOR

### Job Description

The IT Auditor determines audit objectives and activities by examining changes to the technological landscape, regulations and the organisation's IT assets and technologies to identify potential risks to IT assets. He/She assists in the development of an IT audit plan which includes outlining all workflows and audit activities. He conducts audit activities as per audit plan and analyses IT business controls and processes against organisational and industry standards to identify areas of non-compliance and potential risks. He assists with investigation and the preparation of documentation of work performed and develops reports. He also identifies potential recommendations to enhance compliance and address risks identified.

He works in a dynamic environment due to rapid changes in the IT landscape. He is knowledgeable of relevant regulatory requirements and internal auditing standards, particularly in the area of technology risk management.

The IT Auditor has a natural ability to process diverse sets of information and see relevant interdependencies and linkages. He is inquisitive and observant when analysing issues and is able to effectively articulate concepts and ideas.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Audit and Compliance	3	Decision Making	Advanced
Budgeting	3	Communication	Advanced
Business Performance Management	3	Service Orientation	Advanced
Business Risk Management	3	Managing Diversity	Advanced
Data Analytics	2,3	Digital Literacy	Intermediate
IT Governance	4		
IT Standards	4		
Networking	3		
Partnership Management	3		
Process Improvement and Optimisation	3		
Quality Standards	4		
Stakeholder Management	2,3		
Strategy Implementation	3		





Critical Work Functions

Key Tasks

Develop IT audit plans

- Conduct research on technological landscape and regulations to analyse its impact on the organisation’s IT audit plans
- Identify potential risks to IT assets
- Analyse changes to the organisation's IT assets to develop IT audit requirements
- Identify required IT audit workflows and activities
- Assist in the development of an IT audit plan

Implement IT audit plans

- Conduct audit activities in accordance with the IT audit plan and requirements
- Analyse IT controls and processes against organisational and industry IT standards
- Identify areas of non-compliance to IT standards and potential IT risk
- Gather evidence to identify root causes of areas of non-compliance
- Document evidence and IT audit conclusions

Enhance IT compliance and risk management

- Provide recommendations to enhance compliance to IT standards and address IT risks identified
- Develop communication and presentation materials to share IT audit findings and recommendations
- Drive awareness of IT controls across organisation
- Promote best practices and raise organisational awareness on matters relating to governance, risk and compliance
- Monitor resolution of identified non-compliance and risks

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## IT AUDIT MANAGER

### Job Description

The IT Audit Manager determines objectives and potential impact of IT audit plan arising from changes technological landscape and regulations. He develops an IT audit plan that complies with relevant auditing standards. He/She manages the implementation of IT audit plans and activities, as well as investigation of non-compliance and identified risk to determine required changes to structure, policies, processes and behaviours. He reviews audit findings and assess overall state of IT governance, compliance and risks, including evidences for accuracy and comprehensiveness to support audit conclusions. He reviews audit reports for comprehensiveness and adherence to relevant reporting standards and develops recommendations to enhance IT compliance and strengthen controls against emerging risks. He also provides guidance to team members on the planning and implementation of IT audits.

He works in a dynamic environment due to rapid changes in the IT landscape. He is knowledgeable of relevant regulatory requirements and internal auditing standards, particularly in the area of technology risk management.

The IT Audit Manager is detailed-oriented and is passionate about interpreting data to uncover patterns and trends between various sources of information. He is able to independently drive for resolution of issues, clearly articulate concepts and provide advice to the broader audience.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Audit and Compliance

4

Budgeting

4

Business Performance Management

4

Business Risk Management

4

Data Analytics

4

Data Governance

4

IT Governance

4

IT Standards

4

IT Strategy

4

Learning and Development

5

Manpower Planning

4

Networking

4

Partnership Management

4

People and Performance Management

4

Process Improvement and Optimisation

4

Quality Standards

4

Security Governance

4

Stakeholder Management

4

Strategy Implementation

4

Strategy Planning

4

Sustainability Management

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Sense Making

Advanced

Digital Literacy

Advanced

Virtual Collaboration

Advanced

Teamwork

Advanced

Leadership

Advanced



Critical Work Functions

Key Tasks

Develop IT audit plans

- Develop objectives and potential impact of IT audit plan arising from changes technology landscape and regulations
- Determine approaches, methodologies and tools required to measure compliance and risk of IT assets and technologies
- Review workflows and activities in the IT audit plan to propose enhancements
- Evaluate existing IT audit plans for relevancy and changes
- Develop an IT audit plan that complies with relevant internal auditing standards

Implement IT audit plans

- Manage the implementation of IT audit plans
- Ensure adherence to IT audit standards and procedures during the conduct of audit activities
- Manage the investigation of non-compliance to IT standards and identified IT risk to determine required changes to structure, policies, processes and behaviours
- Review audit findings to assess overall state of IT governance, compliance and risks
- Review evidence for accuracy and comprehensiveness to support IT audit conclusions
- Manage follow-up reviews to ensure adequacy and timeliness of corrective actions

Enhance IT compliance and risk management

- Develop recommendations to enhance IT compliance, address risks and strengthen controls against emerging risks
- Determine key messages for communication and presentation materials to share IT audit findings and recommendations
- Advise stakeholders on IT internal controls and security procedures
- Advise employees on IT audit processes and controls
- Provide inputs to the development of training programmes for adoption of new processes and practices designed to mitigate IT risks

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

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## HEAD OF IT AUDIT

### Job Description

The Head of IT Audit develops the organisation's IT audit framework to manage regulatory and operational risks to safeguard IT assets. He/She defines key objectives and guiding principles for the formulation of IT risk management programs, as well as procedures for documenting and updating policies, standards, guidelines relating to the management of IT assets. He advises on the development of IT audit plans and ensures that audit plans comply with regulatory, operational, security risks and relevant internal auditing standards. He oversees the conduct of audits, respective investigations into non-compliance and risks identified from audits. He overlooks new IT policies, systems and processes necessary for enhancing IT controls and mitigate risks. He consults with and advises senior leaders regarding internal controls and security procedures, prepares activity and progress reports relating to the IT audit function. He also guide team members on procedures, technical problems, priorities, and methods to develop audit capabilities.

He works in a dynamic environment due to rapid changes in the IT landscape. He is knowledgeable of relevant regulatory requirements and internal auditing standards, particularly in the area of technology risk management.

The Head of IT Audit possesses strong leadership and communication abilities, and is able to set realistic goals and implement appropriate plans to guide the team toward achieving those goals. He has a deep understanding of the environment in which systems operate and is able to advise and influence key stakeholders.

### Critical Work Functions and Key Tasks

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

[Audit and Compliance](#)

5

[Budgeting](#)

5

[Business Performance Management](#)

5

[Business Risk Management](#)

5

[Data Analytics](#)

5

[Data Governance](#)

5

[IT Governance](#)

5

[IT Standards](#)

5

[IT Strategy](#)

5

[Learning and Development](#)

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[Manpower Planning](#)

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[Security Governance](#)

5

[Stakeholder Management](#)

5

[Strategy Planning](#)

5

[Sustainability Management](#)

5

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

[Interpersonal Skills](#)

Advanced

[Leadership](#)

Advanced

[Resource Management](#)

Advanced

[Problem Solving](#)

Advanced

[Transdisciplinary Thinking](#)

Advanced



Critical Work Functions

Key Tasks

Establish IT audit strategy and framework

- Formulate the organisation's IT audit strategy in alignment with the organisation's vision, mission and strategy, and regulatory standards
- Develop the organisation's IT audit framework to manage operational risks to safeguard IT assets
- Establish key objectives and guiding principles for IT risk management programs
- Develop procedures for documenting and updating technology policies, standards, guidelines and procedures

Develop IT audit plans

- Advise on the development of IT audit plans
- Advise on the approaches, methodologies and tools for IT audits
- Ensure IT audit plans comply with regulatory requirements and standards
- Review IT audit plan for approval

Implement IT audit plans

- Oversee the conduct of IT audits
- Oversee investigations of non-compliance and risks identified from IT audits
- Review recommendations to improve policies, processes and practices to determine closure of IT audit issues
- Oversee the implementation of organisation-wide risk assessment of IT infrastructure and systems
- Oversee the development of audit reports for regulatory compliance

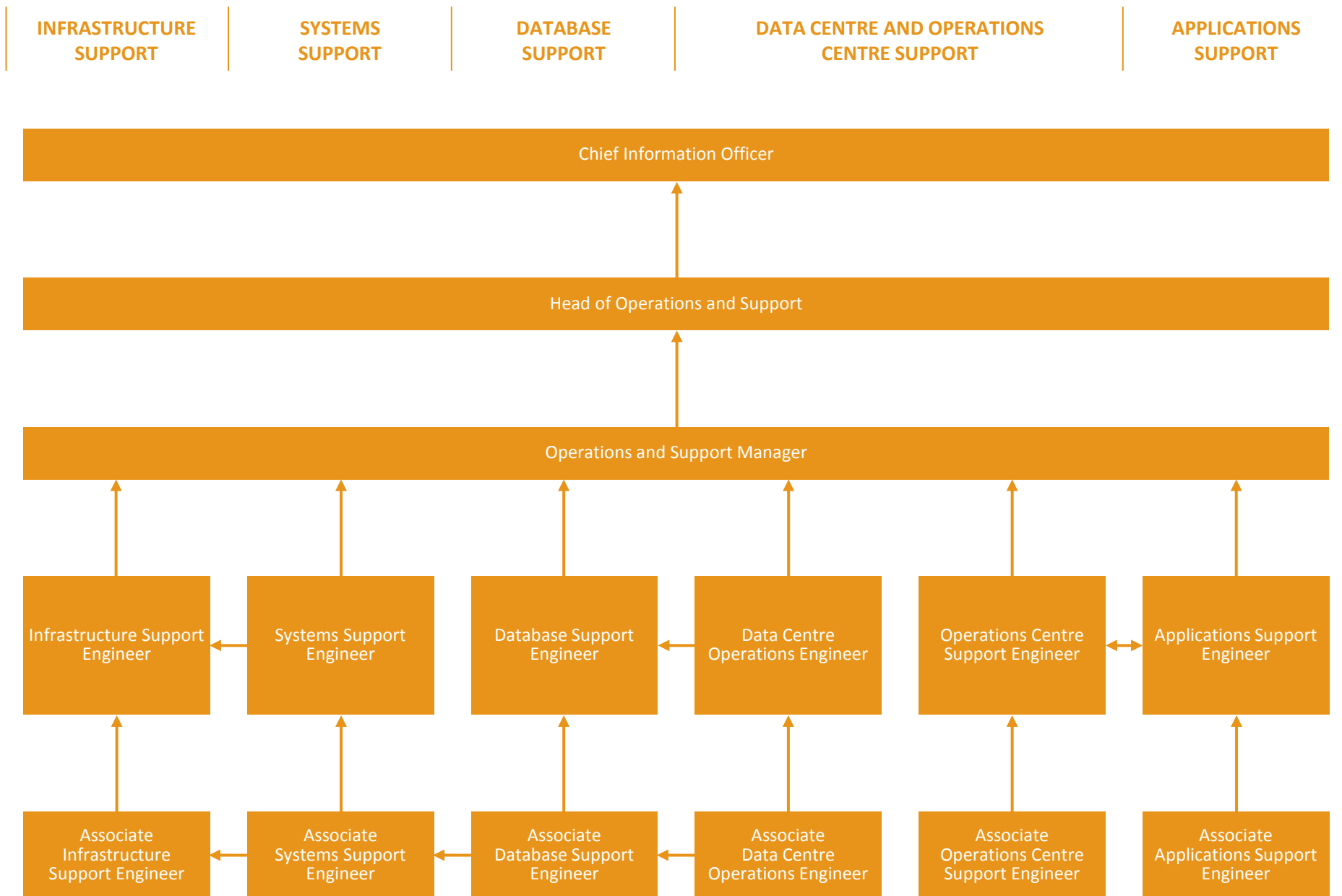
Enhance IT compliance and risk management

- Advise on the development of new IT policies, systems and processes
- Act as an internal advisor and subject matter expert to assess and manage IT operations associated risks
- Drive process improvement in areas where controls do not adequately mitigate IT risks
- Lead the development of training programmes to ensure adoption of new procedures designed to mitigate IT risks

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key team positions

Click on Sub-track names below to view feeder roles and next moves



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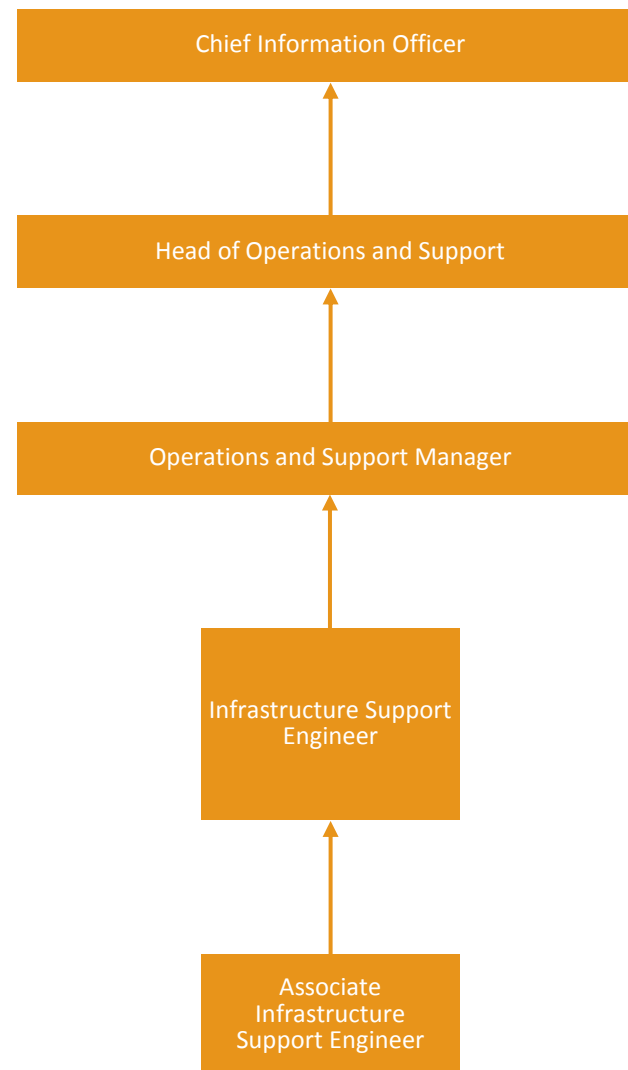
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Click on Sub-track names below to view feeder roles and next moves

## INFRASTRUCTURE SUPPORT



→ Lateral Movement

→ Vertical Progression

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## ASSOCIATE INFRASTRUCTURE SUPPORT ENGINEER

### Job Description

The Associate Infrastructure Support Engineer performs routine infrastructure operations and maintenance activities. He/She assists with monitoring infrastructure performance. He checks for problems in existing systems and modifies work processes by following defined procedures, processes and quality standards. He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays.

He works in a team setting and is proficient in infrastructure systems and network-related tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the database is deployed.

The Associate Infrastructure Support Engineer is able to solve issues quickly and effectively as they arise. He is able to methodically identify the cause of the issue, evaluate it and develop a solution in collaboration with the team. He is able to communicate effectively and displays high service level standards.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Business Needs Analysis	2	Communication	Basic
Cyber and Data Breach Incident Management	2	Interpersonal Skills	Basic
Infrastructure Deployment	1,2	Problem Solving	Basic
Infrastructure Support	1,2	Service Orientation	Basic
Network Administration and Maintenance	1,2	Teamwork	Basic
Network Configuration	2		
Process Improvement and Optimisation	3		
Procurement	2		
Project Management	3		
Service Level Management	3		
Stakeholder Management	2,3		



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### Critical Work Functions

### Key Tasks

Oversee infrastructure operations

- Perform routine checks on infrastructure operations activities in accordance with the IT Operations standards and procedures
- Assist with monitoring daily infrastructure traffic and performance
- Configure infrastructure and related computing environments such as computer hardware, systems software, applications software
- Maintain documentation of maintenance and optimisation procedures and tests
- Perform minor infrastructure repairs in accordance with design or installation specifications

Maintain infrastructure performance

- Assist with infrastructure testing, ongoing optimisation or changes, and scheduled upgrades and updates
- Coordinate the deployment of new and/or upgraded infrastructure

Resolve infrastructure-related  
problems and issues

- Act as the first point of contact for infrastructure-related incidents
- Assist with problem identification and resolution
- Escalate unresolved infrastructure-related incidents for resolution
- Documents incidents and track resolution in management systems
- Document solutions to common infrastructure-related incidents

Oversee service level agreements  
and service improvements

- Assist in developing service-level objectives and targets
- Maintain logs of service level performance metrics
- Suggest improvements for procedures and controls to enhance performance and client satisfaction
- Identify recurring incidents and potential issues for senior management

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## INFRASTRUCTURE SUPPORT ENGINEER

### Job Description

The Infrastructure Support Engineer assists with infrastructure planning, design, operations and maintenance. He/She assists with technical infrastructure performance analysis to identify problems and risks, makes improvement recommendations and supports implementation of preventive solutions. He follows procedures, processes and quality standards and takes appropriate corrective action in response to readily identifiable infrastructure problems and incident. He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays.

He works in a team setting and is proficient in Infrastructure systems and Network related tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the database is deployed.

The Infrastructure Support Engineer is able to resolve issues quickly and effectively as they arise. He is able to methodically identify and evaluate the cause of issues, and develop solutions in collaboration with the team. He is able to communicate effectively and displays high service level standards.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Business Continuity

4

Communication

Intermediate

Business Needs Analysis

3

Interpersonal Skills

Intermediate

Cyber and Data Breach Incident Management

3,4

Problem Solving

Basic

Infrastructure Deployment

3

Service Orientation

Basic

Infrastructure Support

3

Teamwork

Intermediate

Learning and Development

4

Network Administration and Maintenance

3

Network Configuration

3

People and Performance Management

3

Problem Management

3

Process Improvement and Optimisation

4

Procurement

3

Project Management

4

Service Level Management

4

Stakeholder Management

4

Strategy Implementation

3



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**Critical Work Functions**

**Key Tasks**

Oversee infrastructure operations

- Manage infrastructure operations activities and installation of infrastructure systems according to design specifications
- Align infrastructure operations with agreed service level agreements
- Leads infrastructure operations project planning and requirements phases
- Manage the implementation of agreed infrastructure changes and maintenance routines
- Contributes to the design and implementation of infrastructure replacement plans

Maintain infrastructure performance

- Perform ongoing tuning and optimisation of infrastructure hardware and software components such as updates and upgrades
- Manage infrastructure testing and implementation
- Gather performance and data usage statistics for capacity planning and reporting
- Pilot new tools, technologies, and/or processes to enhance the performance of infrastructure systems

Resolve infrastructure-related problems and issues

- Conduct root cause analysis to explore possible solutions
- Simulate user problems to explore solutions to resolve problems
- Oversee updates on issues to ensure resolution
- Recommend system modifications to address issues
- Guide and/or train teams to resolve infrastructure-related incidents
- Create temporary solutions until permanent solutions can be developed to resolve infrastructure-related incidents

Oversee service level agreements and service improvements

- Manage the development of service-level objectives and targets
- Monitor service-level objectives to ensure that requirements are met or exceeded
- Develop client satisfaction metrics and service procedures
- Propose recommendations to improve performance and client satisfaction

## OPERATIONS AND SUPPORT MANAGER

### Job Description

The Operations and Support Manager manages systems and database administration and help desk function. He/She focuses on strategic and policy development aspects that will have medium term consequences on the operation of the function and impact elements of organisation performance. He is responsible for Overseeing the incident resolution and business continuity plans along with the database and systems administration. He focuses on setting goals and priorities, allocates accountability among staff, manages the career development of others, liaises with professional staff and other managers, advises the business on technology related issues and engages in medium-term planning.

He is familiar with enterprise architecture frameworks, database administration and systems, and application monitoring tools.

The Operations and Support Manager possesses an end-to-end understanding of an organisation's system environment and its critical elements that need to be actively managed to ensure service levels are met. He is driven leader, able to align the team behind strategic business priorities and to motivate key stakeholders to strive for continuous improvement at all levels.

**Critical Work Functions  
and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Applications Development

4

IT Asset Management

4

Applications Integration

4

IT Strategy

5

Applications Support and Enhancement

4

Learning and Development

5

Budgeting

4

Manpower Planning

4

Business Continuity

5

Networking

4

Business Needs Analysis

4

People and Performance Management

4

Business Performance Management

4

Performance Management

5

Configuration Tracking

4

Problem Management

4

Cyber and Data Breach Incident Management

5

Process Improvement and Optimisation

5

Data Centre Facilities Management

4

Procurement

4

Data Engineering

4

Project Management

5

Database Administration

5

Quality Standards

4

Disaster Recovery Management

5

Security Programme Management

4

Infrastructure Deployment

4

Service Level Management

5

Infrastructure Support

4

Infrastructure Strategy

5



## OPERATIONS AND SUPPORT MANAGER

### Job Description

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**Critical Work Functions  
and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Software Configuration

4

Communication

Advanced

Software Testing

4

Leadership

Intermediate

Stakeholder Management

5

Developing People

Intermediate

Strategy Implementation

4

Interpersonal Skills

Advanced

Strategy Planning

4

Decision Making

Intermediate

Sustainability Management

4

System Integration

5

Test Planning

4





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**Critical Work Functions**

**Key Tasks**

Formulate strategy for service level agreements (SLAs) and improvements

- Provide inputs for IT operations and support strategy planning
- Develop plans to deliver IT operations and support, systems and database administration services
- Develop service level agreement key performance indicators (KPIs) and dashboards
- Monitor service level dashboards to ensure compliance to KPIs
- Determine corrective action to address non-compliance with SLAs and KPIs

Manage and optimise IT operations and support performance

- Establish priorities for IT operations and support activities, initiatives and incident resolution
- Set direction for continuous improvement of operational procedures and customer experience
- Certify the functionality of components and services to ensure deployment meets expectations and requirements
- Oversee migration of components into the operating environment
- Recommend enhancements to improve systems availability and performance
- Develop and maintain a comprehensive database and/or library of supporting documentation
- Develop capacity planning models and load balancing solutions

Oversee incident resolution and business continuity plans

- Drive and oversee resolution of operations and support centre incidents
- Explore opportunities to improve incident response rate
- Formulate the organisation's disaster recovery and business continuity plans
- Oversee disaster recovery plan drills and activities to determine if technical criteria is met
- Develop, test, maintain and exercise procedures for back-up, restoration and disaster recovery for high availability, high volume mission critical databases

Oversee database and system administration

- Design, monitor and maintain data replication primary and secondary databases
- Oversee database activities to ensure continued reliability, performance monitoring and tuning, security, back-up and disaster recovery
- Oversee the allocation of database resources
- Design security controls for data and databases
- Participate in security investigations of database
- Direct the scheduling of DBMS software installation
- Oversee the upgrade of databases, new structures or elements

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

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### HEAD OF OPERATIONS AND SUPPORT

#### Job Description

The Head of Operations and Support drives the vision and strategy for the IT Operations and Support functions. He/She sets the direction for systems and database administration, day-to-day IT support and operations, data centre operations and system and quality assurance through the delivery of services as per business requirements; controls costs and manages vendors. He is responsible for formulating strategies for service level agreements. He ensures compliance with organisation's quality standards, international standards and government regulations. He is a leader with the energy and commitment to drive large teams toward achieving service level excellence.

He is familiar with enterprise architecture frameworks, database administration and systems, and application monitoring tools.

The Head of Operations and Support has a broad sense of perspective with the ability to influence key internal and external stakeholders. He is strategic in his approach to managing resources and developing capabilities within the team. He is effective in setting direction aligned to the strategic positioning of the business and the IT functions overall. He is able to impress upon the team the need to continuously improve service levels and increase efficiencies.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Applications Development

5

Networking

5

Applications Integration

5

People and Performance Management

5

Budgeting

5

Performance Management

5

Business Continuity

6

Problem Management

5

Business Needs Analysis

5

Procurement

5

Change Management

5

Project Management

6

Contract Management

5

Quality Standards

5

Cyber and Data Breach Incident Management

5

Stakeholder Management

6

Data Centre Facilities Management

5

Strategy Planning

5

Data Engineering

5

Sustainability Management

5

Database Administration

5

System Integration

5

Disaster Recovery Management

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Test Planning

5

Infrastructure Strategy

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IT Strategy

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Learning and Development

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Manpower Planning

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## HEAD OF OPERATIONS AND SUPPORT

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**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

**Generic Skills & Competencies (Top 5)**

**Proficiency Level**

Communication

**Advanced**

Leadership

**Advanced**

Developing People

**Advanced**

Interpersonal Skills

**Advanced**

Decision Making

**Advanced**







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**Critical Work Functions**

**Key Tasks**

Formulate strategy for service level agreements and improvements

- Establish the vision required to provide IT operations and support to the organisation
- Formulate IT service delivery roadmaps aligned with the overall IT strategy
- Define Service Level Agreements (SLAs) and performance metrics based on business requirements
- Establish the direction for implementing corrective actions to optimise performance against the SLAs
- Develop technology roadmaps and action plans in the area of ownership
- Build relationships with third-party infrastructure and tool providers
- Explore collaborations with new outsourcing partners that meet organisation's requirements

Manage and optimise IT operations and support performance

- Anticipate internal and/or external business challenges and/or regulatory issues which may impact IT operations and support functions
- Advise senior management on system concepts and functional capabilities
- Oversee the performance of the IT operations and support functions
- Serve as an internal change agent to drive IT operations and support process enhancements and innovation
- Evaluate future technologies and the suitability of software and hardware upgrades and technology solutions

Set IT standards and governance

- Formulate policies, procedures and technical standards for IT operations and support
- Define processes and systems for IT audits
- Enforce processes and systems to ensure compliance with regulatory compliance requirements

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions

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## CHIEF INFORMATION OFFICER

### Job Description

The Chief Information Officer leads the IT function and provides strategic directions, solutions and policies to support business goals. He/She develops the information strategy and services to meet business requirements including training and upgrading of systems and/or technology knowledge and skills of all staff to improve productivity through information systems. He directs and promotes governance policies and standards in relation to security, quality, risk and project management. He leads important innovation initiatives and has ultimate accountability for the function. He provides the highest level of advice and recommendations to the heads of organisations or business units. He has the ability to leverage on new and innovative technology to develop strategic directions for the IT functions alignment with the organisation objectives.

He is able to propose solutions and influence key stakeholders to drive commitment for initiatives across the organisation.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting	6
Business Continuity	6
Business Risk Management	6
Business Performance Management	5
Cyber and Data Breach Incident Management	6
Cyber Risk Management	6
Disaster Recovery Management	6
Enterprise Architecture	6
Infrastructure Architecture	6
Infrastructure Strategy	6
IT Governance	6
IT Standards	6
IT Strategy	6
Learning and Development	6
Networking	5
Organisational Analysis	6

Organisational Design	6
Partnership Management	6
People and Performance Management	5
Performance Management	6
Stakeholder Management	6
Strategy Planning	5
Sustainability Management	5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership	Advanced
Developing People	Advanced
Creative Thinking	Advanced
Transdisciplinary Thinking	Advanced
Communication	Advanced

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### Critical Work Functions

### Key Tasks

Establish information strategy

- Establish the whole-of-enterprise IT vision and strategy
- Define the IT roadmap
- Build an IT landscape responsive to business changes
- Secure investments for IT initiatives to enable business operations
- Communicate the organisation's information strategy to partners, management, investors and employees
- Advise senior leaders on technology trends to influence the formulation of business strategy
- Establish systems that facilitate data analytics throughout the organisation

Develop IT policies and standards

- Establish organisation-wide IT policies and governance framework
- Establish plans for the off-shoring and outsourcing of IT service delivery
- Set direction for the development and maintenance of Service Level Agreements (SLAs), policies and standards
- Establish objectives and Key Performance Indicators (KPI) for the IT function

Facilitate continuous improvement through technology

- Endorse opportunities for automation and/or streamlining of IT processes
- Develop high-level strategy and guidelines for roll out of IT process changes and/or improvements
- Foster an environment conducive to innovation and technological change
- Foster IT awareness and savviness within the organisation

Manage IT development and operation risk

- Establish organisation wide risk assessment and management frameworks
- Review results from risk assessments for mitigation
- Guide risk management strategies, disaster recovery and business continuity efforts
- Advise policy reviews in line with evolving internal and external environments

Manage stakeholders

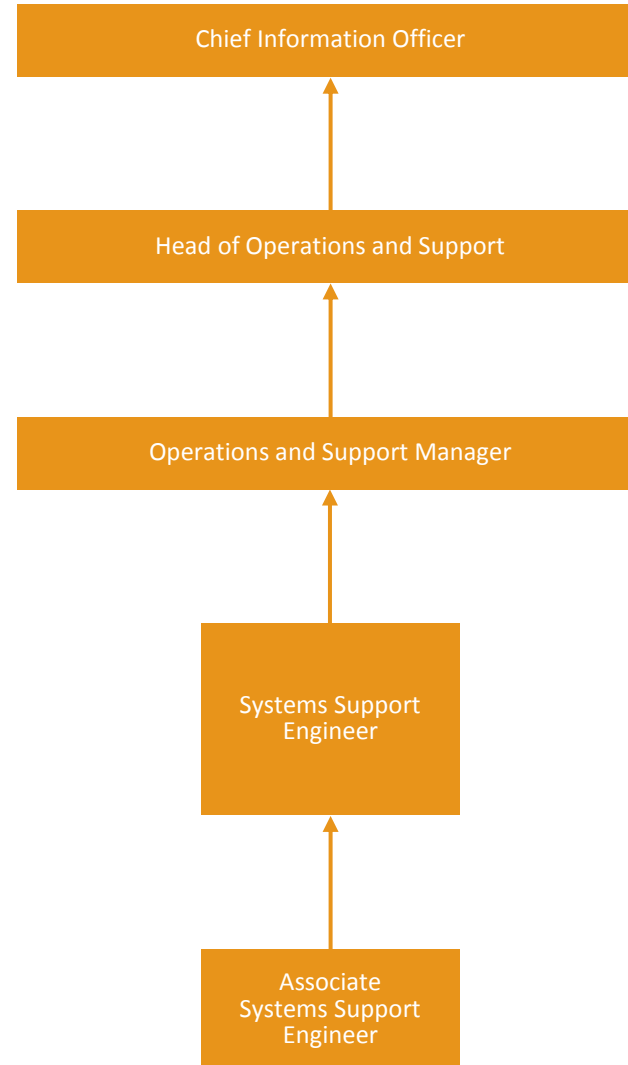
- Build strategic relationships and alliances with stakeholders to achieve common goals
- Manage internal and external stakeholders expectations
- Inspire stakeholders to pursue the organisation's technology vision
- Drive the organisation's technology alignment with business needs
- Guide the dissemination of IT information throughout the organisation

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilization
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions
- Advise stakeholders toward reaching compromises and agreeing on expectations

Click on Sub-track names below to view feeder roles and next moves

## SYSTEMS SUPPORT



→ Lateral Movement

→ Vertical Progression

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### ASSOCIATE SYSTEMS SUPPORT ENGINEER

#### Job Description

The Associate Systems Support Engineer performs routine systems administration related activities. He/She ensures systems operate in a manner that meets business needs and that system improvements are successfully implemented. He assists with implementing remedial actions in the event of system failures/breakdowns. He maximises service uptime, maintains system backups, manages service licensing and maintains security standards. He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays to resolve systems related incidents.

He works in a team setting and is proficient in infrastructure systems and network-related tools and techniques required by the organisation. He is also familiar with the relevant platforms on which the database is deployed on.

The Associate Systems Support Engineer is able to quickly and effectively solve issues as they arise. He is able to methodically identify the cause of the issue, evaluate it and develop a solution in collaboration with the team. He is able to communicate effectively and displays high service level standards.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Business Needs Analysis

2

Communication

Basic

Configuration Tracking

1,2

Interpersonal Skills

Basic

Cyber and Data Breach Incident Management

2

Problem Solving

Basic

Infrastructure Support

1,2

Service Orientation

Basic

IT Asset Management

2

Teamwork

Basic

Network Administration and Maintenance

1,2

Process Improvement and Optimisation

3

Procurement

2

Project Management

3

Security Administration

3

Service Level Management

3

Stakeholder Management

2,3

System Integration

3



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**Critical Work Functions**

**Key Tasks**

Oversee service level agreements and service improvements

- Assist in developing service-level objectives and targets
- Maintain log of service level performance metrics
- Suggest improvements for procedures and controls to enhance performance and client satisfaction
- Identify recurring incidents and potential issues for senior management

Design and develop new systems

- Assist with the development of new systems in accordance with business needs and systems requirements
- Implement systems security and integrity controls
- Assist with new system testing and implementation procedures
- Assist with piloting of new tools, technologies, and/or processes
- Assist with user acceptance tests for the newly deployed systems
- Perform system upgrades
- Manage administration of user groups
- Maintain documentation on current systems set-up and standard operating procedures
- Implement plans to make systems available to users in a shared, secure and controlled manner for easy adoption

Optimise systems performance

- Carry out optimisation of system components, updates and upgrades
- Conduct technical research for software and hardware upgrades
- Maintain documentation of all conducted system optimisation activities
- Track key operational metrics, performance, utilisation, throughput and capacity
- Collate performance and data usage statistics for capacity planning and reporting

Resolve system-related incidents

- Identify and resolve system-related issues
- Escalated unresolved system-related issues

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## SYSTEMS SUPPORT ENGINEER

### Job Description

The Systems Support Engineer undertakes complex projects related to system provisioning, installations, configurations as well as monitoring and maintenance of systems. He/She applies highly developed specialist knowledge and skills in systems administration and works toward continuous optimisation of system performance. He implements system improvements and instructs other IT staff in the resolution of most complex issues. He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays to resolve systems related incidents.

