



SKILLS FRAMEWORK FOR INFOCOMM TECHNOLOGY

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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 training partners, SSG ensure that students and working adults have access to high quality, industry-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.



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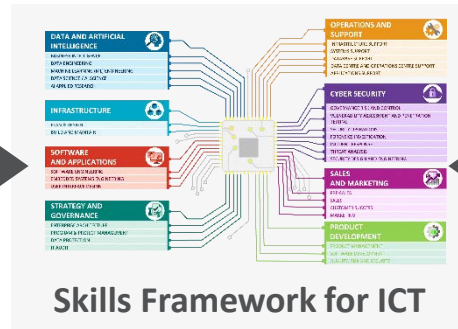
INTRODUCTION

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.

SKILLSFuture SG

TeSA | TECHSKILLS
ACCELERATOR
An initiative of SkillsFuture

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.



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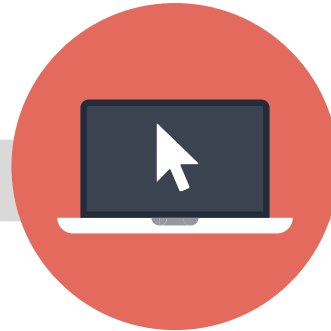
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INTRODUCTION

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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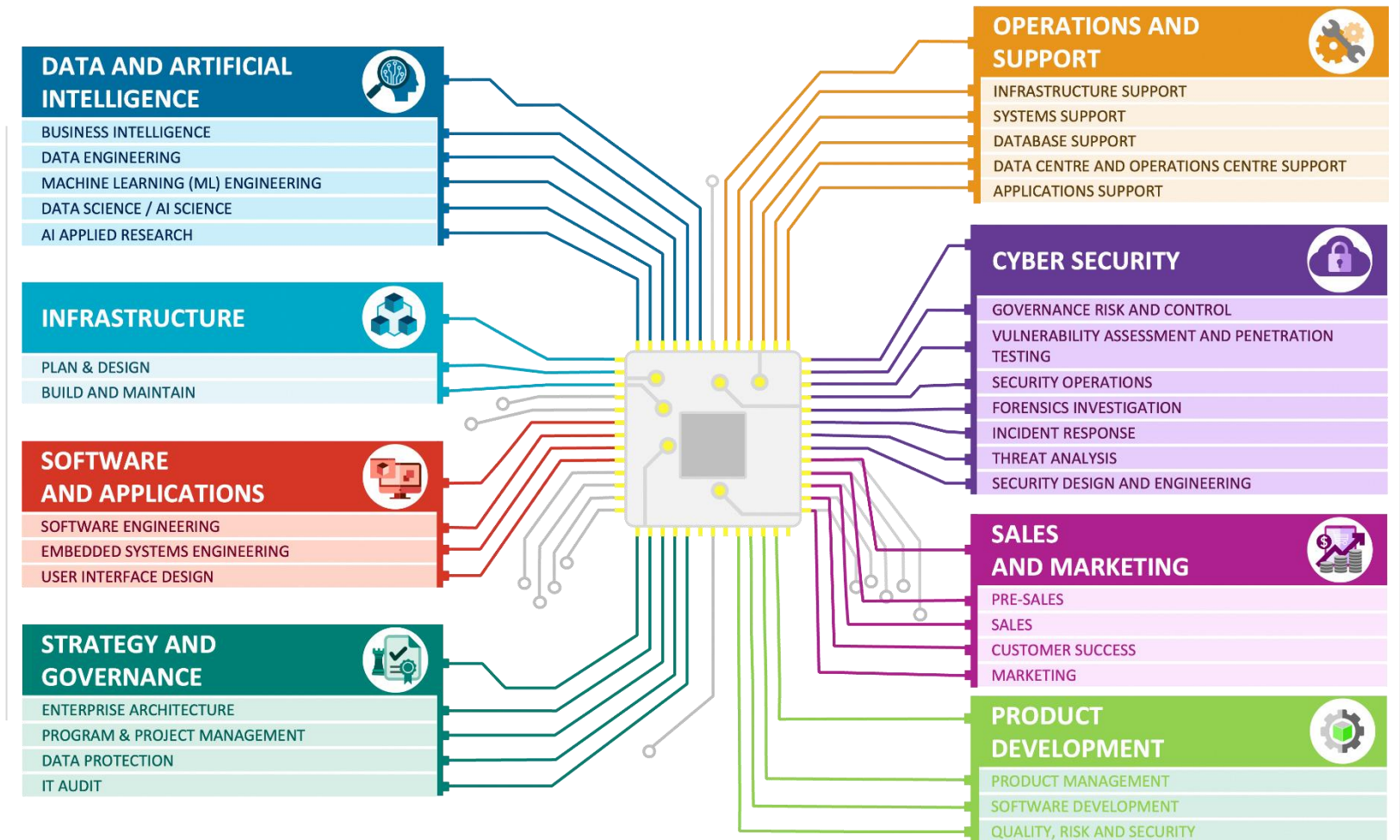
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INTRODUCTION

The Skills Framework for ICT sector consists of

- **8 Tracks**
- **33 Sub-tracks**
- **123 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.

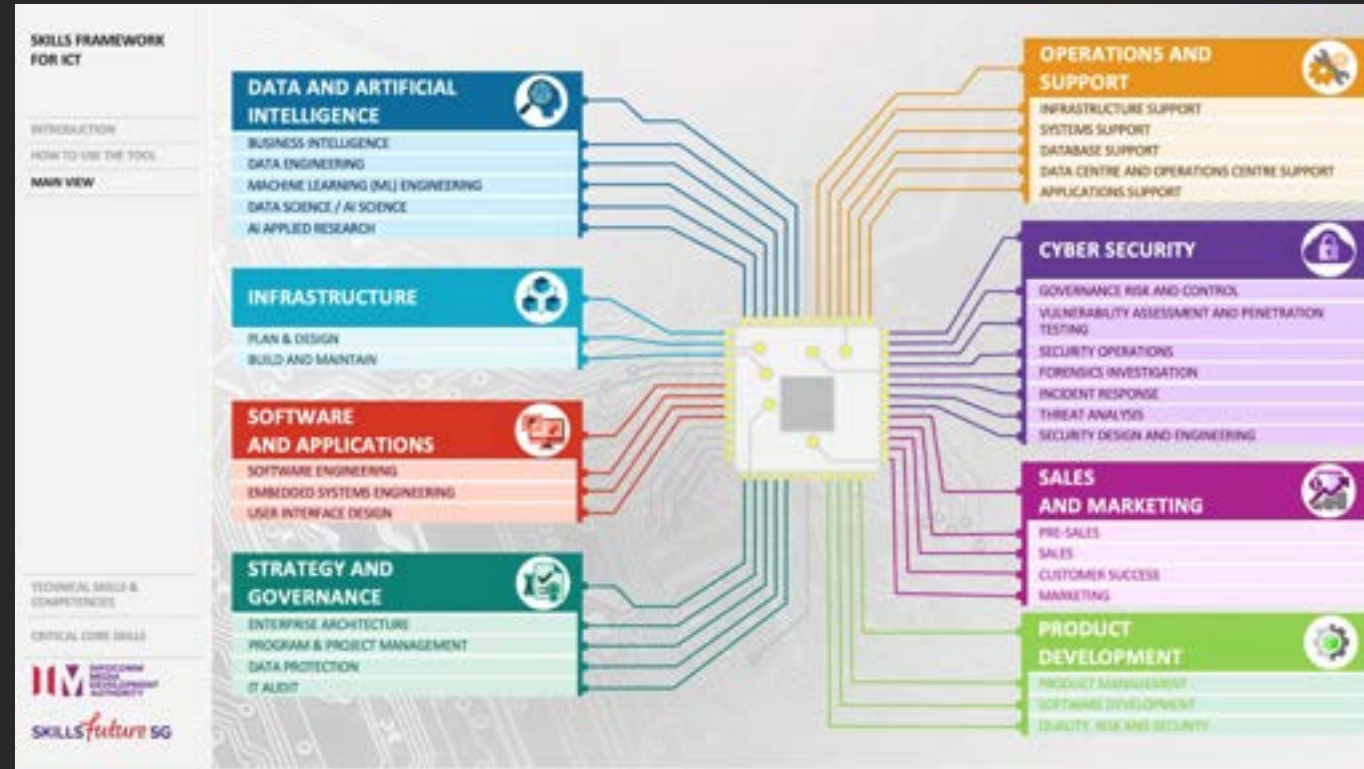


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HOW TO USE THE TOOL

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



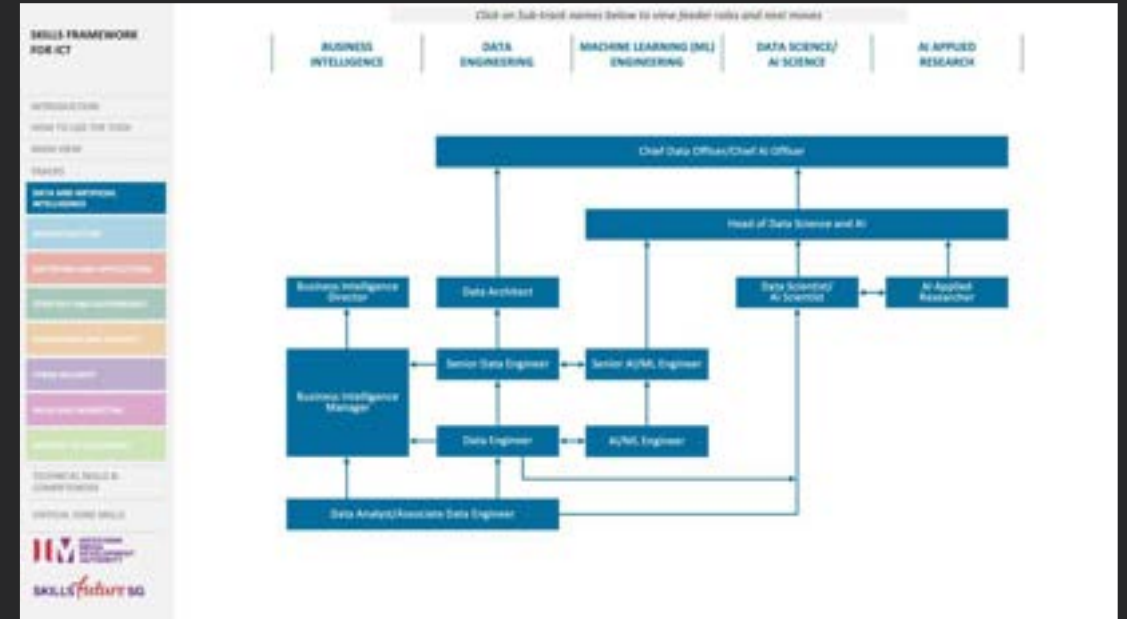
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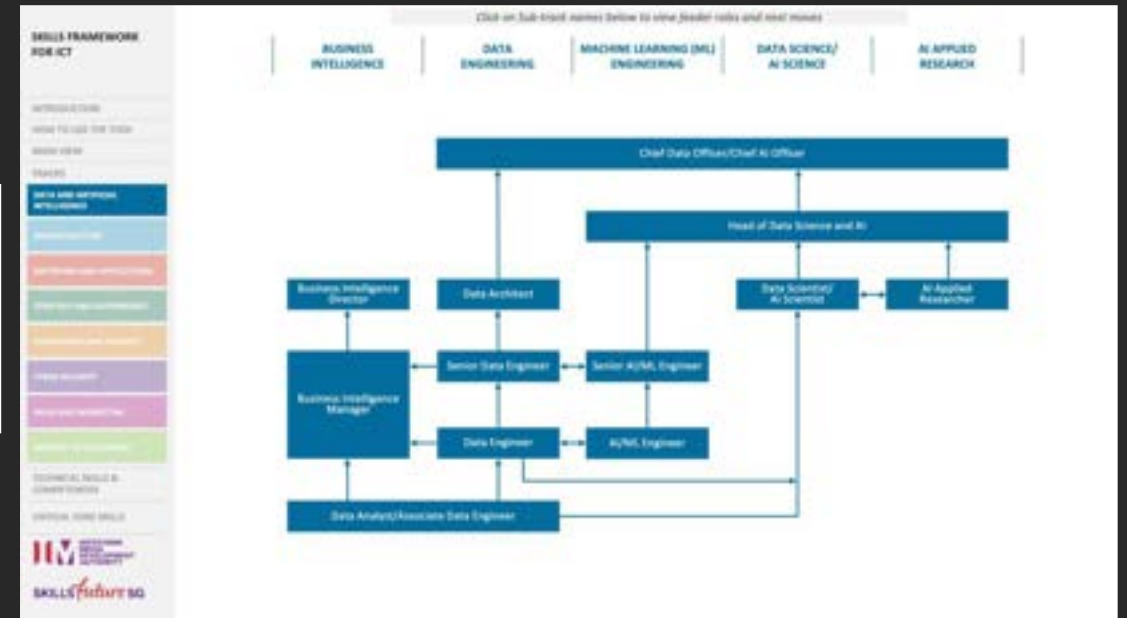
Track VIEW OPTION

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



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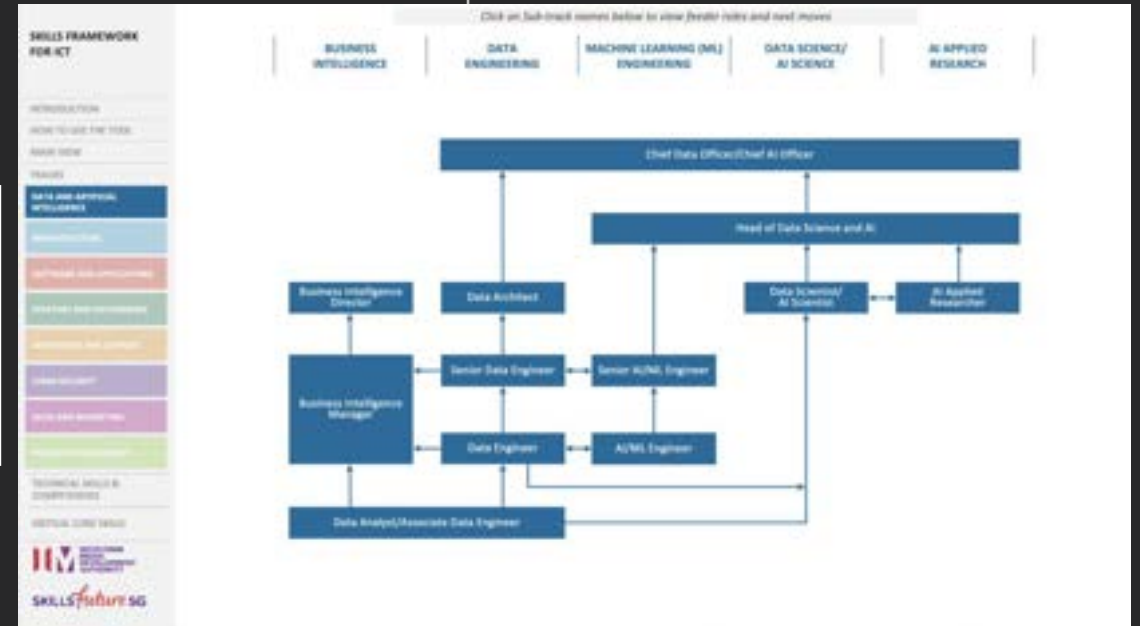
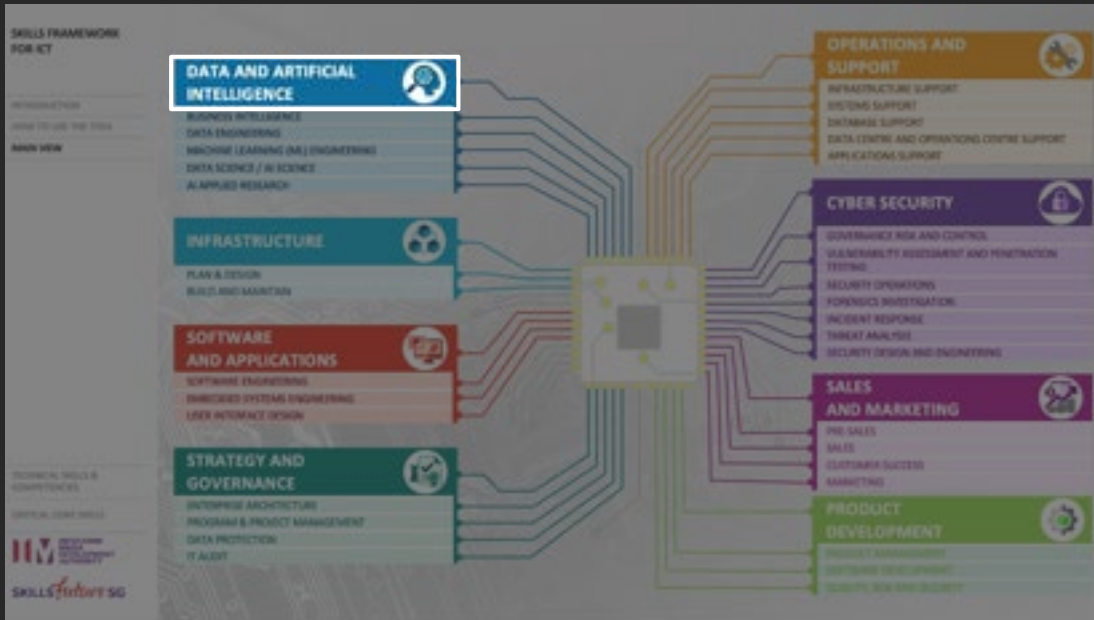