He works in a team setting and is proficient in Infrastructure systems and Network related tools and techniques required by the organisation. He is also familiar with the relevant platforms on which the database is deployed on.

The Systems Support Engineer is able to quickly and effectively solve issues as they arise. He is able to methodically identify the cause of the issue, evaluate it and develop a solution in collaboration with the team. He is able to communicate effectively and displays high service level standards.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Continuity

4

Service Level Management

4

Business Needs Analysis

3

Stakeholder Management

4

Configuration Tracking

3

Strategy Implementation

3

Cyber and Data Breach Incident Management

3,4

System Integration

4

Infrastructure Support

3

IT Asset Management

3

Learning and Development

4

Network Administration and Maintenance

3

People and Performance Management

3

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

4

Procurement

3

Project Management

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Security Administration

4

Security Programme Management

3



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**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

**Generic Skills & Competencies (Top 5)**

**Proficiency Level**

Communication

Intermediate

Interpersonal Skills

Intermediate

Problem Solving

Basic

Service Orientation

Basic

Teamwork

Intermediate





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**Critical Work Functions**

**Key Tasks**

Oversee service level agreements and service improvements

- Manage the development of service-level objectives and targets
- Monitor service-level objectives to ensure that requirements are met or exceeded
- Develop client satisfaction metrics and service procedures
- Propose recommendations to improve performance and client satisfaction

Design and develop new systems

- Develop new systems in accordance with business analysis and systems requirements
- Design security and integrity controls
- Install, modify, implement and maintain systems
- Define the system maintenance procedures
- Analyse the use of new systems to identify enhancement needs
- Conduct user acceptance tests for the newly deployed systems
- Lead research initiatives for the development of advanced and automated approaches for system administration
- Interpret internal or external business issues and recommends solutions and/or best practices
- Provide technical advice on installation, setup, configuration of systems

Optimise systems performance

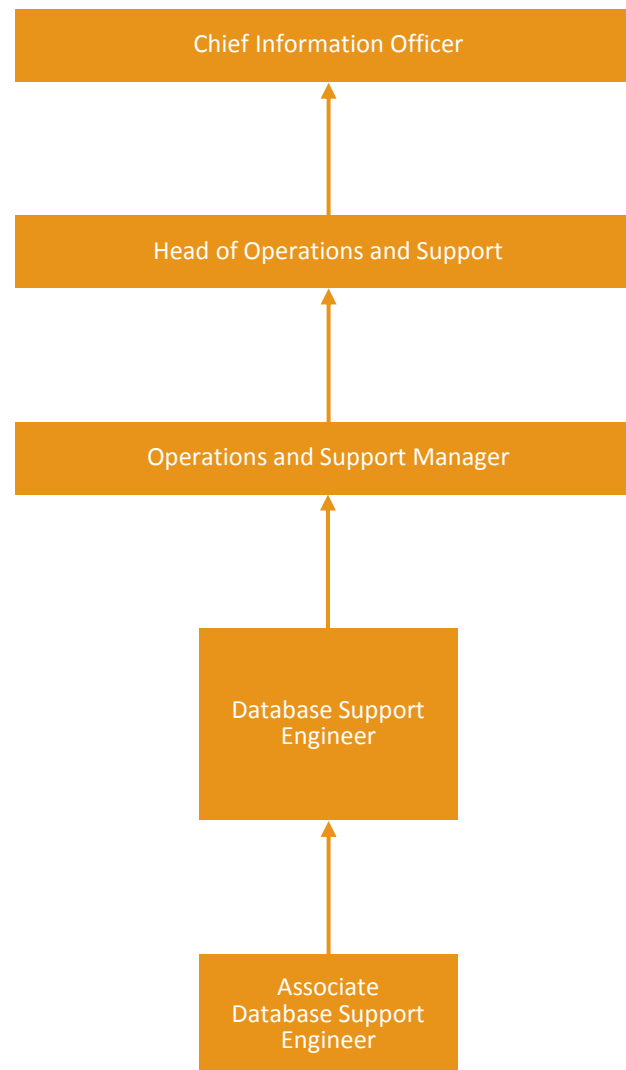
- Explore opportunities to optimise the delivery of systems services with emphasis on availability, reliability, scalability, and security
- Conduct system audits and upgrades
- Develop automated processes to define, measure, and report on service quality, stability and capacity
- Analyse system requirements and performance to optimise the use of network operating systems
- Schedule installations and upgrades in accordance with organisational policies, procedures and protocols

Resolve system-related incidents

- Conduct risk assessments of systems
- Investigate cause of systems issues and resolve issues to ensure uninterrupted operations
- Resolve escalated system-related issues to identify root cause and potential solutions

Click on Sub-track names below to view feeder roles and next moves

## DATABASE SUPPORT



→ Lateral Movement

→ Vertical Progression

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### ASSOCIATE DATABASE SUPPORT ENGINEER

#### Job Description

The Associate Database Support Engineer identifies, tests and deploys all database technologies and support tools. He/She ensures system improvements are successfully implemented and is responsible for verifying all data to be entered into database meets set standards and requirements as well as installing, configuring and maintaining the database infrastructure within assigned span-of-control. He assists in project planning by establishing work plans, estimates, milestones and schedules. He is required to be on standby with on-call availability to resolve database related incidents.

He works in a team setting and is proficient in database administration, database management-related tools and techniques. He is also familiar with the relevant software platforms on which the database is deployed.

The Associate Database Support Engineer is able to quickly and effectively solve issues as they arise. He is able to methodically identify the cause of the issue, evaluate it and develop a solution in collaboration with the team. He is able to communicate effectively and displays high service level standards.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Business Needs Analysis	2	Communication	Basic
Configuration Tracking	1,2	Interpersonal Skills	Basic
Cyber and Data Breach Incident Management	2	Problem Solving	Basic
Data Engineering	2	Service Orientation	Basic
Data Migration	3	Teamwork	Basic
Database Administration	2		
Infrastructure Support	1,2		
IT Asset Management	2		
Problem Management	3		
Process Improvement and Optimisation	3		
Procurement	2		
Project Management	3		
Security Administration	2		
Service Level Management	3		
Stakeholder Management	2,3		



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**Critical Work Functions**

**Key Tasks**

Oversee service level agreements and service improvements

- Assist in developing service-level objectives and targets
- Maintain log of service level performance metrics
- Suggest improvements for procedures and controls to enhance performance and client satisfaction
- Identify recurring incidents and potential issues for senior management

Oversee database administration

- Maintain development, production and multiple testing environments
- Assist in upgrades of databases, new structures or elements
- Assist in installation, configuration and maintenance of database management systems software
- Implement database back-up and recovery procedures

Design and develop new database

- Assist in business needs analysis for database design
- Assist with testing of new database procedures and protocols
- Assist in establishing database system flows
- Maintain data documentation and metadata models
- Code, edit and install stored procedures and functions for accessing, maintaining and populating databases

Optimise database performance

- Perform ongoing optimisation of database components to ensure availability, reliability, scalability, and security
- Assist with database audits and maintenance activities
- Maintain documentation of database optimisation activities
- Track key operational metrics, performance, utilisation, throughput and capacity for reporting
- Ensure optimal database performance and availability

Resolve database incidents

- Identify and resolve database issues
- Determines appropriate course of action for resolving database issues, identify and mitigate risks
- Escalate unresolved database issues
- Ensure adherence to organisational database procedures, policies and protocols

Manage database security

- Implement database security and data integrity controls
- Control privileges and permissions to database users
- Adhere to information security policies, procedures and protocols in all tasks

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GENERIC SKILLS &amp; COMPETENCIES

### DATABASE SUPPORT ENGINEER

#### Job Description

The Database Support Engineer undertakes complex projects requiring additional technical knowledge and makes decisions on ambiguous administrative and support issues. He/She applies highly developed specialist knowledge and skills in database administration. He implements database improvements and provide the necessary advice on setting up new databases, optimising database performance, and resolving issues that arise during the set-up and update on databases. He is also responsible for resolving database related incidents and ensuring database security and integrity controls are in place.

He works in a team setting and is proficient in database administration, database management-related tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the database is deployed on.

The Database Support Engineer is able to methodically identify causes of complex issues, evaluate it and develop solutions in collaboration with the team. He is able to communicate effectively and displays high service level standards.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Business Needs Analysis

3

Project Management

4

Business Continuity

4

Stakeholder Management

4

Configuration Tracking

3

Strategy Implementation

3

Cyber and Data Breach Incident Management

3,4

Security Administration

4

Data Engineering

3

Data Migration

4

Database Administration

4

Infrastructure Support

3

IT Asset Management

3

IT Strategy

4

Learning and Development

4

People and Performance Management

3

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

4

Procurement

3



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### DATABASE SUPPORT ENGINEER

#### Job Description

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**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

**Generic Skills & Competencies (Top 5)**

**Proficiency Level**

Communication

Intermediate

Interpersonal Skills

Intermediate

Problem Solving

Basic

Service Orientation

Basic

Teamwork

Intermediate





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**Critical Work Functions**

**Key Tasks**

Oversee service level agreements and service improvements

- Manage the development of service-level objectives and targets
- Monitor service-level objectives to ensure that requirements are met or exceeded
- Develop client satisfaction metrics and service procedures
- Propose recommendations to improve performance and client satisfaction

Oversee database administration

- Advise senior management on database concepts and functional capabilities and implementation procedures
- Perform upgrades of databases, new structures or elements
- Build scripts to automate the daily operations of database management
- Install, configure and maintain the database management systems software
- Manage the migration of databases

Design and develop new database

- Develop database requirements based on requirements and business needs analysis
- Conduct risk assessment and analysis of proposed database design
- Interpret internal or external business issues and recommends solutions and/or best practices
- Translate logical data models into physical database designs
- Test new databases to ensure performance and smooth operations during deployment
- Verify stored procedures and functions for accessing, maintaining and populating databases
- Lead research initiatives to explore advances and automated approaches for database administration
- Translates logical data models into physical database designs

Optimise database performance

- Explore opportunities to optimise the delivery of database services with emphasis on availability, reliability, scalability, and security
- Conduct database audits and maintenance
- Develop automated processes to define, measure, and report on service quality, stability and capacity
- Monitor, analyse and calibrate DBMS parameters to ensure database is tuned for optimal performance
- Forecast utilisation patterns and propose modifications or upgrades
- Conduct application transaction volume and traffic analysis, and interpret the impact on database performance

Resolve database incidents

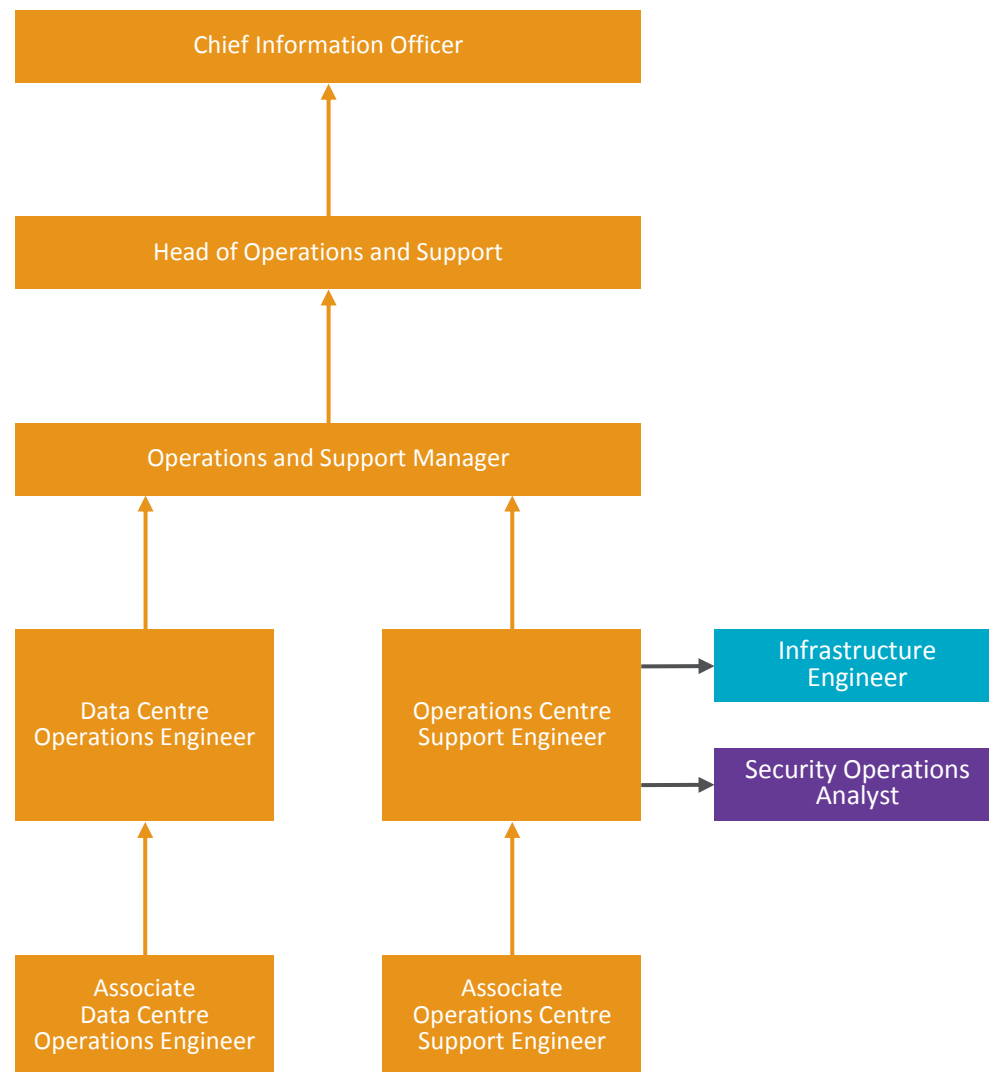
- Investigate escalated of database issues to determine potential solutions
- Ensure 24 x 7 production support and/or database access
- Oversee adherence to organisational database procedures, policies and protocols

Manage database security

- Design security and data integrity controls
- Maintain and monitor database security, integrity and access control
- Recommend and implement database solutions to support data integrity efforts
- Implement required security controls designed around data and databases
- Provide audit trails to detect potential security violations

Click on Sub-track names below to view feeder roles and next moves

## DATA CENTRE AND OPERATIONS CENTRE SUPPORT



→ Lateral Movement

→ Vertical Progression

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### ASSOCIATE DATA CENTRE OPERATIONS ENGINEER

#### Job Description

The Associate Data Centre Operations Engineer provides data centre systems maintenance and monitoring service and basic support in data centre equipment installation. He/She monitors data volume, maintains internal documentation and performs independent troubleshooting of recurring issues whenever required. He also assists with the set-up of data centre facilities and equipment, He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays to resolve data centre related incidents.

He works in a team setting and is proficient in database administration, infrastructure concepts and database management-related tools and techniques. He is also familiar with the relevant software platforms on which the database is deployed.

The Associate Data Centre Operations Engineer is able resolve issues quickly and effectively as they arise. He is able to methodically identify the cause of the issue, evaluate it and develop a solution in collaboration with the team. He is able to communicate effectively and displays high service level standards.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Business Needs Analysis

2

Communication

Basic

Cyber and Data Breach Incident Management

2

Interpersonal Skills

Basic

Data Centre Facilities Management

2

Problem Solving

Basic

Infrastructure Support

1,2

Service Orientation

Basic

IT Asset Management

2

Teamwork

Basic

Process Improvement and Optimisation

3

Procurement

2

Project Management

3

Service Level Management

3

Stakeholder Management

2,3

System Integration

3



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**Critical Work Functions**

**Key Tasks**

Manage the set-up of the data centre

- Analyses vendor products to determine suitability in meeting organisational needs and requirements
- Analyse organisation's requirements and business needs for data centre facilities and equipment
- Determine requirements' impact on existing architecture, work processes and systems
- Participate in technical design review of proposals

Manage data centre performance and operations

- Adhere to organisational policies, procedures and protocols in data centre operations management
- Escalate issues of non-compliance to contractual requirements
- Ensure adherence to contract requirements
- Gather data on data centre facilities' bandwidth, capacity requirements and system inter-dependencies
- Monitor system activity to ensure optimal performance

Manage data centre-related incidents and business continuity

- Troubleshoot, diagnose and resolve data centre-related incidents
- Document incidents and resolutions for future reference
- Assist in the development of disaster recovery plans
- Provide support for incidents during and after normal operating hours
- Participate in disaster recovery drills and exercises
- Escalate unresolved data centre-related incidents to senior management

Oversee service level agreements and service improvements

- Assist in developing service-level objectives and targets
- Maintain log of service level performance metrics
- Suggest improvements for procedures and controls to enhance performance and client satisfaction
- Identify recurring incidents and potential issues for senior management

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### DATA CENTRE OPERATIONS ENGINEER

#### Job Description

The Data Centre Operations Engineer provides support in data centre equipment installation, logging data regarding installed corporate server base, developing procedures for server installation, racking, un-racking, de-commissioning hardware and cable patching from server through to server farm switches. He/She manages the data centre performance and operations. He monitors data volume and performs troubleshooting of non-routine or novel issues with little precedence whenever required. He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays to resolve data centre related incidents.

He works in a team setting and is proficient in database administration, infrastructure concepts and database management related tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the database is deployed.

The Data Centre Operations Engineer is able to quickly and effectively solve issues as they arise. He is able to methodically identify the cause of the issue, evaluate it and develop a solution in collaboration with the team. He is able to communicate effectively and displays high service level standards.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Business Needs Analysis

3

Business Continuity

4

Cyber and Data Breach Incident Management

3,4

Data Centre Facilities Management

3

Disaster Recovery Management

4

Infrastructure Support

3

IT Asset Management

3

IT Strategy

4

Learning and Development

4

People and Performance Management

3

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

4

Procurement

3

Project Management

4

Stakeholder Management

4

Strategy Implementation

3

System Integration

4

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Communication

Intermediate

Interpersonal Skills

Intermediate

Problem Solving

Basic

Service Orientation

Basic

Teamwork

Intermediate



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**Critical Work Functions**

**Key Tasks**

Manage the set-up of the data centre

- Conduct technical feasibility studies to determine viability, cost, time required and compatibility with organisational needs and requirements
- Explore new concepts and ideas in data centre facilities and equipment
- Review and communicate requirements to senior stakeholders
- Analyse designs to ensure compliance with business requirements, predicted cooling, structural and operational concerns
- Conduct short- and long-term planning to meet organisation's requirements and business needs

Manage data centre performance and operations

- Oversee compliance with security policies, procedures and protocols
- Develop documentation, training and guidance procedures for the management of data centre operations
- Identifies best practices in data centre operations and management for adoption
- Ensure compliance with security policies, procedures and protocols
- Evaluate services provided by vendors and recommend changes
- Recommend enhancements to improve availability and performance
- Analyse data centre facilities' bandwidth, capacity requirements and system inter-dependencies
- Optimise the interfaces between the IT equipment and data centre

Manage data centre-related incidents and business continuity

- Develop a disaster recovery plan for data centre operations
- Oversee the execution of disaster recovery drills and exercises
- Analyse incidents to determine patterns and propose recommendations to prevent future occurrences
- Simulate incidents to diagnose and resolve escalated data centre-related incidents
- Oversee resolution of data centre-related incidents involving vendors

Oversee service level agreements and service improvements

- Manage the development of service-level objectives and targets
- Monitor service-level objectives to ensure that requirements are met or exceeded
- Develop client satisfaction metrics and service procedures
- Propose recommendations to improve performance and client satisfaction

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### ASSOCIATE OPERATIONS CENTRE SUPPORT ENGINEER

#### Job Description

The Associate Operations Centre Support Engineer is responsible for monitoring and identifying incidents in hardware and software components across the organisation. He/She analyses problems, performs troubleshooting and incident response on the system. He is also responsible for maintaining technical and systems documentation.

He works in a team setting and is proficient in database systems, network and infrastructure, and monitoring tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the solutions are deployed.

The Associate Operations Centre Support Engineer has strong critical thinking skills to identify issues, and is passionate about analysing and resolving problems, and addressing technical challenges.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Business Needs Analysis	2	Communication	Basic
Configuration Tracking	1,2	Interpersonal Skills	Basic
Cyber and Data Breach Incident Management	2	Problem Solving	Basic
Data Centre Facilities Management	2	Service Orientation	Basic
Infrastructure Support	1,2	Teamwork	Basic
IT Asset Management	2		
Process Improvement and Optimisation	3		
Procurement	2		
Project Management	3		
Service Level Management	3		
Stakeholder Management	2,3		



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### Critical Work Functions

### Key Tasks

Monitor systems performance

- Monitor performance and capacity of computer systems to ensure stable operations
- Identify issues, alerts, or malfunctions in software and/or hardware components
- Gather data for network health check reports for software and hardware teams
- Prepare and document system health check documents for software and hardware teams

Resolve network-related incidents

- Identify and respond to network-related incidents
- Adhere to organisational policies, procedures and protocols when resolving network-related incidents
- Administer service requests
- Escalate unresolved network-related incidents

Oversee service level agreements  
and service improvements

- Assist in developing service-level objectives and targets
- Maintain log of service level performance metrics
- Suggest improvements for procedures and controls to enhance performance and client satisfaction
- Identify recurring incidents and potential issues for senior management

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## OPERATIONS CENTRE SUPPORT ENGINEER

### Job Description

The Operations Centre Support Engineer works closely with the hardware and software teams in the organisation. He/She is responsible for implementing and installing new software and hardware components across the organisation. He has to ensure the systems are reliable, monitored, and support operations are conducted in a timely manner. He will also collaborate with stakeholders to serve, observe, own, and solve problems through innovation, reducing friction with production deployments, and increasing availability.

He works in a team setting and is proficient in database systems, network and infrastructure, and monitoring tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the solutions are deployed.

The Operations Centre Support Engineer applies critical thinking skills to resolve complex issues. He also applies creative skills in address technical challenges on the job.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Business Continuity

4

Business Needs Analysis

3

Configuration Tracking

3

Cyber and Data Breach Incident Management

3,4

Data Centre Facilities Management

3

Infrastructure Support

3

IT Asset Management

3

Learning and Development

4

People and Performance Management

3

Performance Management

4

Process Improvement and Optimisation

4

Problem Management

3

Project Management

4

Procurement

3

Service Level Management

4

Stakeholder Management

4

Strategy Implementation

3

System Integration

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Communication

Intermediate

Interpersonal Skills

Intermediate

Problem Solving

Basic

Service Orientation

Basic

Teamwork

Intermediate



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**Critical Work Functions**

**Key Tasks**

Implement New Systems

- Install software and hardware equipment for users
- Carry out user acceptance tests on installed and/or upgraded equipment
- Oversee integration, compatibility and continuing operations of systems to ensure minimal disruption
- Conduct feasibility studies for implementing new solutions

Monitor systems performance

- Oversee monitoring activities of all systems to ensure stable operations
- Conduct scheduled tests on systems and monitor performance
- Work closely with Software and Hardware teams and provide necessary updates and resolutions at the event of downtime and/or malfunctions

Resolve network-related incidents

- Analyse and provide technical back-up and third line support when technical incidents arise
- Classify and categorise incidents for escalation
- Evaluate past incidents and prepare reports and documentation for senior stakeholders
- Provide support and recommendations to the affected teams post-incident

Oversee service level agreements  
and service improvements

- Manage the development of service-level objectives and targets
- Monitor service-level objectives to ensure that requirements are met or exceeded
- Develop client satisfaction metrics and service procedures
- Propose recommendations to improve performance and client satisfaction



Click on Sub-track names below to view feeder roles and next moves

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### APPLICATIONS SUPPORT

Chief Information Officer

Head of Operations and Support

Operations and Support Manager

Applications Support Engineer

Associate Applications Support Engineer

→ Lateral Movement

→ Vertical Progression

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## ASSOCIATE APPLICATIONS SUPPORT ENGINEER

### Job Description

The Associate Applications Support Engineer is responsible for the providing support and ensuring the maintenance of specific software applications, which may be built in-house or third-party software. He/She should have a deep understanding of the application's functionality and backend. He is responsible for providing the support to the application development, transition, and testing teams, resolve and document any issues with the application.

He works in a team setting and is proficient in applications development and monitoring tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the solutions are deployed.

The Associate Applications Support Engineer applies critical thinking skills to identify and solve problems. He is passionate about analysing and resolving problems, and addressing technical challenges. He also possesses strong interpersonal skills.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Applications Support and Enhancement **1,2**

Business Needs Analysis **2**

Configuration Tracking **1,2**

Customer Experience Management **2**

Cyber and Data Breach Incident Management **2**

Process Improvement and Optimisation **3**

Procurement **2**

Service Level Management **3**

Software Configuration **2**

Software Testing **2**

Stakeholder Management **2,3**

Test Planning **2,3**

Communication **Basic**

Interpersonal Skills **Basic**

Problem Solving **Basic**

Service Orientation **Basic**

Teamwork **Basic**



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**Critical Work Functions**

**Key Tasks**

Provide software support

- Perform operational software configuration management
- Install and update Commercial Off-the-Shelf (COTS) and other software technologies to maintain currency
- Diagnose and respond to reported software defects, anomalies, and operational incidents and events
- Implement software retirement procedures
- Collect and analyse operational data

Manage software maintenance

- Assist in implementing software maintenance processes and plans
- Identify, obtain and maintain software baseline artefacts
- Implement corrective, adaptive and perfective changes to software
- Perform preventative maintenance and software re-engineering activities
- Assists in monitoring and analysing software maintenance activities

Oversee software transition

- Identify software constraints
- Assists in the development of software transition and operational documentation
- Assists in the development of training material for operational support personnel
- Assists in preparation of training materials relating to software support
- Assists in software diagnostics and real-time debugging/trouble shooting

Maintain software and platform solutions

- Conduct maintenance and update of existing software and platform according to plan
- Support monitoring of compliance to security measures
- Solve routine problems
- Monitor performance and analyse usage reports
- Document technical architecture, code changes, issue resolutions and procedures

Oversee service level agreements  
and service improvements

- Assist in developing service-level objectives and targets
- Maintain log of service level performance metrics
- Suggest improvements for procedures and controls to enhance performance and client satisfaction
- Identify recurring incidents and potential issues for senior management

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## APPLICATIONS SUPPORT ENGINEER

### Job Description

The Applications Support Engineer is responsible for the operation, support and maintenance of specific software applications, which may be built in-house or third-party software. He/She should have a deep understanding of the application's functionality and backend. He oversees software testing and transition processes and provides necessary support when required. He is responsible for interacting with the application users and setting up, and on boarding of the users.

He works in a team setting and is proficient in applications development and monitoring tools and techniques required by the organisation. He is also familiar with the relevant software platforms on which the solutions are deployed.

The Applications Support Engineer uses critical thinking skills to identify and solve problems. He is passionate about analysing and resolving problems, and addressing technical challenges. He also possesses strong interpersonal skills.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Applications Development	3	Communication	Intermediate
Applications Integration	3	Interpersonal Skills	Intermediate
Applications Support and Enhancement	3	Problem Solving	Basic
Configuration Tracking	3	Service Orientation	Basic
Customer Experience Management	3	Teamwork	Intermediate
Cyber and Data Breach Incident Management	3		
Process Improvement and Optimisation	3		
Problem Management	3		
Procurement	3		
Service Level Management	4		
Software Configuration	3		
Software Testing	3		
Stakeholder Management	4		
Test Planning	4		



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**Critical Work Functions**

**Key Tasks**

Provide software support	<ul style="list-style-type: none"> <li>Develop operational software configuration management plans</li> <li>Manage the maintenance of Commercial Off-the-Shelf (COTS) and other software technologies to maintain currency</li> <li>Oversee software help desk activities</li> <li>Develop software retirement procedures</li> <li>Acquire tools to facilitate the analysis of operational data</li> </ul>
Manage software maintenance	<ul style="list-style-type: none"> <li>Implement software maintenance processes and plans</li> <li>Conduct technical impact analysis and problem identification</li> <li>Develop plans to make corrective, adaptive and perfective changes to software</li> <li>Manage preventative maintenance and software re-engineering activities</li> <li>Monitor and analyse software maintenance activities</li> </ul>
Oversee software transition	<ul style="list-style-type: none"> <li>Develop software transition plans and identify stakeholders for transition and operational requirements</li> <li>Modify existing and develop new software operational standards</li> <li>Develop software activation and check-out procedures</li> <li>Lead software operational training</li> <li>Develop training material for operational support personnel</li> <li>Determine the impact of software changes on the operational environment</li> <li>Lead software diagnostics and real-time debugging/trouble shooting</li> </ul>
Oversee software testing	<ul style="list-style-type: none"> <li>Identify stakeholders participating in testing activities</li> <li>Design software test plan and criteria for regression testing</li> <li>Design the test environment and test case scenarios</li> <li>Specify test cases for the selected testing technique</li> <li>Analyse defect arrival rate and failure intensity data</li> </ul>
Maintain software and platform solutions	<ul style="list-style-type: none"> <li>Develop maintenance plans including timelines and resources needed</li> <li>Provide high-level maintenance and update of an existing software and/or platform to improve functionality and process flow</li> <li>Provide high-level monitoring of security measures, proper registration of passwords and other access procedures</li> <li>Solve unique and highly complex problems by taking a broad perspective to identify solutions</li> <li>Anticipate internal and/or external business challenges and/or regulatory issues</li> <li>Oversee the maintenance of technical documentation of technical architecture, code changes, issue resolutions and procedures</li> <li>Collaborate with external stakeholders and vendors to resolve problems</li> </ul>
Oversee service level agreements and service improvements	<ul style="list-style-type: none"> <li>Manage the development of service-level objectives and targets</li> <li>Monitor service-level objectives to ensure that requirements are met or exceeded</li> <li>Develop client satisfaction metrics and service procedures</li> <li>Propose recommendations to improve performance and client satisfaction</li> </ul>

Click on Sub-track names below to view feeder roles and next moves

GOVERNANCE  
RISK AND  
CONTROL

VULNERABILITY  
ASSESSMENT AND  
PENETRATION  
TESTING

SECURITY  
OPERATIONS

FORENSICS  
INVESTIGATION

INCIDENT  
RESPONSE

THREAT  
ANALYSIS

SECURITY DESIGN  
AND  
ENGINEERING

Chief Information Security Officer

Cyber Risk  
Manager

Vulnerability  
Assessment and  
Penetration  
Testing Manager

Security  
Operations  
Manager

Forensic  
Investigation  
Manager

Incident  
Investigation  
Manager

Threat Analysis  
Manager

Security  
Architect

Cyber Risk  
Analyst

Vulnerability  
Assessment and  
Penetration  
Testing Analyst

Security  
Operations  
Analyst

Forensic  
Investigator

Incident  
Investigator

Senior Security  
Engineer/Security  
Engineer

Associate Security Analyst

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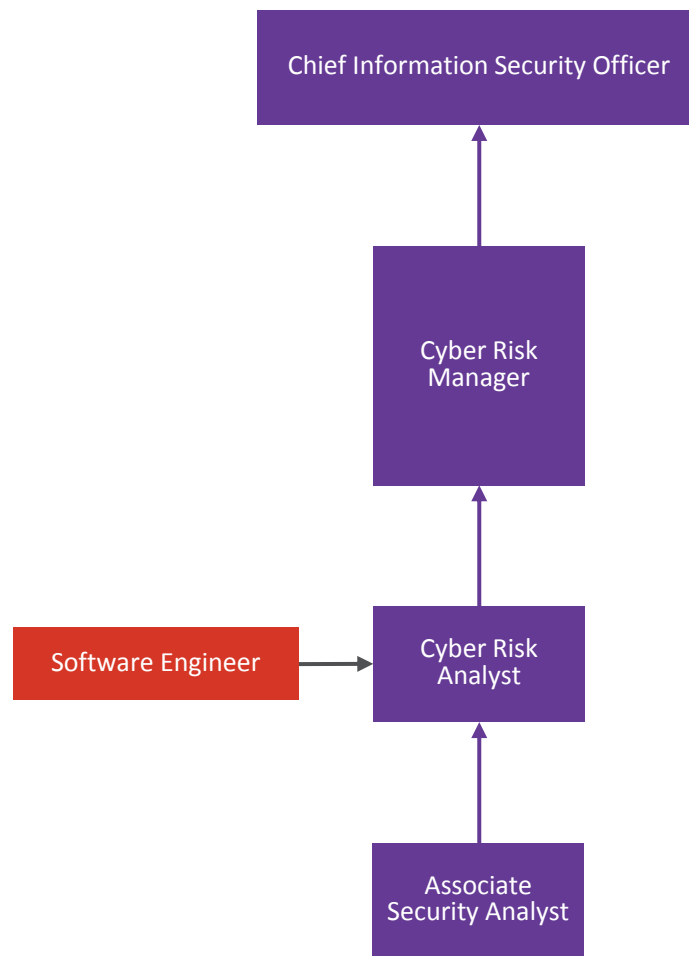
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## GOVERNANCE RISK AND CONTROL



→ Lateral Movement

→ Vertical Progression

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### ASSOCIATE SECURITY ANALYST

#### Job Description

The Associate Security Analyst supports security systems, operations administration, monitoring and maintenance of cyber security systems and applications. He/She monitors security alerts and events. He collects and documents information based on established practices and supports the preparation and publishing of security advisories. He assists with the analysis of security-related information and events, escalation of incidents for validation and remediation. He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays.

He is familiar with cyber security standards, protocols and frameworks, and is required to act in accordance with the Cyber Security Act 2018. He is knowledgeable in using various cyber security tools and techniques to monitor and resolve incidents.

The Associate Security Analyst is alert and vigilant in performing monitoring activities and is able to analyse and resolve security-related issues critically. He communicates clearly in his interactions with others and coordinates effectively with his team to perform security operations.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Business Needs Analysis	2	Communication	Basic
Cyber and Data Breach Incident Management	2	Creative Thinking	Basic
Cyber Forensics	2	Problem Solving	Intermediate
Infrastructure Support	3	Sense Making	Intermediate
Network Administration and Maintenance	1,2	Teamwork	Intermediate
Problem Management	3		
Security Administration	2		
Security Assessment and Testing	2		
Security Education and Awareness	3		
Security Programme Management	3		
Stakeholder Management	2		
Threat Analysis and Defence	3		
Threat Intelligence and Detection	2		



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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Monitor cyber security systems

- Perform cyber security monitoring activities on IT systems and applications
- Categorise security incidents and breaches that occur
- Track and react to security monitoring alerts
- Compile reports on the performance of security operations for management reporting

- In accordance with:
- Cyber Security Act 2018, Cyber Security Agency of Singapore

Maintain cyber security operations

- Assist with the implementation of agreed security system changes and maintenance routines
- Assist in the implementation of new cyber security programs
- Assist with conducting vulnerability and penetration assessments
- Assist in aligning cyber security systems with established service agreement standards
- Maintain documentation of all maintenance procedures and tests on cyber security systems

- As above

Respond to cyber security queries

- Assist in responding to cyber security issues
- Assist in forensic threat investigations
- Assist with resolution of security-related issues
- Assist with simulation of user problems to identify drawbacks of cyber security systems
- Recommend modifications to cyber security systems to address issues
- Maintain logs of cyber security incidents

- As above

Facilitate cyber security compliance

- Assist with the implementation security policies, standards and procedures
- Educate users on cyber security policies, standards and practices
- Identify improvement areas to existing security policies and procedures
- Monitor third party compliance with organisational cyber security policies, standards and procedures
- Monitor users' adherence to cyber security policies, standards and procedures

- As above

Optimise cyber security system performance

- Assist with piloting of new cyber security tools, technologies, and processes
- Assist with installation of new cyber security related hardware and software
- Assist with security system testing and ongoing optimisation or changes such as scheduled upgrades and updates
- Maintain documentation of all optimisation activities
- Recommend security products, services and/or procedures
- Propose improvements to IT operational processes, procedure manuals, and documentation

- As above

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## CYBER RISK ANALYST

### Job Description

The Cyber Risk Analyst conducts cyber risk assessment in support of technology initiatives to help identify IT related risk and determines appropriate controls to mitigate risks. He/She monitors, tracks and manages risk mitigations and exceptions to ensure cyber security standards and policies are established. He applies a defined set of analytical or scientific methods and works independently. He is also responsible for documentation of cyber risk assessment reports.

He is familiar with cyber security standards, protocols and frameworks, and acts in accordance with the Cyber Security Act 2018. He is knowledgeable in using various cyber security monitoring and analysis tools and techniques depending on the organisation's needs and requirements.

The Cyber Risk Analyst is vigilant and systematic in identifying cyber risks and enjoys analysing and investigating such issues. He is a strong team player, and communicates well both verbally and in writing.

**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Audit and Compliance	3	Digital Literacy	Advanced
Business Needs Analysis	3	Computational Thinking	Advanced
Cyber and Data Breach Incident Management	3	Sense Making	Advanced
Cyber Forensics	3	Transdisciplinary Thinking	Intermediate
Cyber Risk Management	4	Problem Solving	Advanced
IT Governance	4		
Security Administration	3		
Security Education and Awareness	4		
Security Governance	4		
Security Programme Management	4		
Stakeholder Management	3		
Strategy Implementation	4		
Strategy Planning	4		



### Critical Work Functions

### Key Tasks

### Performance Expectations

Establish cyber security standards and policies

- Conduct review of existing security policies, procedures, standards and exceptions
- Assist in the development of policies for conducting cyber security risk assessments and compliance audits
- Support implementation of information systems and cyber security policies

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Manage cyber risks and assessments

- Perform cyber risk assessment activities based on risk assessment plans
- Assess third party security controls and internal security systems
- Establish scope of risk analysis for new technology initiatives
- Conduct research on emerging cyber security and risk management trends, issues, and alerts
- Monitor risks and incidents in accordance with the risk mitigation policies and guidelines

- As above

Develop cyber risk documentation

- Document methodologies and tools to mitigate cyber risks
- Prepare reports for cyber risk assessment reporting
- Conduct research to develop internal threat awareness reports

- As above

Mitigate cyber security risks

- Determine cause of security violations
- Recommend corrective actions or appropriate controls to mitigate technical risks
- Assist in the implementation of preventive measures against intrusion, frauds, attacks or leaks
- Track remediation efforts for security and audit deficiencies

- As above

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## CYBER RISK MANAGER

### Job Description

The Cyber Risk Manager guides the assessment of information and cyber risks associated with technology initiatives and provides recommendations on control requirements by risk policy and standards. He/She manages and coordinates responses to regulatory inquiries, inspections, audits and ensures cyber security standards and policies are established and implemented. He oversees the development of reports and implements policies and standards. He manages employees and is held accountable for the performance and results of a team. He provides guidance on security measures and protocols to stakeholders.

He is familiar with cyber security standards, protocols and frameworks, and ensures the organisation's compliance to the Cyber Security Act 2018. He is knowledgeable in using various cyber security monitoring and analysis tools and techniques depending on the organisation's needs and requirements. He also has expertise in cyber risk mitigation strategies and protocols.

The Cyber Risk Manager has a sharp, analytical mind and is able to anticipate problems and risks to mitigate them ahead of time. He is an excellent communicator who works well with others and promotes a cooperative working environment and relationships within and beyond his team.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Audit and Compliance

4

Budgeting

5

Business Needs Analysis

4

Business Performance Management

5

Cyber and Data Breach Incident Management

4

Cyber Forensics

4,5

Cyber Risk Management

5

IT Governance

5

Learning and Development

4,5

Manpower Planning

4

Networking

4

People and Performance Management

4

Security Administration

4

Security Architecture

4

Security Education and Awareness

5

Security Governance

5

Security Programme Management

5

Security Strategy

5

Stakeholder Management

4,5

Strategy Implementation

5

Strategy Planning

5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Computational Thinking

Advanced

Digital Literacy

Advanced

Global Mindset

Advanced

Sense Making

Advanced

Creative Thinking

Advanced

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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Implement cyber security risk strategy	<ul style="list-style-type: none"> <li>Manage the strategic development and improvement of risk frameworks, methodologies and requirements</li> <li>Recommend strategies to address key risk areas in cyber security</li> <li>Assess business needs against cyber security concerns and legal and/or regulatory requirements</li> <li>Anticipate internal and external business challenges and legal or regulatory issues</li> <li>Provide strategic risk guidance to stakeholders in the implementation and execution of cyber risk strategies across the organisation</li> </ul>	<p>In accordance with:</p> <ul style="list-style-type: none"> <li>Cyber Security Act 2018, Cyber Security Agency of Singapore</li> </ul>
Establish cyber security standards and policies	<ul style="list-style-type: none"> <li>Formulate governance procedures for documenting and updating security policy, standards, guidelines and procedures</li> <li>Plan the implementation of information systems and cyber security policies</li> <li>Develop the organisation's Cyber Risk Maturity model</li> <li>Develop policies and frameworks for conducting cyber security risk assessments and compliance audits</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>
Manage cyber risks and assessments	<ul style="list-style-type: none"> <li>Advise the development of techniques and procedures for the conduct of cyber risk assessments</li> <li>Develop plans for cyber risk assessment activities across the organisation</li> <li>Coordinate the on-going cyber risk assessment activities across the organisation</li> <li>Provide strategic and technical recommendations following identification of vulnerabilities in operating systems</li> <li>Incorporate emerging security and risk management trends, issues, and alerts into risk assessment framework</li> <li>Develop cyber risk mitigation strategies and policies for the organisation</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>
Develop cyber risk documentation	<ul style="list-style-type: none"> <li>Oversee the development of documentation on methodologies and tools to mitigate cyber risks</li> <li>Establish guidelines for reporting outcome of cyber risk assessments</li> <li>Oversee the development of internal threat awareness reports</li> <li>Present threat awareness reports to technical and non-technical staff</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>
Mitigate cyber security risks	<ul style="list-style-type: none"> <li>Develop programmes and initiatives to strengthen the capability of the organisation to mitigate risks</li> <li>Oversee the planning and conduct of organisational cyber security exercises</li> <li>Act as a subject matter expert in cyber security incident and breach investigations and post-breach remediation work</li> <li>Propose procedures to prevent future incidents and improve cyber security</li> <li>Monitor the maintenance of the cyber security operations training plans for all security staff</li> <li>Manage responses to regulatory inquiries, inspections or audits</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>
Manage people and organization	<ul style="list-style-type: none"> <li>Review operational strategies, policies and targets across teams and projects</li> <li>Develop strategies for resource planning and utilization</li> <li>Review the utilisation of resources</li> <li>Oversee the development of learning roadmaps for teams and functions</li> <li>Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices</li> <li>Implement succession planning initiatives for key management positions</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>

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### CHIEF INFORMATION SECURITY OFFICER

#### Job Description

The Chief Information Security Officer develops and drives the vision for the information security function. He/She acts as the authority for the development and enforcement of organisation security strategy, standards and policies, and has ultimate responsibility for ensuring the protection of corporate information. He guides the design and continuous improvement of the IT security architecture and Cyber Risk Maturity Model that balances business needs with security risks. He advises the board and top executives on all security matters and sets directions for complying with regulatory inquiries, legal and compliance regulations, inspections and audits.

He is an expert in cyber security compliance standards, protocols and frameworks, as well as the Cyber Security Act 2018. He is keeps abreast of cyber-related applications and hardware technologies and services, and is constantly on the look-out for new technologies that may be leveraged on to enhance work processes, or which may pose as potential threats.

The Chief Information Security Officer is an inspirational and influential leader, who displays sound judgement and decisiveness in ensuring that corporate information is well protected and secured. He is strategic in his approach toward resource management and capability development among his teams.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

Audit and Compliance

5

Budgeting

6

Business Continuity

6

Business Needs Analysis

5

Business Performance Management

6

Business Risk Management

6

Cyber Forensics

6

Cyber and Data Breach Incident Management

6

Cyber Risk Management

6

Disaster Recovery Management

6

Emerging Technology Synthesis

6

IT Standards

6

Learning and Development

6

Manpower Planning

5

Network Security

5

Networking

5

Partnership Management

6

People and Performance Management

5

Security Architecture

5

Security Governance

6

Security Strategy

6

Stakeholder Management

6

Strategy Planning

6

Threat Analysis and Defence

6

Threat Intelligence and Detection

6

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Leadership

Advanced

Global Mindset

Advanced

Decision Making

Advanced

Transdisciplinary Thinking

Advanced

Sense Making

Advanced

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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Formulate information security strategy

- Establish the organisational cyber security vision, strategy and underlying cyber security initiatives or programmes
- Align information security and information risk management strategy with business strategy
- Provide strategic, budgetary and administrative advice for implementation of information security strategy
- Drive security awareness and education on information security throughout the organisation
- Advise senior management and key stakeholders on information security matters

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Establish security architecture

- Oversee the development of information security and risk management policies, disaster recovery and business continuity plans
- Evaluate current information security practices to ensure compliance with IT standards and industry norms
- Oversee the implementation of appropriate plans to ensure compliance with regulatory, industry and regional mandates
- Establish and implement cyber security legal risk rules and guidelines in line with industry norms and standards
- Drive information security and risk management awareness training programmes

- As above

Establish security architecture

- Oversee the design of cyber security architecture and the overall Cyber Risk Maturity Model
- Establish Key Performance Indicators (KPIs) to assess the effectiveness of the security architecture
- Facilitate the development of a framework to measure the effectiveness of security programmes
- Review security architecture to ensure that it addresses technology shifts and threats

- As above

Manage cyber security incidents

- Act as a subject matter expert in cyber security investigations and analysis
- Drive resolution of large scale security incidents
- Lead the development of plans to address system vulnerabilities
- Advise on responses to regulatory inquiries, inspections or audits
- Present evidence for legal action arising from cyber security incidents

- As above

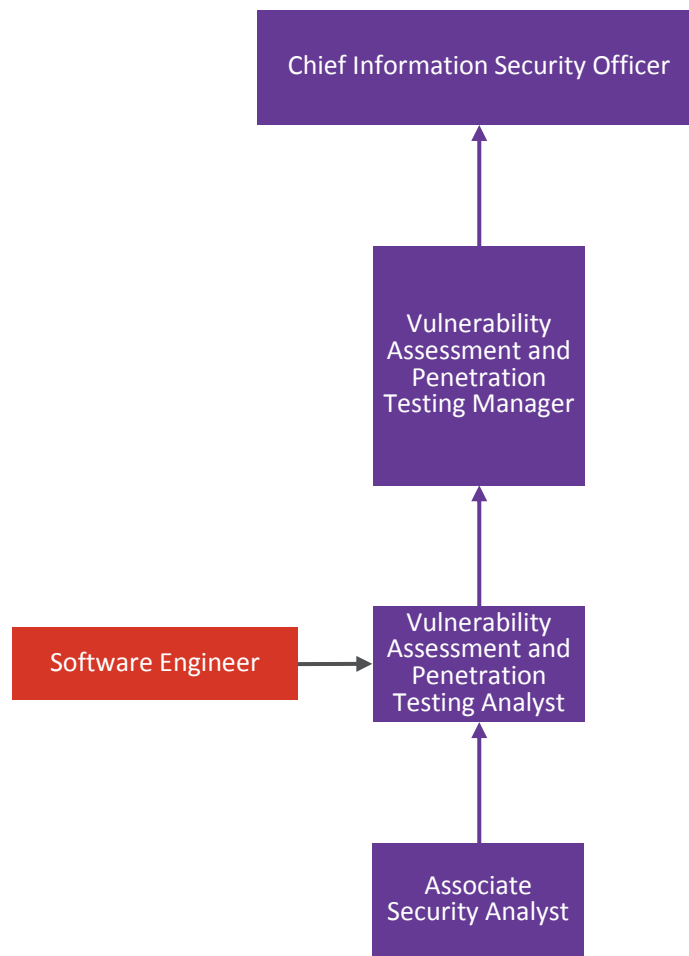
Manage cyber security risks

- Oversee the development of cyber security risk assessment frameworks
- Advise business stakeholders on the different types of cyber risks and incidents along with the cyber security compliance standards
- Oversee the development and testing of disaster recovery and business continuity plans
- Drive compliance with international and national information security and privacy regulations
- Act as the organisation's liaison with external agencies in cyber security risk matters

- As above

Click on Sub-track names below to view feeder roles and next moves

## VULNERABILITY ASSESSMENT AND PENETRATION TESTING



→ Lateral Movement

→ Vertical Progression

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## VULNERABILITY ASSESSMENT AND PENETRATION TESTING ANALYST

### Job Description

The Vulnerability Assessment and Penetration Testing Analyst designs and performs tests and check cases to determine if infrastructure components, systems and applications meet confidentiality, integrity, authentication, availability, authorisation and non-repudiation standards. He/She translates requirements into test plan, writes and executes test scripts or codes in line with standards and procedures to determine vulnerability from attacks. He certifies infrastructure components, systems and applications that meet security standards.

The Vulnerability Assessment and Penetration Testing Analyst is well versed with cyber security standards, protocols and frameworks, has a creative and analytical mind, and deploys new and innovative methods to perform penetration tests. He works well in a team and communicates findings and implications effectively to relevant stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Audit and Compliance	3	Digital Literacy	Advanced
Cyber Risk Management	4	Computational Thinking	Advanced
Emerging Technology Synthesis	4	Sense Making	Advanced
Learning and Development	4	Transdisciplinary Thinking	Intermediate
Network Security	4	Problem Solving	Advanced
Security Assessment and Testing	4		
Security Strategy	4		
Stakeholder Management	3		
Strategy Implementation	3		
Strategy Planning	4		
Test Planning	4		
Threat Analysis and Defence	4		



### Critical Work Functions

### Key Tasks

### Performance Expectations

Establish cyber security policies

- Assist in the development of cyber security standards, policies and best practices
- Assist in establishing certification based policies for maintaining compliance to cyber security standards
- Conduct reviews and assessment of existing security policies, procedures, standards and exceptions

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Oversee vulnerability assessment and penetration testing (VAPT) activities

- Carry out scoping activities to identify systems components which require testing
- Define and translate requirements into test plans, scenarios, scripts or procedures
- Conduct VAPT, black box and code reviews, and reverse engineering
- Perform on-site security assessments of infrastructure components and computer systems
- Propose recommendations for continuous improvement of testing processes and methodologies
- Identify emerging security and risk management trends, issues, and alerts in VAPT activities

- As above

Manage VAPTs

- Prepare reports on VAPT results based on established guidelines
- Provide inputs on security penetration testing in the development of software and applications
- Review software designs, source codes and deployment to address cyber security issues
- Prepare documentation to facilitate certification of software
- Maintain repositories for certification documentation and modifications

- As above

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## VULNERABILITY ASSESSMENT AND PENETRATION TESTING MANAGER

### Job Description

The Vulnerability Assessment and Penetration Testing Manager plans and oversees the delivery of testing and certification services to determine whether infrastructure components, systems and applications meet confidentiality, integrity, authentication, availability, authorisation and non-repudiation standards. He/She reports on testing outcomes and activities. He provides recommendations and manages stakeholder expectations. He ensures compliance with assessment and testing standards, processes and tools. He develops organisational testing capability and supports knowledge management.

He is well versed with cyber security standards, protocols and frameworks, and has sound knowledge of various testing applications and services.

The Vulnerability Assessment and Penetration Testing Manager possesses strong analytical and critical thinking abilities to resolve and advise on highly complex issues, and effectively communicates outcomes to relevant stakeholders. He is adept at managing resources and developing his team.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Audit and Compliance

4

Budgeting

5

Business Performance Management

5

Cyber Risk Management

5

Emerging Technology Synthesis

5

Learning and Development

5

Manpower Planning

5

Network Security

5

Networking

5

People and Performance Management

5

Security Assessment and Testing

5

Security Education and Awareness

5

Security Governance

5

Security Strategy

5

Stakeholder Management

4

Strategy Implementation

4

Strategy Planning

5

Test Planning

5

Threat Analysis and Defence

5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Computational Thinking

Advanced

Digital Literacy

Advanced

Global Mindset

Advanced

Sense Making

Advanced

Creative Thinking

Advanced

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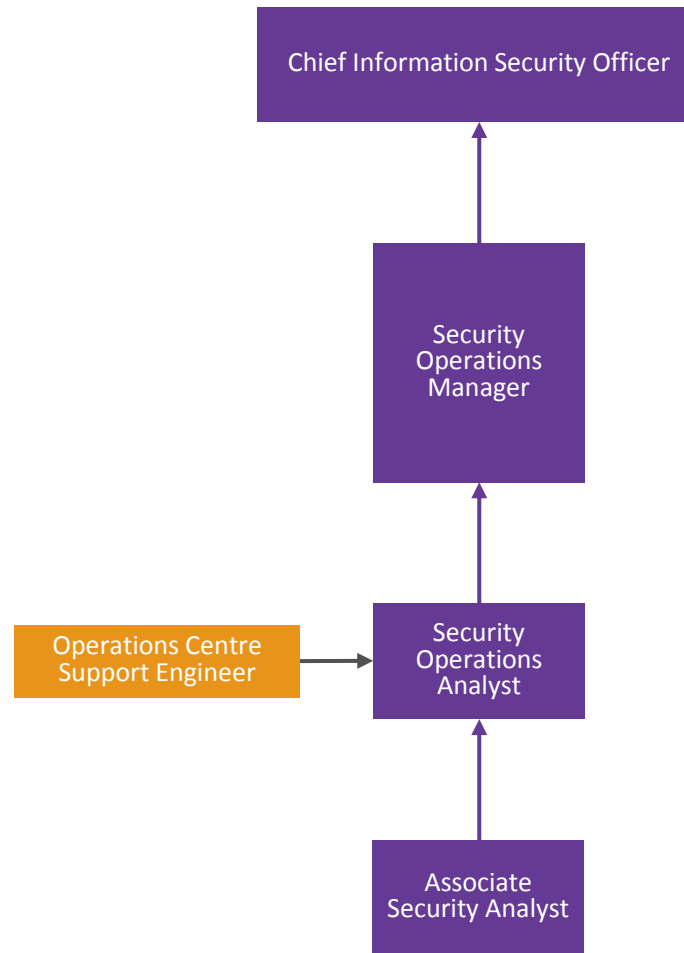
GENERIC SKILLS  
& COMPETENCIES



Critical Work Functions	Key Tasks	Performance Expectations
Establish cyber security policies	<ul style="list-style-type: none"> <li>Develop policies and frameworks to conduct security penetration testing</li> <li>Establish certification-based policies for maintaining compliance</li> <li>Formulate governance procedures for documenting and updating security testing policy, standards, guidelines and procedures</li> </ul>	In accordance with: <ul style="list-style-type: none"> <li>Cyber Security Act 2018, Cyber Security Agency of Singapore</li> </ul>
Establish cyber security guidelines and methodologies	<ul style="list-style-type: none"> <li>Design service strategies and scope for security testing technologies and solutions</li> <li>Recommend strategic and operational changes to security testing to address new threats</li> <li>Drive cyber security awareness within the organisation</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>
Oversee vulnerability assessment and penetration testing (VAPT) activities	<ul style="list-style-type: none"> <li>Establish test metrics to benchmark against requirements and industry best practices</li> <li>Monitor the conduct of certification tests, audits, inspections and reviews</li> <li>Provide advice on complex security test data analysis to support security vulnerability assessment processes, including root cause analysis</li> <li>Act as an escalation point on issues, dependencies, and risks related to security testing</li> <li>Lead team members to continuously improve testing capabilities</li> <li>Incorporate emerging security and risk management trends, issues, and alerts in penetration testing activities</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>
Manage VAPTs	<ul style="list-style-type: none"> <li>Develop frameworks and dashboards for the reporting of VAPT results</li> <li>Communicate the outcome of testing initiatives and results to the stakeholder groups</li> <li>Recommend strategies and techniques to mitigate identified risks</li> <li>Provide advice based on security VAPT considerations</li> <li>Approve documentation to certify penetration testing results</li> <li>Propose corrections and recommendations to improve and facilitate certification of software</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>
Manage people and organisation	<ul style="list-style-type: none"> <li>Review operational strategies, policies and targets across teams and projects</li> <li>Develop strategies for resource planning and utilisation</li> <li>Review the utilisation of resources</li> <li>Oversee the development of learning roadmaps for teams and functions</li> <li>Establish performance indicators to benchmark effectiveness of learning and development programs against best practices</li> <li>Implement succession planning initiatives for key management positions</li> </ul>	<ul style="list-style-type: none"> <li>As above</li> </ul>

Click on Sub-track names below to view feeder roles and next moves

## SECURITY OPERATIONS



→ Lateral Movement

→ Vertical Progression

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## SECURITY OPERATIONS ANALYST

### Job Description

The Security Operations Analyst performs real-time analysis and trending of security log data from various security devices and systems. He/She maintains data sources feeding the log monitoring system, develops and maintains detection and alerting rules. He responds to user incident reports and evaluates the type and severity of security events. He documents incidents and develops reports. He identifies recurring security issues and risks to develop mitigation plans and recommends process improvements. He interprets and applies security policies and procedures. He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays.

He is familiar with cyber security standards, protocols and frameworks, and works in accordance with the Cyber Security Act 2018. He is knowledgeable in using various cyber security monitoring and testing tools and techniques.

The Security Operations Analyst is diligent and takes an analytical approach to perform real-time analyses. He is skilled in synthesising trends and insights, and is confident in putting forth creative mitigation plans and solutions to security incidents.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Audit and Compliance

3

Communication

Intermediate

Business Continuity

4

Creative Thinking

Intermediate

Cyber and Data Breach Incident Management

3

Problem Solving

Intermediate

Cyber Risk Management

4

Sense Making

Intermediate

Disaster Recovery Management

4

Teamwork

Intermediate

Network Security

3

Security Administration

3

Security Programme Management

4

Stakeholder Management

3

Threat Analysis and Defence

4

Threat Intelligence and Detection

3

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### Critical Work Functions

### Key Tasks

### Performance Expectations

Monitor cyber security systems

- Carries out audits, reviews, security control assessments, and tests of security operations based on established schedules and protocols
- Perform real-time analysis and trending of security log data from cyber security systems
- Analyse security event data to identify suspicious and malicious activities
- Provide inputs to improve security monitoring rules and alerts
- Document processes related to cyber security monitoring

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Maintain cyber security operations

- Implement cyber security protocols
- Formulate emergency response procedures
- Maintain data sources feeding the log monitoring system
- Schedule security checks in accordance with reporting schedules
- Prepare periodic status reports for presentation to management

- As above

Manage response to  
cyber security incidents

- Review security incident reports
- Analyse the type and severity of cyber security incidents
- Assist in establishing procedures for handling detected cyber security incidents
- Provide status updates during the lifecycle of a cyber security incident
- Prepare final incident report detailing the events of the cyber security incident
- Support the maintenance and update of business recovery, contingency plans and procedures

- As above

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## SECURITY OPERATIONS MANAGER

### Job Description

The Security Operations Manager plans and oversees monitoring and maintenance of security operations and provides direction and leadership to internal resources. He/She provides expertise on security technologies and innovative security concepts and works toward enhancing the resilience of security operations. He coordinates ongoing reviews of existing security programs, protocols and planned upgrades. He establishes escalation processes for security incidents and develops contingency plans and disaster recovery procedures. He focuses on policy implementation and control.

He is familiar with cyber security standards, protocols and frameworks, and ensures the organisation's compliance with the Cyber Security Act 2018. He is knowledgeable in using various cyber security monitoring and testing tools and techniques.

The Security Operations Manager is diligent and watchful in monitoring security operations, systems and activities. He is also a confident leader who develops plans and solutions to address security incidents and also one who has a passion for engaging and developing others in his team.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Audit and Compliance

4

Budgeting

5

Business Continuity

5

Business Performance Management

5

Cyber and Data Breach Incident Management

4

Cyber Risk Management

5

Disaster Recovery Management

5

Emerging Technology Synthesis

5

Learning and Development

4,5

Manpower Planning

4

Network Security

4

Networking

4

People and Performance Management

4

Security Administration

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Security Education and Awareness

5

Security Strategy

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Stakeholder Management

4,5

Strategy Implementation

5

Strategy Planning

5

Threat Analysis and Defence

5

Threat Intelligence and Detection

4,5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Communication

Advanced

Developing People

Advanced

Problem Solving

Advanced

Resource Management

Advanced

Sense Making

Advanced



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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Implement cyber security strategy

- Develop the organisation's cyber security strategy
- Align security operations functions with the organisation's overall business objectives
- Advise senior leaders on critical issues that may affect corporate security objectives
- Advise the design and implementation of security policy and controls
- Provide expertise on security technologies and innovative security concepts
- Provide technical and operational oversight for security tool deployment and implementation

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Monitor cyber security systems

- Develop plans for monitoring security systems and responding to cyber security incidents
- Oversee the identification and measurement of critical cyber security operations metrics
- Develop cyber threat detection and incident alert rules and implement regulations
- Monitor levels of service of the cyber security operations
- Present periodic cyber security status reports to management

- As above

Maintain cyber security operations

- Oversee planning and coordination of 24 x 7 security operations coverage
- Coordinate ongoing reviews of existing security programs, protocols and planned upgrades
- Monitor compliance to security policies, regulations, rules and norms
- Drive continuous improvement of security operations

- As above

Manage response to  
cyber security incidents

- Formulate internal guidelines for processing and escalation of cyber security incidents
- Review reports on incidents and breaches of cyber security
- Oversee prioritisation of alerts and resources for incident responses
- Present final incident reports on cyber security incidents to senior management for approval
- Recommend systems and procedures for the prevention, detection, containment and correction of cyber security breaches

- As above

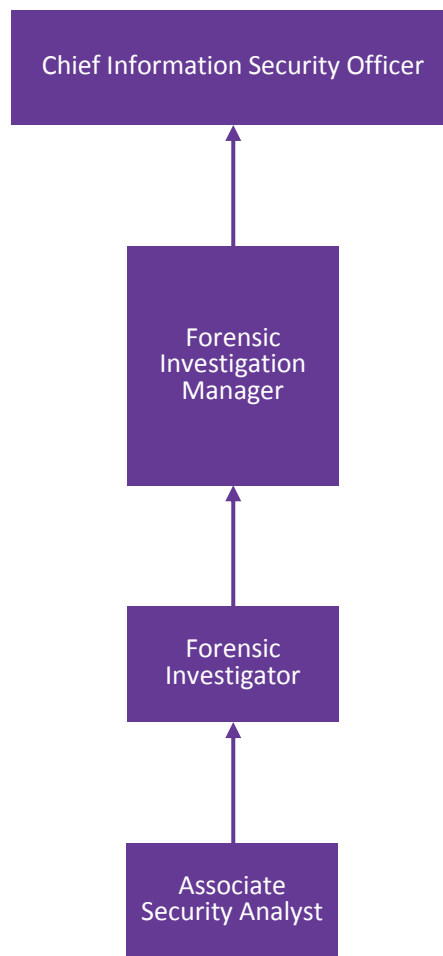
Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programs against best practices
- Implement succession planning initiatives for key management positions

- As above

Click on Sub-track names below to view feeder roles and next moves

## FORENSICS INVESTIGATION



→ Lateral Movement

→ Vertical Progression

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## FORENSICS INVESTIGATOR

### Job Description

The Forensics Investigator is responsible for the investigation processes after a cyber-threat or incident. He/She is responsible to collect and analyse the threat data from the affected systems. He is also responsible for performing the forensics investigation and determining the root cause of cyber-attacks.

He is familiar with different types of threats, cyber security standards, protocols and frameworks, and acts in accordance with the Cyber Security Act 2018. He is knowledgeable of hardware and software applications to analyse threat data from various sources.

The Forensics Investigator is diligent and takes an analytical approach to perform analyses and uncover insights. He is skilled in synthesising trends and insights, and is confident in putting forth creative mitigation plans and solutions to mitigate security incidents.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Cyber Forensics	3	Communication	Intermediate
Cyber Risk Management	4	Creative Thinking	Intermediate
Emerging Technology Synthesis	3	Problem Solving	Intermediate
Failure Analysis	3	Sense Making	Intermediate
Network Security	3	Teamwork	Intermediate
Security Administration	3		
Security Assessment and Testing	3		
Stakeholder Management	3		
Threat Analysis and Defence	3		
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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Collate threat data  
post-cyber attack

- Collect information from affected stakeholders and document the impact of the cyber-attack
- Scan IT systems to retrieve information from storage and other electronic devices
- Collect and decrypt threat data from affected IT systems
- Perform cross analysis of threat data with existing threat database to classify the threat data

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Oversee forensic  
investigations

- Conduct forensic analysis and investigations to determine the causes of security incidents
- Distil key insights and impact from analyses of security incidents
- Contain the impact of security incidents
- Prepare investigative reports detailing incident findings, analysis and conclusions
- Update threat database based on investigation findings
- Provide insights and recommendations to affected stakeholders on post investigation findings and cyber-attack mitigation strategies

- As above

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## FORENSICS INVESTIGATION MANAGER

### Job Description

The Forensics Investigation Manager plans and oversees the investigation processes and protocols after a cyber-threat or incident. He/She is responsible to ensure that the data is collected and analysed properly. He is also responsible for developing a forensics investigation strategy and overseeing the forensics investigations to ensure the threat is classified and future actions are recommended to the affected stakeholders.

He is familiar with different types of threats, cyber security standards, protocols and frameworks, and ensures the organisation's compliance with the Cyber Security Act 2018. He is knowledgeable of hardware and software applications to analyse threat data from various sources.