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HOW TO USE THE TOOL

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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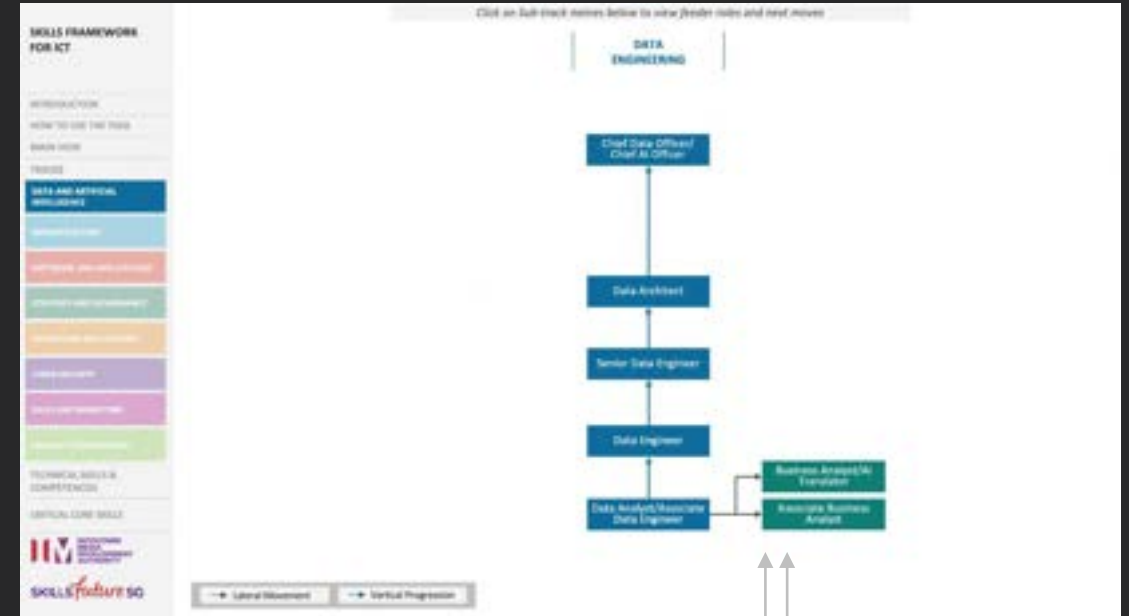
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HOW TO USE THE TOOL

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

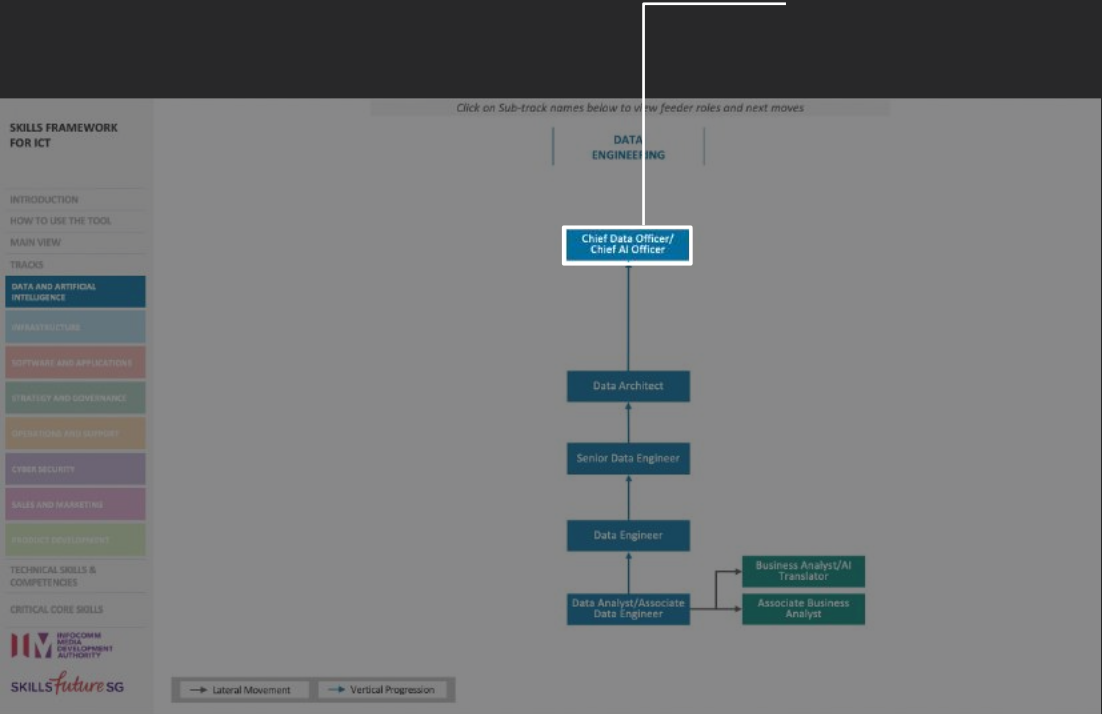


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HOW TO USE THE TOOL

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



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

SKILLS FRAMEWORK FOR ICT

INTRODUCTION
HOW TO USE THE TOOL
MAIN VIEW
TRACKS
DATA AND ARTIFICIAL INTELLIGENCE
INFRASTRUCTURE
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OPERATIONS AND SUPPORT
CYBER SECURITY
SALES AND MARKETING
PRODUCT DEVELOPMENT
TECHNICAL SKILLS & COMPETENCIES
CRITICAL CORE SKILLS

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 policy 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 derivative from the organisation's data pools. 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.

Technical Skills & Competencies

Technical Skills & Competencies	Proficiency Level
Bigging	5
Business Agility	5
Business Continuity	5
Business Risk Management	5
Change Management	5
Data Ethics	5
Data Governance	5
Data Strategy	5
Enterprise Architecture	5
Emerging Technology foresight	5
IT Governance	5
IT Standards	5
Organisational Analysis	5
Performance Management	5
Quality Standards	5
Resilience	5

Critical Core Skills (Top 5)

Critical Core Skills (Top 5)	Proficiency Level
Stakeholder Management	5
Strategic Planning	5
Problem Solving	Advanced
Communication	Advanced
Interpersonal Skills	Advanced
Leadership	Advanced
Systems 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

SKILLS FRAMEWORK FOR ICT

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DATA AND ARTIFICIAL INTELLIGENCE

INFRASTRUCTURE

SYSTEMS AND APPLICATIONS

STRATEGY AND ECONOMICS

INNOVATION AND SOCIETY

LEGAL ASPECTS

VALUES AND GOVERNANCE

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CRITICAL CORE SKILLS

ICT

INFORMATION TECHNOLOGY AND ARTIFICIAL INTELLIGENCE

SKILLSfuture SG

CHIEF DATA OFFICER/CHIEF AI OFFICER

Job Description

The Chief Data Officer/Chief Artificial Intelligence (AI) 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	5
Business Agility	5
Business Continuity	5
Business Risk Management	5
Change Management	5
Data Ethics	5
Data Governance	5
Data Strategy	5
Enterprise Architecture	5
Emerging Technology Synthesis	5
IT Governance	5
IT Standards	5
Organisational Analysis	5
Performance Management	5
Quality Standards	5
Research	5
Sustainability Management	5
Stakeholder Management	5
Strategy Planning	5

Critical Core Skills (Top 5)

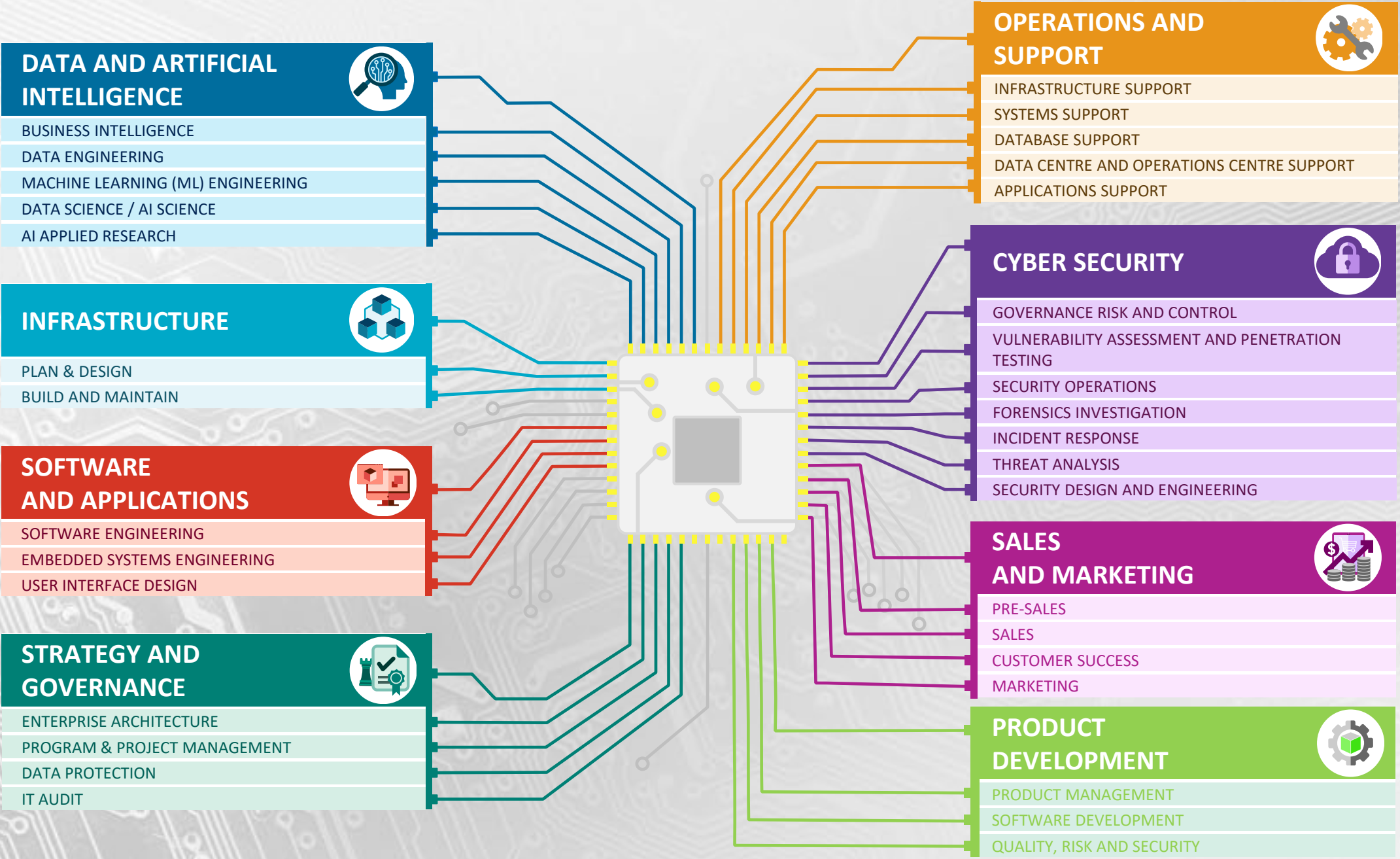
Proficiency Level

Problem Solving	Advanced
Communication	Advanced
Interpersonal Skills	Advanced
Leadership	Advanced
Service Orientation	Advanced



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FOR ICT

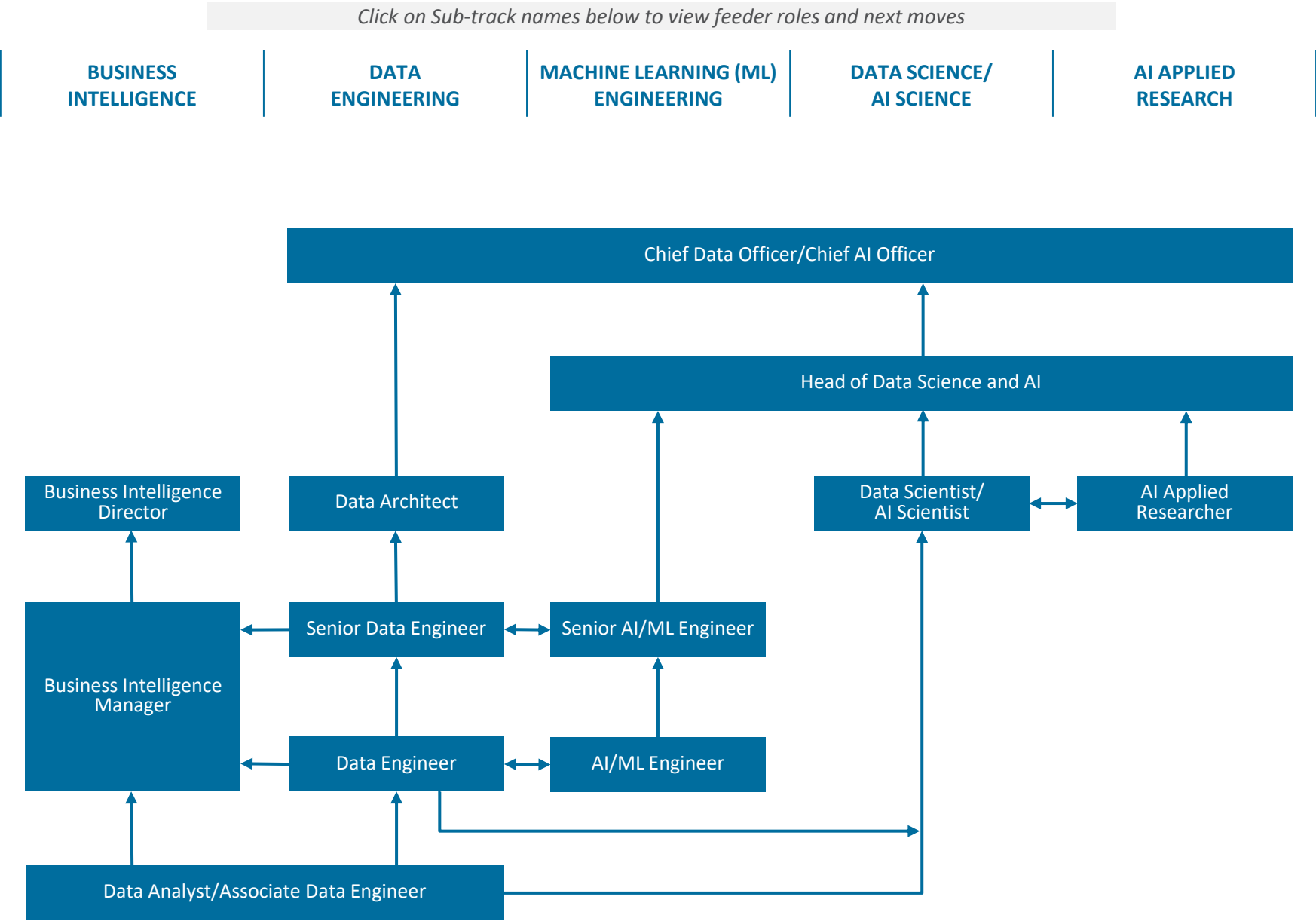
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TRACKS

- DATA AND ARTIFICIAL INTELLIGENCE
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- SOFTWARE AND APPLICATIONS
- STRATEGY AND GOVERNANCE
- OPERATIONS AND SUPPORT
- CYBER SECURITY
- SALES AND MARKETING
- PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



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TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



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

BUSINESS
INTELLIGENCE



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (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

Critical Work Functions	Key Tasks	Performance Expectations
Identify business needs	- Identify information needs of stakeholders required for decision-making - Assist in the translation of business needs into analytics and reporting requirements - Recommend types of data and data sources needed to obtain the required information and insights - Assist in identifying potential business intelligence service offerings required by the business	In accordance with: - Model AI Governance Framework - Personal Data Protection Act 2012
Prepare and analyse data	- Gather data from internal systems and external sources - Perform data entry tasks in data collection systems - Clean and update databases to remove duplicated, outdated or irrelevant information - Perform data validation and quality control checks - Perform basic extract, transform and load related activities to prepare data for analysis or transfer - Analyse data to identify trends, patterns and correlations to support decision-making - Propose solutions and recommendations to address information need	As above
Present Insights	- Develop automated and logical data models and data output methods - Translate analyses into common business language to influence business decisions or actions - Design data reports and visualisation tools to facilitate data understanding through storytelling	As above

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

Critical Core Skills (Top 5)

Proficiency Level

Communication

Intermediate

Problem Solving

Intermediate

Sense Making

Intermediate

Transdisciplinary Thinking

Intermediate

Creative Thinking

Intermediate

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

Critical Core Skills (Top 5)

Proficiency Level

Problem Solving

Advanced

Communication

Advanced

Leadership

Intermediate

Lifelong Learning

Advanced

Interpersonal Skills

Advanced

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

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TECHNICAL SKILLS &
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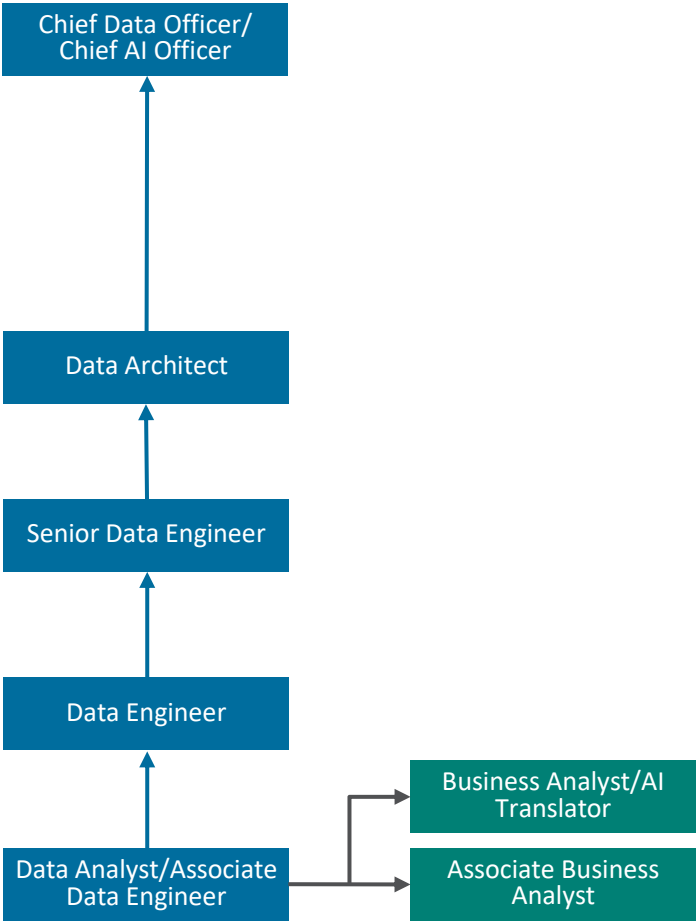
CRITICAL CORE SKILLS



SKILLSfuture SG

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

DATA
ENGINEERING



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (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

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

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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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Developing People

Intermediate

Communication

Intermediate

Transdisciplinary Thinking

Advanced

Computational Thinking

Advanced

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

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	Security Architecture	4,5
Change Management	5	Stakeholder Management	5
Computational Modelling	5	Strategy Planning	5
Configuration Tracking	4	System Integration	6
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		
		Critical Core Skills (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

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

Business Agility

6

Business Continuity

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

Sustainability Management

6

Stakeholder Management

6

Strategy Planning

6

Critical Core Skills (Top 5)