The Forensics Investigation Manager is diligent and watchful in the investigation activities. He is also a confident leader who develops plans and solutions to address security incidents, and has a passion for engaging and developing others in his team.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting	5
Business Performance Management	5
Cyber Forensics	4,5
Cyber Risk Management	5
Emerging Technology Synthesis	4
Failure Analysis	4
Learning and Development	4,5
Manpower Planning	4
Network Security	4
Networking	4
People and Performance Management	4
Security Administration	4
Security Assessment and Testing	5
Security Governance	5
Security Strategy	5
Stakeholder Management	4,5

Strategy Implementation	5
Strategy Planning	5
Threat Analysis and Defence	4
Threat Intelligence and Detection	4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Communication	Advanced
Developing People	Advanced
Problem Solving	Advanced
Resource Management	Advanced
Sense Making	Advanced

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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Develop a forensics investigation strategy

- Develop strategy to collect and analyse threat data after an incident
- Establish digital forensic investigation policies and standards for the organisation
- Develop threat mitigation processes and policies after analysing the root cause of the incident, refreshing them when required
- Advise senior management on major information security-related risks and forensics investigations policies and procedures

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Oversee forensic investigations

- Lead forensic investigations and coordinate forensic teams post cyber-attacks to determine the root cause of the incident
- Scrutinise forensic incident trends to ensure correct measures are taken during the investigation process
- Determine the tactics, techniques and procedures used for cyber attacks
- Manage the evidence and causal analysis of cyber threats, incidents and attacks
- Present reports and outcomes in investigations or legal proceedings to senior management and key stakeholders

- As above

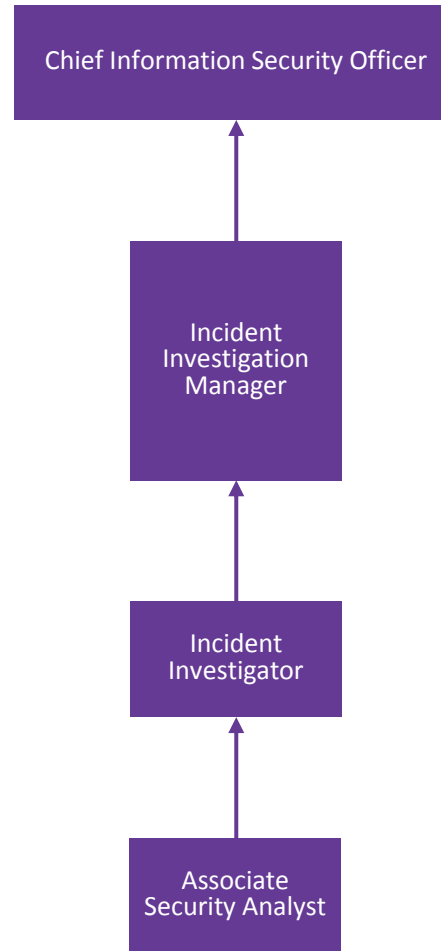
Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programs against best practices
- Implement succession planning initiatives for key management positions

- As above

Click on Sub-track names below to view feeder roles and next moves

## INCIDENT RESPONSE



→ Lateral Movement

→ Vertical Progression

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## INCIDENT INVESTIGATOR

### Job Description

The Incident Investigator conducts complex analysis to investigate causes of intrusion, attack, loss or breach occurring in an organisation. He/She identifies and defines cyber threats and root causes. He develops reports that detail incident timeline, evidence, findings, conclusions and recommendations. He is responsible for managing cyber incidents and resolving the incidents in a timely manner. He prepares reports, communicates findings to senior stakeholders, and recommends corrective actions to prevent and mitigate internal control failures. He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays.

He is familiar with cyber security standards, protocols and frameworks, and works in compliance with the Cyber Security Act 2018. He is knowledgeable in using various cyber security tools and techniques to resolve incidents.

The Incident Investigator is detail-oriented and adopts a critical and systematic approach in conducting investigations and analyses. He views issues from multiple perspectives and actively communicates his thoughts and engages with other team members.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Cyber Forensics	3	Communication	Intermediate
Cyber and Data Breach Incident Management	3	Creative Thinking	Intermediate
Cyber Risk Management	4	Problem Solving	Intermediate
Security Assessment and Testing	3	Sense Making	Intermediate
Stakeholder Management	3	Teamwork	Intermediate
Threat Analysis and Defence	3		
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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Develop and implement cyber incident response strategy

- Develop approaches to combat cyber threats and mitigate risks to information systems assets
- Develop guidelines to perform incident response strategies and policies
- Implement processes and guidelines to perform incident response protocols, analyse data, and create incident reports
- Implement mechanisms to improve cyber security measures and incident response times

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Manage cyber security incidents

- Handle responses to cyber security incidents
- Lead the recovery of contained cyber security incidents, following established processes and policies
- Utilise appropriate cyber incident management techniques to resolve challenges

- As above

Oversee cyber threat analysis

- Collect, analyse and store cyber threat intelligence information
- Analyse past cyber-attacks to draw insights and implications on the organisation
- Scrutinise vulnerabilities within systems that may pose cyber security risks
- Recommend ways to enhance the resilience and security of IT systems
- Propose mitigation techniques and countermeasures to ensure cyber threats are kept at a minimum

- As above

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## INCIDENT INVESTIGATION MANAGER

### Job Description

The Incident Investigation Manager plans and oversees the performance of security response during the event of a cyber-incident or threat. He proposes mitigation techniques and countermeasures as well as develops cyber security solutions to prevent future attacks. He develops and implements cyber incident response strategies. He presents cyber-incident reports to senior leaders. He is required to be on standby with on-call availability with varied shifts including nights, weekends and holidays.

He is familiar with cyber security standards, protocols and frameworks, and ensures the organisation's compliance to the Cyber Security Act 2018. He is knowledgeable in using various cyber security analysis tools and techniques to resolve incidents.

The Incident Investigation Manager is diligent and watchful in monitoring security operations, systems and activities. He is quick to provide solutions and fix issues when they arise. He is adept at dealing with complexity, and is an articulate and developmental leader in his team.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Budgeting

5

Business Performance Management

5

Cyber and Data Breach Incident Management

4

Cyber Forensics

4,5

Cyber Risk Management

5

Learning and Development

4,5

Manpower Planning

4

Networking

4

People and Performance Management

4

Security Assessment and Testing

4

Security Governance

5

Security Strategy

5

Stakeholder Management

4,5

Strategy Implementation

5

Strategy Planning

5

Threat Analysis and Defence

4

Threat Intelligence and Detection

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Communication

Advanced

Developing People

Advanced

Problem Solving

Advanced

Resource Management

Advanced

Sense Making

Advanced



### Critical Work Functions

### Key Tasks

### Performance Expectations

Develop and implement cyber incident response strategy

- Develop contingency and disaster recovery plans tailored specifically for every security incident
- Establish incident response policies and standards for the organisation
- Develop incident response processes and policies, refreshing them where required
- Advise senior management on major information security-related risks and cyber incident response strategies

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Oversee cyber threat analysis

- Oversee the identification of security risks and exposures to internal systems
- Optimise cyber security data analytics models to pre-empt and detect suspicious activities
- Provide risk analysis and security design advice to internal software and system design teams
- Oversee the sharing of cyber threat intelligence with security partners, vendors and law enforcement
- Oversee the development of cyber security solutions to prevent future cyber incidents

- As above

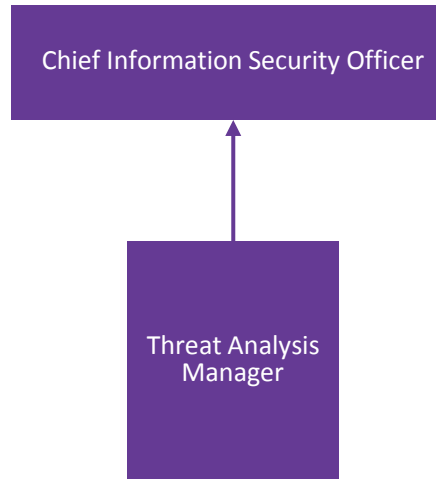
Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programs against best practices
- Implement succession planning initiatives for key management positions

- As above

Click on Sub-track names below to view feeder roles and next moves

## THREAT ANALYSIS



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## THREAT ANALYSIS MANAGER

### Job Description

The Threat Analysis Manager plans out strategies to pre-empt potential threats in an organisation's cyber related systems. He/She is responsible for identifying the IT assets that are prone to cyber threats and attacks. He proactively monitors the open web and identifies potential threats and groups or individuals capable of attempting cyber-attacks. He runs tests and analyses different areas of the IT assets to ensure they are safe from cyber-attacks.

He is familiar with cyber security standards, protocols and frameworks. He is knowledgeable in using various cyber security analysis tools and techniques to monitor and identify potential incidents.

The Threat Analysis Manager is alert and vigilant in performing monitoring activities, and is able to analyse and identify potential security-related issues, which may have critical impact on security and operational systems. He communicates clearly in his interactions with others and coordinates effectively with his team to perform security operations.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Audit and Compliance

4

Budgeting

5

Business Performance Management

4,5

Cyber and Data Breach Incident Management

5

Cyber Risk Management

5

Emerging Technology Synthesis

5

IT Standards

5

Learning and Development

5

Manpower Planning

4,5

Network Security

4

Networking

4

People and Performance Management

4

Security Architecture

4

Security Assessment and Testing

5

Security Programme Management

5

Security Strategy

5

Stakeholder Management

5

Strategy Implementation

4

Strategy Planning

5

Threat Analysis and Defence

5

Threat Intelligence and Detection

5

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Virtual Collaboration

Intermediate

Transdisciplinary Thinking

Advanced

Problem Solving

Advanced

Leadership

Advanced

Global Mindset

Advanced

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### Critical Work Functions

### Key Tasks

### Performance Expectations

Assess organisational assets for potential cyber threats

- Develop and implement strategies to identify assets prone to cyber threats and attacks
- Deconstruct the architecture of the application to uncover potential threats and vulnerabilities in the design, implementation, deployment or configuration of the application and systems
- Conduct in-depth analysis of existing threats and identify existing gaps in the current cyber security set-up
- Provide advice on the design and implementation of security policy and controls on identified assets
- Evaluate and provide feedback to improve intelligence production, intelligence reporting, collection requirements, and operations

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Research and pro-active monitoring of threats and attacks

- Run continuous scans and monitor threats that may exist in the dark web and external web-based applications
- Conduct research on new and existing threats that may impact existing IT systems
- Identify potential attacker groups or individuals and take preventive measures
- Recommend and develop approaches or solutions to problems and situations for which information is incomplete or for which no precedent exists
- Monitor and report changes in threat dispositions, activities, tactics, capabilities, objectives related to designated cyber operations warning problem sets

- As above

Classifying threats and simulating attacks on systems and applications

- Identify potential threats that may affect applications and systems using the knowledge of the application and system vulnerabilities
- Run test attacks and simulations on the systems to identify the possibilities of threats and extent of damage it could cause
- Prioritise and rate identified threats based on its severity
- Provide timely notice of imminent or hostile intentions or activities which may impact organisation objectives, resources, or capabilities
- Use existing database of threats and attack histories to pre-empt and classify potential new threats

- As above

Implement and document threat mitigation strategies and protocols

- Document new threats based on a core set of attributes to develop threat mitigation protocols
- Provide guidance on threat mitigation strategies and potential threats and cyber-attacks to ensure current cyber security standards and set-up are updated
- Analyse intelligence and support designated exercises, planning activities, and time sensitive operations
- Provide evaluation and feedback to improve intelligence production, reporting, collection requirements, and operations.

- As above

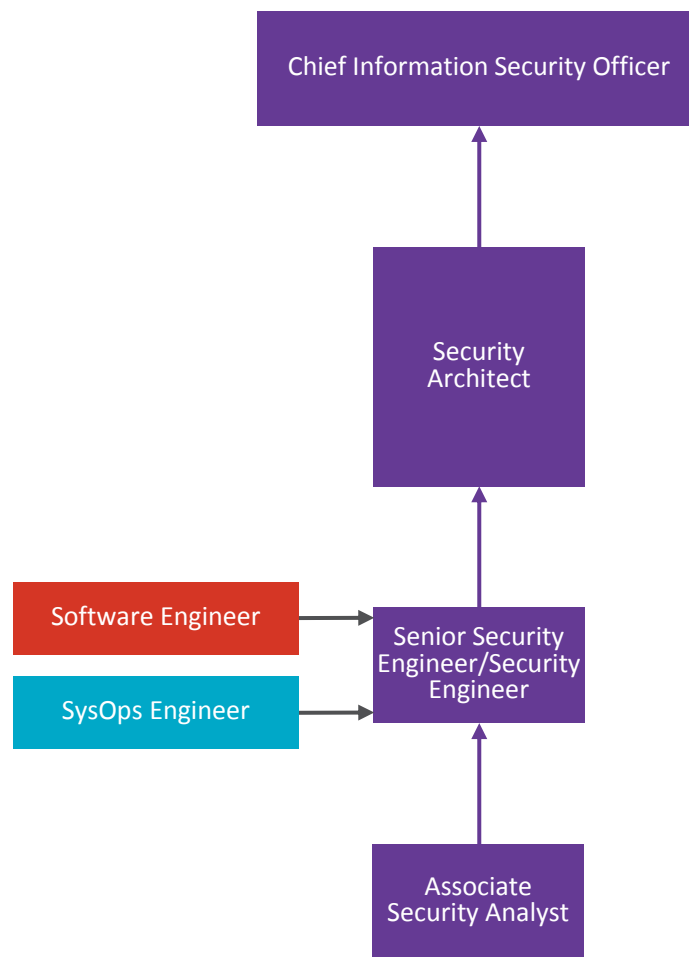
Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- Monitor and track the achievement of 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 and allocation 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

- As above

Click on Sub-track names below to view feeder roles and next moves

## SECURITY DESIGN AND ENGINEERING



→ Lateral Movement

→ Vertical Progression

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## SENIOR SECURITY ENGINEER/ SECURITY ENGINEER

### Job Description

The Senior Security Engineer/Security Engineer designs, develops and implements secure system architectures. He/She embeds security principles into the design of system architectures to mitigate the risks posed by new technologies and business practices. He designs artefacts, spanning design, development and implementation, into enterprise systems that describe security principles and how they relate to the overall enterprise system architecture. He performs routine activities related to the periodic review and audit activities of infrastructure security systems and maintains documentation of security standards and procedures.

He is well versed with cyber security standards, protocols and frameworks, and works in compliance with the Cyber Security Act 2018. He is knowledgeable of various application and hardware technologies and services.

The Senior Security Engineer/Security Engineer is structured and systematic in his approach to designing and implementing secure system architectures. He is articulate and works well with his team and other stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Business Needs Analysis	3	Communication	Intermediate
Cyber and Data Breach Incident Management	3	Computational Thinking	Intermediate
Cyber Risk Management	4	Problem Solving	Intermediate
Emerging Technology Synthesis	3	Sense Making	Intermediate
Infrastructure Design	3	Teamwork	Intermediate
Network Security	4		
Security Administration	3		
Security Architecture	3		
Security Governance	4		
Security Programme Management	3		
Strategy Implementation	4		
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**Critical Work Functions**

**Key Tasks**

**Performance Expectations**

Develop architecture requirements and maintain oversight

- Design security controls and systems in alignment with security guidelines
- Assist in the testing and evaluation of new security technologies and controls
- Recommend security products, services and procedures to enhance system architecture designs
- Document the design, operation, use, and expected outputs of new systems
- Conduct research on modern security software architectures and network architecture design best practices

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Implement security systems

- Implement new enterprise security architecture, technologies and enhancements
- Identify techniques to scale up and automate security infrastructure and processes
- Resolve issues that arise in implementation of new security systems
- Monitor security systems for strengths and weaknesses and propose improvements to address weaknesses

- As above

Manage security systems

- Oversee the maintenance of security systems, platforms and associated software
- Develop and implement custom disaster recovery drills and simulation tests on existing systems
- Assist in the resolution of identified problems and incidents

- As above

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## SECURITY ARCHITECT

### Job Description

The Security Architect leads unique and highly complex projects involving design, development and implementation of secure system architectures. He/She plans and monitors the design of artefacts into enterprise systems that describe security principles and how they relate to the overall enterprise system architecture. He is involved in the development and application of new solutions in infrastructure security. He recommends and leads the adoption of new technological advances and best practices in infrastructure security systems to mitigate security risks. He identifies and resolves unique and complex issues, which may have organisation-wide and long-term impact.

He is an expert in cyber security standards, protocols and frameworks, and ensures the organisation's compliance to the Cyber Security Act 2018. He is knowledgeable of various application and hardware technologies and services.

The Security Architect has a creative and critical mind, and enjoys identifying linkages and interconnections among various parts of a system or architecture. He is a technical expert who should also be people-oriented, consultative, developmental and actively engaging stakeholders to design optimal secure system architectures. He also mentors and provides technical leadership to the junior staff.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Business Needs Analysis	4	Communication	Advanced
Cyber Risk Management	5	Creative Thinking	Advanced
Emerging Technology Synthesis	4	Developing People	Advanced
Infrastructure Design	4	Problem Solving	Advanced
Network Security	5	Sense Making	Advanced
Security Administration	4		
Security Architecture	4,5		
Solution Architecture	5		
Security Governance	5		
Security Programme Management	4,5		
Security Strategy	5		
Stakeholder Management	5		
Strategy Implementation	5		
Strategy Planning	5		



### Critical Work Functions

Formulate the organisation's security architecture strategy, governance, roadmap, standards, policies and procedures

### Key Tasks

- Lead and coordinate the domain technical and business discussions
- Participate in ecosystem strategy development, environment analysis and opportunity identification
- Analyse, design and develop roadmaps and implementation plans based on a current versus future state
- Design standard configurations and patterns
- Lead and facilitate the business architecture governance process based on the enterprise architecture governance structure
- Manage exceptions to architectural standards at a security level
- Review and approve recommendations to security architectural standards

### Performance Expectations

- In accordance with:
- Cyber Security Act 2018, Cyber Security Agency of Singapore

Develop architecture requirements and maintain oversight

- Analyse and develop security architectural requirements
- Align architectural requirements with IT strategy
- Assess near-term needs to establish business priorities
- Ensure compatibility with existing solutions, infrastructure, services and strategic requirements
- Coordinate architecture implementation and modification activities
- Assist in post-implementation and continuous improvement efforts to enhance performance and provide increased functionality
- Ensure conceptual completeness of the technical solution

- As above

Manage quality and continuous improvement of architecture

- Analyse the current architecture to identify weaknesses and develop opportunities for improvement
- Identify and propose variances to the architecture to accommodate project needs
- Perform ongoing architecture quality review activities

- As above

Research emerging technologies

- Consult with clients and IT teams on security architecture solutions
- Analyse cost versus benefits, risks, impact and technology priorities
- Provide recommendations on emerging technology to senior management
- Develop a communication plan for security architecture
- Lead the research and evaluation of emerging technology, industry and market trends to assist in project development
- Identify organisational requirements for resources

- As above

Translate security architecture into security solutions

- Oversee the development and maintenance of the organisation's security strategy
- Oversee the translation of the security architecture to solutions
- Ensure adequate security solutions are in place throughout all IT systems and platforms
- Define the alignment of security governance with enterprise architecture governance
- Act as a security expert in application development, database design and network efforts
- Ensure compliance with enterprise and IT security policies and industry regulations
- Contribute to the alignment of security governance with enterprise architecture governance
- Evaluate secure solutions based on approved security architectures
- Explores new security technologies and architectures

- As above

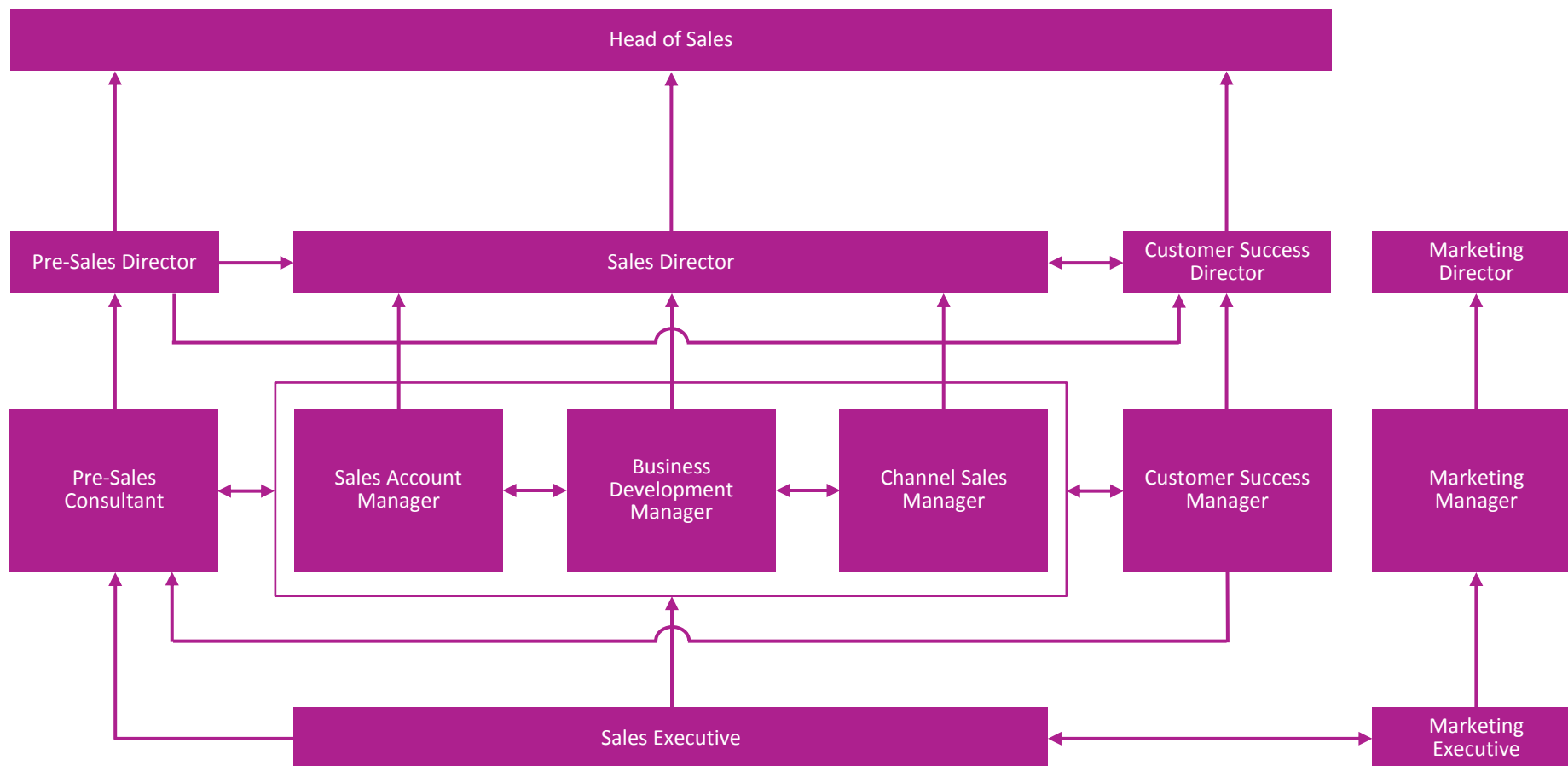
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PRE-SALES

SALES

CUSTOMER SUCCESS

MARKETING



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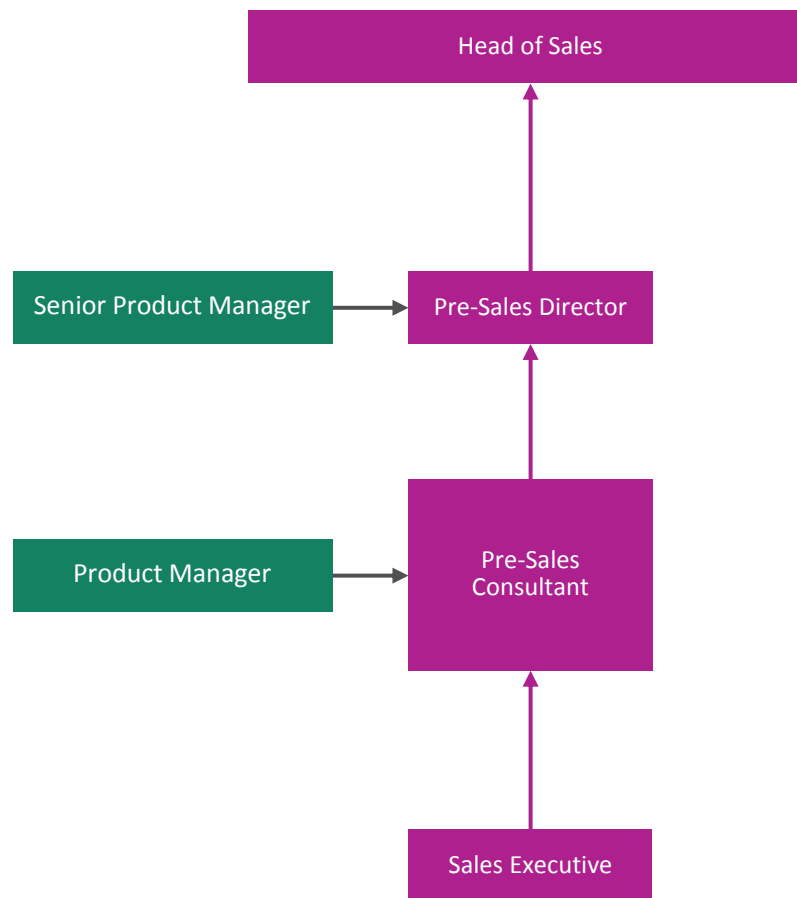
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## PRE-SALES



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## SALES EXECUTIVE

### Job Description

The Sales Executive identifies and qualifies prospective clients, seek opportunities for new sales through client and market research. He/She keeps clients informed of new products/service offerings and assists with translating client and channel partner needs into actionable insights. He provides administrative support to the sales teams, including the development of channel sales product promotions and co-marketing activities. He responds to technical and procedural questions, coordinates the formulation of price quotations, submission of sales contract for orders and maintenance of customer records. He supports the training and guides channel sales partners about product and/or service offerings and features based on mutual performance objectives.

He works in a fast-paced and dynamic environment, and travels to clients' premises for meetings as and when required. He is familiar with client relationship management and sales tools. He is knowledgeable of the organisation's products and services, as well as trends, developments and challenges of the industry domain.

The Sales Executive is self-motivated and mindful of placing the client's interests at the forefront of his/her priorities. He is able to confidently explain how the product can add value to the customer and is proactive in identifying and addressing client needs. He is a team player who is able to take rejection as a personal challenge to succeed when given the next opportunity.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Account Management	2	Communication	Intermediate
Business Development	3	Interpersonal Skills	Intermediate
Business Needs Analysis	2	Service Orientation	Advanced
Business Negotiation	3	Global Mindset	Intermediate
Contract Management	3	Problem Solving	Intermediate
Customer Experience Management	2		
Data Analytics	2		
Market Research	2		
Networking	3		
Partnership Management	3		
Sales Channel Management	3		
Stakeholder Management	2		
Technical Sales Support	2		

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### Critical Work Functions

### Key Tasks

Develop new business opportunities

- Identify prospective clients and channel partners through calls, on-site visits, emails and networking or industry events
- Conduct client and channel partner research to uncover insights on potential business needs
- Conduct market research and profiling, competitive landscape analysis and client profiling
- Assist with identifying new business opportunities with existing clients based on research
- Participate in industry and networking events

Identify new sales opportunities

- Assist with identifying new sales opportunities with new and existing clients based on research
- Source for new sales opportunities through inbound lead follow-up, conduct of cold calls, and relevant outreach activities
- Conduct analysis of benefits and value of the organisation's products and services against possible needs of potential clients to qualify prospect
- Respond to phone and email queries on product and service offerings

Convert sales opportunities to client accounts

- Provide administrative support to sales and business development teams
- Maintain client database and documentation
- Assist in compiling market information for feasibility studies
- Assist with the preparation of client presentation materials and conduct of product demonstration
- Perform follow-up action to close sales, and monitor payment fulfilment activities

Manage relationship with clients and channel partners

- Develop relationships with existing and potential clients and channel partners through regular engagements
- Translate client and channel partner needs into actionable insights to inform engagement plans and activities
- Communicate updates and launch of new of product/service features and benefits to clients and channel partners
- Coordinate resolution of inquiries and problems from clients and channel partners
- Assist with channel partner research and recruitment
- Implement mechanisms to evaluate and categorise channel partners
- Monitor compliance with establishes sales processes

Manage channel sales operations

- Support the development of channel sales product promotions and co-marketing activities for lead generation
- Resolve channel sales issues and routine product and/or service related problems with channel partners
- Provide logistical sales support required to close orders
- Track channel partner sales performance
- Prepare training materials for channel partners
- Assist in the conduct of training and certification for channel partners
- On-board channel partners based on guidelines
- Assist with assessing, clarifying, and validating channel partner needs

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### PRE-SALES CONSULTANT

#### Job Description

The Pre-Sales Consultant is responsible for providing pre-sales technical expertise to the sales team and clients during the sales process. He/She delivers presentations and technical demonstrations of the organisation's products to prospective clients. He translates the client's business requirements into technical specifications and requirements, and provides technical inputs for proposals, tenders, bids and any relevant documents. He uses prescribed guidelines or policies to analyse and solve problems.

He works in a fast-paced and dynamic environment, and travels frequently to clients' premises for technical sales pitches and meetings. He is familiar with client relationship management and sales tools. He possesses deep product and technical knowledge, and is knowledgeable of the trends, developments and challenges of the industry domain.

The Pre-Sales Consultant displays effective listening skills and is inquisitive in nature. He possesses deep technical and domain knowledge, pays attention to detail, and has strong analytical and problem-solving capabilities. He has a service-oriented personality and is a team player who works towards developing solutions collaboratively.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

#### Technical Skills & Competencies

#### Proficiency Level

#### Generic Skills & Competencies (Top 5)

#### Proficiency Level

Account Management

3

Problem Solving

Advanced

Business Development

3

Interpersonal Skills

Intermediate

Business Performance Management

4

Communication

Intermediate

Business Needs Analysis

3

Service Orientation

Advanced

Business Negotiation

4

Decision Making

Advanced

Data Analytics

3

Networking

4

Learning and Development

4

Product Management

3

Problem Management

3

Project Management

3

Stakeholder Management

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Technical Sales Support

3



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### Critical Work Functions

### Key Tasks

Develop business opportunities

- Collaborate with sales teams to develop and recommend products and services that meet customer requirements
- Collate customer needs and business requirements to support development of technical requirements and solutions
- Develop technical product collaterals for use by sales staff and customers
- Provide product, service and technology training to the sales team
- Engage in customer meetings to build deeper understanding of technical requirements and solutions

Implement pre-sales strategy

- Create pre-sales product and services propositions
- Oversee the collection of information on customer needs, priorities and market trends
- Identify impact of technological developments on pre-sales activities

Deliver pre-sales presentations  
and product demonstrations

- Develop proposals and conduct presentations, trainings and product demonstrations to customers
- Develop collateral for recommended solutions to be presented to the customer
- Answer customer queries and requests for information on the product and/or service
- Present recommended solutions to customer for validation and improvements
- Translates business requirements of the client into technical specifications and requirements
- Conduct negotiation on technical aspects of contracts

Develop solution prototypes

- Diagnose technical issues arising from the development of prototypes for resolution
- Develop Proof-of-Concepts to establish feasibility of products and services based on the client's needs and requirements
- Align prototype development to project objectives, technical requirements, schedules, deliverables and cost estimates
- Document proposed solutions and steps

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## PRE-SALES DIRECTOR

### Job Description

The Pre-Sales Director defines and articulates the organisation's strategy for securing technical wins with prospective clients. He/She focuses on developing key growth pre-sales strategies, tactics and action plans required to achieve revenue and/or sales targets. He advises the team on developing prototypes to ensure feasibility of solutions, and oversees the delivery of in-depth presentations and product demonstrations to clients. He solves complex problems and evaluates clients' needs with different perspectives.

He works in a fast-paced and dynamic environment, and travels frequently to clients' premises for technical sales pitches and meetings. He is familiar with client relationship management and sales tools. He possesses deep product and technical knowledge, and is knowledgeable of the trends, developments and challenges of the industry domain.