Proficiency Level

Problem Solving

Advanced

Communication

Advanced

Interpersonal Skills

Advanced

Leadership

Advanced

Service Orientation

Advanced

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

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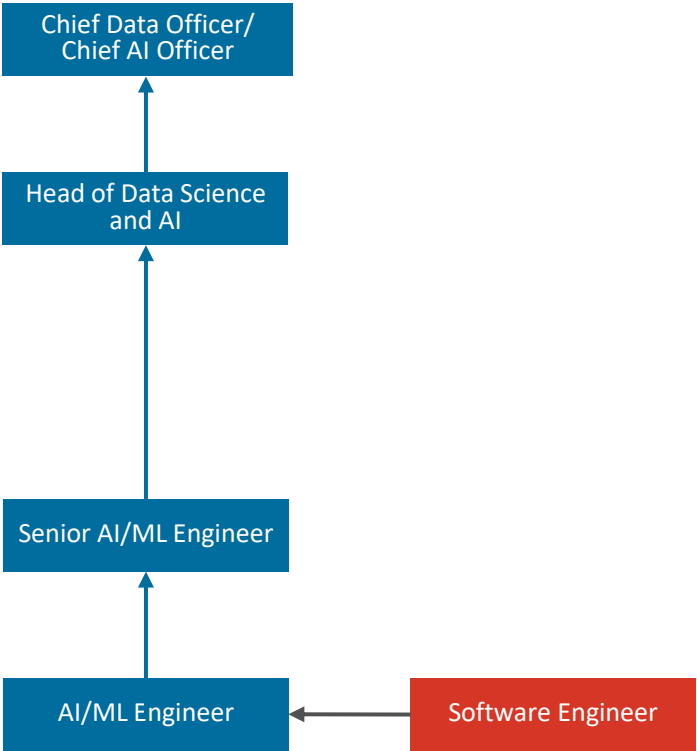
CRITICAL CORE SKILLS



SKILLSfuture SG

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

MACHINE LEARNING (ML)
ENGINEERING



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Intermediate

Developing People

Intermediate

Transdisciplinary Thinking

Intermediate

Computational Thinking

Intermediate

Communication

Intermediate

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

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

Critical Core Skills (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

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

Business Agility

5

Business Continuity

5

Business Innovation

6

Business Needs Analysis

5

Business Performance Management

6

Business Risk Management

5

Change Management

5

Computer Vision Technology

5

Data Design

5

Data Engineering

5

Data Ethics

5

Data Governance

5

Data Strategy

5

Emerging Technology Synthesis

5

Intelligent Reasoning

5

Learning and Development

6

Manpower Planning

5

Networking

5

Organisational Analysis

5

Pattern Recognition Systems

5

People and Performance Management

5

Performance Management

5

Project Management

6

Quality Standards

5

Research

5

Self-learning Systems

5

Software Design

5

Solution Architecture

5

Stakeholder Management

5

Strategy Implementation

4



HEAD OF DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

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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

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



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

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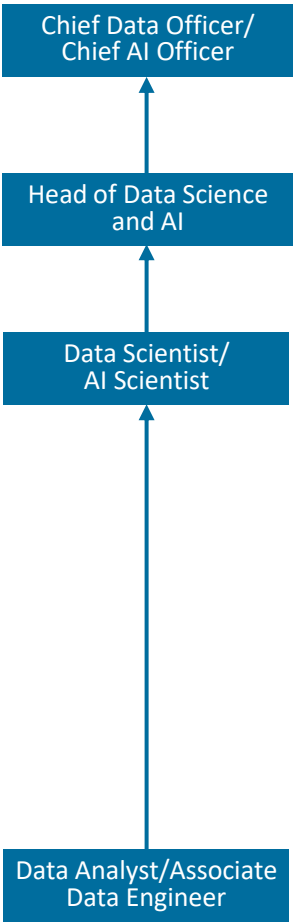
CRITICAL CORE SKILLS



SKILLS *future* SG

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

DATA SCIENCE/
AI SCIENCE



→ Lateral Movement

→ Vertical Progression

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		

Critical Core Skills (Top 5)	Proficiency Level
Leadership	Advanced
Developing People	Intermediate
Computational Thinking	Advanced
Communication	Intermediate
Transdisciplinary Thinking	Advanced

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

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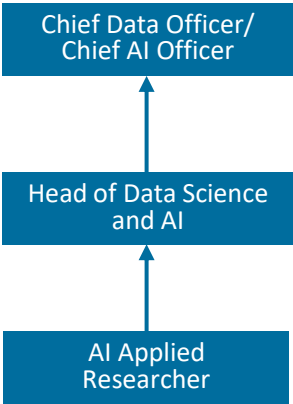
CRITICAL CORE SKILLS



SKILLS *future* SG

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

AI APPLIED
RESEARCH



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Developing People

Advanced

Communication

Intermediate

Computational Thinking

Intermediate

Lifelong Learning

Intermediate

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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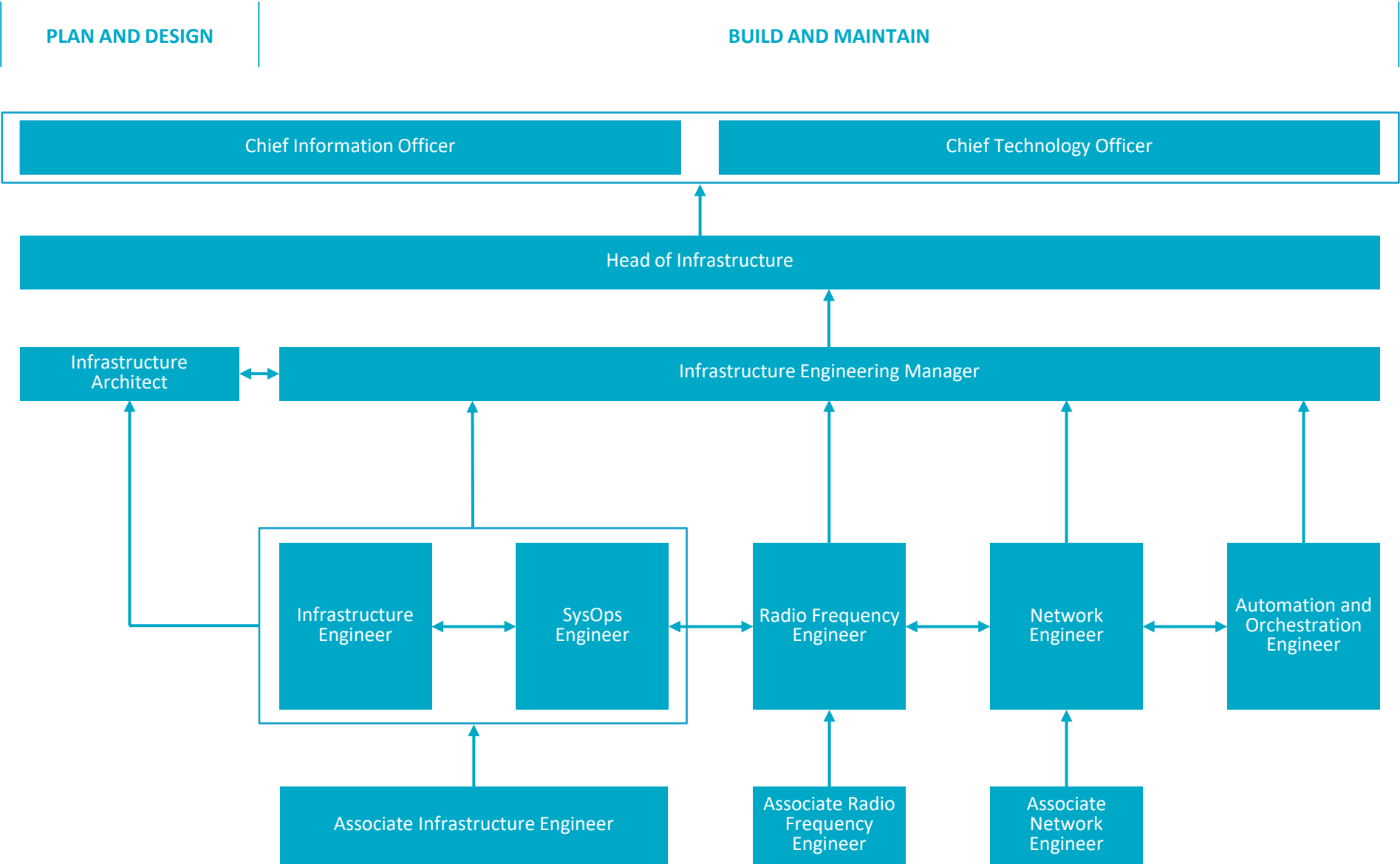
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 - SOFTWARE AND APPLICATIONS
 - STRATEGY AND GOVERNANCE
 - OPERATIONS AND SUPPORT
 - CYBER SECURITY
 - SALES AND MARKETING
 - PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



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



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COMPETENCIES

CRITICAL CORE SKILLS



SKILLS *future* SG

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

PLAN AND DESIGN



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Communication

Intermediate

Transdisciplinary Thinking

Advanced

Decision Making

Intermediate

Sense Making

Intermediate

Creative Thinking

Advanced

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

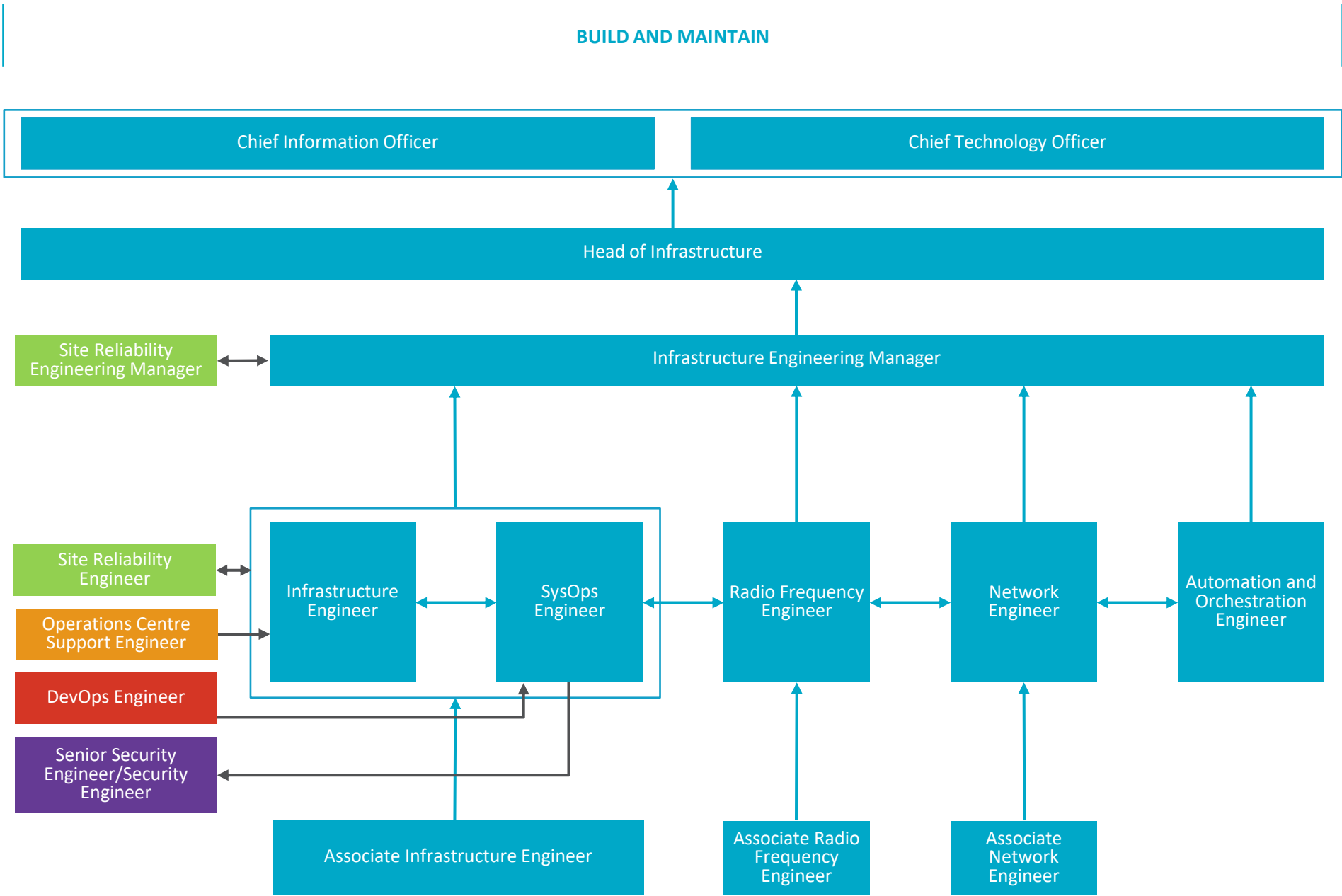
Design infrastructure architecture

- 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

SKILLS FRAMEWORK
FOR ICT

- INTRODUCTION
- HOW TO USE THE TOOL
- MAIN VIEW
- TRACKS
 - DATA AND ARTIFICIAL INTELLIGENCE
 - INFRASTRUCTURE
 - SOFTWARE AND APPLICATIONS
 - STRATEGY AND GOVERNANCE
 - OPERATIONS AND SUPPORT
 - CYBER SECURITY
 - SALES AND MARKETING
 - PRODUCT DEVELOPMENT
- TECHNICAL SKILLS & COMPETENCIES
- CRITICAL CORE SKILLS

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



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

Critical Core Skills (Top 5)

Proficiency Level

Service Orientation

Basic

Problem Solving

Intermediate

Resource Management

Basic

Teamwork

Basic

Sense Making

Basic

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

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	Network Administration and Maintenance3
Budgeting	3	Network Configuration3
Business Environment Analysis	3	Network Security4
Business Innovation	4	Partnership Management3
Business Needs Analysis	3	Performance Management4
Business Requirements Mapping	3	Problem Management3
Business Risk Management	3	Process Improvement and Optimisation3
Change Management	3	Procurement3
Cloud Computing	4	Quality Engineering4
Configuration Tracking	3	Security Administration3
Contract Management	3	Service Level Management3
Cyber and Data Breach Incident Management	4	Software Configuration3
Emerging Technology Synthesis	4	Solution Architecture3
Infrastructure Deployment	4	Stakeholder Management3
Infrastructure Design	4	
Infrastructure Support	4	



INFRASTRUCTURE ENGINEER

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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

Test Planning

3

Vendor Management

4

Critical Core Skills (Top 5)

Proficiency Level

Service Orientation

Intermediate

Problem Solving

Advanced

Resource Management

Intermediate

Teamwork

Basic

Sense Making

Intermediate



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

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

Budgeting

4

Business Environment Analysis

4

Business Innovation

5

Business Needs Analysis

4

Business Negotiation

4

Business Performance Management

4

Business Requirements Mapping

5

Business Risk Management

4

Change Management

4

Cloud Computing

5

Contract Management

4

Cyber and Data Breach Incident
Management

5

Disaster Recovery Management

4

Emerging Technology Synthesis

5

Infrastructure Deployment

4

Infrastructure Design

5

Infrastructure Strategy

4

IT Asset Management

4

IT Governance

4

IT Standards

4

IT Strategy

4

Learning and Development

4

Manpower Planning

3

Network Administration and Maintenance

4

Networking

4

Organisational Analysis

4

Partnership Management

4

People and Performance Management

3

Performance Management

5

Problem Management

4



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

Critical Core Skills (Top 5)

Proficiency Level

Project Feasibility Assessment

4

Project Management

5

Quality Engineering

5

Security Administration

4

Stakeholder Management

5

Strategy Implementation

3

Strategy Planning

4

Sustainability Management

4

Test Planning

4

Vendor Management

5

Decision Making

Intermediate

Leadership

Intermediate

Communication

Advanced

Resource Management

Intermediate

Service Orientation

Advanced



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

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

View details

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

Technical Skills & Competencies

Proficiency Level

Sustainability Management

5

Test Planning

5

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Communication

Advanced

Decision Making

Intermediate

Resource Management

Advanced

Global Mindset

Advanced



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

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

Critical Core Skills (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

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

Critical Core Skills (Top 5)

Proficiency Level

Problem Solving

Basic

Communication

Basic

Computational Thinking

Basic

Sense Making

Basic

Teamwork

Intermediate

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

Critical Core Skills (Top 5)

Proficiency Level

Problem Solving

Intermediate

Communication

Intermediate

Computational Thinking

Intermediate

Sense Making

Intermediate

Decision Making

Basic

Critical Work Functions

Key Tasks

Design wireless network and infrastructure

- Develop proposals for the expansion of radio networks and systems based on business requirements
- Design radio frequency schematic for the construction of wireless networks
- Define technical specifications and resource requirements necessary for wireless networks
- Conduct technical evaluation and proof-of-concept for new technologies in wireless networking and radio frequency transmission

Deploy wireless networks and infrastructure

- Evaluate data from site surveys to determine suitability for optimal deployment of wireless networks
- Manage the installation and maintenance of wireless network equipment
- Analyse functionality of and recommend upgrades to existing wireless network equipment
- Perform simulations for radio frequency network design
- Implement solutions or techniques to mitigate radio frequency interference
- Provide technical advice on the procurement of wireless network equipment
- Develop operating processes and protocols for disaster recovery of wireless network infrastructure

Optimise wireless network performance

- Conduct radio network drive tests to obtain information on network coverage and performance
- Review logs and reports from radio network drive tests and monitor network performance
- Analyse key performance indicators to identify problem areas in wireless communication systems and network performance
- Implement measures and tune network parameters to improve wireless communication systems and network performance

Manage wireless network security

- Plan and coordinate network security measures for wireless network infrastructure
- Assess the security of wireless protocols and radio networks to identify vulnerabilities or interceptions
- Prioritise and resolve wireless network security incidents, and escalate where necessary
- Conduct audit of wireless networks and design to ensure compliance to regulatory standards

Troubleshoot wireless communication issues

- Resolve defects in wireless network infrastructure and software
- Oversee the resolution of wireless network issues
- Establish standards and procedures for troubleshooting and resolution of wireless network issues
- Implement automation workflow for the management of repeated network issues

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

Critical Core Skills (Top 5)

Proficiency Level

Business Environment Analysis

2

Business Needs Analysis

2

Cyber and Data Breach Incident
Management

3

Emerging Technology Synthesis

3

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

Service Level Management

3

Stakeholder Management

2

Test Planning

2

Vendor Management

3

Problem Solving

Basic

Communication

Basic

Computational Thinking

Basic

Sense Making

Basic

Teamwork

Intermediate

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

Business Environment Analysis

3

Business Innovation

4

Business Needs Analysis

3

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Configuration Tracking

3

Contract Management

3

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

Problem Management

3

Process Improvement and Optimisation

3

Procurement

3

Security Administration

3

Solution Architecture

3

Stakeholder Management

3

Systems Design

4

Test Planning

3

Vendor Management

4

Critical Core Skills (Top 5)

Proficiency Level

Problem Solving

Advanced

Service Orientation

Intermediate

Sense Making

Intermediate

Teamwork

Basic

Decision Making

Basic

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

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

Critical Core Skills (Top 5)

ProficiencyLevel

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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Critical Work Functions and Key Tasks

View details

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

Critical Core Skills (Top 5)	ProficiencyLevel
Service Orientation	Intermediate
Resource Management	Intermediate
Problem Solving	Advanced
Sense Making	Intermediate
Teamwork	Basic



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

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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Developing People

Advanced

Creative Thinking

Advanced

Transdisciplinary Thinking

Advanced

Communication

Advanced

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 approves the deployment of new technologies to enhance or develop new services and product offerings. He devises and implements long-term strategies focused on both current and new technologies that can help an organisation go to market more effectively, in turn increasing revenue through technological enhancements.

He is an inspiring leader with a futuristic mindset with an ability to drive innovative enhancements in the organisation. He foresees connections across diverse areas and influences 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

Agile Software Development

6

Applications Development

5

Artificial Intelligence Application

6

Automation Management

6

Budgeting

6

Business Agility

6

Business Continuity

6

Business Risk Management

6

Business Negotiation

5

Change Management

6

Continuous Integration and
Continuous Deployment

5

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

Service Level Management

6

Solution Architecture

6

Stakeholder Management

6

Strategy Planning

6

Software Design

6

Software Testing

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

Sustainability Management

6

System Integration

6

Test Planning

5

Critical Core Skills (Top 5)

Proficiency Level

Communication

Advanced

Decision Making

Advanced

Developing People

Advanced

Influence

Advanced

Transdisciplinary Thinking

Advanced



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
- Manage critical internal and external stakeholders' changes in needs and priorities
- Inspire stakeholders to pursue the organisation's technology vision
- Drive technology alignment with the organisation's business needs

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

SKILLS FRAMEWORK
FOR ICT

INTRODUCTION

HOW TO USE THE TOOL

MAIN VIEW

TRACKS

DATA AND ARTIFICIAL
INTELLIGENCE

INFRASTRUCTURE

SOFTWARE AND APPLICATIONS

STRATEGY AND GOVERNANCE

OPERATIONS AND SUPPORT

CYBER SECURITY

SALES AND MARKETING

PRODUCT DEVELOPMENT

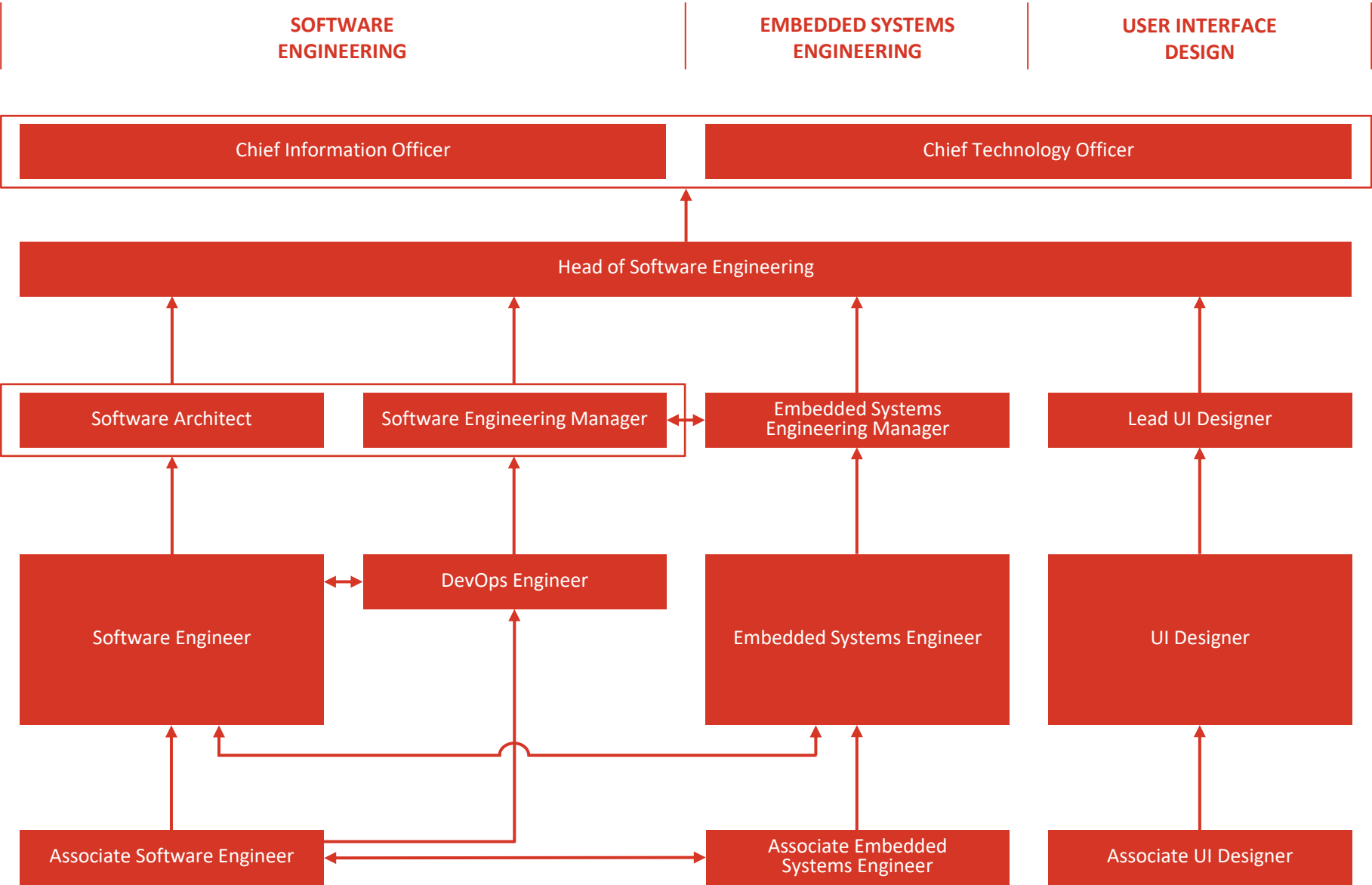
TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



SKILLSfuture SG

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



→ Lateral Movement

→ Vertical Progression

SKILLS FRAMEWORK
FOR ICT

INTRODUCTION

HOW TO USE THE TOOL

MAIN VIEW

TRACKS

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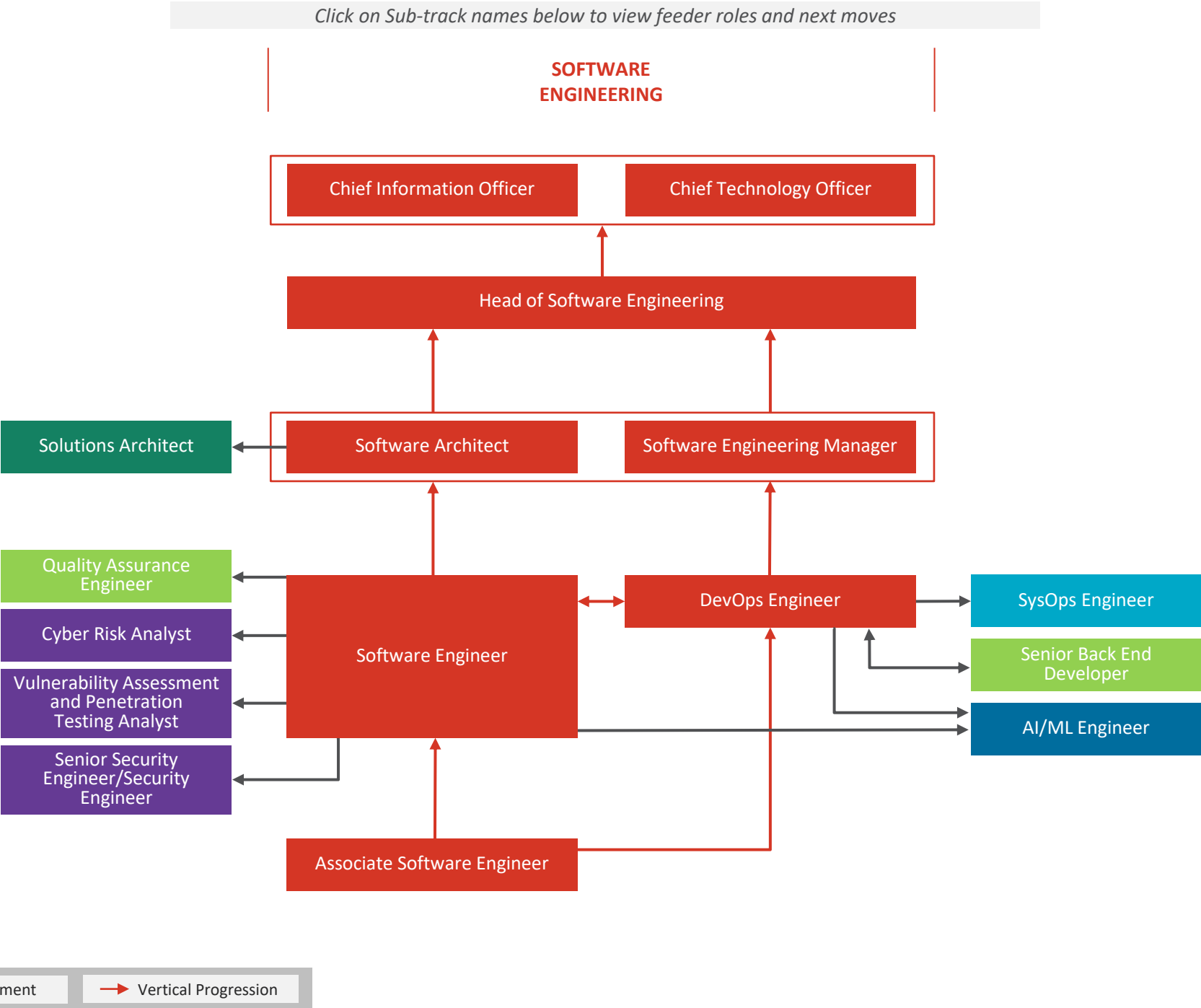
PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



SKILLSfuture SG



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

Critical Core Skills (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	• Participate in discussions with stakeholders to understand user requirements • Conduct requirements analysis based on user requirements • Prepare requirements documentation, descriptions of interfaces, and functional and non-functional requirements • Assist in writing proposals and communication materials to pitch ideas • Propose new technologies for cutting edge platform development
Manage the design of software	• Assist in the installation and use of tools for a project’s designated design strategy and methodology • Assist in architectural design tasks associated with use of standard notations, diagramming techniques, models, and patterns • Apply selected software design pattern to the design of software components or modules • Participate in software design reviews • Carry out static analysis tasks to evaluate design quality • Assist in development and use of simulation and prototypes to evaluate software design quality
Manage software construction processes	• Perform integration testing as part of the integration process • Collect standard measures of code quality and size • Generate codes and systems from models • Create and execute unit tests for delivered codes • Achieve test coverage goals set by project and organisation standards
Oversee software testing	• Identify unit and integration testing success and failure criteria • Adhere to software test plans • Assist with the development of the test plans and test cases • Implement the test environment and unit test cases, and integration and system test cases • Collect and analyse test execution results
Oversee security provisions in software	• Follow recommended coding standards and secure-coding principles to avoid security vulnerabilities • Adhere to project standards in the collection of security assessment metrics • Perform code reviews to identify security vulnerabilities
Manage software management configuration (SCM)	• Assist in determining impact of constraints on SCM imposed by policies, contract, and software development life cycle • Provides measurement data for SCM measures • Assists in identifying software configuration items (SCIs) • Generate, classify and manage problem reports

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

[View details](#)

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

Critical Core Skills (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

- Validate user requirements and design specifications
- Translate user requirements into technical specifications
- Formulate software requirement specifications
- Recommend approaches that balance security, stability, and performance needs
- Provide technical guidance on proposed solutions and alternatives

Manage the design of software

- Design software components and modules
- Determine design alternatives and perform trade-off analysis
- Create multiple views of the software system and design high-level organisation of a software system
- Facilitate software design reviews
- Lead static analysis tasks to evaluate design quality
- Develop and use simulation and prototypes to evaluate software design quality

Manage software construction processes

- Assist in the selection of processes, models, languages and tools for software construction
- Perform code re-factoring
- Review detailed designs and code to ensure quality requirements are met
- Establish project standards for designs and codes
- Leads code reviews and inspections

Oversee software testing

- Identify stakeholders participating in testing activities
- Design software test plan and criteria for regression testing
- Design the test environment and test case scenarios
- Specify test cases for the selected testing technique
- Analyse defect arrival rate and failure intensity data

Oversee security provisions in software

- Identify security risks and create requirements to capture security issues
- Perform initial threat modelling
- Model threats and associated risks of new and modified systems
- Identify the attack surface of new and modified systems
- Establish project coding standards to avoid security vulnerabilities
- Review and approve coding standards to avoid security vulnerabilities

Manage software management configuration (SCM)

- Develop and maintain the SCM plan
- Assist in specifying the SCM measures to be used
- Procure SCM tools
- Develop and tailor tools for generating SCM audit reports
- Maintain mechanisms for recording and reporting SCM information
- Oversee the building, verification and implementation of software releases
- Ensure the execution and documentation of approved changes

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

Critical Core Skills (Top 5)

Proficiency Level

Communication

Intermediate

Interpersonal Skills

Intermediate

Creative Thinking

Intermediate

Transdisciplinary Thinking

Advanced

Computational Thinking

Advanced

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

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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Communication

Advanced

Resource Management

Advanced

Developing People

Advanced

Interpersonal Skills

Advanced

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

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

Agile Software Development

3

Applications Development

4

Applications Integration

4

Applications Support and Enhancement

3,4

Business Agility

4

Business Environment Analysis

3

Business Needs Analysis

4

Business Requirements Mapping

3

Business Risk Management

3

Change Management

4

Configuration Tracking

3

Continuous Integration and
Continuous Deployment

3

Data Design

4

Database Administration

4

Emerging Technology Synthesis

4

Network Configuration

3

Performance Management

4

Problem Management

3

Project Management

4

Quality Standards

4

Security Administration

3

Software Configuration

4

Software Design

4

Software Testing

4

Stakeholder Management

4

Systems Design

3

System Integration

4

Test Planning

4

User Interface Design

4



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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.

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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

Critical Core Skills (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

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



SOFTWARE ENGINEERING 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

Critical Core Skills (Top 5)

Proficiency Level

Software Testing

4

Stakeholder Management

5

Strategy Implementation

3

Strategy Planning

4

System Integration

4

Test Planning

4

User Interface Design

4

Vendor Management

4

Communication

Intermediate

Decision Making

Advanced

Teamwork

Intermediate

Developing People

Advanced

Virtual Collaboration

Intermediate



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

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 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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Developing People

Advanced

Creative Thinking

Advanced

Transdisciplinary Thinking

Advanced

Communication

Advanced

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 approves the deployment of new technologies to enhance or develop new services and product offerings. He devises and implements long-term strategies focused on both current and new technologies that can help an organisation go to market more effectively, in turn increasing revenue through technological enhancements.

He is an inspiring leader with a futuristic mindset with an ability to drive innovative enhancements in the organisation. He foresees connections across diverse areas and influences 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

Agile Software Development

6

Applications Development

5

Artificial Intelligence Application

6

Automation Management

6

Budgeting

6

Business Agility

6

Business Continuity

6

Business Risk Management

6

Business Negotiation

5

Change Management

6

Continuous Integration and
Continuous Deployment

5

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

Service Level Management

6

Solution Architecture

6

Stakeholder Management

6

Strategy Planning

6

Software Design

6

Software Testing

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

Sustainability Management

6

System Integration

6

Test Planning

5

Critical Core Skills (Top 5)

Proficiency Level

Communication

Advanced

Decision Making

Advanced

Developing People

Advanced

Influence

Advanced

Transdisciplinary Thinking

Advanced



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
- Manage critical internal and external stakeholders' changes in needs and priorities
- Inspire stakeholders to pursue the organisation's technology vision
- Drive technology alignment with the organisation's business needs

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

SKILLS FRAMEWORK
FOR ICT

INTRODUCTION

HOW TO USE THE TOOL

MAIN VIEW

TRACKS

DATA AND ARTIFICIAL
INTELLIGENCE

INFRASTRUCTURE

SOFTWARE AND APPLICATIONS

STRATEGY AND GOVERNANCE

OPERATIONS AND SUPPORT

CYBER SECURITY

SALES AND MARKETING

PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



SKILLSfuture SG

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

EMBEDDED SYSTEMS
ENGINEERING

Chief Information Officer

Chief Technology Officer

Head of Software Engineering

Embedded Systems
Engineering Manager

Software Engineering
Manager

Quality Assurance
Manager

Embedded Systems
Engineer

Senior Back End
Developer

Associate Embedded
Systems Engineer

Back End Developer

→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Computational Thinking

Intermediate

Lifelong Learning

Intermediate

Problem Solving

Intermediate

Communication

Basic

Teamwork

Intermediate

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

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

Critical Core Skills (Top 5)

Proficiency Level

Computational Thinking

Advanced

Lifelong Learning

Intermediate

Problem Solving

Advanced

Teamwork

Intermediate

Communication

Intermediate

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

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



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.