The Pre-Sales Director is target-driven and client centric, and has the ability to foster collaboration between stakeholders. He has a deep understanding of key business industries and knowledge of products and services in the market. He is strongly committed to developing talent and inspires his team members to pursue a common vision.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Account Management

4

Budgeting

4

Business Development

4

Business Needs Analysis

4

Business Negotiation

5

Business Performance Management

5

Data Analytics

4

Learning and Development

5

Manpower Planning

4

Networking

5

People and Performance Management

4

Product Management

4

Problem Management

4

Project Management

4

Sales Strategy

5

Stakeholder Management

5

Strategy Implementation

4

Strategy Planning

4

Technical Sales Support

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Advanced

Problem Solving

Advanced

Resource Management

Advanced

Service Orientation

Advanced

Communication

Advanced

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### Critical Work Functions

### Key Tasks

Develop business opportunities  
Establish pre-sales strategy

- Pursue up-sell and additional business development opportunities with existing customers
- Drive technical viability of proposed products and services
- Make recommendations for development and implementation of customisations and upgrades to existing products and services
- Oversee the development of technical product collaterals for use by sales staff and customers
- Advise the translation of clients' needs and business requirements into possible technical requirements and solutions

Develop business opportunities

- Establish pre-sales parameters and protocols for the full portfolio of products and services
- Liaise with product management teams to define details of product and service roadmap
- Advise internal stakeholders on customers' needs, priorities and market trends
- Develop strategies to improve renewal rates of using the organisation's products and services among existing customers

Deliver pre-sales presentations and product demonstrations

- Oversee delivery of proposals, presentations, trainings and product demonstrations to customers
- Advise the team on narrative and message framing of presentations on solution recommendations
- Articulate projected benefits of the products and services to the customer
- Clarify customer concerns on the products and services
- Advise on technical aspects of contracts for negotiation

Develop solution prototypes

- Oversee the diagnosis of technical issues arising from the development of prototypes
- Oversee the development of Proof-of-Concepts to establish feasibility of products and services based on the client's needs and requirements
- Outline solution objectives, technical requirements, schedules, deliverables and cost estimates
- Manage the development of prototypes in collaboration with the customer and product development teams

Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- Monitor and track the achievement of 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 and allocation of resources
- Develop learning roadmaps to support the professional development of the team

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## HEAD OF SALES

### Job Description

The Head of Sales defines, articulates and implements the organisation's vision and strategy for direct and indirect selling of products and/or services. He/She develops sales forecasts, budget and manpower plans; and focuses on executing key growth sales strategies, tactics and action plans required to achieve revenue or sales targets. He advises on the formulation of strategies to secure technical wins, as well as to increase client retention and lifetime value. He pursues key sales prospects, negotiates and constructs appropriate terms of sales. He delivers presentations and product demonstrations to clients. He designs, develops and implements operating policies.

He works in a fast-paced and dynamic environment, travels to clients' premises for sales pitches and negotiations, and attends networking events. He is familiar with client relationship management and sales tools, as well as sales operations and business practices. He knowledgeable of the trends, developments and challenges of the industry domain.

The Head of Sales is driven to achieve target and deadlines and is able to prioritise objectives and influence stakeholders towards consensus. He is able to establish a vision and strategic direction for the sales team that is aligned with business objectives, while at the same time takes into account client needs. He enjoys networking and building long-lasting relationships with clients and partners.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Account Management	5	Product Management	5
Budgeting	6	Project Management	5
Business Development	6	Sales Channel Management	5
Business Needs Analysis	5	Sales Strategy	6
Business Performance Management	5	Stakeholder Management	6
Business Negotiation	5	Strategy Planning	6
Consumer Intelligence Analysis	5		
Contract Management	5		
Customer Experience Management	5		
Data Analytics	5		
Learning and Development	6		
Manpower Planning	5		
Networking	5		
Partnership Management	5		
People and Performance Management	5		
Pricing Strategy	5		
		<b>Generic Skills &amp; Competencies (Top 5)</b>	<b>Proficiency Level</b>
		Leadership	Advanced
		Decision Making	Advanced
		Communication	Advanced
		Global Mindset	Intermediate
		Problem Solving	Advanced

**Critical Work Functions**

**Key Tasks**

Establish sales strategy

- Formulate organisational sales strategy to maximises business development and sales opportunities
- Establish sales policies and programmes that aligned with organisation's sales goals and objectives
- Define the purpose and scope of market and feasibility studies
- Recommend sales volume, product mix, market share, pricing approaches and profit objectives for products or product lines
- Evaluate sales performance against established sales forecasts and expense budgets planning

Develop business opportunities

- Provide strategic direction for development of new accounts
- Define the approach for the overall sales of products and services to new and existing accounts, and account retention
- Provide guidance for the sales team in generating proposals
- Collaborate with marketing teams to grow penetration into key markets
- Provide overall direction for market research topics based on business strategy

Convert sales opportunities  
to client accounts

- Champion the execution of sales programmes and initiatives
- Provide direction, control, and coordination for sales development activities
- Recommend changes in product portfolio, pricing structures and packaging
- Drive sales efforts with marketing function of the organisation
- Direct the implementation of organisational sales policies and procedures
- Direct advertising and sales promotion campaigns

Manage relationship with clients  
and channel partners

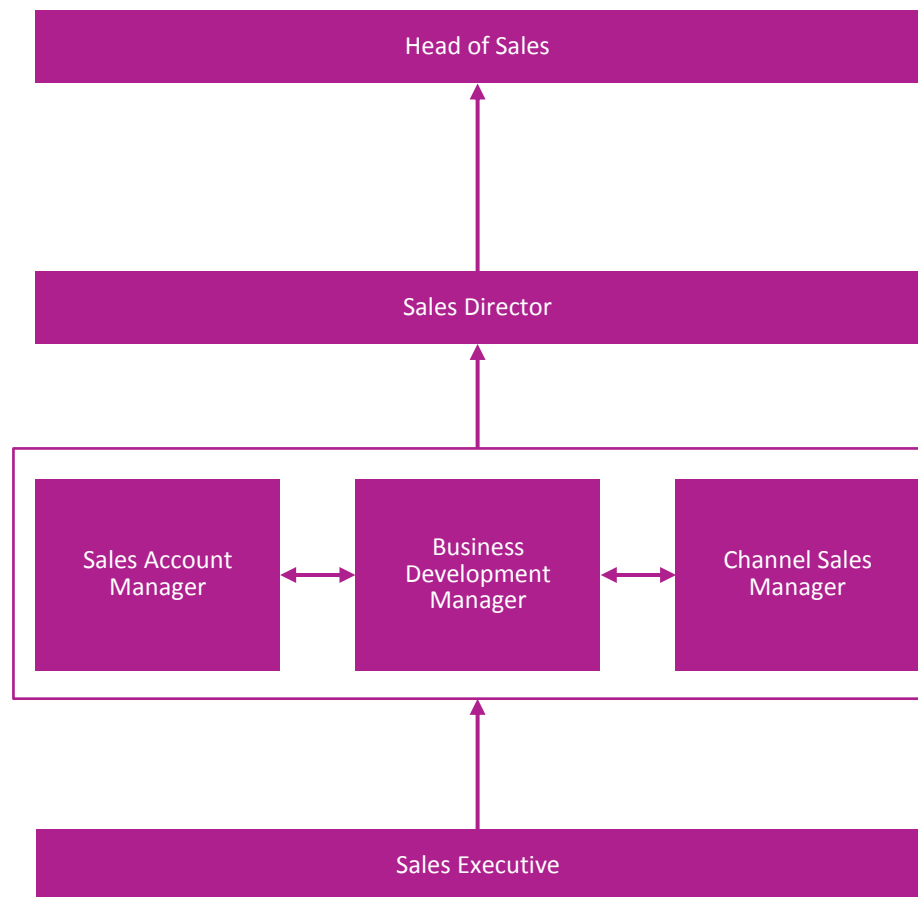
- Establish policies and standards for managing and engaging with clients and channel partners
- Oversee the development of feedback management policies, processes and standards for managing feedback
- Build long-term relationships with senior stakeholders in client organisations

Manage people and organisation

- Review operational strategies, policies and targets across teams and projects
- Develop strategies for resource planning and utilisation
- Review the utilisation of resources
- Oversee the development of learning roadmaps for teams and functions
- Establish performance indicators to benchmark effectiveness of learning and development programmes against best practices
- Implement succession planning initiatives for key management positions

Click on Sub-track names below to view feeder roles and next moves

## SALES



→ Lateral Movement

→ Vertical Progression

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## SALES ACCOUNT MANAGER

### Job Description

The Sales Account Manager acts as a key point of contact between an organisation and its clients. He/She possesses thorough product knowledge and oversees product and/or service sales. He works with customers to identify their wants and prepares reports by collecting, analysing, and summarising sales information. He contacts existing customers to discuss and give recommendations on how specific products or services can meet their needs. He maintains customer relationships to strategically place new products and drive sales for long-term growth.

He works in a fast-paced and dynamic environment, and travels frequently to clients' premises for meetings. He is familiar with client relationship management and sales tools. He is knowledgeable of the organisation's products and services, as well as trends, developments and challenges of the industry domain.

The Sales Account Manager is a resourceful, people-focused and persistent individual, who takes rejection as a personal challenge to succeed when given opportunity. He appreciates the value of long lasting relationships and prioritises efforts to build trust with existing and potential customers. He exhibits good listening skills and is able to establish rapport with customers and team members alike easily.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Account Management

4

Communication

Advanced

Budgeting

4

Interpersonal Skills

Intermediate

Business Development

4

Service Orientation

Intermediate

Business Needs Analysis

3

Decision Making

Intermediate

Business Negotiation

4

Problem Solving

Intermediate

Contract Management

4

Customer Experience Management

4

Data Analytics

3

Networking

4

Partnership Management

3

Pricing Strategy

3

Sales Strategy

4

Product Management

3

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Technical Sales Support

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### Critical Work Functions

### Key Tasks

Implement sales strategy

- Analyse sales and client data to identify market trends and estimate market demand
- Determine strategic sales targets, markets and product and/or service offerings, expected volume and profits
- Create lead generation plans to ensure a substantive sales opportunity pipeline
- Develop pricing approaches to support sales and market growth strategies
- Coordinate sales activities in line with sales strategy
- Provide trends and market feedback to senior management

Identify new sales opportunities

- Identify new sales opportunities with existing clients
- Evaluate prospect qualification analysis of leads generated by the business development team or insides sales team
- Present new products and/or services to new and existing clients
- Participate in price formulation for product and/or service
- Work with pre-sales teams and other internal stakeholders to meet client needs

Convert sales opportunities to client accounts

- Plan approach for sales opportunities
- Develop sales proposals, quotes and bid documents
- Manage the preparation of documents and materials for meetings and negotiations
- Analyse motivations and concerns of influencers and decision makers in the client organisation
- Negotiate specific terms of product and/or service offerings
- Coordinate with relevant stakeholders to finalise terms and conditions related to contracts and agreements

Manage relationship with clients  
and channel partners

- Develop engagement plans and activities to build and strengthen relationships with clients
- Engage clients regularly to uncover current and potential business concerns and needs
- Manage the resolution of client feedback and escalate to higher level when needed
- Evaluate client feedback to identify areas for improvement and recommend changes to enhance client experience
- Communicate client feedback and market sentiments to relevant internal stakeholders to enhance products and/or services



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## BUSINESS DEVELOPMENT MANAGER

### Job Description

The Business Development Manager works to improve an organisation's market position and achieve financial growth. He/She prospects new clients by networking, cold calling, advertising or other means of generating interest from potential clients. He builds key customer relationships, identifies business opportunities, negotiates and closes business deals and maintains extensive knowledge of current market conditions. He plans persuasive approaches and pitches to convince potential clients. He may manage the activities of others supporting business development.

He works in a fast-paced dynamic environment, frequently travels to clients' premises, and attends networking events. He is familiar with client relationship management and sales tools. He is knowledgeable of the organisation's products and services, as well as trends, developments and challenges of the industry domain.

The Business Development Manager is self-motivated and capable of setting clear and meaningful goals. He displays high levels of resilience when faced with challenges. He understands the consultative selling approach and is able to leverage on and support the role that marketing plays in attracting, qualifying and nurturing prospective customers. He is articulate and creative in utilising his product and customer knowledge to close deals.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Budgeting

4

Business Development

4

Business Needs Analysis

3

Business Negotiation

4

Contract Management

4

Customer Experience Management

4

Data Analytics

3

Market Research

3

Networking

4

Partnership Management

4

Sales Strategy

3

Stakeholder Management

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Technical Sales Support

3

Interpersonal Skills

Advanced

Communication

Advanced

Problem Solving

Intermediate

Service Orientation

Intermediate

Transdisciplinary Thinking

Intermediate



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**Critical Work Functions**

**Key Tasks**

Implement business development strategy

- Develop business development plans for sales team with critical success factors and targets
- Manage preparation of bid documents and proposals
- Oversee the development of campaigns, social media presence, seminars, forums, web-site content and case studies
- Oversee the development of sales tools to facilitate the selling process
- Develop long-range goals and objectives for market penetration
- Analyse business development approaches and strategies to determine their best use within the market
- Use sales tools for accurate forecasting of current and future business
- Update business development strategies in line with market and industry trends

Develop new business opportunities

- Research potential clients, existing and new markets, products and services to identify new business opportunities
- Represent the organisation at business networks and industry events
- Identify new business opportunities for growing revenue, diversifying business streams and strengthening market position
- Obtain insights from business network on developments in product and/or service offerings in relation to industry needs
- Evaluate opportunities through financial feasibility studies, risk assessment and market research to inform business development decisions
- Present business trends and its impact on new products and/or services, and distribution channels
- Report on the status of new sales activities

Manage relationship with clients  
and channel partners

- Develop engagement plans and activities to build and strengthen relationships with clients
- Engage clients regularly to uncover current and potential business concerns and needs
- Manage the resolution of client feedback and queries and escalate to higher level when needed
- Evaluate client feedback to identify areas for improvement and recommend changes to enhance client experience
- Communicate client feedback and market sentiments to relevant internal stakeholders to enhance products and/or services

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## CHANNEL SALES MANAGER

### Job Description

The Channel Sales Manager utilises strategies and tactics to win, maintain and expand relationships with channel partners. He/She works toward achieving sales, profitability, and channel partner recruitment objectives. He may represent selected number or the entire range of organisation products; develops and implements unique partner joint solutions that deliver a compelling value for target customers. He trains and educates channel sales partners about product and service offerings and features. He assesses, clarifies, and validates partner needs on an ongoing basis to ensure compliance with partner agreements and goals.

He works in a fast-paced and dynamic environment that requires visits to channel partner sales premises. He is familiar with client relationship management and sales tools, as well as marketing and promotion methods. He possesses deep product knowledge, and is knowledgeable of industry trends, developments and challenges impacting channel partners.

The Channel Sales Manager is self-motivated and service-oriented; able to effectively guide channel sales partners towards mutually beneficial priorities and objectives. He communicates product and product portfolio functionality and benefits in a simple and persuasive manner, ensuring that channel sales partners are self-sufficient.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Budgeting

4

Business Development

4

Business Needs Analysis

3

Business Negotiation

4

Contract Management

4

Data Analytics

3

Networking

4

Partnership Management

3

Pricing Strategy

3

Sales Channel Management

4

Sales Strategy

4

Stakeholder Management

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Technical Sales Support

3

Interpersonal Skills

Advanced

Managing Diversity

Intermediate

Creative Thinking

Advanced

Communication

Advanced

Service Orientation

Intermediate



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### Critical Work Functions

### Key Tasks

Implement sales strategy

- Define channel sales targets and objectives
- Forecast sales pipeline of various sales channels
- Manage the development, management and execution of go-to-market strategies
- Develop pricing approaches to support sales and market growth strategies
- Present managements reports on sales pipeline, revenue and performance
- Articulate competitive advantage of products and/or services to channel partners

Establish channel sales partnerships

- Oversee the evaluation and recruitment of channel partners
- Facilitate agreement on mutual performance objectives, financial targets, and critical milestones with channel partners
- Manage partnership agreements, order and contracting documentation
- Communicate established sales processes to channel partners for compliance

Manage relationship with clients  
and channel partners

- Develop engagement plans and activities to build and strengthen relationships with channel partners
- Engage partners regularly to uncover current and potential business concerns and needs
- Resolve issues and conflicts with channel partners and escalate to higher level when needed
- Evaluate feedback from channel partners to identify areas for improvement and recommend changes
- Communicate channel partner feedback and market sentiments to relevant internal stakeholders to enhance products and/or services

Manage channel sales operations

- Drive the achievement of sales targets and strategic objectives
- Manage marketing and promotional packages for various sales channel
- Manage internal sales logistics required to close orders
- Negotiate contracts with channel partners to yield mutual benefits
- Prepare management reports on channel partner sales performance
- Facilitate training and certification of channel partners
- Guide on boarding of channel partners
- Recommend co-marketing activities with channel partners

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## SALES DIRECTOR

### Job Description

The Sales Director determines sales targets, markets and product offering. He/She focuses on revenue target setting accountability, sales strategy and career development of others, liaising with professional staff and other managers on the medium- to long-term sales planning. He develops, communicates and implements the operational strategy, regularly leads important sales initiatives and has ultimate accountability for the sales function. He oversees the preparation and presentation of technical proposals and ensures that the complete plans are feasible within cost, time, and environmental constraints. He drives product differentiation and optimises the use of resources, evaluates partnership effectiveness, and advises on corrective action. He solves complex problems and adopts new perspectives to drive sales.

He works in a fast-paced and dynamic environment, and travels to clients' premises for sales pitches and negotiations. He is familiar with client relationship management and sales tools, as well as sales operations and business practices. He knowledgeable of the trends, developments and challenges of the industry domain.

The Sales Director is creative and self-motivated, and is dedicated to growing the business. He contributes his expertise to product development and brainstorming of marketing campaigns, as needed. He is a competent decision maker who exhibits flexibility amidst a rapidly changing environment. He strives to train talent and build successful teams.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Account Management

4

Budgeting

5

Business Development

5

Business Needs Analysis

5

Business Performance Management

4

Business Negotiation

4

Contract Management

4

Customer Experience Management

4

Data Analytics

4

Learning and Development

5

Manpower Planning

4

Market Research

4

Networking

4

Partnership Management

4

People and Performance Management

4

Pricing Strategy

4

Product Management

4

Project Management

4

Sales Channel Management

5

Sales Strategy

5

Stakeholder Management

5

Strategy Implementation

4

Strategy Planning

4

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Leadership

Advanced

Interpersonal Skills

Advanced

Decision Making

Advanced

Communication

Advanced

Problem Solving

Intermediate

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### Critical Work Functions

### Key Tasks

Establish sales strategy

- Develop long-range goals and objectives for market growth and penetration
- Analyse business development approaches and strategies to determine best use within the market
- Forecast current and future business based on market research and analysis of data from sales tools
- Formulate pricing structure and strategies
- Review sales and business development strategies to ensure relevance with market and industry trends
- Develop the unique selling propositions and differentiators based on market and competitor knowledge

Establish channel sales partnerships

- Establish relationships with new channel partners
- Manage important and strategic channels partners
- Review content of legal agreements with channel partners
- Drive compliance with established channel sales processes
- Negotiate partnership agreements

Manage relationship with clients  
and channel partners

- Lead the development of engagement initiatives and programmes to build and strengthen relationships
- Develop policies and processes for feedback management
- Engage strategic and high value accounts periodically
- Drive servicing of accounts
- Provide technical knowledge to sales teams and clients
- Influence senior stakeholders in client organisations to close deals
- Manage escalated issues and conflicts with clients and channel partners

Manage channel sales operations

- Establish incentive programmes to drive the achievement of sales targets and strategic objectives
- Endorse marketing and promotional packages and co-marketing activities with channel partners
- Manage internal resources and logistics to close sales
- Lead negotiations of contracts with channel partners
- Establish on boarding guidelines and protocols for channel partners
- Establish mechanisms and processes to assess, clarify and validate partner needs
- Coordinate efforts to meet partner performance objectives and expectations
- Deliver management reports on channel partner sales performance

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

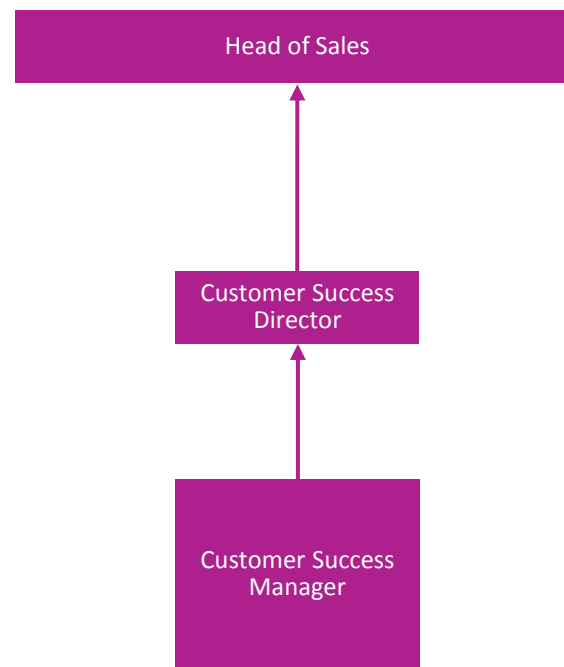
Click on Sub-track names below to view feeder roles and next moves

## CUSTOMER SUCCESS

Head of Sales

Customer Success Director

Customer Success Manager



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## CUSTOMER SUCCESS MANAGER

### Job Description

The Customer Success Manager is responsible for driving client satisfaction, increasing retention and lifetime value for the business. He/She ensures the clients derive optimal value from the use of products and services. He develops programmes to onboard the clients and manages the entire onboarding process, determining key milestones with clients and celebrating achievement of milestones. He engages the clients to gain insights on usage and satisfaction with the organisation's products and services, formulates plans to address challenges for the clients, and helps the clients derive greater value. He analyses client data to enhance the client experience and satisfaction, and at the same time identifies opportunities for up-selling and cross-selling.

He works in a fast-paced and dynamic environment, and visits clients' premises as and when required. He is familiar with client relationship management and sales tools, as well as customer service frameworks and practices. He is knowledgeable of best practices pertaining to the use of the organisation's products and services, and the clients' industry and business needs.

The Customer Success Manager possesses strong analytical and problem solving skills. He is able to build and sustain relationships with clients, and is seen as a trusted advisor. He is a creative thinker, patient and client-oriented.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level	Generic Skills & Competencies (Top 5)	Proficiency Level
Account Management	3	Service Orientation	Advanced
Budgeting	3	Communication	Intermediate
Business Needs Analysis	3	Interpersonal Skills	Intermediate
Business Performance Management	3	Problem Solving	Intermediate
Customer Experience Management	2,3	Sense Making	Intermediate
Networking	4		
Product Management	3		
Problem Management	3		
Project Management	4		
Stakeholder Management	4		
Strategy Implementation	3		





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**Critical Work Functions**

**Key Tasks**

Implement customer success strategy

- Design initiatives and programs to drive client satisfaction, retention and lifetime value
- Develop service level agreements with various functions to facilitate implementation, feedback and collaboration
- Analyse operating landscape, technology developments, and client feedback to derive insights
- Determine key performance indicators and goals to measure progress and achievement of client success

Onboard new customers

- Manage the client onboarding process and provide recommendations to improve the process
- Determine objectives and success measures of the onboarding process with the client
- Design and manage delivery of client onboarding programmes
- Engage clients throughout the onboarding process to identify and address concerns, provide support, obtain feedback and understand client needs
- Evaluate success of the client onboarding process and celebrate wins

Optimise derivable value of products  
and services for customers

- Conduct reviews on usage of and satisfaction with products and services to determine opportunities for optimising value for the client
- Formulate solutions to address challenges, under-utilisation, and improve utilisation of solutions to deliver greater value to clients
- Create client success case studies and educational resources for internal teams and clients
- Conduct sharing sessions with clients on industry best practices
- Analyse client data to improve client experience, engagement and satisfaction with the organisation's products and services
- Engage clients to understand their business challenges and variables that may impact future growth and performance
- Direct technical issues of products and services to relevant technical teams for resolution

Increase customer lifetime value

- Identify opportunities for upselling and cross-selling of products and services based on analysis of the client's business strategy, needs and maturity of technology
- Provide inputs to conceptualise new products and services and increase the value of existing products and services
- Provide inputs to the sales team on securing renewal of contracts and additions to existing contracts
- Manage the renewal sales cycle and pipeline

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## CUSTOMER SUCCESS DIRECTOR

### Job Description

The Customer Success Director is responsible for establishing strategies to drive customer satisfaction to increase retention and lifetime value for the organisation. He/She defines critical success factors for the team and provides advice on the development of client onboarding, engagement initiatives and programs to ensure successful adoption of solutions and realisation of optimal value for the client. He oversees the development of educational resources and case studies, as well as recommendations and action plans to address challenges faced by the client. He leverages relationships with clients to drive opportunities for new business developments and up-selling and cross-selling.

He works in a fast-paced and dynamic environment, and visits clients' premises as and when required. He is familiar with client relationship management and sales tools, as well as customer service frameworks and practices. He is knowledgeable of best practices pertaining to the use of the organisation's products and services, and the client's industry and business needs.

The Customer Success Director is highly analytical and forward thinking. He keeps abreast of market development and trends including technology disruptions, legislative and regulatory changes. He possesses strong interpersonal and leadership capabilities to influence key stakeholders and develop team members.

**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Account Management

4

Leadership

Advanced

Budgeting

4

Service Orientation

Advanced

Business Needs Analysis

4

Problem Solving

Advanced

Business Performance Management

4

Resource Management

Advanced

Customer Experience Management

4

Teamwork

Advanced

Learning and Development

4

Manpower Planning

4

Networking

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People and Performance Management

4

Problem Management

4

Product Management

4

Project Management

5

Stakeholder Management

5

Strategy Implementation

4

Strategy Planning

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### Critical Work Functions

### Key Tasks

Establish customer success strategy

- Establish strategies to drive client satisfaction, retention and lifetime value for the organisation
- Guide the formulation of policies and procedures to foster collaboration with different functions along with sales and product development cycle
- Oversee client profiling and segmentation
- Synthesise insights from analysis of the operating landscape, technology developments, and client feedback to inform strategy development
- Define critical success factors to measure and assess client success

Onboard new customers

- Lead the development and enhancement of client onboarding processes based on industry best practices
- Advise on the design of onboarding programs and client experience based on client profiles
- Formulate frameworks to measure the effectiveness and success of client onboarding

Optimise derivable value of products  
and services for customers

- Synthesise insights on user behaviour, challenges and client business outcomes to identify driving factors impacting the successful adoption of products and services
- Advise on the formulation of recommendations and action plans for clients to obtain greater value from products, services and their relationship with the organisation
- Determine purpose of case studies and its key message to guide narrative, framing and creation of case study content
- Define key themes for the development of educational resources based on emerging trends and developments impacting clients
- Foster collaboration with internal teams to address gaps and improve client satisfaction
- Design engagement approaches to derive insights on clients' business challenges and variables that may impact future growth and performance

Increase customer lifetime value

- Leverage relationships with business decision makers and influencers to identify new business opportunities
- Partner with sales and marketing teams to develop materials and campaigns for up-selling and cross-selling
- Lead the development of approaches and plans to increase opportunities for up-selling and cross-selling

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

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## MARKETING



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## MARKETING EXECUTIVE

### Job Description

The Marketing Executive supports the administrative and logistical needs for implementing IMC programs and trade events. He/She ensures that all content across platforms is updated, supports partnership marketing by identifying potential partners and managing partner relationships. He conducts market research, gathers client insights, collects and organises feedback from product testing for new marketing, product and/or service ideas.

He works in a fluid and collaborative environment. He supports the basic intent of increasing brand awareness and improving products and services.

He is innovative, digitally-savvy, resourceful and analytical to spot opportunities for new ideas and test concepts. He is a team player and is able to work under pressure within tight deadlines.

**Critical Work Functions and Key Tasks**

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Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Brand Management

3

Business Environment Analysis

2

Content Management

2

Consumer Intelligence Analysis

2

Customer Behaviour Analysis

2

Contract Management

3

Design Concepts Generation

3

Customer Experience Management

2

Data Analytics

2

Design Concepts Generation

3

Emerging Technology Synthesis

3

Integrated Marketing

3

Market Trend Analysis

2

Marketing Campaign Management

3

Marketing Communications Plan Development

2

Marketing Mix Management

2

Marketing Strategy

4

Media Platforms Management

2

Media Strategy Development

2

Market Research

3

Partnership Management

3

Pricing Strategy

3

Project Management

3

Stakeholder Management

2

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Creative Thinking

Intermediate

Digital Literacy

Advanced

Communication

Intermediate

Service Orientation

Basic

Interpersonal Skills

Intermediate

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### Critical Work Functions

### Key Tasks

Formulate data-driven market and client insights

- Conduct market research on trends, competitor's product positioning, placement and pricing strategies
- Identify information needs requiring data-mining and analysis to derive market and client insights
- Analyse market research findings, sales data and digital marketing dashboards to derive market insights
- Analyse data obtained on clients' buying behaviours, motivation, attitudes, preferences and needs to derive client insights
- Analyse data from digital marketing dashboards
- Develop client insights, and market and competitor analysis reports
- Propose new marketing ideas and approaches based on client insights derived from market analysis

Manage integrated marketing communications (IMC) programme

- Participate in the conceptualisation and design development of IMC campaigns for the business and/or specific lines of product and service
- Identify target client profile segments, market segments and potential marketing mix for IMC campaign
- Identify possible traditional and digital media channels and platforms for IMC campaign
- Coordinate with design teams to develop IMC campaign concept design elements and materials for traditional and digital media channels
- Support the administrative and logistical needs for implementing IMC campaigns and trade events
- Consolidate performance data of IMC campaigns
- Monitor implementation of IMC campaigns against planned timeline
- Update marketing and communications content on various media and platforms
- Identify emerging technologies for potential adoption for IMC campaign and activities

Manage partnership marketing

- Identify sales and profit by market segment
- Identify potential partners within a target segment to conduct partnership marketing
- Determine partner motivations and key drivers for collaboration
- Manage expectations and performance of partners
- Resolve conflicts and disputes that arise from partnerships or contracts

Advise on product development and enhancement

- Collaborate with technology teams to ideate commercially viable products
- Coordinate with the industry partners to conduct testing of new or enhanced products to obtain feedback
- Collect and organise feedback from product testing for analysis

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## MARKETING MANAGER

### Job Description

The Marketing Manager contributes to the realisation of the organisation's business strategies by driving its marketing and integrated marketing communications (IMC) strategy, developing go-to-market product positioning strategy, generating data-driven insights and monitoring budgets. He/She develops roadmaps for new or enhanced products and services, determines product pricing and is responsible for the development and curation of offline and digital content for accuracy and relevancy. He analyses effectiveness and return on investment from partnership marketing to determine renewal of partnerships.

He works in a fast-paced, dynamic and digitally-centric environment where he is expected to lead the development of appealing marketing concepts to promote the organisation and its products.

He is an innovative, energetic, collaborative and highly adaptable team leader. He is digitally-savvy and possesses a strong business acumen, strong interpersonal skills and a high level of initiative.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Brand Management

4

Market Trend Analysis

3

Budgeting

3

Marketing Campaign Management

4

Business Environment Analysis

3

Marketing Communications Plan Development

3

Business Performance Management

3

Marketing Mix Management

3

Consumer Intelligence Analysis

3

Marketing Strategy

5

Content Management

3,4

Media Platforms Management

3

Content Strategy

4

Media Strategy Development

3

Contract Management

4

Partnership Management

4

Customer Behaviour Analysis

3

Pricing Strategy

4

Customer Experience Management

3

Project Management

4

Data Analytics

3

Stakeholder Management

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Design Concepts Generation

4

Emerging Technology Synthesis

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Integrated Marketing

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Market Research

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**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Generic Skills & Competencies (Top 5)

### Proficiency Level

Service Orientation

Intermediate

Digital Literacy

Advanced

Creative Thinking

Intermediate

Communication

Intermediate

Interpersonal Skills

Intermediate





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Critical Work Functions

Key Tasks

Establish an integrated marketing communications (IMC) strategy

- Develop IMC plans for the organisation's products and services
- Develop go-to-market product positioning strategy and roadmaps for new and/or enhanced products and services
- Determine product pricing and packaging strategies
- Analyse market segments to develop new target customers
- Provide suggestions to enhance marketing strategy
- Determine targets of key performance measures to evaluate effectiveness of IMC strategies and plans
- Develop budgets for IMC programmes and activities

Formulate data-driven market and client insights

- Determine market and competitor research objectives, approaches and tools
- Determine implications on the business and marketing activities from market, competitor and client insights
- Provide feedback to the team on conducting researching and formulating insights
- Review functionalities of digital marketing dashboards to improve quality and type of data obtained
- Ensure the application of data-driven insights to guide the development of marketing plans and activities
- Develop recommendations to generate and/or increase demand of products based on market and client insights
- Evaluate viability of changes and/or new ideas to marketing efforts

Manage integrated marketing communications (IMC) programmes

- Manage IMC programme concept development for the business and/or specific lines of product and service
- Determine key messaging and framing, and marketing mix for IMC programmes
- Develop an IMC programme plans for the business and/or specific lines of product and service
- Develop a media plan detailing media and platform requirements for IMC programme implementation
- Manage the development and curation of offline and digital content and collaterals for IMC programmes
- Ensure consistency of IMC programme concept design, key messaging and experience across various traditional and digital media platforms
- Oversee the implementation of IMC programmes and its activities
- Manage marketing and communications content for accuracy and relevancy
- Evaluate performance of IMC programmes based on programme targets to identify areas of improvement

Manage partnership marketing

- Develop relationships with partners to leverage partner network and reach to support marketing objectives
- Determine growth opportunities across target segments and implications on partnerships
- Evaluate suitability of partners for partnership marketing programmes
- Negotiate contract details with partners for partnership marketing programmes
- Analyse effectiveness and return on investment from partnership marketing to determine renewal of partnerships
- Develop initiatives to drive engagement with target profiles and improve client experience

Advise on product development and enhancement

- Participate in the conduct of product feasibility studies
- Plan product testing approach and activities with sales and technology teams to obtain feedback
- Analyse feedback from product testing and communicate findings to technology teams

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## MARKETING DIRECTOR

### Job Description

The Marketing Director drives the organisation's business strategy by establishing the organisation's integrated marketing communications (IMC) strategy, partnership marketing arrangements and advices on product development and enhancement. He/She provides senior management with marketing advise, develops budget and manpower plans; and focuses on executing the IMC and partnership marketing plans to achieve business results. He directs the research and data analytics to obtain market and client insights, translates client insights into products and product features with market interest or potential market demand.