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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

Strategy Implementation

3

Strategy Planning

4

System Integration

5

Test Planning

4

User Interface Design

4

Vendor Management

4

Critical Core Skills (Top 5)

Proficiency Level

Communication

Intermediate

Teamwork

Intermediate

Developing People

Advanced

Virtual Collaboration

Intermediate

Decision Making

Advanced



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

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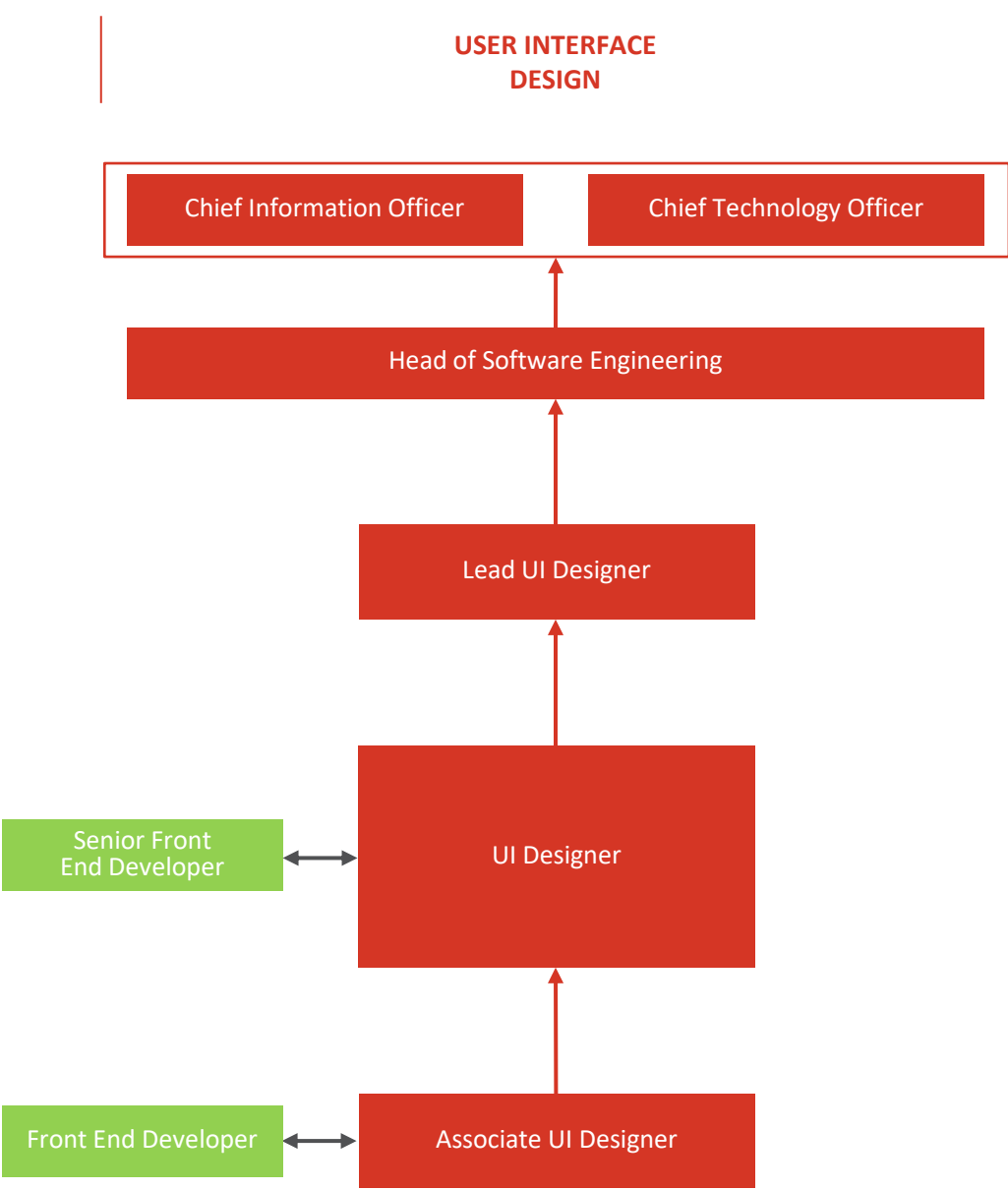
TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



SKILLSfuture SG

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



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

User Experience Design

2

User Interface Design

3

User Testing and Usability Testing

3

Critical Core Skills (Top 5)

Proficiency Level

Computational Thinking

Basic

Creative Thinking

Intermediate

Lifelong Learning

Intermediate

Communication

Basic

Service Orientation

Basic

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

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

Brand Management

4

Budgeting

3

Business Environment Analysis

3

Business Innovation

5

Business Needs Analysis

3

Business Performance Management

3

Business Requirements Mapping

4

Customer Experience Management

3

Data Analytics

3

Design Thinking Practice

4

Emerging Technology Synthesis

4

Process Improvement and Optimisation

4

Product Management

4

Project Management

4

Research

3

Software Design

4

Critical Core Skills (Top 5)

Proficiency Level

Software Testing

3

Solution Architecture

4

Stakeholder Management

4

User Experience Design

3

User Interface Design

4

User Testing and Usability Testing

4

Critical Core Skills (Top 5)

Proficiency Level

Computational Thinking

Basic

Creative Thinking

Intermediate

Lifelong Learning

Intermediate

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

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

Budgeting

4

Business Innovation

6

Business Needs Analysis

4

Business Performance Management

4

Business Requirements Mapping

5

Customer Experience Management

4

Data Analytics

4

Design Thinking Practice

4

Emerging Technology Synthesis

5

Learning and Development

4

Manpower Planning

3

Networking

4

Organisational Analysis

4

People and Performance Management

3

Process Improvement and Optimisation

5

Product Management

5

Project Management

5

Research

4

Software Design

5

Software Testing

4

Solution Architecture

4

Stakeholder Management

5

Strategy Implementation

3

Strategy Planning

4

User Experience Design

4

User Interface Design

5

User Testing and Usability Testing

5



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.

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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

Critical Core Skills (Top 5)

Proficiency Level

Resource Management

Intermediate

Decision Making

Advanced

Developing People

Advanced

Interpersonal Skills

Intermediate

Teamwork

Advanced



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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SALES AND MARKETING

PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



SKILLSfuture SG

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

INFRASTRUCTURE
SUPPORT

SYSTEMS
SUPPORT

DATABASE
SUPPORT

DATA CENTRE AND OPERATIONS
CENTRE SUPPORT

APPLICATIONS
SUPPORT

Chief Information Officer

Head of Operations and Support

Operations and Support Manager

Infrastructure Support
Engineer

Systems Support
Engineer

Database Support
Engineer

Data Centre
Operations Engineer

Operations Centre
Support Engineer

Applications Support
Engineer

Associate
Infrastructure
Support Engineer

Associate
Systems Support
Engineer

Associate
Database Support
Engineer

Associate
Data Centre
Operations Engineer

Associate
Operations Centre
Support Engineer

Associate
Applications Support
Engineer

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PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



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

INFRASTRUCTURE
SUPPORT

Chief Information Officer

Head of Operations and Support

Operations and Support Manager

Infrastructure Support
Engineer

Associate
Infrastructure
Support Engineer

→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (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

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

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

Critical Core Skills (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

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

Software Configuration

4

Software Testing

4

Stakeholder Management

5

Strategy Implementation

4

Strategy Planning

4

Sustainability Management

4

System Integration

5

Test Planning

4

Critical Core Skills (Top 5)

Proficiency Level

Communication

Advanced

Leadership

Intermediate

Developing People

Intermediate

Interpersonal Skills

Advanced

Decision Making

Intermediate



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

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

Applications Integration

5

Budgeting

5

Business Continuity

6

Business Needs Analysis

5

Change Management

5

Contract Management

5

Cyber and Data Breach Incident Management

5

Data Centre Facilities Management

5

Data Engineering

5

Database Administration

5

Disaster Recovery Management

5

Infrastructure Strategy

5

IT Strategy

4

Learning and Development

6

Manpower Planning

5

Networking

5

People and Performance Management

5

Performance Management

5

Problem Management

5

Procurement

5

Project Management

6

Quality Standards

5

Stakeholder Management

6

Strategy Planning

5

Sustainability Management

5

System Integration

5

Test Planning

5



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.

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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

Critical Core Skills (Top 5)	Proficiency Level
Communication	Advanced
Leadership	Advanced
Developing People	Advanced
Interpersonal Skills	Advanced
Decision Making	Advanced



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

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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Developing People

Advanced

Creative Thinking

Advanced

Transdisciplinary Thinking

Advanced

Communication

Advanced

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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PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



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

SYSTEMS
SUPPORT

Chief Information Officer

Head of Operations and Support

Operations and Support Manager

Systems Support
Engineer

Associate
Systems Support
Engineer

→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (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

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

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

Business Needs Analysis

3

Configuration Tracking

3

Cyber and Data Breach Incident Management

3,4

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

4

Security Administration

4

Security Programme Management

3

Service Level Management

4

Stakeholder Management

4

Strategy Implementation

3

System Integration

4



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

Critical Core Skills (Top 5)	Proficiency Level
Communication	Intermediate
Interpersonal Skills	Intermediate
Problem Solving	Basic
Service Orientation	Basic
Teamwork	Intermediate



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

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CRITICAL CORE SKILLS



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

DATABASE
SUPPORT

Chief Information Officer

Head of Operations and Support

Operations and Support Manager

Database Support
Engineer

Associate
Database Support
Engineer

→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (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

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

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

Business Continuity

4

Configuration Tracking

3

Cyber and Data Breach Incident Management

3,4

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

Project Management

4

Stakeholder Management

4

Strategy Implementation

3

Security Administration

4



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

Critical Core
Skills (Top 5)

Proficiency
Level

Communication

Intermediate

Interpersonal Skills

Intermediate

Problem Solving

Basic

Service Orientation

Basic

Teamwork

Intermediate



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

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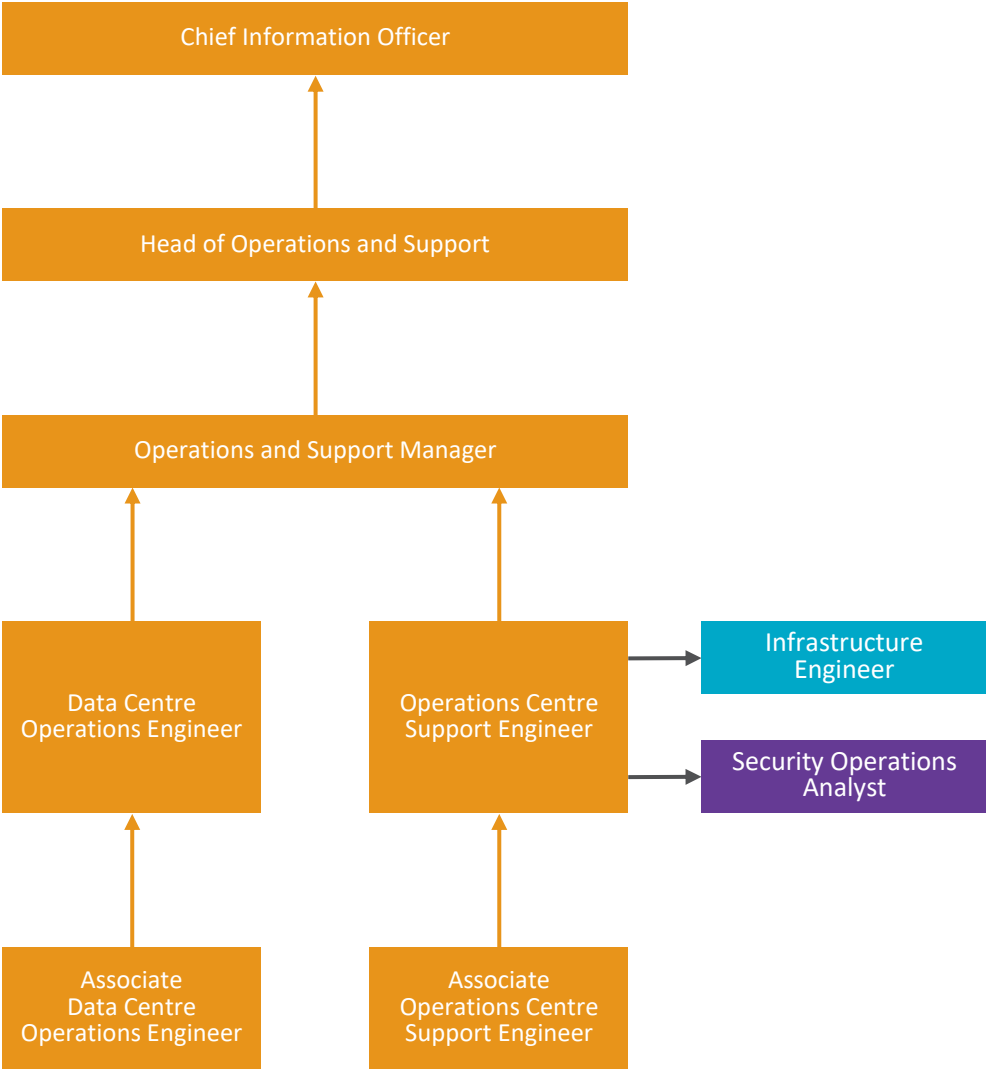
CRITICAL CORE SKILLS



SKILLSFuture SG

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

DATA CENTRE AND OPERATIONS
CENTRE SUPPORT



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Business Needs Analysis

2

Cyber and Data Breach Incident Management

2

Data Centre Facilities Management

2

Infrastructure Support

1,2

IT Asset Management

2

Process Improvement and Optimisation

3

Procurement

2

Project Management

3

Service Level Management

3

Stakeholder Management

2,3

System Integration

3

Communication

Basic

Interpersonal Skills

Basic

Problem Solving

Basic

Service Orientation

Basic

Teamwork

Basic

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

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

Critical Core Skills (Top 5)

Proficiency Level

Communication

Intermediate

Interpersonal Skills

Intermediate

Problem Solving

Basic

Service Orientation

Basic

Teamwork

Intermediate

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

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

Critical Core Skills (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

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

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

Critical Core Skills (Top 5)

Proficiency Level

Communication

Intermediate

Interpersonal Skills

Intermediate

Problem Solving

Basic

Service Orientation

Basic

Teamwork

Intermediate

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

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TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



SKILLSFuture SG

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

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

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	Critical Core Skills (Top 5)	Proficiency Level
Applications Support and Enhancement	1,2	Communication	Basic
Business Needs Analysis	2	Interpersonal Skills	Basic
Configuration Tracking	1,2	Problem Solving	Basic
Customer Experience Management	2	Service Orientation	Basic
Cyber and Data Breach Incident Management	2	Teamwork	Basic
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		

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

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	Critical Core Skills (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		

Critical Work Functions

Key Tasks

Provide software support

- Develop operational software configuration management plans
- Manage the maintenance of Commercial Off-the-Shelf (COTS) and other software technologies to maintain currency
- Oversee software help desk activities
- Develop software retirement procedures
- Acquire tools to facilitate the analysis of operational data

Manage software maintenance

- Implement software maintenance processes and plans
- Conduct technical impact analysis and problem identification
- Develop plans to make corrective, adaptive and perfective changes to software
- Manage preventative maintenance and software re-engineering activities
- Monitor and analyse software maintenance activities

Oversee software transition

- Develop software transition plans and identify stakeholders for transition and operational requirements
- Modify existing and develop new software operational standards
- Develop software activation and check-out procedures
- Lead software operational training
- Develop training material for operational support personnel
- Determine the impact of software changes on the operational environment
- Lead software diagnostics and real-time debugging/trouble shooting

Oversee software testing

- Identify stakeholders participating in testing activities
- Design software test plan and criteria for regression testing
- Design the test environment and test case scenarios
- Specify test cases for the selected testing technique
- Analyse defect arrival rate and failure intensity data

Maintain software and platform solutions

- Develop maintenance plans including timelines and resources needed
- Provide high-level maintenance and update of an existing software and/or platform to improve functionality and process flow
- Provide high-level monitoring of security measures, proper registration of passwords and other access procedures
- Solve unique and highly complex problems by taking a broad perspective to identify solutions
- Anticipate internal and/or external business challenges and/or regulatory issues
- Oversee the maintenance of technical documentation of technical architecture, code changes, issue resolutions and procedures
- Collaborate with external stakeholders and vendors to resolve problems

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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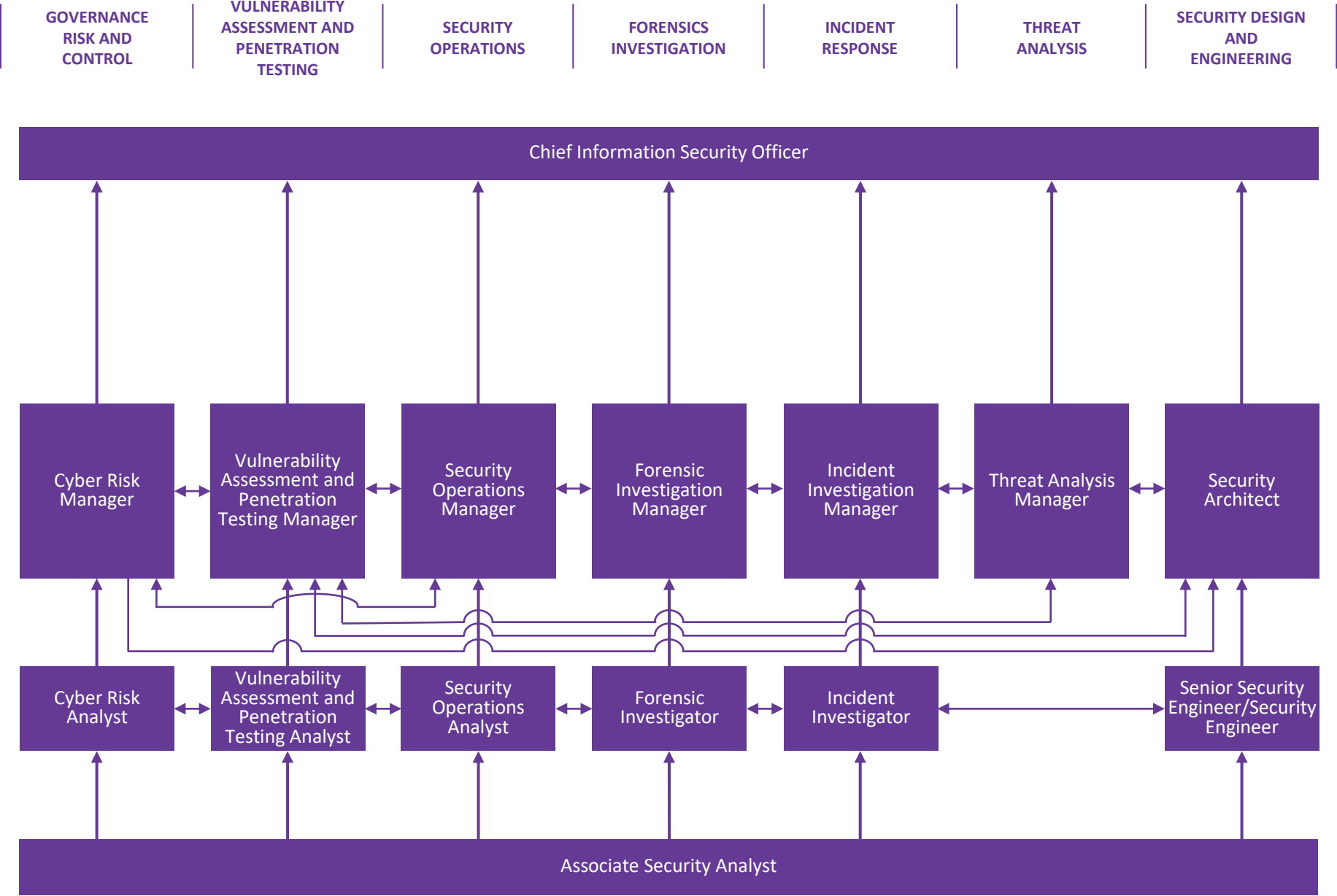
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CRITICAL CORE SKILLS



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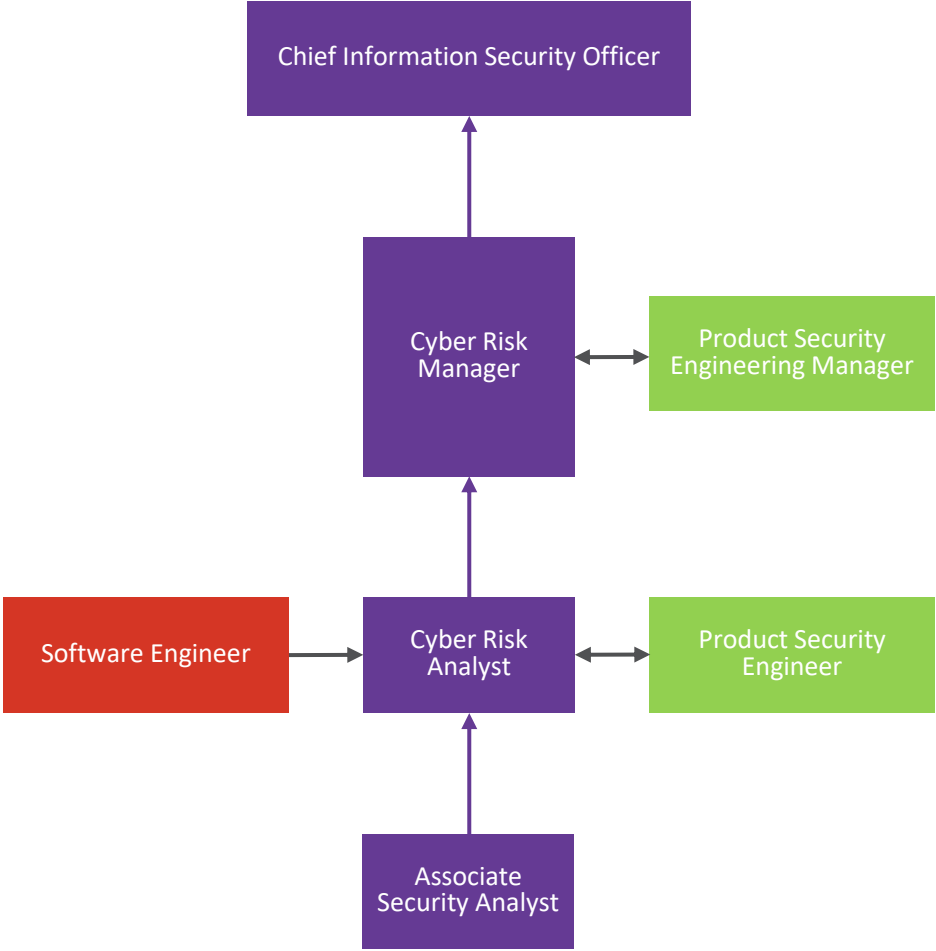
CRITICAL CORE SKILLS



SKILLSFuture SG

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

GOVERNANCE RISK
AND CONTROL



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (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

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

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

View details

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

Technical Skills & Competencies	Proficiency Level	Critical Core Skills (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

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

Critical Core Skills (Top 5)

Proficiency Level

Computational Thinking

Advanced

Digital Literacy

Advanced

Global Mindset

Advanced

Sense Making

Advanced

Creative Thinking

Advanced

Critical Work Functions	Key Tasks	Performance Expectations
Implement cyber security risk strategy	- Manage the strategic development and improvement of risk frameworks, methodologies and requirements - Recommend strategies to address key risk areas in cyber security - Assess business needs against cyber security concerns and legal and/or regulatory requirements - Anticipate internal and external business challenges and legal or regulatory issues - Provide strategic risk guidance to stakeholders in the implementation and execution of cyber risk strategies across the organisation	In accordance with: Cyber Security Act 2018, Cyber Security Agency of Singapore
Establish cyber security standards and policies	- Formulate governance procedures for documenting and updating security policy, standards, guidelines and procedures - Plan the implementation of information systems and cyber security policies - Develop the organisation's Cyber Risk Maturity model - Develop policies and frameworks for conducting cyber security risk assessments and compliance audits	As above
Manage cyber risks and assessments	- Advise the development of techniques and procedures for the conduct of cyber risk assessments - Develop plans for cyber risk assessment activities across the organisation - Coordinate the on-going cyber risk assessment activities across the organisation - Provide strategic and technical recommendations following identification of vulnerabilities in operating systems - Incorporate emerging security and risk management trends, issues, and alerts into risk assessment framework - Develop cyber risk mitigation strategies and policies for the organisation	As above
Develop cyber risk documentation	- Oversee the development of documentation on methodologies and tools to mitigate cyber risks - Establish guidelines for reporting outcome of cyber risk assessments - Oversee the development of internal threat awareness reports - Present threat awareness reports to technical and non-technical staff	As above
Mitigate cyber security risks	- Develop programmes and initiatives to strengthen the capability of the organisation to mitigate risks - Oversee the planning and conduct of organisational cyber security exercises - Act as a subject matter expert in cyber security incident and breach investigations and post-breach remediation work - Propose procedures to prevent future incidents and improve cyber security - Monitor the maintenance of the cyber security operations training plans for all security staff - Manage responses to regulatory inquiries, inspections or audits	As above
Manage people and organization	- 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	As above

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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Global Mindset

Advanced

Decision Making

Advanced

Transdisciplinary Thinking

Advanced

Sense Making

Advanced

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

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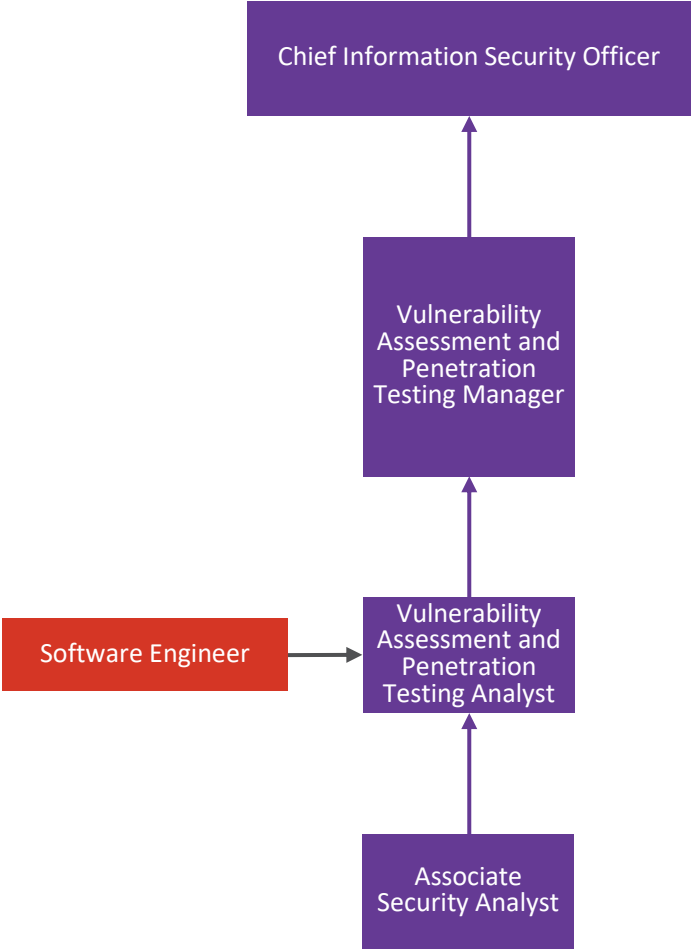
CRITICAL CORE SKILLS



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

VULNERABILITY ASSESSMENT
AND PENETRATION TESTING



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Audit and Compliance

3

Cyber Risk Management

4

Emerging Technology Synthesis

4

Learning and Development

4

Network Security

4

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

Digital Literacy

Advanced

Computational Thinking

Advanced

Sense Making

Advanced

Transdisciplinary Thinking

Intermediate

Problem Solving

Advanced

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

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

Critical Core Skills (Top 5)

Proficiency Level

Computational Thinking

Advanced

Digital Literacy

Advanced

Global Mindset

Advanced

Sense Making

Advanced

Creative Thinking

Advanced

Critical Work Functions	Key Tasks	Performance Expectations
Establish cyber security policies	- Develop policies and frameworks to conduct security penetration testing - Establish certification-based policies for maintaining compliance - Formulate governance procedures for documenting and updating security testing policy, standards, guidelines and procedures	In accordance with: Cyber Security Act 2018, Cyber Security Agency of Singapore
Establish cyber security guidelines and methodologies	- Design service strategies and scope for security testing technologies and solutions - Recommend strategic and operational changes to security testing to address new threats - Drive cyber security awareness within the organisation	As above
Oversee vulnerability assessment and penetration testing (VAPT) activities	- Establish test metrics to benchmark against requirements and industry best practices - Monitor the conduct of certification tests, audits, inspections and reviews - Provide advice on complex security test data analysis to support security vulnerability assessment processes, including root cause analysis - Act as an escalation point on issues, dependencies, and risks related to security testing - Lead team members to continuously improve testing capabilities - Incorporate emerging security and risk management trends, issues, and alerts in penetration testing activities	As above
Manage VAPTs	- Develop frameworks and dashboards for the reporting of VAPT results - Communicate the outcome of testing initiatives and results to the stakeholder groups - Recommend strategies and techniques to mitigate identified risks - Provide advice based on security VAPT considerations - Approve documentation to certify penetration testing results - Propose corrections and recommendations to improve and facilitate certification of software	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

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COMPETENCIES

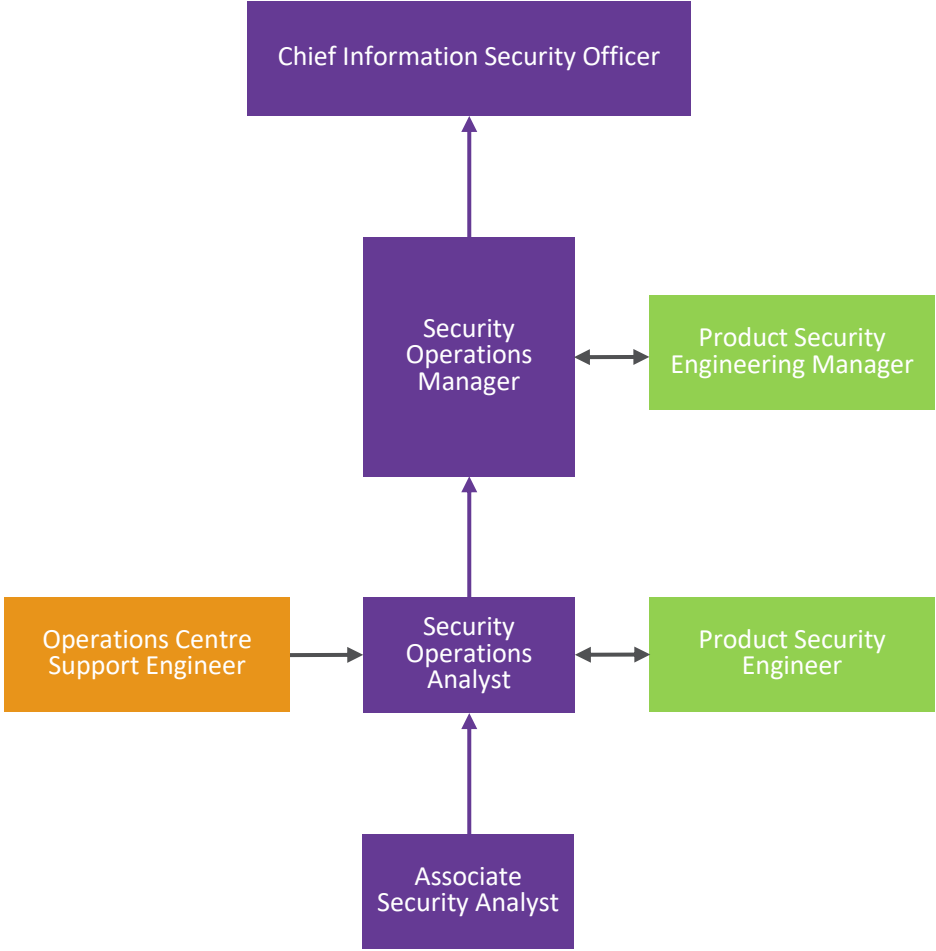
CRITICAL CORE SKILLS



SKILLSFuture SG

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

SECURITY
OPERATIONS



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Audit and Compliance

3

Business Continuity

4

Cyber and Data Breach Incident Management

3

Cyber Risk Management

4

Disaster Recovery Management

4

Network Security

3

Security Administration

3

Security Programme Management

4

Stakeholder Management

3

Threat Analysis and Defence

4

Threat Intelligence and Detection

3

Communication

Intermediate

Creative Thinking

Intermediate

Problem Solving

Intermediate

Sense Making

Intermediate

Teamwork

Intermediate

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

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	Stakeholder Management	4,5
Budgeting	5	Strategy Implementation	5
Business Continuity	5	Strategy Planning	5
Business Performance Management	5	Threat Analysis and Defence	5
Cyber and Data Breach Incident Management	4	Threat Intelligence and Detection	4,5
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	4		
Security Education and Awareness	5		
Security Strategy	5		
		Critical Core Skills (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
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

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SKILLSFuture SG

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

FORENSICS
INVESTIGATION

Chief Information Security Officer

Forensic
Investigation
Manager

Forensic
Investigator

Associate
Security Analyst

→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (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

Threat Intelligence and Detection

3

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

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	Strategy Implementation	5
Business Performance Management	5	Strategy Planning	5
Cyber Forensics	4,5	Threat Analysis and Defence	4
Cyber Risk Management	5	Threat Intelligence and Detection	4
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		
		Critical Core Skills (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 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

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CRITICAL CORE SKILLS



SKILLSFuture SG

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

INCIDENT
RESPONSE

Chief Information Security Officer

Incident
Investigation
Manager

Incident
Investigator

Associate
Security Analyst

→ Lateral Movement

→ Vertical Progression

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	Critical Core Skills (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		
Threat Intelligence and Detection	3		

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

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

Critical Core Skills (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

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SKILLS *future* SG

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

THREAT
ANALYSIS

Chief Information Security Officer

Threat Analysis
Manager

→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Virtual Collaboration

Intermediate

Transdisciplinary Thinking

Advanced

Problem Solving

Advanced

Leadership

Advanced

Global Mindset

Advanced

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

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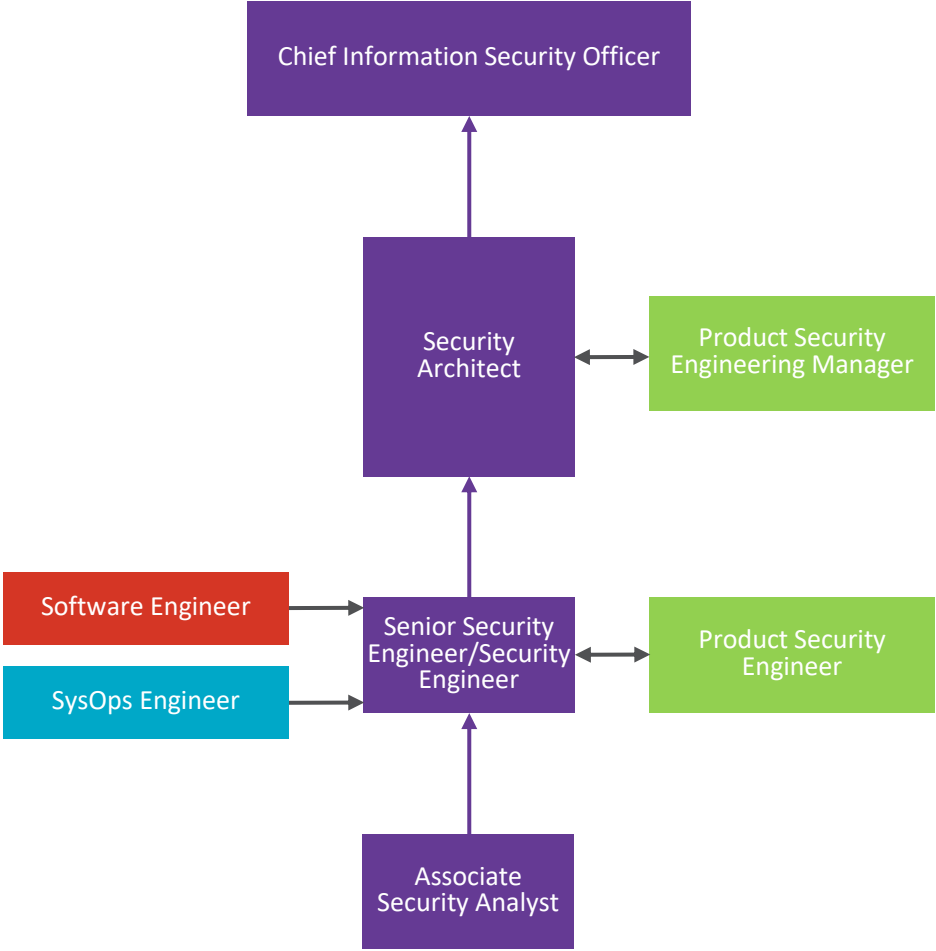
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SKILLSFuture SG

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

SECURITY DESIGN AND
ENGINEERING



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Business Needs Analysis

3

Cyber and Data Breach Incident Management

3

Cyber Risk Management

4

Emerging Technology Synthesis

3

Infrastructure Design

3

Network Security

4

Security Administration

3

Security Architecture

3

Security Governance

4

Security Programme Management

3

Strategy Implementation

4

Strategy Planning

4

Communication

Intermediate

Computational Thinking

Intermediate

Problem Solving

Intermediate

Sense Making

Intermediate

Teamwork

Intermediate

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

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

Critical Core Skills (Top 5)