He operates in a rapidly transforming business environment and functions through his understanding of consumers' insights, market trends and industry landscape to promote the organisation and increase market demand.

He is a results-oriented, astute leader who is able to negotiate strategically. He possesses strong business acumen and broad understanding of consumer, market and industry trends. He is an inspirational leader with a strong client focus to engage a variety of internal and external stakeholders.

**Critical Work Functions and Key Tasks**

[View details](#)

Click on any of the Skills and Competencies to view a detailed description

### Technical Skills & Competencies

### Proficiency Level

Brand Management	5	Market Research	4
Budgeting	4	Market Trend Analysis	4
Business Environment Analysis	4	Marketing Campaign Management	5
Business Innovation	4	Marketing Communications Plan Development	4
Business Performance Management	4	Marketing Mix Management	4
Consumer Intelligence Analysis	4	Marketing Strategy	6
Content Management	5	Media Platforms Management	4
Content Strategy	5	Media Strategy Development	4
Customer Behaviour Analysis	4	Networking	4
Customer Experience Management	4	Partnership Management	4
Data Analytics	4	Pricing Strategy	5
Design Concepts Generation	5	Project Management	5
Emerging Technology Synthesis	4	Stakeholder Management	4
Integrated Marketing	5	Strategy Implementation	4
Learning and Development	5	Strategy Planning	4
Manpower Planning	4		



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### Generic Skills & Competencies (Top 5)

### Proficiency Level

[Service Orientation](#)
**Advanced**
[Leadership](#)
**Advanced**
[Digital Literacy](#)
**Intermediate**
[Communication](#)
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[Interpersonal Skills](#)
**Advanced**


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Critical Work Functions

Key Tasks

Establish an integrated marketing communications (IMC) strategy

- Formulate the organisation's IMC strategy aligned with business objectives
- Advise on the development of IMC strategies for specific product and/or service lines
- Prioritise areas of IMC focus based on anticipated market developments, consumer trends and business needs
- Review and update IMC strategy and plans to ensure it keeps pace with emerging trends
- Advise senior management on product and service marketing
- Establish key performance measures to evaluate success of IMC strategies and plans
- Forecast budget and resource requirements

Formulate data-driven market and client insights

- Direct the application of research and data analytics to obtain market and client insights
- Establish research and analysis framework, approaches and processes to guide research and analytics activities
- Provide advice on research topics, approaches and scope to improve marketing effectiveness
- Drive implementation of new technologies for digital marketing analytics
- Advise on product strategy and pricing based on market and client insights

Manage integrated marketing communications (IMC) programmes

- Establish objectives of IMC programmes based on business needs and priorities
- Oversee systematic targeting of IMC to priority client and market segments
- Guide the planning, concept and key message development, and implementation of IMC programmes
- Guide media planning and selection of media and platforms for IMC programmes
- Endorse design of IMC programme collaterals
- Advise on the use of IMC to enhance branding for competitive positioning
- Evaluate costs to acquire and retain target clients and market segments through marketing programmes
- Establish performance measures and targets for IMC programmes

Manage partnership marketing

- Establish objectives for entering into partnership marketing arrangements
- Establish processes and guidelines for the selection of partners for partnership marketing
- Review partnership marketing contracts for approval
- Evaluate outcomes from partnership marketing arrangements against overall marketing strategy and objectives

Advise on product development and enhancement

- Establish processes for the provision of feedback to the sales and technology teams to develop and enhance products
- Translate market and client insights into products and product features with market interest or potential market demand
- Advise technology teams on product feasibility based on market and client insights

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

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**Proficiency Levels**

- Agile Coaching
- Business Agility
- Business Continuity
- Business Environment Analysis
- Business Innovation
- Business Needs Analysis
- Business Process Re-engineering
- Business Requirements Mapping

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- 4 5 6
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- 3 4 5

- Business Risk Management
- Change Management
- Crisis Management
- Demand Analysis
- Disaster Recovery Management
- Emerging Technology Synthesis
- Manpower Planning
- Portfolio Management

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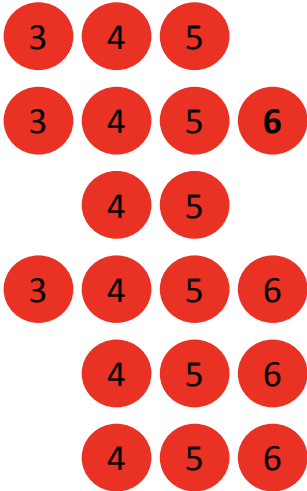
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**Proficiency Levels**

- Process Improvement and Optimisation
- Product Management
- Project Feasibility Assessment
- Project Management
- Strategy Planning
- Sustainability Management



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**Business Negotiation**

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**Data Analytics**

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**Networking**

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**Proficiency Levels**

- Data Design
- Design Thinking Practice
- Embedded Systems Integration
- Embedded Systems Interface Design
- Enterprise Architecture
- Infrastructure Design
- Organisational Design
- Security Architecture

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- 3 4 5 6
- 3 4 5
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- 4 5 6
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- 4 5 6
- 3 4 5

**Proficiency Levels**

- Software Design
- Solution Architecture
- Systems Design
- User Experience Design
- User Interface Design

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Proficiency Levels

Proficiency Levels

- Agile Software Development
- Applications Development
- Applications Integration
- Cloud Computing
- Computational Modelling
- Computer Vision Technology
- Configuration Tracking
- Continuous Integration and Continuous Deployment

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- Control System Programming
- Data Engineering
- Data Visualisation
- Embedded Systems Programming
- Failure Analysis
- Infrastructure Deployment
- Intelligent Reasoning
- Network Configuration

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Proficiency Levels

- Network Security
- Network Slicing
- Pattern Recognition Systems
- Process Validation
- Quality Assurance
- Quality Engineering
- Radio Frequency Engineering
- Research

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- Security Assessment and Testing
- Security Programme Management
- Self-Learning Systems
- Software Configuration
- Software Testing
- System Integration
- Test Planning
- Text Analytics and Processing

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Proficiency Levels

- Audit and Compliance
- Cyber Risk Management
- Data Ethics
- Data Governance
- Data Protection Management
- Data Sharing
- IT Governance
- IT Standards

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- Quality Standards
- Security Governance

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Applications Support and Enhancement	1	2	3	4	
Cyber and Data Breach Incident Management		2	3	4	5 6
Cyber Forensics		2	3	4	5 6
Data Centre Facilities Management		2	3	4	5
Data Migration			3	4	
Database Administration		2	3	4	5
Infrastructure Support	1	2	3	4	
IT Asset Management		2	3	4	

Network Administration and Maintenance	1	2	3	4	
Performance Management				4	5 6
Problem Management			3	4	5
Security Administration		2	3	4	
Security Education and Awareness			3	4	5
Threat Analysis and Defence			3	4	5 6
Threat Intelligence and Detection	2	3	4	5	6



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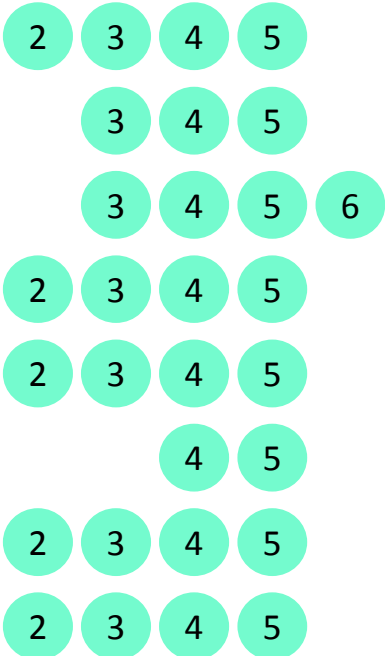
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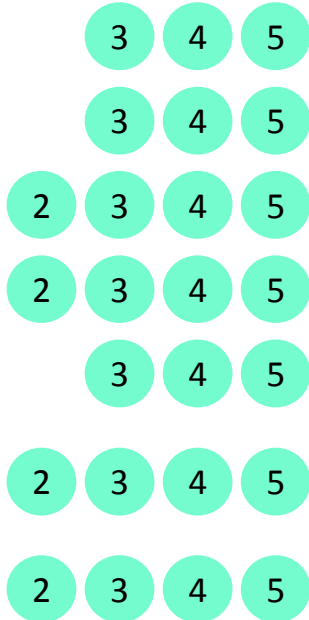
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Proficiency Levels

- Account Management
- Brand Management
- Business Development
- Consumer Intelligence Analysis
- Content Management
- Content Strategy
- Customer Behaviour Analysis
- Customer Experience Management



- Design Concepts Generation
- Integrated Marketing
- Market Research
- Market Trend Analysis
- Marketing Campaign Management
- Marketing Communications Plan Development
- Marketing Mix Management



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Marketing Strategy			4	5	6
Media Platforms Management	2	3	4	5	
Media Strategy Development	2	3	4	5	
Pricing Strategy		3	4	5	
Sales Channel Management		3	4	5	
Sales Strategy			4	5	6
Technical Sales Support	2	3	4	5	



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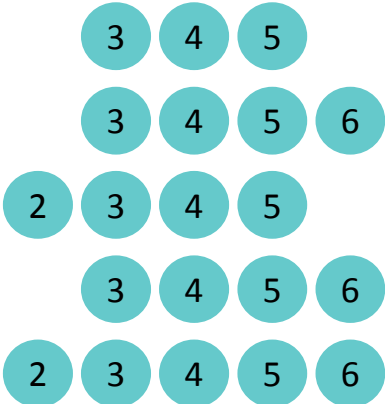
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Strategy Planning and Implementation 

- Contract Management
- Partnership Management
- Procurement
- Service Level Management
- Stakeholder Management

**Proficiency Levels**



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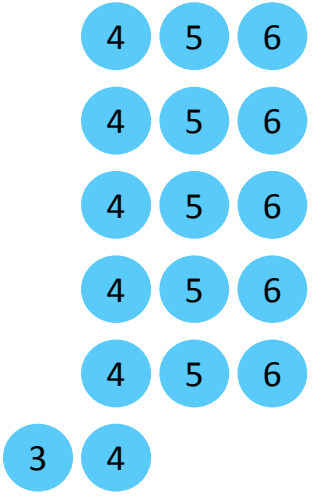
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**Proficiency Levels**

- Data Strategy
- Infrastructure Strategy
- IT Strategy
- Organisational Analysis
- Security Strategy
- Strategy Implementation



## Agile Coaching

*Formulate and implement Agile coaching frameworks, processes and standards to foster Agile mindset and practices within the organisation and develop Agile teams.*

### Proficiency Level 4

Coach teams in the conduct of Agile practices and the implementation of Agile methodologies and practices in the organisation

### Proficiency Level 5

Evaluate the effectiveness of Agile processes, standards, learning content and implementation plans to transition teams to Agile methodologies

### Proficiency Level 6

Formulate the organisation's Agile coaching and mentoring frameworks, processes and standards to drive adoption of the Agile methodologies and practices

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## Agile Software Development

*Plan and implement Agile methodology and the use of adaptive and iterative methods and techniques in the software development lifecycle to account for continuous evolution, development, and deployment to enable seamless delivery of the application to the end user.*

### Proficiency Level 3

Adopt Agile software development methodologies to develop, improve and deploy software applications

### Proficiency Level 4

Plan Agile software development processes for software applications development

### Proficiency Level 5

Lead Agile software development processes and ensure end-to-end management of processes for seamless development, deployment and delivery of software applications

### Proficiency Level 6

Establish the organisation's policies, standards and guidelines for Agile software development to drive adoption of the Agile methodologies and its practices

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## Applications Development

*Develop applications based on the design specifications; encompassing coding, testing, debugging, documenting and reviewing and/or refining it across the application development stages in accordance with defined standards for development and security. The complexity of the application may range from a basic application to a context-aware and/or augmented reality application that incorporates predictive behaviour analytics, geo-spatial capabilities and other appropriate algorithms. The technical skill includes the analysis and possibly the reuse, improvement, reconfiguration, addition or integration of existing and/or new application components.*

### Proficiency Level 3

Develop basic applications with secure features, run routine application tests, and conduct debugging to resolve errors

### Proficiency Level 4

Plan the application development process, program applications and secure features, applying suitable debugging techniques to resolve complex errors

### Proficiency Level 5

Lead large-scale or business-critical application development projects and explore the incorporation of analytics and advanced capabilities to enhance the application

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## Applications Integration

*Integrate data or functions from one application program with that of another application program - involves development of an integration plan, programming and the identification and utilisation of appropriate middleware to optimise the connectivity and performance of disparate applications across target environments.*

### Proficiency Level 3

Integrate data and functions across application programs, and perform follow up tests to verify proper functioning

### Proficiency Level 4

Oversee end-to-end process of application integration, determining suitable middleware and testing procedures and resolving issues that arise

### Proficiency Level 5

Establish a business case for application integration and introduce new middleware tools and methodologies to enable both intra- and inter-enterprise application integration

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## Audit and Compliance

*Develop compliance processes and audit strategy for the organisation to review adherence to statutory regulatory and standards. Assessment and enhancement of the thoroughness of compliance and/or governance processes and organisation's internal controls to align with changing compliance standards. This also includes the actual conduct and/or performance of audit activities.*

### Proficiency Level 3

Conduct audits, analyse results and implement changes to address identified gaps

### Proficiency Level 4

Develop and enhance compliance processes based on an evaluation of gaps in business and IT operations

### Proficiency Level 5

Establish audit and compliance strategy and objectives for the organisation, ensuring robustness of internal controls are strengthened

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## Applications Support and Enhancement

*Provide ongoing technical support and improvements to users of applications. This includes technical guidance and assistance related to the installation and maintenance of applications, fixing and resolution of application problems or disruptions, and response to change requests that will enhance the operations and usage of an application.*

### Proficiency Level 1

Perform routine installation and maintenance of applications, and collate performance statistics and user feedback on an application

### Proficiency Level 2

Install, maintain and troubleshoot commonly-encountered problems in applications and respond to simple change requests

### Proficiency Level 3

Analyse application performance statistics and user feedback, resolving bugs as required, and review application change requests

### Proficiency Level 4

Establish internal protocols for application support, and evaluate viability of application enhancements and change requests in collaboration with developers

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# Account Management

*Manage, maintain and grow the sales and relationships with a specific customer or set of accounts. This includes in-depth customer engagement, relationship-building and provision of quality solutions and service to address customers' needs efficiently and generate revenue.*

### Proficiency Level 2

Perform sales activities for assigned clients or accounts following a standard process, and execute day-to-day administrative activities for sales

### Proficiency Level 3

Engage with customers, providing solutions, gathering feedback and managing customer satisfaction for a given account

### Proficiency Level 4

Develop plans and processes to cater to various customer accounts, manage customer satisfaction and address current and projected customer needs

### Proficiency Level 5

Establish organisational direction in managing customer accounts, and develop an account management framework and customer service strategy to engage, retain and grow customers

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## Business Agility

*Organise the business, work activities and people in ways that enable the organisation to readily adapt to changes in its internal or external environment, whilst achieving desired outcomes and delivering value to customers.*

### Proficiency Level 4

Lead the implementation of operational initiatives to enhance business agility

### Proficiency Level 5

Adapt overall processes and create a working environment of business agility

### Proficiency Level 6

Establish policies that enable adaptability and foster a culture of business agility in the organisation

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## Business Continuity

*Develop internal infrastructure to ensure organisational resilience and maintenance of the availability, stability and integrity of critical systems, processes and stakeholders that support and drive key aspects of the business. This includes the planning, designing and testing contingency plans and setting up of internal systems and structures which are ready to respond to potential threats and maintain desired levels of continuity.*

### Proficiency Level 4

Implement business continuity and contingency procedures and exercises

### Proficiency Level 5

Develop business continuity plans, and direct resources to establish and maintain business continuity processes

### Proficiency Level 6

Define the optimal business continuity strategy and objectives for business continuity and contingency plans

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## Business Environment Analysis

*Analyse data pertaining to the business landscape and environment, including competitor-analysis, trends and developments in laws and regulations and the impact on the business.*

### Proficiency Level 2

Utilise a range of data sources to analyse information to derive business environmental patterns and produce reports to present findings

### Proficiency Level 3

Utilise research instruments, quantitative and qualitative data to gather information on the business environment, evaluate data to draw out meaningful inferences that impact the organisation's market positioning and provide feedback to management

### Proficiency Level 4

Monitor the influence of external and internal factors on the critical business functions, report findings and recommend responses to management

### Proficiency Level 5

Monitor business environment to assess internal and external influencing factors that may impact strategy planning and operational plans and recommend response approaches to environmental changes

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## Business Innovation

*Identify and evaluate digitisation and innovative business opportunities provided by new advancements in information and communication technology to establish new services or businesses to bridge the physical and digital worlds.*

### Proficiency Level 4

Explore opportunities for business innovation and reform, and lead the implementation of innovative business initiatives

### Proficiency Level 5

Prioritise business innovation opportunities and design digital architectures and processes to facilitate the creation of an innovative business environment

### Proficiency Level 6

Inspire a culture of business and digital innovation within and beyond the organisation

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## Business Needs Analysis

*Identify and scope business requirements and priorities through rigorous information gathering and analysis as well as clarification of the solutions, initiatives and programmes to enable effective delivery. This also involves the development of a compelling and defensible business case and the articulation of the potential impact of the solution to the business.*

### Proficiency Level 2

Document business requirements and identify basic needs as well as potential solutions

### Proficiency Level 3

Elicit and analyse business requirements from key stakeholders and assess relevant solutions and their potential impact

### Proficiency Level 4

Investigate existing business processes, evaluate requirements and define the scope for recommended solutions and programmes

### Proficiency Level 5

Lead comprehensive analysis to understand underlying drivers and present a compelling business case for proposed IT solutions

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## Business Process Re-engineering

*Analyse business processes and workflows within the organisation and identification of new approaches to completely redesign business activities or optimise performance, quality and speed of services or processes. This includes the exploration of automating and streamlining processes, evaluation of associated costs and benefits of redesigning business processes, as well as the identification of the potential impact and the change management activities and resources required.*

### Proficiency Level 4

Evaluate business processes and workflows, and develop a business process re-engineering plan

### Proficiency Level 5

Establish a business process re-engineering strategy, determining the processes to be re-engineered and significantly redefining process flows

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## Business Requirements Mapping

*Map business requirements to existing processes to identify gaps or opportunities for possible solutions and evaluate impact of solutions against requirements to propose adjustments as needed.*

### Proficiency Level 3

Analyse relevant information from stakeholders and map business requirements to existing processes to identify gaps and/or opportunities

### Proficiency Level 4

Evaluate factors and ideas to identify key business requirements and objectives to be achieved. Test relevant solutions or programmes and impact of solutions and/or programmes against identified business requirements to propose adjustments

### Proficiency Level 5

Define overall strategies, objectives and priorities to underscore business requirement mapping activities and assess alignment between solutions, requirements and eventual outcomes

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## Business Risk Management

*Forecast and assess existing and potential IT risks which impact the operation and/or profitability to the business as well as the development and roll out company-wide strategies and processes to mitigate risks, minimise their impact or effectively manage such business risks.*

### Proficiency Level 3

Identify risks and their business impact and propose measures to manage risks

### Proficiency Level 4

Assess current and potential risks within a defined functional area, and develop risk countermeasures and contingency plans

### Proficiency Level 5

Critically evaluate, review and drive organisation-wide risk mitigation and management initiatives

### Proficiency Level 6

Anticipate emerging threats and potential risks, and define the overarching risk management strategy for the business

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## Business Negotiation

*Conduct negotiations to establish win-win outcomes for the organisation.*

### Proficiency Level 3

Apply negotiation skills and techniques and documenting negotiations

### Proficiency Level 4

Participating in negotiations

### Proficiency Level 5

Manage and direct negotiations and refining negotiation policies

### Proficiency Level 6

Direct negotiation policy and develop negotiation limits

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## Budgeting

*Preparing organisational budgets to support short- and long-term business plans through forecasting, allocation and financial policy setting.*

### Proficiency Level 3

Prepare business unit's operational budgets

### Proficiency Level 4

Manage budgeting and forecasting for annual financial and business planning within the business unit

### Proficiency Level 5

Develop long-term financial plans and budget requirements

### Proficiency Level 6

Endorse organisational financial and treasury management policies, systems, budgets and plans

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## Business Performance Management

*Implement organisational performance systems to meet business plans and objectives by establishing performance indicators, tracking progress and addressing gaps.*

### Proficiency Level 3

Monitor performance of the department

### Proficiency Level 4

Manage organisation performance systems across departments

### Proficiency Level 5

Formulate organisational performance systems and key performance indicators in alignment with organisation's vision, mission and values

### Proficiency Level 6

Establish organisational guidelines for performance systems according to organisational mission and objectives

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## Brand Management

*Co-create the organisation's projected brand and reputation with the customer, consider customer's perspectives and the organisation's desired image and priorities. This also includes the development and execution of branding campaigns, public relations and reputation management strategies to sustain or enhance the desired brand.*

### Proficiency Level 3

Deliver branding designs and execute branding and public relations campaigns and activities, incorporating customers' perspectives and responses

### Proficiency Level 4

Facilitate co-creation of a positive brand image through stakeholder programmes and interactions, and develop ideas for improving brand identity and reputation

### Proficiency Level 5

Visualise the desired user experience and lead the co-creation of branding strategy with internal and external stakeholders to develop the desired identity

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## Business Development

*Explore and establish strategic business opportunities for the organisation and translate market research and/or analysis into viable leads. This would encompass identification of new markets and potential customers, active generation and pursuit of leads and commercial opportunities, regular engagement with relevant industries to introduce and promote the organisation's IT products, services or offerings.*

### Proficiency Level 3

Conduct research on critical or emerging markets and identify potential leads

### Proficiency Level 4

Analyse insights from market intelligence data and related business functions to identify commercial opportunities and propose ways to capitalise on them

### Proficiency Level 5

Develop a business development strategy for specific markets and engage key decision makers to generate viable leads or increase scope of business with existing clients

### Proficiency Level 6

Establish an organisational business development strategy, direct expansion into new markets and lead the creation of new and significant business opportunities and relationships

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## Change Management

*Plan and systematic execution of processes to facilitate the transition of individuals, teams and organisations to a desired end state in a manner that is seamless, sustainable and aligned with business objectives. This includes the redirection of resources, business processes, finances and operating models, as well as stakeholder engagement to facilitate implementation and maximise adoption.*

### Proficiency Level 3

Apply change control procedures in work processes, assess impact of change and develop communications to prepare stakeholders for the change

### Proficiency Level 4

Recommend business activities required to integrate and roll out new changes and drive the execution of change control procedures, engaging stakeholders in the process

### Proficiency Level 5

Develop business readiness plan and direct business activities, processes and resources to facilitate changes and transitions, and plan change control procedures for IT initiatives

### Proficiency Level 6

Establish the organisation's change management strategy, define key success indicators, and inspire shared commitment to the change

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## Cloud Computing

*Implement cloud solutions to enhance business performance and security of IT systems.*

### Proficiency Level 3

Deploy cloud solutions and resolve cloud integration issues

### Proficiency Level 4

Develop plans to implement cloud solutions

### Proficiency Level 5

Evaluate the suitability of cloud solutions against organisational requirements and business needs

### Proficiency Level 6

Build actionable strategy plans and policies for the introduction and adoption of cloud solutions across the organisation

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## Computational Modelling

*Develop, select and apply algorithms and advanced computational methods to enable systems or software agents to learn, improve, adapt and produce desired outcomes or tasks. This also involves the interpretation of data, including the application of data modelling techniques to explore and address a specific issues or requirements.*

### Proficiency Level 3

Identify and utilise appropriate statistical algorithms and data models to test hypotheses and derive patterns or solutions

### Proficiency Level 4

Develop and utilise new algorithms and advanced statistical models to enable the production of desired outcomes

### Proficiency Level 5

Design advanced statistical and computational models, and spearhead the application of algorithms and modelling techniques to new domains

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## Computer Vision Technology

*Develop and deploy vision analytics algorithm and spatial sensing and/or reasoning systems.*

### Proficiency Level 4

Set-up and deploy video analytics algorithms and perform system performance evaluations

### Proficiency Level 5

Build spatial sensing and spatial reasoning systems

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## Configuration Tracking

*Track systematically and manage changes and revisions in software projects to ensure that all changes are accounted for and to protect assets against unauthorized change, diversion and inappropriate use.*

### Proficiency Level 1

Label, track and document all configuration items and changes to software projects using standard tools and templates

### Proficiency Level 2

Verify accuracy, completeness and currency of information in configuration logs and review unauthorised changes, diversions or inappropriate use of software assets

### Proficiency Level 3

Develop and update a configuration management plan, determining systems and techniques to track changes and revisions

### Proficiency Level 4

Develop policies, processes and guidelines for the organisation's configuration management and tracking

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## Continuous Integration and Continuous Deployment

*Manage the planning, building, testing and integration of codes, and deployment of software changes and updates into a live environment.*

### Proficiency Level 3

Perform continuous integration and continuous deployment (CI/CD) activities based on developed plans to build, test and deploy release packages into live environment

### Proficiency Level 4

Develop plans for continuous integration and continuous deployment (CI/CD) based on design specifications, build, test and deploy release packages into live environment

### Proficiency Level 5

Establish and advise on the organisation's continuous integration and continuous deployment (CI/CD) policies and plans, manage the build, test and deployment of packages into live environment

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## Control System Programming

*Develop capabilities in areas of communications and remote operations by programming logic circuits and erasable programmable read-only memory for ships, rigs and/or conversions.*

### Proficiency Level 2

Apply basic hardware programming techniques to build peripheral systems around the programmable logic controllers (PLC) and troubleshoot programming errors in the codes

### Proficiency Level 3

Implement hardware programming techniques to enhance functionality of equipment and systems by using appropriate process parameter measuring devices and utilising their outputs to control operations

### Proficiency Level 4

Develop programmable control systems by incorporating new technologies and linking them to operating principles of equipment and systems on-site and advise involved parties on programming techniques

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## Cyber Risk Management

*Develop cyber risk assessment and treatment techniques that can effectively pre-empt and identify significant security loopholes and weaknesses, demonstration of the business risks associated with these loopholes and provision of risk treatment and prioritisation strategies to effectively address the cyber-related risks, threats and vulnerabilities identified to ensure appropriate levels of protection, confidentiality, integrity and privacy in alignment with the security framework.*

### Proficiency Level 4

Develop cyber risk assessment techniques and roll-out endorsed measures to address identified cyber security risks, threats and vulnerabilities

### Proficiency Level 5

Assess and direct enhancements to cyber risk assessment techniques, and develop strategies to address cyber security loopholes

### Proficiency Level 6

Evaluate the readiness and robustness of the organisation's cyber security defences, and authorise cyber risk assessment activities

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## Cyber and Data Breach Incident Management

*Detect and report cyber and data-related incidents, identify affected systems and user groups, trigger alerts and announcements to relevant stakeholders and efficient resolution of the situation.*

### Proficiency Level 2

Provide real-time incident and status reporting, and identify affected systems and user groups

### Proficiency Level 3

Troubleshoot incidents, escalate alerts to relevant stakeholder, and analyse root causes and implications of incidents

### Proficiency Level 4

Develop incident management procedures and synthesise incident-related analyses to distil key insights, resolve incidents and establish mitigating and preventive solutions

### Proficiency Level 5

Formulate incident response strategies and direct teams in the remediation, resolution, communication and post-mortem of large-scale, unpredictable cyber and data incidents

### Proficiency Level 6

Drive cross-collaboration efforts to co-develop strategies to manage cyber and data incidents on an industry, national or international scale

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## Cyber Forensics

*Develop and manage digital forensic investigation and reporting plan which specifies the tools, methods, procedures and practices to be used. This includes the collection, analysis and preservation of digital evidence in line with standard procedures and reporting of findings for legal proceedings.*

### Proficiency Level 2

Scan, retrieve and preserve digital evidence from various sources, following authorised protocols

### Proficiency Level 3

Coordinate the collection and preservation of evidence and analyse forensic evidence to draw inferences

### Proficiency Level 4

Develop a digital forensic investigation plan, and integrate analysis of evidence, outlining key conclusions, insights and recommendations

### Proficiency Level 5

Establish digital forensic investigation policies and protocols for the organisation, and manage multiple investigations

### Proficiency Level 6

Define new cyber forensics tools, techniques and methodologies and lead cyber forensics investigations on an international scale

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## Consumer Intelligence Analysis

*Devise frameworks for consumer intelligence analysis to develop an understanding of customer knowledge from various customer touch points, for example, Customer Relationship Management (CRM), Point-of-Sale (POS) and e-Commerce systems.*

### Proficiency Level 2

Analyse data from CRM, point-of-sale and e-commerce systems and generate relevant customer insights

### Proficiency Level 3

Organise and synthesise findings from information collected via CRM, point-of-sale, e-commerce systems, assess customer interaction activities and provide insights for continuous improvements

### Proficiency Level 4

Determine the value in accumulated data from enterprise, CRM, point-of-sale and e-commerce systems and integrate data regarding customer interactions across all touchpoints

### Proficiency Level 5

Design the framework for consumer intelligence analysis to drive data collection efforts and set specific objectives of consumer intelligence analysis and generate derived measures

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# Content Management

*Create, curate and manage the organisation's web assets and content using appropriate systems and platforms to engage prospects and customers on the organisation's value propositions.*

## Proficiency Level 2

Assist in the maintenance and update of content management systems and participate in cross functional efforts to prepare relevant content to be posted and updated

## Proficiency Level 3

Execute content management policies and guidelines on content management and system maintenance, update, refinement and review

## Proficiency Level 4

Monitor adherence to content management policies and guidelines, address issues escalated on content management systems to ensure smooth running and develop metrics to measure performance of content management systems in achieving business goals

## Proficiency Level 5

Formulate suite of policies to govern the creation and curation of web content, scan the horizon for emerging system capabilities in the area of web content management and advise on the applicability of such offerings in answering the organisation's needs in a cost-appropriate way

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## Content Strategy

*Develop a content strategy to include the conceptualisation and mapping of digital storyboards as well as the optimisation of content delivery parameters to market the organisation's products and services.*

### Proficiency Level 4

Determine optimal content types, styles, modes and frequency of content delivery, and translate content ideas into digital storyboards

### Proficiency Level 5

Establish overall content strategy for the organisation, evaluate and align marketing content ideas with evolving trends and business goals and priorities

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## Customer Behaviour Analysis

*Devise customer behaviour analysis tools and approaches and perform analysis on information pertaining to customer behaviours.*

### Proficiency Level 2

Collect data on customer behaviours and characteristics based on established research frameworks and historical data

### Proficiency Level 3

Analyse data to develop insights pertaining to customer behaviours such as how marketing activities may be impacted to increase customer base

### Proficiency Level 4

Manage activities to carry out customer behaviour analysis and present findings and recommendations pertaining to possible changes in marketing activities to influence target consumers

### Proficiency Level 5

Establish a customer behaviour analysis model and framework and devise parameters to identify types of customer characteristics essential to make informed decisions pertaining to changes in marketing activities

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## Customer Experience Management

*Develop and implement a cohesive end-to-end customer journey and experience to engage a population of customers with changing profiles, demands and buying patterns.*

### Proficiency Level 2

Recognise customer profiles and preferences, and execute the customer engagement strategy, creating a positive customer experience through day to day interactions

### Proficiency Level 3

Analyse implications of customer profiles, requirements and buying patterns on organisation's marketing strategy, and propose customer engagement initiatives

### Proficiency Level 4

Direct the operating rhythm for customer management processes and establish key touchpoints and interactive experiences that engage customers

### Proficiency Level 5

Establish a cohesive customer journey in line with evolving customer demands, and integrate the customer experience with the organisation's strategy and brand

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## Contract Management

*Formalise contracts and/or service level agreements with providers of products and services including measure and manage supplier performance and fulfilment of agreed-upon service level agreements. This includes resolution of contractual issues and maintenance of vendor and/or provider relationships.*

### Proficiency Level 3

Prepare drafts of contracts and agreements, monitor vendor performance and resolve minor contractual issues on an operational level

### Proficiency Level 4

Review contracts and agreements and manage performance levels against agreed standards, provide feedback and investigate contractual issues

### Proficiency Level 5

Determine business viability of contracts and establish organisation's expectations of vendors, resolving any escalated performance or contractual issues

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## Crisis Management

*Develop and implement crisis management plans for organisational preparedness of disruptive events within the broader context of business continuity management.*

### Proficiency Level 3

Execute crisis management plans

### Proficiency Level 4

Manage crisis situations

### Proficiency Level 5

Direct the management of crisis situations

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## Demand Analysis

*Devise frameworks to assess market dynamics and execute analyses to uncover demand outlook of products or services.*

### Proficiency Level 3

Manage activities to carry out demand analysis and analyse market characteristics of products or services to assess its demand outlook

### Proficiency Level 4

Assess the desirability and practicality of ongoing market development realistically and undertake market development activities where appropriate