Proficiency Level

Business Needs Analysis

4

Cyber Risk Management

5

Emerging Technology Synthesis

4

Infrastructure Design

4

Network Security

5

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

Communication

Advanced

Creative Thinking

Advanced

Developing People

Advanced

Problem Solving

Advanced

Sense Making

Advanced

Critical Work Functions	Key Tasks	Performance Expectations
Formulate the organisation's security 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 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	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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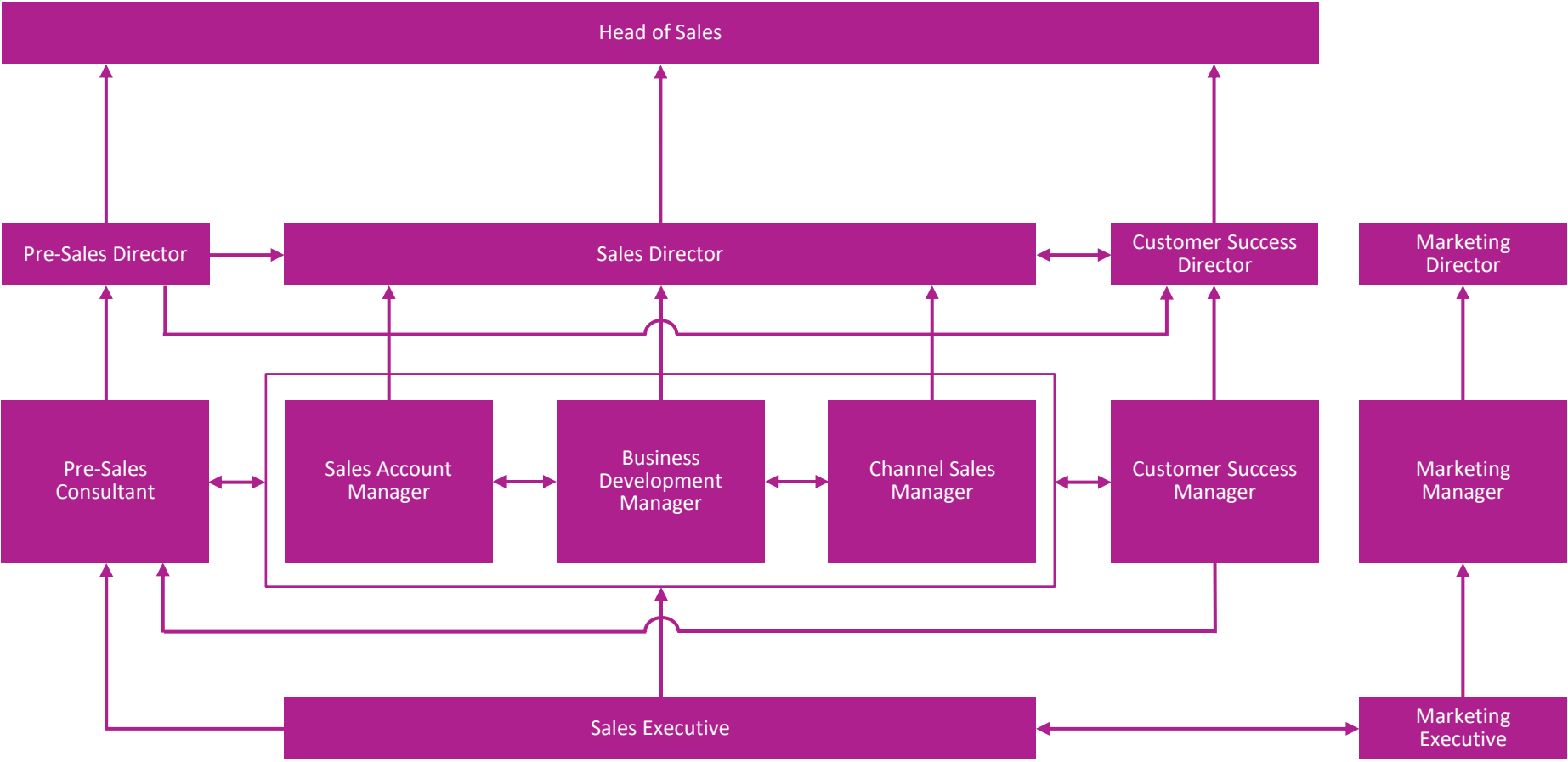
Click on Sub-track names below to view feeder roles and next moves

PRE-SALES

SALES

CUSTOMER
SUCCESS

MARKETING



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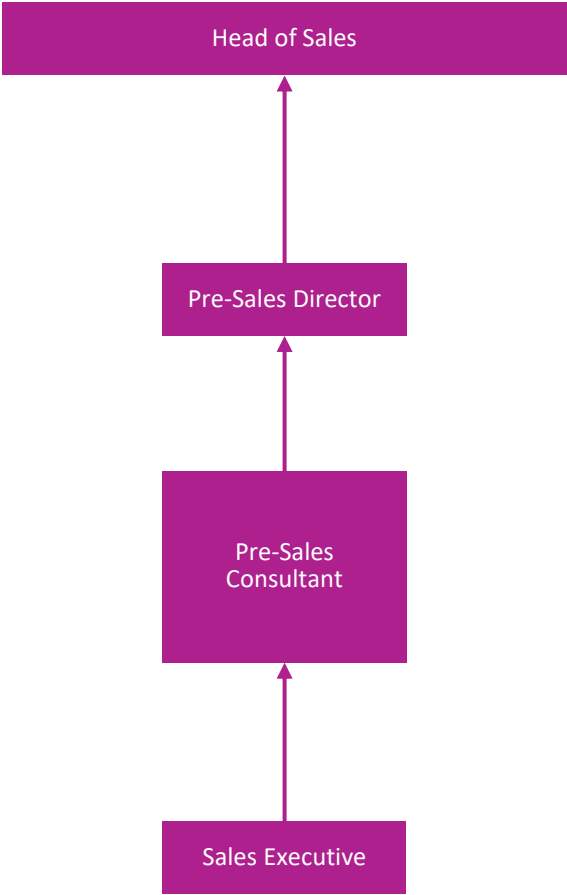
CRITICAL CORE SKILLS



SKILLS *future* SG

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

PRE-SALES



→ Lateral Movement

➡ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Account Management

2

Business Development

3

Business Needs Analysis

2

Business Negotiation

3

Contract Management

3

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

Communication

Intermediate

Interpersonal Skills

Intermediate

Service Orientation

Advanced

Global Mindset

Intermediate

Problem Solving

Intermediate

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

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

Critical Core Skills (Top 5)

Proficiency Level

Account Management

3

Business Development

3

Business Performance Management

4

Business Needs Analysis

3

Business Negotiation

4

Data Analytics

3

Networking

4

Learning and Development

4

Product Management

3

Problem Management

3

Project Management

3

Stakeholder Management

4

Technical Sales Support

3

Problem Solving

Advanced

Interpersonal Skills

Intermediate

Communication

Intermediate

Service Orientation

Advanced

Decision Making

Advanced

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

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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Problem Solving

Advanced

Resource Management

Advanced

Service Orientation

Advanced

Communication

Advanced

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

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

Budgeting

6

Business Development

6

Business Needs Analysis

5

Business Performance Management

5

Business Negotiation

5

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

Product Management

5

Project Management

5

Sales Channel Management

5

Sales Strategy

6

Stakeholder Management

6

Strategy Planning

6

Critical Core Skills (Top 5)

Proficiency Level

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

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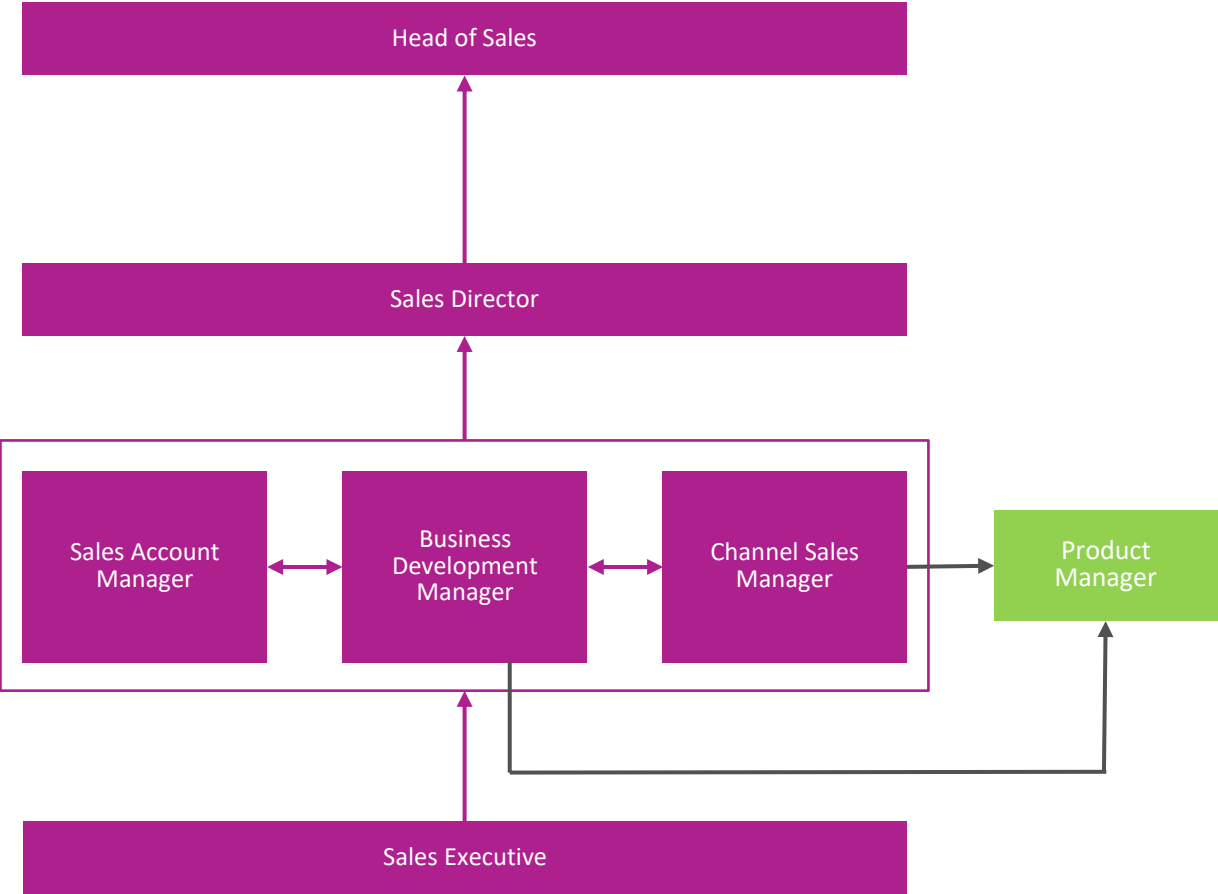
CRITICAL CORE SKILLS



SKILLSFuture SG

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

SALES



→ Lateral Movement

➡ Vertical Progression

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

Critical Core Skills (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

Stakeholder Management

4

Technical Sales Support

3

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

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 place 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	Critical Core Skills (Top 5)	Proficiency Level
Budgeting	4	Interpersonal Skills	Advanced
Business Development	4	Communication	Advanced
Business Needs Analysis	3	Problem Solving	Intermediate
Business Negotiation	4	Service Orientation	Intermediate
Contract Management	4	Transdisciplinary Thinking	Intermediate
Customer Experience Management	4		
Data Analytics	3		
Market Research	3		
Networking	4		
Partnership Management	4		
Sales Strategy	3		
Stakeholder Management	4		
Technical Sales Support	3		

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

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	Critical Core Skills (Top 5)	Proficiency Level
Budgeting	4	Interpersonal Skills	Advanced
Business Development	4	Managing Diversity	Intermediate
Business Needs Analysis	3	Creative Thinking	Advanced
Business Negotiation	4	Communication	Advanced
Contract Management	4	Service Orientation	Intermediate
Data Analytics	3		
Networking	4		
Partnership Management	3		
Pricing Strategy	3		
Sales Channel Management	4		
Sales Strategy	4		
Stakeholder Management	4		
Technical Sales Support	3		

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

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

Critical Core Skills (Top 5)

Proficiency Level

Leadership

Advanced

Interpersonal Skills

Advanced

Decision Making

Advanced

Communication

Advanced

Problem Solving

Intermediate

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

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SKILLS *future* SG

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

CUSTOMER
SUCCESS

Head of Sales

Customer Success
Director

Customer Success
Manager

→ Lateral Movement

➡ Vertical Progression

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	Critical Core Skills (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		

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

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

View details

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

Technical Skills & Competencies	Proficiency Level	Critical Core Skills (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	5		
People and Performance Management	4		
Problem Management	4		
Product Management	4		
Project Management	5		
Stakeholder Management	5		
Strategy Implementation	4		
Strategy Planning	4		

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
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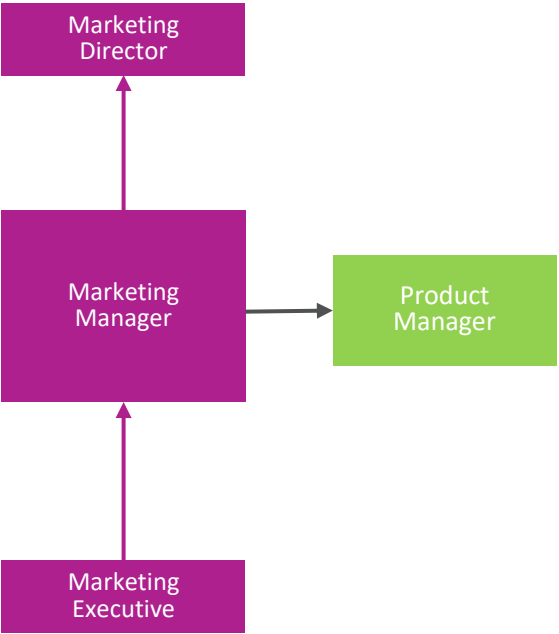
CRITICAL CORE SKILLS



SKILLSFuture SG

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

MARKETING



→ Lateral Movement

➡ Vertical Progression

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

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

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

Critical Core Skills (Top 5)

Proficiency Level

Creative Thinking

Intermediate

Digital Literacy

Advanced

Communication

Intermediate

Service Orientation

Basic

Interpersonal Skills

Intermediate

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

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

3

Design Concepts Generation

4

Emerging Technology Synthesis

4

Integrated Marketing

4

Manpower Planning

3

Market Research

3



MARKETING 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

Critical Core Skills (Top 5)	Proficiency Level
Service Orientation	Intermediate
Digital Literacy	Advanced
Creative Thinking	Intermediate
Communication	Intermediate
Interpersonal Skills	Intermediate



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

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



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.

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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

Critical Core Skills (Top 5)

Proficiency Level

Service Orientation

Advanced

Leadership

Advanced

Digital Literacy

Intermediate

Communication

Advanced

Interpersonal Skills

Advanced



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
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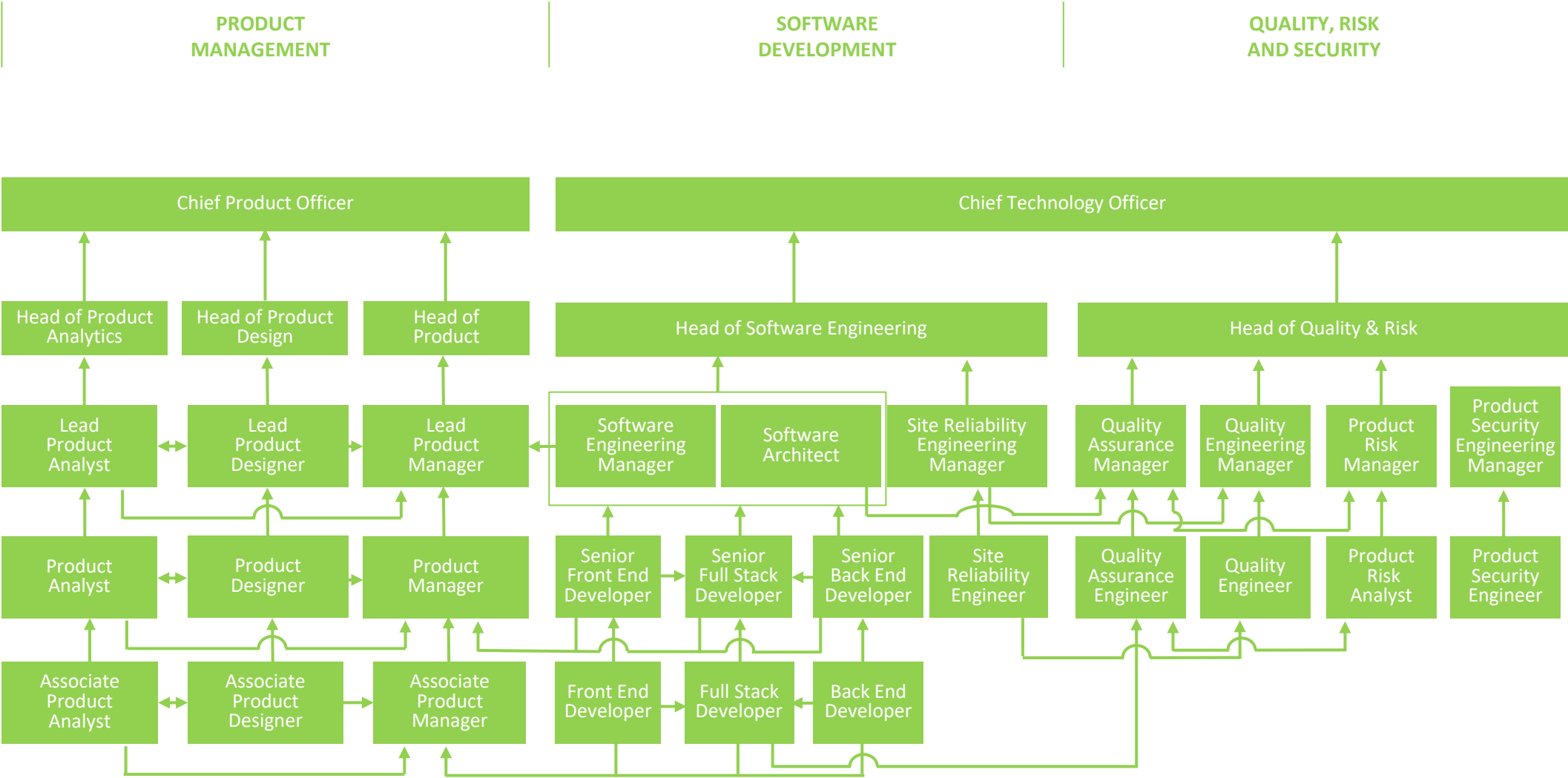
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COMPETENCIES