### Proficiency Level 5

Evaluate market dynamics based on market trends, formulate demand analysis framework and establish key priorities to analyse target customers in identifying opportunities to influence the market

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## Data Analytics

*Implementing data analytics within the organisation to generate business insights and intelligence through the use of statistical and computational techniques and tools, algorithms, predictive data modelling and data visualisation.*

### Proficiency Level 2

Identify underlying trends and patterns in business data using statistical and computational techniques and tools

### Proficiency Level 3

Develop, apply and evaluate algorithms, predictive data modelling and data visualisation to identify underlying trends and patterns in data

### Proficiency Level 4

Design and conduct data studies to drive organisational decisions and insights

### Proficiency Level 5

Manage and enhance organisational data science capability by refining financial and other business performance criteria and design data studies

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## Data Design

*Specify and create a data structure or database model, including the setting of various parameters or fields that can be modified to suit different structured or unstructured data requirements, the design of data flow, as well as the development of mechanisms for maintenance, storage and retrieval of data based on the business requirements.*

### Proficiency Level 3

Identify data requirements and support the design of database models, incorporating parameters, fields and mechanisms for the maintenance, storage and retrieval of data

### Proficiency Level 4

Design data models and data flow diagrams and mechanisms to optimise the flow, maintenance, storage and retrieval of data

### Proficiency Level 5

Establish a strategy for the creation of large-scale data models and structures and spearhead the implementation of database technology, architectures, software and facilities

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## Design Thinking Practice

*Manage design thinking methodologies and processes to solve specific challenges for the organisation, and guide stakeholders through the phases of inspiration, empathy, ideation and implementation.*

### Proficiency Level 3

Apply design thinking methodologies and execute design thinking processes to challenge norms and conventions in the organisation

### Proficiency Level 4

Facilitate and guide stakeholders to apply design thinking methodologies and processes for the organisation

### Proficiency Level 5

Establish effective design thinking processes, methodologies and frameworks to proliferate design thinking across the organisation

### Proficiency Level 6

Transform organisational operations, processes and systems by contextualising and incorporating design thinking processes and methodologies for the organisation

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## Data Ethics

*Apply legal and ethical principles in the collection, use, storage and disposal of data.*

### Proficiency Level 3

Apply and uphold principles of professional, legal and ethical conduct, policies and procedures in the handling of data

### Proficiency Level 4

Analyse unethical practices and apply ethical decision-making models and strategies to address ethical dilemmas and issues

### Proficiency Level 5

Formulate the organisation's code of ethics, systems and processes to ensure adherence to professional, legal and ethical requirements for data usage

### Proficiency Level 6

Drive professional, legal and ethical accountability and responsibility within and across organisations

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## Data Visualisation

*Implement contemporary techniques, dynamic visual displays with illustrative and interactive graphics to present patterns, trends, analytical insights from data or new concepts in a strategic manner for the intended audience.*

### Proficiency Level 3

Select appropriate visualisation techniques and develop dashboards to reflect data trends and findings

### Proficiency Level 4

Design data displays to present trends and finding, incorporating new and advanced visualisation techniques and analytics capabilities

### Proficiency Level 5

Establish an effective data visualisation architecture and design intelligent and adaptable displays employing optimal delivery modes, mechanisms and timings

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## Data Governance

*Develop and implement guidelines, laws, and regulations across the organisation for the handling of data at various stages in its lifecycle as well as the provision of advice on proper data handling and resolution of data breaches in a range of complex, ambiguous or multi-faceted contexts.*

### Proficiency Level 4

Implement guidelines, laws, statutes and regulations on appropriate handling of data at various stages in their lifecycle, and monitor compliance with data policies

### Proficiency Level 5

Develop organisation practices and standards for handling data throughout their lifecycle, resolve breaches, and oversee transfer of data between organisations

### Proficiency Level 6

Establish policies for data security and usage, facilitate industry consensus around data ethics, and provide expert advice on data transfer across geographies

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## Data Protection Management

*Develop and implement a Data Protection Management Programme to comply with the Personal Data Protection Act 2012.*

### Proficiency Level 3

Collect, use or disclose personal data in accordance with the organisation's Data Protection Management Programme (DPMP)

### Proficiency Level 4

Develop the organisation's Data Protection Management Programme (DPMP) in accordance with legal requirements

### Proficiency Level 5

Formulate the organisation's data protection strategy and ensure effectiveness of Data Protection Management Programme (DPMP)

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## Data Sharing

*Assess the value of data to achieve a competitive advantage and business objectives.*

### Proficiency Level 3

Conduct stock-take of the organisation's data assets

### Proficiency Level 4

Assess the value data assets to achieve organisational and business goals

### Proficiency Level 5

Evaluate the net worth of the organisation's data to achieve organisational and business goals

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## Data Centre Facilities Management

*Manage and maintain data centre resources, facilities and/or physical infrastructure to ensure smooth, stable and sustainable operations within data centres. This includes monitoring and managing energy supply requirements, availability and consumption, ensuring the necessary resources are in place to support a stable power supply and day-to-day management of data centre equipment. This involves the management of the physical environment / conditions within the data centre and implementation of security measures to safeguard the integrity of the data centre.*

### Proficiency Level 2

Maintain required performance and security levels of data centre hardware and facility systems, and conduct routine installation or decommissioning of equipment

### Proficiency Level 3

Identify ideal environmental conditions for operations and restore data centre performance against security and service level requirements

### Proficiency Level 4

Undertake capacity and resource planning for data centre facilities, and develop protocols and security guidelines in data centre management

### Proficiency Level 5

Develop a data centre facilities management plan, defining infrastructure and technical requirements, and chart future plans for capacity enhancements

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## Data Migration

*Plan and perform activities to migrate data between computer storage types or file formats.*

### Proficiency Level 3

Prepare data and perform manual or automated data migration, troubleshoot database errors faced, and validate migrated data post-migration to ensure accuracy

### Proficiency Level 4

Determine the business need for data migration and plan data migration activities, establishing guidelines and strategies to minimise impact on daily business operations

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## Database Administration

*Perform Installation, coordination and upgrading of databases and database servers, performance monitoring and troubleshooting. This includes monitoring user access to database and optimisation of database performance, planning for backup and recovery, archived data maintenance and reporting.*

### Proficiency Level 2

Conduct basic installation, configuration and upgrade of databases and servers, and perform routine data backup and recovery activities

### Proficiency Level 3

Monitor and maintain databases, and troubleshoot database errors faced, and ensure appropriate levels of user access to databases

### Proficiency Level 4

Plan for installation, configuration and upgrading of databases and oversee database maintenance, troubleshooting, back up and recovery activities

### Proficiency Level 5

Establish strategy and guidelines for database management and administration, directing processes, resources and IT investments to optimise database performance

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## Design Concepts Generation

*Build preliminary ideas on innovative design concepts and different ways to address needs and opportunities of target stakeholders.*

### Proficiency Level 3

Research and evaluate existing information that informs new concept development as well as analyse concepts in terms of their suitability for the target audience or purpose, their feasibility and their commercial potential

### Proficiency Level 4

Integrate ideas generated and create specifications to relevant parties for approval, funding or endorsement

### Proficiency Level 5

Lead teams through the idea generation processes to develop preliminary concepts as well as inspire, produce and manage the generation of creative concepts and ideas

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## Data Strategy

*Develop a robust and coherent data strategy and support architectures, policies, practices and procedures that enable the organisation to manage and utilise data in an effective manner. This includes introduction of innovative ways of organising, managing and integrating the data of the organisation to ensure their viability and ability to drive business value. It also includes the setting of information storage, sharing, handling and usage protocols to support alignment with relevant legislation and business strategies.*

### Proficiency Level 4

Develop data management structures and recommend policies, processes and tools for effective data storage, handling and utilisation

### Proficiency Level 5

Establish data management strategies to extract maximum value from information assets and support decision-making and business processes

### Proficiency Level 6

Define a coherent data strategy and spearhead new approaches to enrich, synthesise and apply data, to maximise the value of data as a critical business asset and driver

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## Data Engineering

*Develop and implement efficient and stable processes to collect, store, extract, transform, load and integrate data at various stages in the data pipeline. This also involves processing varying amounts of data from a variety of sources and preparing data in a structure that is easily access and analysed according to business requirements.*

### Proficiency Level 2

Utilise appropriate tools, systems and techniques to collect, store, extract, transform and load data according to set guidelines

### Proficiency Level 3

Implement data management processes and systems to map data sources, processes and relationships, and transform and process multiple streams of data

### Proficiency Level 4

Translate business requirements into data structures and processes to standardise data, verify data reliability and validity, store, extract, transform, load and integrate data

### Proficiency Level 5

Lead the creation of data management procedures and oversee the integration of data, ensuring optimisation of the organisation's data pipeline

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## Disaster Recovery Management

*Develop and implement internal policies, processes and arrangements to guide and enable the prompt recovery of critical IT infrastructure and systems following a crisis or disaster. This includes monitoring the efficiency and effectiveness of response to significant incidents or disruptions and reviewing the organisation's disaster recovery plan and processes.*

### Proficiency Level 4

Identify and implement recovery solutions to support disaster recovery strategies

### Proficiency Level 5

Design a disaster recovery plan and review recommendations for alternate solutions and recovery or back up procedures

### Proficiency Level 6

Anticipate future needs of the organisation's IT infrastructure, and apply relevant global standards to the organisation's disaster recovery strategy, policies and guidelines

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## Embedded Systems Integration

*Implement control systems to perform pre-defined tasks and also real-time monitoring for the real world.*

### Proficiency Level 3

Model, operate and integrate a variety of sensors and actuators for real world applications

### Proficiency Level 4

Design and develop embedded system processes for the interfacing of embedded systems to the real world

### Proficiency Level 5

Lead the evaluation of the performance of embedded systems against specified requirements and user expectations

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## Embedded Systems Interface Design

*Design and set up interface and interconnections from or among sensors, through a network, to a main location, to enable transmission of information.*

### Proficiency Level 4

Design physical layouts reflecting connections among sensors, networks and data collection or transmitting systems, and test and fine tune them

### Proficiency Level 5

Guide the design of sensor networks and the associated embedded systems interfaces, and verify the viability of the designed interfaces

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## Enterprise Architecture

*Operationalise a business strategy on the planning and development of business structures and models to facilitate the evolution of a business to its desired future state. This involves the review and prioritisation of market trends, evaluation of alternative strategies, as well as the strategic evaluation and utilisation of enterprise capability and technology to support business requirements.*

### Proficiency Level 4

Articulate impact of trends and alternative strategies on enterprise architecture, and develop action plans to support the transition to the desired future state

### Proficiency Level 5

Design business architecture blueprint and frameworks to achieve the desired future state, and attain enterprise resources to facilitate the transition

### Proficiency Level 6

Envision and lead the development of a future-ready enterprise architecture, and strategically manage resources and capabilities to sustain the evolution of the business

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## Embedded Systems Programming

*Program an embedded system using permitted programming interfaces provided by the system to support creation of devices that do not operate on traditional operating systems.*

### Proficiency Level 4

Develop software applications and drivers to run in embedded systems, including rapid prototyping as well as the implementation of embedded software or firmware

### Proficiency Level 5

Plan end to end process of incorporating embedded systems in hardware and devices, validating and optimising embedded software systems in different application areas

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## Emerging Technology Synthesis

*Monitor and integrate emerging technology trends and developments, structured data gathering for the identification of new and emerging technological products, services and techniques. In addition, the performance of cost-benefit analysis and evaluation of their relevance, viability, sustainability and potential value add to the business.*

### Proficiency Level 3

Conduct research and identify opportunities for new and emerging technology to support the business

### Proficiency Level 4

Evaluate new and emerging technology and trends against the organisational needs and processes

### Proficiency Level 5

Establish internal structures and processes to guide the exploration, integration and evaluation of new technologies

### Proficiency Level 6

Establish an emerging technology strategy and spearhead organisational norms to synthesise and leverage new technologies and trends to propel business growth

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## Failure Analysis

*Examine the electrical and physical defects evidence to verify the causes of failure as well as identify the failure modes.*

### Proficiency Level 3

Implement failure analysis to determine if defect is caused by electrical or physical failure

### Proficiency Level 4

Review failure analysis results and implement changes that limit and/or eliminate the causes of failure

### Proficiency Level 5

Initiate failure analysis projects to improve organisation's objectives

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## Infrastructure Deployment

*Set up, deploy and decommission infrastructure components and associated equipment in accordance to a set plan and established safety and/or quality procedures. This includes the assessment and preparation of appropriate site locations, infrastructure, the development of an installation plan, layout at the site, the testing of on-site systems, infrastructure components, equipment and the correction of issues and/or malfunctions.*

### Proficiency Level 1

Set up and remove basic infrastructure and associated equipment, and run basic tests on the on-site systems, infrastructure components and equipment

### Proficiency Level 2

Deploy, deactivate and decommission infrastructure components, verify performance through installation tests, and resolve basic infrastructure deployment issues

### Proficiency Level 3

Detail an infrastructure installation and testing plan for suitable site locations, resolving infrastructure malfunctions where required

### Proficiency Level 4

Lead large-scale installation projects, involving deployment, decommissioning and coordination of multiple hardware and software deployment plans

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## Intelligent Reasoning

*Design and build intelligent machine reasoning systems that can integrate, make sense of, and act upon heterogeneous sensory information sources, using domain knowledge accumulated in respective industries.*

### Proficiency Level 4

Build knowledge-based intelligent software applications using machine reasoning techniques and computer programming

### Proficiency Level 5

Evaluate, design and build intelligent software systems

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## Integrated Marketing

*Develop and execute a marketing plan on and across various channels and platforms as well as the tracking of customers' response and effectiveness to marketing communications on these channels. This also includes the integration of traditional and digital marketing channels and techniques where applicable.*

### Proficiency Level 3

Assess and propose suitable marketing channels and platforms, developing a marketing plan for specific channels

### Proficiency Level 4

Select marketing channel mix that best satisfies target markets, recommending steps to integrate traditional and digital marketing

### Proficiency Level 5

Develop an integrated marketing strategy combining traditional and digital marketing approaches, and incorporating relevant marketing trends, techniques and technologies

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## Infrastructure Strategy

*Develop a robust strategy and plan for defining and managing a future-ready IT infrastructure, optimising its capacity, availability and synchronisation to enable an organisation's business operations. This involves evaluating infrastructure models and options for infrastructure components, managing infrastructure investments and facilitating the transformation toward the desired future infrastructure model.*

### Proficiency Level 4

Support the development of and implement a strategic IT infrastructure plan, overseeing and synchronising the performance of infrastructure elements

### Proficiency Level 5

Develop a robust infrastructure plan and model that is aligned and adaptable to internal business priorities and external trends

### Proficiency Level 6

Establish a future-ready infrastructure strategy, spearheading infrastructure change and transformation to the desired future state

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## IT Strategy

*Plan, develop and communicate effective inward- and outward-facing IT strategies, solutions and action plans, driven by environment scanning and assessment of the business' future needs and long-term strategic direction. This involves devising internal management strategies and models to support and sustain IT transformations and alignment of IT investments and programmes with the strategy to optimise the business value from IT.*

### Proficiency Level 4

Generate insights to support strategic plans, systems and guidelines for IT, and evaluate the potential costs and value of new IT programmes

### Proficiency Level 5

Create an IT strategy, and develop transformation initiatives to meet business requirements and support the modernisation of the IT landscape

### Proficiency Level 6

Establish future vision and key priorities for the IT organisation based on a projection of industry trends and developments

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## IT Governance

*Set and monitor IT infrastructure, information, digital services and associated technology. This involves developing policies and practices to govern the organisation's approach toward handling and using IT products and services in order to ensure conformance with regulations and accountability in decision making in alignment with the business strategic plans and service standards.*

### Proficiency Level 4

Develop and implement standard operating procedures based on IT policies and practices, ensuring compliance with standards and regulations

### Proficiency Level 5

Develop policies and practices to govern the handling and usage of IT products and services and facilitate communications with governing authorities

### Proficiency Level 6

Establish the IT governance strategy and structure to guide policies and practices, and facilitate industry-wide conversations around technology governance and standards

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## IT Standards

*Develop and review of standard operating procedures as well as service expectations for IT-related activities and processes. This includes the provision of clear guidelines for the organisation to carry out IT-related tasks in a manner that is effective, efficient and consistent with the IT service standards and quality standards of the organisation.*

### Proficiency Level 4

Review current practices of performing IT-related activities, and propose revisions to service standards and protocols

### Proficiency Level 5

Set guidelines for IT-related activities in alignment with relevant service, quality and global industry standards

### Proficiency Level 6

Inspire enhancements and redefine IT standards, in line with the evolving landscape and their impact on service expectations

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## Infrastructure Support

*Provide services to end users by systematically identifying, classifying and troubleshooting technical issues and incidents that disrupt and impact their day-to-day business activities, within a specified timeframe. This also includes implementing an end-to-end problem management process to analyse underlying problems, advising on infrastructure related upgrades and improvements and developing user guides and training materials.*

### Proficiency Level 1

Follow a fixed set of procedures to execute basic infrastructure administration and support

### Proficiency Level 2

Analyse issues or incidents encountered by users and conduct troubleshooting, and roll out upgrades

### Proficiency Level 3

Diagnose, troubleshoot and provide end-to-end management of infrastructure disruptions or technical issues encountered by users, and plan infrastructure upgrade activities

### Proficiency Level 4

Develop plans and retain accountability for maximising service quality, speed and availability in infrastructure administration and support activities

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## IT Asset Management

*Manage, optimise and protect the organisation's IT assets. This includes the timely purchase, deployment, categorisation, maintenance and phase out of IT assets within the organisation in a way that optimises business value. Also includes development and implementation of procedures to guide the proper handling, usage and storage of IT assets to limit potential business or legal risks.*

### Proficiency Level 2

Procure and categorise IT assets across different lifecycle stages, and monitor IT asset levels regularly

### Proficiency Level 3

Determine the IT assets to be procured and guidelines for proper handling, storage and maintenance, and manage the phase-in and phase-out of IT assets

### Proficiency Level 4

Integrate understanding of future IT asset requirements and policy changes to define an asset management plan that optimises business value and minimise risk

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## Infrastructure Design

*Establish design policies and principles covering elements of connectivity, capacity, security, access, interfacing as well as the translation of that into the specifications, outline and design of IT infrastructure within the organisation, in order to support the business requirements.*

### Proficiency Level 3

Translate a broader infrastructure blueprint into technical specifications and develop prototypes for simple infrastructure components

### Proficiency Level 4

Define and deliver technical and conceptual visualisation of IT infrastructure components and features

### Proficiency Level 5

Project infrastructure requirements and define IT infrastructure design policies and principles, evaluating the viability and managing the impact of design options

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## Learning and Development

*Manage employees' learning and development activities to maximise employee' potential and capabilities to contribute to the organisation.*

### Proficiency Level 4

Support employees to develop their skills and facilitate learning opportunities and coaching junior management employees

### Proficiency Level 5

Drive employee developmental programmes in alignment to business needs

### Proficiency Level 6

Mentor successors, support organisational learning and develop and engage employees to develop a strong organisational base

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## Market Research

*Plan and conduct marketing and digital research and analysis to uncover market, customer and competitor trends in order to extract useful business insights. This also includes the evaluation of marketing activity effectiveness and development of ways to optimise marketing efforts.*

### Proficiency Level 2

Conduct research and gather data on customers and competitors, to support the analysis of product performance, market trends and marketing effectiveness

### Proficiency Level 3

Plan market, competitor and customer research activities and analyse trends and dynamics through information gathered

### Proficiency Level 4

Direct market research and analytics activities and processes to optimise the quantity and quality of responses and business insights

### Proficiency Level 5

Define critical business questions, establish new ways to optimise digital data and present insights from marketing and digital research to senior management

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## Market Trend Analysis

*Devise the framework, manage and conduct the situational analysis process to uncover market trends and industry developments to identify new opportunities.*

### Proficiency Level 2

Collect data by conducting research, support the analysis of market trends and developments and prepare research documentation

### Proficiency Level 3

Analyse information on market trends and industry developments, interpret future potential demands and produce reports to present findings

### Proficiency Level 4

Manage activities to carry out situational analysis, develop business proposals for new opportunities and recommend directions for production or adaptation of current products or services through inferences from findings

### Proficiency Level 5

Develop situational analysis frameworks to obtain market information and prioritise analyses on latest market trends

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## Media Platforms Management

*Drive organisational policies and procedures for media use as well as develop and implement media plans in business while evaluating their effectiveness.*

### Proficiency Level 2

Collate information on types of media and support implementation of media platform plans and activities

### Proficiency Level 3

Monitor various media platform options and propose appropriate social media platforms and tools for achieving communication objectives

### Proficiency Level 4

Manage development of media plan frameworks, contents and integration of media platforms to achieve business strategies

### Proficiency Level 5

Drive organisational policies and procedures for media use and establish guidelines and metrics for audience engagement to measure success of media activities

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# Media Strategy Development

*Develop, execute and evaluate media strategies and plans to assess impact of media advertising across channels in relation to target customers.*

### Proficiency Level 2

Collect past media performance and information to assist in refining media planning strategies

### Proficiency Level 3

Conduct media plans activities within allocated budgets and timelines

### Proficiency Level 4

Create media plans which define media requirements of the advertising briefs and manage budget allocation per medium per advertising period across channels

### Proficiency Level 5

Develop a strategy to select media vehicles that meet creative and frequency requirements of the advertising messages to be achieved within agreed timelines and budgets

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## Marketing Mix Management

*Establish marketing mix frameworks which include development of products, prices, places and promotions as well as, identify levels of customer touch-points.*

### Proficiency Level 2

Collect relevant information on marketing mix components and carry out consumer research

### Proficiency Level 3

Evaluate the effect of components within the marketing mix, establish their relative importance to the target customers and provide recommendations to desired response to achieve organisation's objectives

### Proficiency Level 4

Evaluate, review and adjust marketing mix against marketing performance and identify marketing mix that satisfies target customers

### Proficiency Level 5

Drive marketing mix strategies, promote key characteristics of products or services and their significance in the markets to make informed decisions in formulating a marketing mix strategy

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## Marketing Strategy

*Define an organisational marketing strategy, consider critical industry trends, customer segments and market developments as well as the communication and implementation of the strategy.*

### Proficiency Level 4

Identify critical customer segments, market gaps and competitors to support the development of a marketing strategy, and lead implementation of marketing efforts

### Proficiency Level 5

Develop a strategy to grow market demand for key products and services, considering critical customers, market potential assessment and impact of emerging trends

### Proficiency Level 6

Define overarching marketing strategy considering macro-trends and anticipated industry and technology shifts, and inspire employee commitment to the strategy

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## Marketing Campaign Management

*Develop evaluation strategies for marketing campaign effectiveness and analyse data to provide recommendations for improvements in future marketing campaigns.*

### Proficiency Level 3

Execute marketing campaigns based on creative briefs, ensure compliance with budgetary requirements and collaborate with partners

### Proficiency Level 4

Develop marketing campaigns and enhance campaign awareness and campaign visibility

### Proficiency Level 5

Drive marketing campaign development, implementation and review the effectiveness of campaign to achieve organisational objectives

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## Marketing Communications Plan Development

*Formulate, develop and implement marketing communications plans and evaluate tools and vehicles appropriate to reflect effective execution of communication strategies.*

### Proficiency Level 2

Collect feedback on marketing communications and media

### Proficiency Level 3

Implement promotional briefs and assess the effectiveness of selected media options

### Proficiency Level 4

Facilitate and develop marketing communication strategies to achieve objectives identified and propose marketing communication options appropriate for briefing documents

### Proficiency Level 5

Develop objectives, goals, desired performance, strategies and scope of marketing communication plans

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## Manpower Planning

*Estimate and fulfil manpower requirements to achieve business goals and targets.*

### Proficiency Level 3

Facilitate recruitment of manpower to meet forecast requirements

### Proficiency Level 4

Conduct project level manpower forecasts to bridge gaps between manpower demand and supply, and facilitate development of recruitment strategies

### Proficiency Level 5

Formulate organisational manpower plans to bridge gaps between manpower demand and supply based on current and projected needs of the organisation

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## Network Configuration

*Configure network hardware and software components according to organisational guidelines and technical requirements. This includes the implementation and configuration of multiple servers, network devices and network management tools as well as the management of user network access to ensure stable and reliable network operations.*

### Proficiency Level 2

Perform basic configuration of network components and monitor user network access

### Proficiency Level 3

Implement and configure servers and devices in line with network blueprint, and manage user network access

### Proficiency Level 4

Evaluate organisational network requirements and develop a network configuration blueprint

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## Network Security

*Design and configure network systems to ensure the integrity of network infrastructure through the use of appropriate protection, detection and response mechanisms.*

### Proficiency Level 3

Install, configure and test network security

### Proficiency Level 4

Manage network security throughout a network

### Proficiency Level 5

Design and implement wireless network security

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## Network Administration and Maintenance

*Monitor network in order to provide for optimum levels of network performance and minimisation of downtime. This includes detection, isolation, recovery and limitation of the impact of failures on the network as well as provision of support to system users through ongoing maintenance information sharing and training.*

### Proficiency Level 1

Document network performance levels, and identify and isolate network faults

### Proficiency Level 2

Monitor network performance, investigate and resolve network faults or downtime

### Proficiency Level 3

Review, optimise and align network performance with business needs, and program basic rules into Software-Defined Networking (SDN) applications

### Proficiency Level 4

Assess network capabilities and set network rules to support software-defined infrastructure and optimise performance in changing environments

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## Network Slicing

*Create logically partitioned networks from a shared infrastructure to provide optimised and customised services for different users based on service level agreements.*

### Proficiency Level 4

Design and maintain network slices to fulfil customers' needs

### Proficiency Level 5

Configure network slices to support multiple end-user services

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## Networking

*Identifying, evaluating and strategising to seize new business opportunities to grow the organisation's business operations.*

### Proficiency Level 3

Identify and analyse  
business opportunities

### Proficiency Level 4

Develop business plans for  
new opportunities

### Proficiency Level 5

Implementing strategies to  
capitalise on new business  
opportunities

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## Organisational Analysis

*Evaluate factors that can affect the organization's performance as well as strategically assessing the organization's own resources and potential for improvement.*

### Proficiency Level 4

Manage, review and evaluate systems and processes with a view for enhancements. It also includes gathering of feedback and developing solutions to close gaps and to make improvements

### Proficiency Level 5

Lead the conduct of functional analysis and recommending areas for enhancement in functional operations

### Proficiency Level 6

Synergise organisational analysis, reviewing and evaluating findings and communicating findings to relevant stakeholders as well as advising on improvements for the organisation

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## Organisational Design

*Develop and facilitate the implementation of organisational design to ensure its effectiveness and alignment with stakeholders' priorities.*

### Proficiency Level 4

Drive the implementation of organisational design

### Proficiency Level 5

Design organisational structures, systems and processes

### Proficiency Level 6

Align organisational design with business needs and priorities

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## Portfolio Management

*Manage systematically the IT investments, projects, services and activities within a company, in line with business objectives and priorities. This involves the development of a framework to evaluate potential costs and benefits and make key decisions about IT investments, internal allocation and utilisation of IT resources and/or assets and any changes to IT processes or services offered.*

### Proficiency Level 4

Develop IT project plans and analyse their costs and benefits, based on the portfolio objectives and framework

### Proficiency Level 5

Plan a portfolio management framework based on business strategy, and manage IT investments

### Proficiency Level 6

Establish a strategy and future roadmap for managing IT portfolio and investments and make critical IT investment decisions for the business

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## Process Improvement and Optimisation

*Establish systems to discover critical processes and maximise these processes to achieve maximum efficiency in accordance with organisation procedures.*

### Proficiency Level 3

Identify and Implement the adoption of process improvement and optimisation methods

### Proficiency Level 4

Analyse and develop, review of plans for process improvement and optimisation

### Proficiency Level 5

Devise strategies for the adoption of improvements and optimisation of processes

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## Product Management

*Create and manage a product roadmap, involving the ideating, planning, forecasting, marketing and management of a product or a suite of products throughout stages of its lifecycle, from its conceptualisation to market entrance and eventual phasing-out. This includes the creation of a new product idea or concept and definition of the product strategy based on a projection of its potential benefits to the customer as well as the review of product performance against milestones and targets set.*

### Proficiency Level 3

Identify competitor, consumer and technology trends impacting the product, and manage the product lifecycle and performance

### Proficiency Level 4

Conceptualise ideas and develop a business model prototype and incubation plan for a new product, creating plans to bring the product to market and enhance its performance

### Proficiency Level 5

Anticipate future industry trends, and define the product incubation strategy and business model

### Proficiency Level 6

Re-define thinking and inspire the conceptualisation of new and innovative products that create significant industry impact

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## Project Feasibility Assessment

*Assess the business environment and organisational capabilities to evaluate and determine the feasibility of a project.*

### Proficiency Level 4

Assess the business environment and organisational capabilities and prepare financial projections, as well as report findings to relevant stakeholders

### Proficiency Level 5

Evaluate and determine feasibility of projects for the organisation, recommend the authorisation of projects and evaluate business environment, cost and organisation capabilities to determine project feasibility

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## Process Validation

*Verify that processes are reproducible and consistent in delivering quality products according to specifications, and in line with international regulations.*

### Proficiency Level 3

Evaluate data to establish whether processes are reproducible and capable of consistently delivering quality products

### Proficiency Level 4

Develop process validation procedures and evaluate validation results

### Proficiency Level 5

Formulate process validation strategies to ensure quality integrated systems across the manufacturing process chain

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## Pattern Recognition Systems

*Develop and apply intelligent pattern recognition systems and techniques to analyse data and derive useful hidden patterns to solve problems*

### Proficiency Level 4

Analyse data by deriving useful hidden patterns in the data, select and apply the most suitable pattern recognition techniques to solve problems and develop pattern recognition systems

### Proficiency Level 5

Develop intelligent systems using machine learning techniques

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## Performance Management

*Evaluate and optimise network, system and/or software performance against user and business requirements. This involves the introduction and utilisation of new tools and mechanisms to gather, analyse and fully optimise performance data. This also includes the initiation of controls, modifications and new investments to enhance end-to-end performance of ICT components, systems and services.*

### Proficiency Level 4

Establish metrics and mechanisms to assess network, software or system performance, and determine Infocomm Technology (ICT) infrastructure components and parameters to be enhanced

### Proficiency Level 5

Evaluate and integrate new mechanisms and technology, and leverage analytics to optimise performance data, and determine implications of performance levels reported

### Proficiency Level 6

Chart direction on key performance indicators of ICT infrastructure and develop a strategy to enable achievement to achieve long term business requirements

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## People and Performance Management

*Establish organisation-wide performance management strategies to facilitate performance management, including identification of key performance indicators and employee performance assessment.*

### Proficiency Level 3

Implement performance management programmes

### Proficiency Level 4

Develop performance management programmes

### Proficiency Level 5

Establish organisation-wide performance management strategies

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## Partnership Management

*Build cooperative partnerships with inter-organisational and external stakeholders and leveraging of relations to meet organisational objectives. This includes coordination and strategizing with internal and external stakeholders through close cooperation and exchange of information to solve problems.*

### Proficiency Level 3

Support the development and coordination of partnerships with external stakeholders and organisations

### Proficiency Level 4

Propose strategic initiatives with other organisations based on identification of mutual benefits, and analyse their impact

### Proficiency Level 5

Evaluate and drive inter-organisational initiatives, and negotiate strategic information exchange with key partners

### Proficiency Level 6

Inspire direction and define key imperatives for inter-organisational partnerships, leading negotiations with senior leaders and on an international scale

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## Problem Management

*Manage the lifecycle of problems to prevent problems and incidents from occurring, eliminate recurring incidents and minimise impact of unavoidable incidents.*

### Proficiency Level 3

Handle specific problems from diagnosis and prioritisation to the identification and implementation of solutions

### Proficiency Level 4

Introduce processes, guidelines and technologies to facilitate the management of problems throughout their lifecycle

### Proficiency Level 5

Establish problem management strategies, protocols, and mechanisms to guide the prevention, resolution and minimisation of problems and their effects

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## Pricing Strategy

*Develop an effective and agile pricing strategy for IT products and services based on a range of internal and external factors.*

### Proficiency Level 3

Analyse trends to assess impact of internal and external factors on pricing and the effectiveness of pricing policies against competitors

### Proficiency Level 4

Recommend optimal pricing levels for different customer segments and adapt pricing plans based on analysis of both internal and external factors

### Proficiency Level 5

Determine an appropriate pricing strategy for different products, services and customer segments, and establish mechanisms to allow for pricing agility

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## Procurement

*Develop and apply procurement processes related to the solicitation of technology services through external providers. This includes the review of proposals, setting of vendor selection guidelines, risk assessment through appropriate audits and tests and selection of external service providers based on stipulated evaluation criteria.*

### Proficiency Level 2

Conduct research and simple quality, risk and security checks on IT vendors, preparing draft documents and materials required in the procurement process

### Proficiency Level 3

Prepare Requests for Proposals (RFP), and assess them against selection criteria and technical specifications, implementing security due diligence review in the vendor selection process

### Proficiency Level 4

Develop a procurement plan including vendor selection guidelines, and select a suitable service provider considering potential risks

### Proficiency Level 5

Establish an organisation-wide procurement process as well as policies and criteria for security due diligence review, retaining accountability for procurement decisions made

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## Project Management

*Perform planning, organisation, monitoring and control of all aspects of an IT programme and the strategic utilisation of resources to achieve the objectives within the agreed timelines, costs and performance expectations. In addition, the identification, coordination and management of project interdependencies, ensuring alignment with and achievement of business objectives.*

### Proficiency Level 3

Oversee small projects or programmes, managing timelines, resources, risks and stakeholders

### Proficiency Level 4

Plan and drive medium scale projects or programmes, including allocating resources to different parts, and engaging stakeholders on the project's progress and outcomes

### Proficiency Level 5

Lead end-to-end management of large programmes or multiple projects concurrently, coordinating project interdependencies

### Proficiency Level 6

Direct the management and authorise ownership of multiple large, complex programmes and projects, ensuring alignment with strategic business priorities

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## Quality Engineering

*Create, deploy and maintain quality-related systems, processes and tools to establish an environment that supports process and product quality.*

### Proficiency Level 3

Measure current process capability and identify areas for quality improvement

### Proficiency Level 4

Investigate process drivers of quality, and recommend quality management infrastructure, techniques and tools to facilitate quality optimisation

### Proficiency Level 5

Develop quality-related infrastructure and practices, as well as new techniques, tools and control systems, to drive high quality products and processes

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## Quality Standards

*Develop, review and communicate a clear, quality expectations and standards within an organisation that are aligned to the company's values and business objectives. This encompasses the setting and implementation of quality expectations for IT products and services delivered to both internal or external clients.*

### Proficiency Level 4

Assess existing quality standards and align processes and activities with IT product and service quality expectations

### Proficiency Level 5

Establish and control quality expectations in line with organisation directions and selected benchmarks

### Proficiency Level 6

Review organisation's quality guidelines against emerging trends and industry best practices, ensuring alignment with company values and objectives

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## Quality Assurance

*Apply quality standards to review performance through the planning and conduct of quality assurance audits to ensure that quality expectations are upheld. This includes the analysis of quality audit results and setting of follow-up actions to improve or enhance the quality of products, services or processes.*

### Proficiency Level 3

Conduct quality assurance (QA) audits and consolidate results and identify lapses and discrepancies

### Proficiency Level 4

Implement quality performance guidelines and review the effectiveness of Quality Assurance (QA) processes

### Proficiency Level 5

Establish quality benchmark standards and drive organisational commitment to ongoing quality through regular review of Quality Assurance (QA) audit results

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## Radio Frequency Engineering

*Design, deploy and maintain radio frequency infrastructure for IT systems and wireless communication networks.*

### Proficiency Level 3

Set up and tune radio frequency (RF) and analyse faults

### Proficiency Level 4

Manage system-wide radio frequency (RF) faults to optimise performance

### Proficiency Level 5

Design and evaluate radio frequency (RF) performance

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## Research

*Research on a concept or idea to provide inputs for content development.*

### Proficiency Level 3

Lead comprehensive research and analyse research findings to generate insights and recommendations

### Proficiency Level 4

Design a research strategy and propose projects to meet identified research needs

### Proficiency Level 5

Oversee and review the effective implementation of the research project within known resource constraints

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## Security Architecture

*Design security architectures and controls; either embedding of security principles into the design of architectures to mitigate the risks posed by new technologies and business practices, or the actual design and specification of implementable security components, along with the accompanying control measures, to meet defined business security needs.*

### Proficiency Level 3

Design secure systems and define security specifications of components, integrating appropriate security controls

### Proficiency Level 4

Design a security blueprint and direct the design of a robust and coherent security architecture, based on a suite of security solutions and key design principles

### Proficiency Level 5

Establish organisational guidelines and principles for the design of security architecture and controls, and drive the enhancement of organisation-wide security systems

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## Software Design

*Create and refine the overall plan for the design of software, including the design of functional specifications starting from the defined business requirements as well as the consideration and incorporation of various controls, functionality and interoperability of different elements into a design blueprint or model which describes the overall architecture in hardware, software, databases, and third party frameworks that the software will use or interact with.*

### Proficiency Level 3

Design simple software components, assessing functionality of different elements, and produce design documentation

### Proficiency Level 4

Create a software design blueprint based on a broad design concept, and business and user requirements

### Proficiency Level 5

Translate complex software ideas and concepts into a design blueprint and establish key design principles and methodologies

### Proficiency Level 6

Inspire new and innovative software design ideas, and align design principles and parameters with current and future needs

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## Solution Architecture

*Design or refine a solution blueprint or structure to guide the development of IT solutions in hardware, software, processes or related components, to meet current and future business needs. The solution architecture developed may lead to broad or specific changes to IT services, operating models and processes, and should provide a framework to guide the development and modification of solutions.*

### Proficiency Level 4

Develop a solution architecture and prepare a technical blueprint for a given area, demonstrating how the solution addresses requirements

### Proficiency Level 5

Establish frameworks and determine relevant tools and techniques to guide the development IT solutions

### Proficiency Level 6

Synthesise new trends and developments in or beyond the Infocomm Technology (ICT) industry, and lead the development of innovative and ground-breaking solutions that have significant industry impact

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## Systems Design

*Design systems to meet specified business and user requirements that are compatible with established system architectures, as well as organisational and performance standards.*

### Proficiency Level 4

Design systems and components based on determined specifications

### Proficiency Level 5

Evaluate and review systems designs

### Proficiency Level 6

Formulate the organisation's policies, standards, guidelines and methods for systems design

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## Strategy Planning

*Develop organisational strategies and policies by analysing the impact of internal and external influencing factors and seeking consultation from relevant stakeholders.*

### Proficiency Level 4

Develop resource allocation plans and implement strategies and policies

### Proficiency Level 5

Formulate the strategies and policies that are forward-looking and focuses on bottom line results

### Proficiency Level 6

Build actionable organisation strategy plans and policies that are forward-looking, anticipate strategic risks and focus on bottom line results

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## Security Assessment and Testing

*Conduct threat modelling, vulnerability assessment and penetration testing to reveal vulnerabilities or lapses in the existing systems or security mechanisms and evaluate the extent to which systems are able to protect the organisation's data and maintain functionality as intended.*

### Proficiency Level 2

Execute vulnerability scans and conduct research on exploitation of system vulnerabilities, and interpret findings to identify security lapses

### Proficiency Level 3

Conduct authorised penetration testing of systems and to expose threats, vulnerabilities and potential attack vectors in systems

### Proficiency Level 4

Design security testing plan, and perform advanced, authorised penetration testing as well as intelligence analysis on cyber attack incidents

### Proficiency Level 5

Authorise and establish organisation guidelines and strategies for security testing, and determine the future-readiness of the organisation's security posture

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## Security Programme Management

*Develop and manage security solutions, products and services through technology innovation, experimentation and collaboration. This includes security programme planning, developing and testing new security capabilities and implementing security technologies and programmes.*

### Proficiency Level 3

Detail the security requirements for system architecture components and implement security programmes

### Proficiency Level 4

Manage large scale secure system initiatives and collaborations with programmers to develop new security solutions and capabilities

### Proficiency Level 5

Spearhead new, complex or revolutionary security programmes, and integrate a suite of enterprise-wide security programmes into a cohesive security architecture

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## Self-Learning Systems

*Design and develop self-learning systems using reinforcement learning and evolutionary learning techniques.*

### Proficiency Level 3

Analyse, articulate and apply key artificial intelligence (AI) technologies in their work and that of the teams and organisation, in the area of business process automation and optimisation

### Proficiency Level 4

Plan the end-to-end process to design, build and deploy adaptive software robots in hardware and devices, validating and optimising software robots in different application areas

### Proficiency Level 5

Design and develop self-learning systems using reinforcement learning and evolutionary learning techniques

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## Software Configuration

*Configure software products and apply scripts and automation tools to integrate and deploy software releases to various platforms and operating environments. This includes subsequent modifications to software configuration, based on outcomes of systems and/or configuration tests.*

### Proficiency Level 2

Apply standard scripts and tools to deploy software products, and document release and deployment activities as well as modifications to software configurations

### Proficiency Level 3

Identify appropriate scripts and tools, and configure software products to run effectively on various platforms

### Proficiency Level 4

Establish and revise an effective release and configuration plan, and evaluate configuration test results to recommend modifications to the product or deployment process

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## Software Testing

*Assess and test the overall effectiveness and performance of an application, involving the setting up of suitable testing conditions, definition of test cases and/or technical criteria.*

### Proficiency Level 2

Draft simple test scenarios, and perform software testing procedures, highlighting bugs or glitches affecting performance

### Proficiency Level 3

Design test scenarios and implement new or complex tests, investigating issues or gaps between actual and expected results

### Proficiency Level 4

Define the testing objectives and criteria for success and oversee the testing and follow up processes for software products

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## System Integration

*Develop and implement a roadmap and specific integration solutions to facilitate integration of various ICT components and optimise inter-operability of systems and their interfaces. This includes the integration of various architectural components such as networks, servers, system platforms and their interfaces.*

### Proficiency Level 3

Perform basic compatibility assessments and integrate selected system components according to a plan

### Proficiency Level 4

Determine interoperability of system components and develop a system integration plan

### Proficiency Level 5

Design a feasible integration roadmap, monitor system integration outcomes and drive enhancements to integration plans

### Proficiency Level 6

Establish an integration strategy and a clear vision for an integrated ICT architectural design

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## Sales Channel Management

*Develop and implement a strategy to manage the channels and channel partners through which IT products and/or services are sold. This also includes the assessment and selection of suitable channel partners, establishment and expansion of alliances with channel partners and maintenance of a committed network of distributors.*

### Proficiency Level 3

Assess and sustain alliances with distribution channels and channel partners, regularly managing their performance

### Proficiency Level 4

Evaluate channel options and recommend optimal channels and partners, and formulate performance guidelines for channel partners to abide by

### Proficiency Level 5

Develop an enterprise-wide channel sales strategy, including engagement and recruitment of channel partners and setting of key targets and performance expectations

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## Sales Strategy

*Develop a sales strategy, plan and targets, consider market potential, industry trends and various internal and external business factors as well as the evaluation and further refinement of the sales strategy.*

### Proficiency Level 4

Develop and implement a sales action plan for business units, evaluates its effectiveness and propose refinements to sales strategy and activities

### Proficiency Level 5

Assess market potential, and formulate sales strategies to generate demand and achieve business objectives

### Proficiency Level 6

Define an overarching sales strategy integrating macro-trends, industry trends, economic indicators and internal business factors, in line with market projections and business objectives

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# Service Level Management

*Plan, monitor and manage service provisions for the achievement of agreed service level targets.*

### Proficiency Level 3

Monitor service levels, review and report service delivery deviations

### Proficiency Level 4

Manage fulfilment of service level agreements (SLAs) and resolve issues to maintain overall service levels

### Proficiency Level 5

Evaluate service levels and oversee improvements to enhance service performance

### Proficiency Level 6

Formulate the organisation's service delivery standards and strategy, drive a service level agreement (SLA)-oriented mindset, and establish strategic networks and partnerships

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## Stakeholder Management

*Manage stakeholder expectations and needs by aligning those with requirements and objectives of the organisation. This involves planning of actions to effectively communicate with, negotiate with and influence stakeholders.*

### Proficiency Level 2

Identify key stakeholder relationships, needs and interests, and coordinate with stakeholders on a day-to-day basis

### Proficiency Level 3

Serve as the organisation's main contact point for stakeholder communications, clarifying responsibilities among stakeholders, and engaging them to align expectations

### Proficiency Level 4

Develop a stakeholder engagement plan and negotiate with stakeholders to arrive at mutually-beneficial arrangements

### Proficiency Level 5

Define a strategic stakeholder management roadmap, and lead critical discussions and negotiations, addressing escalated issues or problems encountered

### Proficiency Level 6

Establish the overall vision for the alignment of organisation's and stakeholders' objectives, co-creating shared goals and strategic initiatives with senior stakeholders

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## Security Strategy

*Establish the organisation's security vision, strategy and initiatives to ensure adequate protection of assets. This involves the planning, implementation and review of enterprise-wide security controls which includes policies, processes, physical infrastructure, software and hardware functions to govern and preserve the privacy, security and confidentiality of the organisation's information and assets.*

### Proficiency Level 4

Assess security risks, threats and vulnerabilities, and recommend security initiatives to mitigate them

### Proficiency Level 5

Establish security goals and objectives as well as policies and standards to guide information security and assurance in the current and future landscape

### Proficiency Level 6

Create a security vision for the organisation and establish an overarching information security strategy and frameworks

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## Strategy Implementation

*Execute and implement operational and tactical-level action plans in alignment with the organisation's business strategies.*

### Proficiency Level 3

Analyse strategies for critical business functions to ensure plans are within risk mitigation factors

### Proficiency Level 4

Evaluate strategies for critical business functions to ensure plans are realistic and reflect health of business

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## Security Governance

*Develop and disseminate corporate security policies, frameworks and guidelines to ensure that day-to-day business operations guard or are well protected against risks, threats and vulnerabilities.*

### Proficiency Level 4

Proactively identify security risks in business operations and implement security guidelines and protocols, in line with corporate security policies

### Proficiency Level 5

Evaluate security risks and establish corporate security policies and frameworks to guard against them

### Proficiency Level 6

Anticipate potential security threats and emerging trends in security management, establishing targets for the organisation's security policies and systems

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## Security Administration

*Administer, configure and update of security programmes and mechanisms, including the application of system patches to ensure that enterprise assets are adequately protected against threats. This also includes the authorisation, management and monitoring of access control permissions and/or rights to various IT facilities.*

### Proficiency Level 2

Run system diagnostic tools, and install and update simple, basic security programmes, virus protection and system patches

### Proficiency Level 3

Administer, configure and troubleshoot security programmes and mechanisms, and analyse impact of patches and updates on system and networks

### Proficiency Level 4

Plan the administration and technical operationalisation of security programmes, and investigate security breaches in information, system and network access

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## Security Education and Awareness

*Drive security education and awareness in an organisation by providing advice and guidance on potential risks, mitigation strategies and best practices. This includes development of communication strategies and training materials to ensure employee adoption and adherence to security policies and standards.*

### Proficiency Level 3

Develop security education materials and manage delivery of security activities and programmes according to plan

### Proficiency Level 4

Determine security knowledge requirements, plan and lead implementation of large-scale security education and awareness programmes

### Proficiency Level 5

Develop communication strategies and establish strategic alliances to raise security awareness, aligning security awareness programmes with business priorities and trends

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## Sustainability Management

*Plan, develop and roll out of an organisation-wide sustainability strategy. This includes the assessment of the organisation's utilisation and/or consumption of energy and other resources, vis-a-vis the availability and stability of supply sources and external best practices and standards in sustainability. This also includes the on-going monitoring and tracking of energy and/or resource-consumption over time, to identify impact on the organisation's internal and external environment as well as potential improvements in energy- or resource-efficiency.*

### Proficiency Level 4

Assess the organisation's utilisation of energy against supply considerations, and propose and implement solutions to optimise utilisation

### Proficiency Level 5

Define action plans, solutions and technologies to address energy efficiency gaps, and implement sustainability practices that encourage organisational commitment

### Proficiency Level 6

Establish an organisation-wide sustainability strategy and introduce new, innovative practices and technologies to optimise energy and resource efficiency

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## Threat Analysis and Defence

*Enable and conduct analysis of malicious threats, to examine their characteristics, behaviours, capabilities, intent and interactions with the environment as well as the development of defence and mitigation strategies and techniques to effectively combat such threats.*

### Proficiency Level 3

Perform static, dynamic or behavioural analysis on malicious codes and threats, debug malware and thwart malicious attacks

### Proficiency Level 4

Examine malicious threat behaviour and capabilities, and circumvent anti-analysis mechanisms, recommending techniques to block malicious code and attacks

### Proficiency Level 5

Establish an enterprise threat defence and mitigation strategy, incorporating new techniques to combat threats and attacks

### Proficiency Level 6

Re-define analysis and defence strategies, techniques and tactics to combat new types and sources of threats and attacks

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## Threat Intelligence and Detection

*Monitor intelligence-gathering and anticipate potential threats to an ICT system proactively. This involves the pre-emptive analysis of potential perpetrators, anomalous activities and evidence-based knowledge and inferences on perpetrators' motivations and tactics.*

### Proficiency Level 2

Install security applications and interpret logs to detect anomalous activity, intrusions and threats

### Proficiency Level 3

Implement intrusion detection technology and analyse multi-source information to identify vulnerabilities, potential exploits, methods, motives, and capabilities

### Proficiency Level 4

Develop strategies to monitor threats and project future technical cyber threat scenarios and present mission reports to key stakeholders

### Proficiency Level 5

Establish a threat intelligence strategy and direct analysis and integration across various sources to present a robust view on threats, perpetrators, motivations and modus operandi

### Proficiency Level 6

Anticipate evolving trends and threats in the operating environment, and redefine threat intelligence strategies, methodologies and tactics to predict and mitigate threats

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## Technical Sales Support

*Develop preliminary technical solutions, proposal or initial prototypes to address customers' needs. This includes analysis and diagnosis of customers' technical requirements, design of proof of concept, and delivery of product demonstrations and/or customisation samples as part of broader end-to-end solution to customers.*

### Proficiency Level 2

Perform technical product demonstrations and shortlist potential solutions, resolving technical issues to meet customers' requirements

### Proficiency Level 3

Analyse technical requirements and draft proof-of-concept for technical solutions to customers

### Proficiency Level 4

Lead the design of customised technical solutions, demonstrating their value in relation to the broader end-to-end solutions delivered

### Proficiency Level 5

Synthesise high-level trends in customer's technical requirements, and lead enterprise-wide proposals for technical products and solutions

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## Test Planning

*Develop a test strategy and systematic test procedures to verify and ensure that a product, system or technical solution meets its design specifications as well as the performance, load and volume levels set out. This includes the ability to define when different requirements will be verified across the product life stages, the tools used to perform the test, the data and/or resources needed to conduct the tests and testware in test cases, test scripts, test reports and test plans required.*

### Proficiency Level 2

Identify and document the basic tools, testware, resources and processes to carry out required tests

### Proficiency Level 3

Determine requirements and develop a phase test plan, identifying optimal schedules and means for executing test scripts

### Proficiency Level 4

Define testing objectives, and design a master test plan including a series of systematic test procedures to achieve them

### Proficiency Level 5

Develop a test strategy, and establish testing policies, guidelines and metrics according to internal and external standards

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## Text Analytics and Processing

*Identify, extract and analyse text data using text analytics solutions to discover themes, patterns and trends.*

### Proficiency Level 4

Analyse text data to discover themes, patterns and trends to improve business processes and decision making

### Proficiency Level 5

Implement advanced machine learning techniques in building natural language processing (NLP) models for performing common text processing tasks

### Proficiency Level 6

Design and implement systems that can interact with users using spoken or written natural language

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## User Experience Design

*Conceptualise, project and make enhancement of the user's interaction and engagement with an IT product and/or service based on a robust analysis and understanding of the product and/or service's performance vis-a-vis the user's desired experience and outcomes. This involves creating wire frames to adequately guide and inform subsequent planning and development processes, and making enhancements to optimise the user's experience of the product and/or service.*

### Proficiency Level 2

Translate key user experience concepts and guidelines into simple wireframes, proposing elements of aesthetics and accessibility that would impact the user experience

### Proficiency Level 3

Analyse and understand the desired experience from target users of IT products and/or services, and develop solutions to address gaps in the overall user experience

### Proficiency Level 4

Create user experience design concepts, develop user flow charts and drive modifications or enhancements to the product or service features

### Proficiency Level 5

Anticipate future user requirements and define the guiding principles and philosophy for the intended user experience, while ensuring its business viability

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## User Interface Design

*Design user interfaces for machines and software, incorporating visual, technical and functional elements that facilitate ease of access, understanding and usage. This would involve adding, removing, modifying or enhancing elements to make the user's interaction with the product as seamless as possible.*

### Proficiency Level 3

Identify functionalities and information flows to develop components of user interface prototypes, making tweaks to graphical user interfaces

### Proficiency Level 4

Design the information architecture, process flow and user interface prototypes as well as graphical user interfaces

### Proficiency Level 5

Direct the development of prototypes and user interfaces, and customise complex graphical user interfaces

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## User Testing and Usability Testing

*Conduct and manage user tests to validate the feasibility of design, evaluate its functionality and ease of use as part of a user-centred design process.*

### Proficiency Level 3

Analyse users' desired needs to identify and design solutions. and conduct observation studies to uncover usability issues in the organisation's products

### Proficiency Level 4

Oversee user testing activities to create design concepts and solutions, and develop test plans for the conduct of observation studies involving different levels of experienced users, to evaluate the organisation's products' ease of use

### Proficiency Level 5

Establish user needs analysis frameworks to anticipate users' future needs and establish test metrics and goals for usability testing

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## Vendor Management

*Manage vendor relationships by ensuring performance as per contracts, operations within standards established by the organisation such as adherence to safety, security, and compliance standards.*

### Proficiency Level 3

Monitor vendors' performance and resolve contractual issues

### Proficiency Level 4

Develop and sustain vendor relationships and manage vendors' performance

### Proficiency Level 5

Establish organisation's expectations of vendors and manage critical vendor interactions

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**SKILLS FRAMEWORK FOR ICT**

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CYBER SECURITY

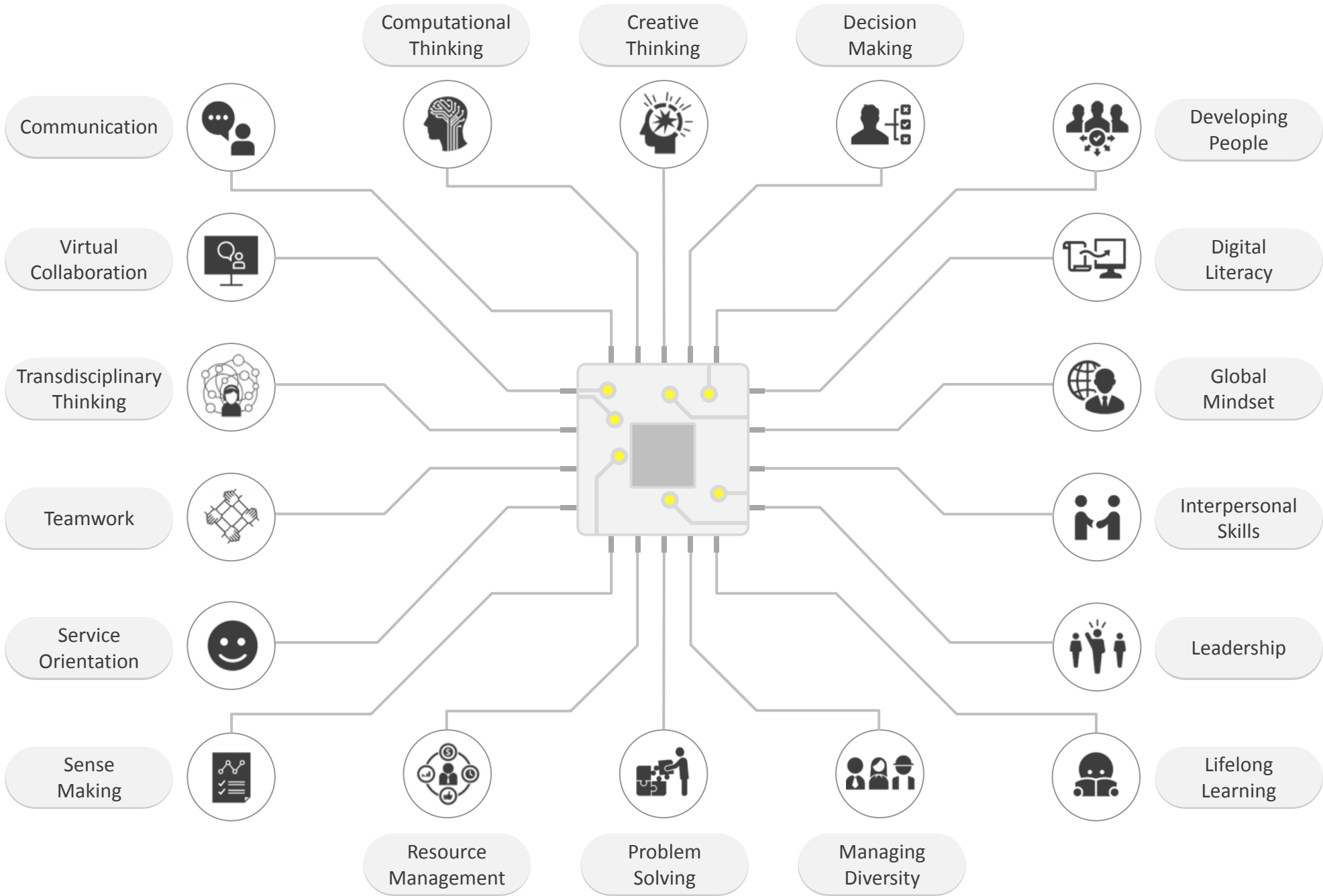
SALES AND MARKETING

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SKILLSfuture SG



## Communication

*Convey and exchange thoughts, ideas and information effectively through various mediums and approaches.*

### Basic

Communicate information with others to respond to general inquiries and to obtain specific information.

### Intermediate

Articulate and discuss ideas and persuade others to achieve common outcomes

### Advanced

Negotiate with others to address issues and achieve mutual consensus.

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## Computational Thinking

*Develop and use computational models, tools and techniques to interpret and understand data, solve problems and guide decision-making.*

### Basic

Use computational models, tools and techniques to identify patterns in a problem and develop a solution.

### Intermediate

Modify existing computational models, tools and techniques to develop different solutions.

### Advanced

Develop and create computational models, tools and techniques to implement new solutions and apply to other problems.

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## Creative Thinking

*Adopt a fresh perspective to combine ideas or information in new ways and make connections between seemingly unrelated fields to create new ideas and applications.*

### Basic

Connect ideas or information from related fields or applications to address an immediate issue.

### Intermediate

Connect or combine ideas or information from unrelated fields or applications to generate multiple ideas to bring about a specific outcome.

### Advanced

Create original applications or ideas to reveal new possibilities and reshape goals through high level of innovativeness.

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## Decision Making

*Choose a course of action from various alternatives using a reasoned process to achieve intended goals.*

### Basic

Make decision of a simple or routine nature to achieve intended goals using given information and guidelines.

### Intermediate

Make decision in a complex setting to achieve intended goals using a structured process and multiple sources of available information.

### Advanced

Make decision in a volatile and ambiguous setting using a structured process and limited sources of available information to achieve intended goals.

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## Developing People

*Help others to learn and develop their capabilities to enhance their performance and achieve personal or professional goals.*

### Basic

Use demonstration and explanation to teach a familiar task to inexperienced co-workers.

### Intermediate

Provide coaching to others to develop their skills and knowledge on their jobs to enhance performance.

### Advanced

Provide mentorship to help others to develop their professional and personal development to improve performance and further their careers.

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## Digital Literacy

*Use ICT tools, equipment and software to create, evaluate and share information digitally with others.*

### Basic

Perform basic functions using software programmes pertaining to computer operating system and file management and search online information.

### Intermediate

Use available software features to create and edit documents, customise templates and reports and evaluate online information.

### Advanced

Use available software features to enhance documents, analyse and manipulate data and use ICT to organise, share and communicate information clearly and coherently.

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## Global Mindset

*Awareness of diversity across global cultures and markets and seek opportunities to adopt successful practices and ideas.*

### Basic

Demonstrate understanding of global challenges and opportunities, and how to transfer best practices across cultures. Respect cultural differences and needs of a diverse workforce.

### Intermediate

Develop global networks and manages virtual relationships while balancing both local and global perspectives. Adopt a local and global perspective when making decision making.

### Advanced

Build the organisation's capabilities to compete in a global environment. Manage tension between corporate requirements, global and cultural differences.

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## Interpersonal Skills

*Manage relationships efficiently and communicate with others effectively to achieve mutual consensus and outcomes.*

### Basic

Recognise own internal feelings and emotional states to manage interpersonal relationships in social situations.

### Intermediate

Detect and decipher emotions of others to manage interpersonal relationships in social situations.

### Advanced

Influence, guide and handle others' emotions to build instrumental relationships and manage conflicts and disagreements.

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## Leadership

*Lead others to achieve objectives in the most efficient way. Provide an inclusive workspace that cultivates workplace relationships and teamwork, and foster the development of others.*

### Basic

Demonstrate professionalism to set a good example at peer level. Support others through own initiative and enthuse others through own positive and energetic approach.

### Intermediate

Lead by example at team level. Encourage and guide others to adopt a point of view, make changes or take action. Provide a team environment that facilitates relationships building, teamwork and the development of others.

### Advanced

Lead by example at organisational level. Inspire, motivate and guide others to adopt a point of view, make changes or take action. Cultivate an open, cooperative and collaborative learning culture for the organisation.

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## Lifelong Learning

*Seek out opportunities to enhance one's knowledge and skills. Access and acquire new knowledge and skills actively for continual learning.*

### Basic

Organise and manage own learning by setting learning targets. Identify learning approaches to achieve work or career goals.

### Intermediate

Engage in collaborative learning by discussing one's learning with others and soliciting feedback to continually improve oneself.

### Advanced

Conduct self-reflective practices to review one's learning to facilitate continual growth in one's career or profession.

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## Managing Diversity

*Work well with people from different ethnic, social, cultural and educational backgrounds and understand the concerns and interests of diverse work groups.*

### Basic

Demonstrate sensitivity to the cultural characteristics, values, beliefs, and behaviors of another ethnic or cultural group.

### Intermediate

Build relationships with different ethnic or cultural groups by engaging in cross-cultural cooperative projects.

### Advanced

Manage conflicts arising from different ethnic or cultural groups and work effectively in cross-cultural settings.

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## Problem Solving

*Generate feasible and efficient solutions to solve problems and capitalise on new opportunities.*

### Basic

Identify easily perceivable problems and follow given guidelines and procedures to solve the problems.

### Intermediate

Identify less perceivable problems and use problem solving tools and techniques to solve the problems.

### Advanced

Anticipate potential problems beyond the current scope and apply higher order problem solving tools and techniques to turn problems into opportunities.

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## Resource Management

*Efficient and effective deployment and allocation of resources when and where they are needed. Include planning, allocating and scheduling of resources to tasks, which typically include man power, machines, money and materials.*

### Basic

Use resources to ensure optimum and efficient use of resources.

### Intermediate

Deepen insights into the planning, allocation and deployment of resources to anticipate needs. Plan the allocation and deployment of resources efficiently and effectively.

### Advanced

Establish strategies for the allocation and deployment of resources efficiently and effectively.

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## Sense Making

*Organise and analyse data and information accurately to identify relationships and detect patterns and trends to gain insights for decision-making.*

### Basic

Identify relationships and linkages within different components of data.

### Intermediate

Interpret data to uncover patterns and trends between various sources of data.

### Advanced

Analyse data relationships, patterns and trends to gain important insights and make informed decisions.

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## Service Orientation

*Commit to exceeding both internal and external customers' needs. Proactively identify customer needs and sustain a culture of service excellence within the organisation.*

### Basic

Exceed customer needs and expectations and handle service challenges with a positive mindset. Demonstrate an understanding of the organisation's service vision, mission and values.

### Intermediate

Anticipate customers needs and expectations, and elicit feedback from customers to improve service. Build relationships with customers to create and sustain customer loyalty.

### Advanced

Model, lead, train and motivate staff with a focus on sustaining a culture that encourages commitment to service excellence and high performance.

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## Teamwork

*Work collaboratively and effectively with others to contribute to group efforts to achieve identified objectives.*

### Basic

Contribute to a positive and cooperative working environment by fulfilling own responsibilities and providing support to co-workers to achieve team goals.

### Intermediate

Facilitate work team activities, provide assistance and support needed by team members and promote ownership and commitment among team members to work goals to improve team performance.

### Advanced

Establish teams, design and assess tasks to continually improve team effectiveness and cultivate a sense of organisational ownership and a cooperative working environment.

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## Transdisciplinary Thinking

*Understanding of concepts across multiple disciplines, with the capacity to synthesise the knowledge and insights to guide decisions and foster cooperation.*

### Basic

Research and adapt concepts from outside one's field of expertise to supplement one's core knowledge and proficiency.

### Intermediate

Co-relate material from diverse knowledge bases to guide decisions and policy making. Participate in reflective and trans-disciplinary communities within and outside the organisation.

### Advanced

Synthesise knowledge and insights across disciplinary boundaries to aid strategic decisions and foster cooperation within and outside of the organisation.

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## Virtual Collaboration

*Use online collaborative communication tools to work as teams to accomplish tasks or projects.*

### Basic

Participate and contribute in a virtual team. Set up appropriate online collaborative tools and supporting equipment.

### Intermediate

Use interactive collaborative tools to foster cohesion and commitment among virtual team members to achieve goals. Keep up-to-date with innovative online collaborative tools and applications to enhance one's proficiency in engaging in virtual collaboration.

### Advanced

Leverage on diverse team talent, latest online collaborative technologies and virtual platforms to produce collaborative behaviour and achieve technological savviness in virtual collaboration.

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