CRITICAL CORE SKILLS



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



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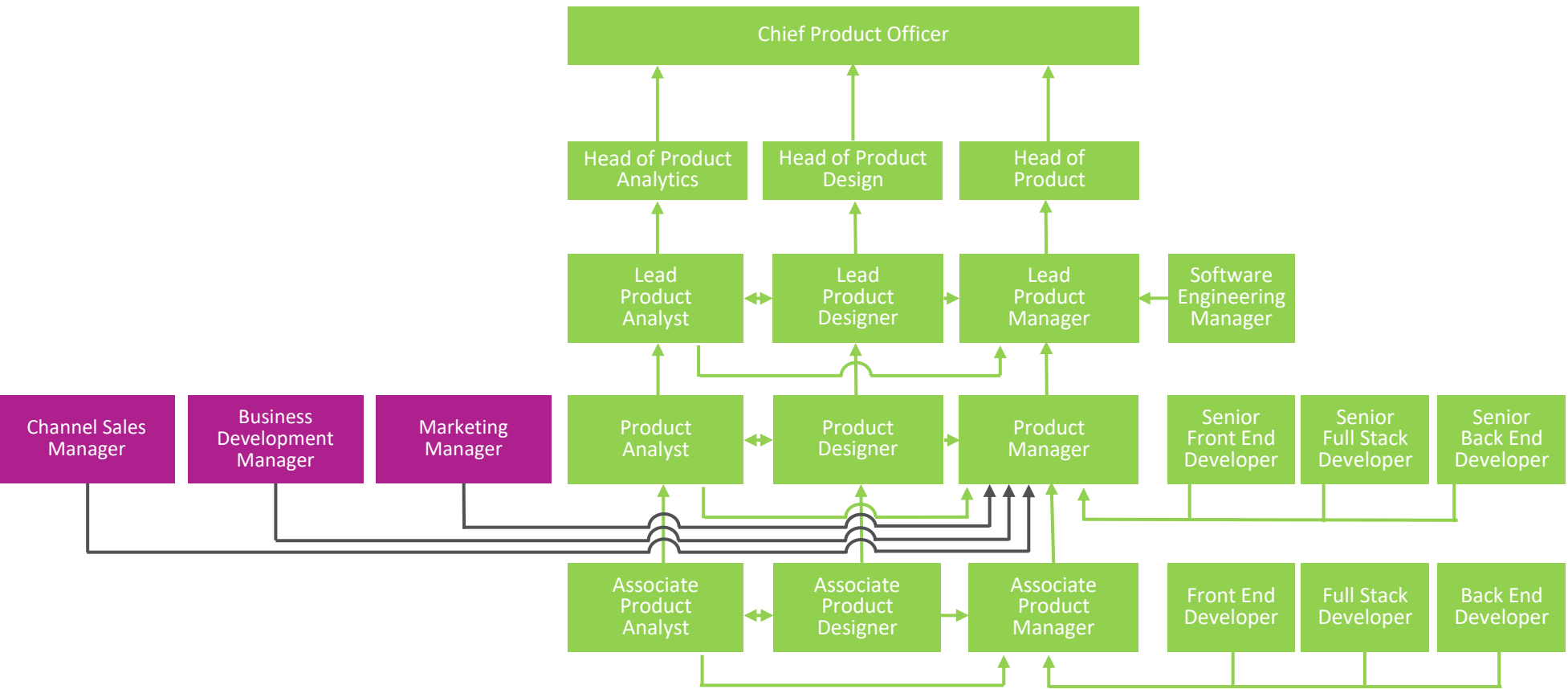
CRITICAL CORE SKILLS



SKILLSfuture SG

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

PRODUCT
MANAGEMENT



→ Lateral Movement

→ Vertical Progression

ASSOCIATE PRODUCT ANALYST

Job Description

The Associate Product Analyst performs market analysis to support product decisions. He/She gathers data available externally and internally to generate reports and prepare the data for analysis. He collects, cleans, analyses and visualises large datasets to create actionable insights. He executes the end-to-end product analysis.

He supports the product development team and uses analytical tools and techniques as required by the team. He is familiar with the product offerings and provides data-driven insights.

The Associate Product Analyst works with data and adopts an analytical approach to solving problems. He is confident in communicating ideas and solutions to 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

Artificial Intelligence Application
in Product Development

3

Automation Management in
Product Development

2

Business Environment Analysis

2

Business Needs Analysis

2

Business Requirements Mapping

3

Data Analytics

2

Data Design

3

Data Engineering

2

Data Ethics

3

Data Visualisation and Storyboarding

3

Design Thinking Practice

3

Market Research

2

Partnership Management

3

Project Management

3

Quality Standards

4

Stakeholder Management

2

Critical Core Skills (Top 5)

Proficiency Level

Collaboration

Intermediate

Communication

Intermediate

Customer Orientation

Intermediate

Digital Fluency

Basic

Sense Making

Intermediate

Critical Work Functions

Key Tasks

Identify market needs

- Communicate needs of stakeholders for product decision-making
- Document requirements and parameter configurations through customer journeys and user stories
- Gather data for market information and insights
- Support team with market research to determine market requirements of products
- Conduct benchmarking of products offered in the market
- Conduct market surveys and interviews to collect data on consumer needs and determine product-market fit

Build a user experience research roadmap

- Execute the research roadmap based on customer journey, usability, and design
- Apply research strategies throughout various product stages from conceptualisation, prototyping, developing, launching to reviewing
- Perform qualitative and quantitative research to collect user data (e.g. data analysis, UAT testing, usability testing, eye tracking, testing across desktop, tablet, and mobile interfaces, card sorting, A/B Testing, multivariate testing, heuristic evaluations)
- Apply the predetermined User Research Practice Framework on data collection and benchmarking activities
- Apply the latest developments in user research methodologies, best practices, and latest consumers' trends

Perform research and testing

- Execute testing life cycle for product implementation and the core life operating system including end-to-end quality checks
- Participate in discussions with various stakeholders such as designers, engineers, and product managers in the research process to deliver robust insights
- Execute User Acceptance Testing (UAT) on product launches
- Prepare test data and testing progress results to log defects
- Execute proper completion and documentation of the entire testing process within stipulated timelines

Analyse product data

- Gather data from internal and external sources
- Prepare large datasets with actionable insights
- Perform data validation and quality control checks
- Identify trends, patterns, and correlations in data to support decision-making
- Identify possible data-driven solutions and recommendations

Present insights and improvements
to the product roadmap

- Perform analyses to influence product decisions and/or actions
- Create data reports and visualisation tools to facilitate data understanding through storytelling
- Execute the conceptualisation, design and building of visual dashboards and graphs

ASSOCIATE PRODUCT DESIGNER

Job Description

The Associate Product Designer assists in executing the design and development of the product line lifecycle, including the end-to-end iterative design process. He/She supports product development in the conceptualisation and design phase, including research performance, job stories creation, journey mapping, content modelling, wire-framing, prototyping, user testing, and high-fidelity visuals generation to achieve design solutions.

He works on design concepts and drawings stipulated by the team to create the best product, and works with various teams to assist in brainstorming product ideas and suggest iterations and improvements to product engineers on products based on market feedback. He is familiar with research methodologies to perform research on product technologies and frameworks to apply to design concepts, is well-versed in product development lifecycles and stays abreast of the latest emerging industry trends in terms of product design.

The Associate Product Designer keeps up to date with insights, emerging industry trends and feedback from teams, synthesising this information and applying them to product design. He is articulate, a strong communicator with internal and external stakeholders and can 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

Artificial Intelligence Application
in Product Development

3

Narrative Design in
Product Development

2

Automation Management in
Product Development

2

Partnership Management

3

Brand Management

3

Process Improvement and Optimisation

3

Business Development

3

Product Management

3

Business Environment Analysis

2

Project Management

3

Business Needs Analysis

2

Quality Standards

4

Business Requirements Mapping

3

Stakeholder Management

2

Customer Experience Management

2

Testing Planning

3

Data Analytics

2

User Experience Design

4

Data Visualisation and Storyboarding

3

User Interface Design

3

Demand Analysis

3

User Testing and User Testability

4

Design Concepts Generation

3

Design Thinking Practice

3

Emerging Technology Synthesis

3

Market Research

2



ASSOCIATE PRODUCT DESIGNER

Job Description

The Associate Product Designer assists in executing the design and development of the product line lifecycle, including the end-to-end iterative design process. He/She supports product development in the conceptualisation and design phase, including research performance, job stories creation, journey mapping, content modelling, wire-framing, prototyping, user testing, and high-fidelity visuals generation to achieve design solutions.

He works on design concepts and drawings stipulated by the team to create the best product, and works with various teams to assist in brainstorming product ideas and suggest iterations and improvements to product engineers on products based on market feedback. He is familiar with research methodologies to perform research on product technologies and frameworks to apply to design concepts, is well-versed in product development lifecycles and stays abreast of the latest emerging industry trends in terms of product design.

The Associate Product Designer keeps up to date with insights, emerging industry trends and feedback from teams, synthesising this information and applying them to product design. He is articulate, a strong communicator with internal and external stakeholders and can 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

Critical Core Skills (Top 5)

Proficiency Level

Collaboration

Intermediate

Communication

Intermediate

Creative Thinking

Basic

Customer Orientation

Basic

Problem Solving

Basic



Critical Work Functions

Key Tasks

Formulate ideas through various iterative processes

- Conduct cross functional product strategy workshops to facilitate ideation and creation of UX related artefacts for product scoping and delivery planning
- Interact with product researchers to develop empathy for customers in design sprints
- Brainstorm ideas as a team with a focus on usability, interaction design and human centred design thinking to create polished, production level, world class visual design
- Prototype design solutions using various designing tools

Conceptualise the design strategy

- Improve customer experience for products based on predetermined plans formulated by the Product Design team
- Execute various UX initiatives including running design sprints to resolve users' problems, content mapping, sketching, wireframing, low and high-fidelity prototyping
- Understand the full scope of a typical user-centred design process to solve consumers' pain points
- Iterate products based on creative solutions brainstormed as a team to bring innovative ideas to the market

Perform data analysis

- Compile data on user behaviour and consumers' pain points
- Research on industry UX/UI trends for insights and learning points from competitors' sites
- Build user flow charts, storyboards, wire frames, and related elements to provide clear data visualisation for the planning phase of a product

Collaborate with various functions to run the design sprint for a product

- Work closely with engineers, product managers, product researchers, and front-end developers to build product designs
- Assist other functions in the organisation to understand the value design can bring to a product
- Assist the Product Designer in stakeholder meetings and discussions

ASSOCIATE PRODUCT MANAGER

Job Description

The Associate Product Manager assists the Product Manager in executing activities in product development from conception to launch, research on product functionalities and performance, and brainstorm for ideas with the team on enhancements and/or improvements to products based on market feedback. He compiles research on potential partners for collaboration and brainstorms 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 and understands product positioning approaches. He is also aware of new and emerging consumer trends in the market.

The Associate Product Manager draws connections across all phases of the product life cycle and develops creative strategies to address them. He is an articulate and influential communicator 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

Artificial Intelligence Application
in Product Development

3

Automation Management in
Product Development

2

Business Environment Analysis

2

Business Needs Analysis

2

Business Requirements Mapping

3

Customer Experience Management

2

Data Analytics

2

Demand Analysis

3

Design Thinking Practice

3

Emerging Technology Synthesis

3

Market Research

2

Portfolio Management

4

Product Management

3

Project Management

3

Stakeholder Management

2

Strategy Implementation

3

User Experience Design

4

User Interface Design

3

Critical Core Skills (Top 5)

Proficiency Level

Collaboration

Intermediate

Communication

Intermediate

Customer Orientation

Basic

Global Perspective

Basic

Problem Solving

Intermediate

Critical Work Functions

Key Tasks

Formulate and implement product development strategy and plans

- Assist with activities required to run the product line life cycle
- Assist in the maintenance of the organisation's product roadmap
- Assist in logistical activities for internal and external product launches
- Assist in preparing product requirement documents containing product specifications and requirements

Drive product development

- Prepare communication materials required for product development
- Compile information on product functionalities and performance based on market feedback
- Brainstorm on enhancements to products based on market feedback

Develop and grow business

- Conduct market research to determine market requirements for current and future products
- Compile information on potential partners highlighted by the team for products
- Research on business opportunities and market trends
- Research on specific markets and past collaborations
- Assist in completing segments of the business proposals
- Brainstorm with the team for innovative ideas to grow market share, improve customer experience and drive growth

CHIEF PRODUCT OFFICER

Job Description

The Chief Product Officer 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 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 Chief Product Officer adopts a global mindset 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

Artificial Intelligence Application
in Product Development

6

Emerging Technology Synthesis

6

Automation Management in
Product Development

6

IT Strategy

6

Budgeting

5

Learning and Development

6

Business Agility

6

Networking

5

Business Continuity

6

Organisational Analysis

6

Business Development

6

Partnership Management

6

Business Environment Analysis

5

People and Performance Management

5

Business Innovation

6

Performance Management

6

Business Needs Analysis

6

Portfolio Management

6

Business Performance Management

6

Pricing Strategy

5

Business Requirements Mapping

5

Product Management

6

Customer Experience Management

5

Project Management

6

Data Analytics

5

Quality Standards

6

Demand Analysis

5

Stakeholder Management

6

Design Thinking Practice

6

Strategy Planning

6



CHIEF PRODUCT OFFICER

Job Description

The Chief Product Officer 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.

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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

System Integration

6

User Experience Design

5

User Interface Design

5

User Testing and Usability Testing

5

Critical Core Skills (Top 5)

Proficiency Level

Customer Orientation

Advanced

Decision Making

Advanced

Global Perspective

Advanced

Influence

Advanced

Transdisciplinary Thinking

Advanced



Critical Work Functions

Key Tasks

Formulate and implement product development strategy and plans

- Define product development vision and strategy
- Create strategies to 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
- 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

- Establish product branding strategies, marketing tactics and pricing strategies
- Foster relationships with key clients, business partners and industry stakeholders to drive business growth
- Guide the team to develop differentiated strategies across the lines of business
- Sign off business proposals for new opportunities

Manage people and organisation

- Develop strategies for resource planning and utilisation
- 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

HEAD OF PRODUCT

Job Description

The Head of Product drives the product development vision and strategy and ensures alignment of the product roadmap with organisational strategy and vision. He/she oversees the development for a suite of products to achieve strategic goals. He establishes relationships with key clients and business partners to drive business and product growth. 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 proficient with product development and management practices and tools, as well as various product positioning and pricing methodologies. He keeps abreast of the latest consumer and industry trends and anticipates new trends.

The Head of Product adopts a global mindset when distilling market trends and synthesising opportunities for growth. He guides the team to adopt innovative practices and mindsets. He is an influential leader who inspires others to achieve long-term strategic goals and influence.

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

Artificial Intelligence Application
in Product Development

4

Learning and Development

6

Automation Management in
Product Development

4

Manpower Planning

5

Market Research

5

Budgeting

5

Networking

5

Business Agility

5

Partnership Management

5

Business Development

5

People and Performance Management

5

Business Environment Analysis

5

Performance Management

6

Business Innovation

5

Portfolio Management

6

Business Needs Analysis

5

Pricing Strategy

5

Business Performance Management

6

Product Management

6

Customer Experience Management

5

Project Management

5

Data Analytics

5

Quality Standards

5

Demand Analysis

5

Stakeholder Management

5

Design Concepts Generation

5

Strategy Implementation

5

Design Thinking Practice

6

Emerging Technology Synthesis

5



HEAD OF PRODUCT

Job Description

The Head of Product drives the product development vision and strategy and ensures alignment of the product roadmap with organisational strategy and vision. He/she oversees the development for a suite of products to achieve strategic goals. He establishes relationships with key clients and business partners to drive business and product growth. 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 proficient with product development and management practices and tools, as well as various product positioning and pricing methodologies. He keeps abreast of the latest consumer and industry trends and anticipates new trends.

The Head of Product adopts a global mindset when distilling market trends and synthesising opportunities for growth. He guides the team to adopt innovative practices and mindsets. He is an influential leader who inspires others to achieve long-term strategic goals and influence.

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	Critical Core Skills (Top 5)	Proficiency Level
Strategy Planning	4	Customer Orientation	Advanced
System Integration	5	Decision Making	Advanced
User Experience Design	5	Global Perspective	Advanced
User Interface Design	5	Influence	Advanced
User Testing and Usability Testing	5	Transdisciplinary Thinking	Advanced



Critical Work Functions

Key Tasks

Formulate and implement product development strategy and plans

- Develop strategies to meet market needs and make product decisions
- Oversee product portfolio roadmap, pricing and launch strategies and financial projections
- Anticipate the impacts of internal and/or external business challenges and/or regulatory issues
- Review product portfolio performance

Drive product development

- Oversee development for a suite of products
- Oversee the alignment of product performance and functionality to organisational strategy and vision
- Drive product enhancements through analysing results of feedback loops
- Validate detailed specifications and development costing against market potential and future revenue
- Influence stakeholders to achieve strategic goals and initiatives
- Develop strategies to align product features with desired user experience
- Lead the development, implementation, and release process for the product

Develop and grow business

- Spearhead research and analyses on products and product markets
- Establish relationships with key clients and business partners to drive business and product growth
- Oversee the execution of the feature roadmaps
- Distil insights and competitive intelligence with various market analyses to grow the organisation's business
- Identify potential partnerships and new opportunities for product development
- Foster an innovative mindset within the product team

Manage people and organisation

- Forecast budget expenditure and allocation across teams and projects
- Establish key performance indicators of the team
- Review newly proposed operational strategies, policies and targets across teams and projects
- Review the utilisation of resources
- Drive the development of learning roadmaps for the team
- Implement workforce planning initiatives for the team

HEAD OF PRODUCT ANALYTICS

Job Description

The Head of Product Analytics identifies actionable solutions for the growth of the organisation. He/She synthesises data from various sources to create a compelling business case. He drives the strategy for gathering, cleaning, analysing and visualising of data. He is responsible for developing organisation-wide guidelines on insight reporting and oversees the end-to-end analysis of products.

He is a key member of the product development team and is proficient in data analytics and visualisation. He is well-versed in various product offerings, latest market trends and is aware of the latest technologies to track data insights. He also provides data-driven insights.

The Head of Product Analytics has a strong analytical mind and uses critical thinking skills to identify underlying issues and develop practical solutions. He is an influential leader who inspires his team and stakeholders to achieve long-term strategic goals, and influence.

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

Artificial Intelligence Application
in Product Development

4

Automation Management
in Product Development

2

Budgeting

5

Business Development

5

Business Environment Analysis

5

Business Innovation

6

Business Needs Analysis

5

Business Requirements Mapping

5

Data Analytics

5

Data Design

5

Data Engineering

5

Data Ethics

5

Data Governance

4

Data Strategy

6

Data Visualisation and Storyboarding

5

Design Thinking Practice

5

Learning and Development

6

Manpower Planning

4

Market Research

5

Networking

5

Partnership Management

5

People and Performance Management

4

Performance Management

6

Project Management

5

Quality Standards

5

Stakeholder Management

5



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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

Critical Core
Skills (Top 5)

Proficiency
Level

Adaptability

Advanced

Customer Orientation

Advanced

Digital Fluency

Advanced

Problem Solving

Advanced

Sense Making

Advanced



Critical Work Functions

Key Tasks

Identify market needs

- Develop strategies to align market needs in product decision-making
- Oversee requirements and parameter configurations through customer journeys and user stories
- Evaluate types of data and data sources needed to obtain market information and insights
- Synergise market requirements of products to guide decision-making
- Drive product enhancement strategies through the analysis of insights and recommendations based on evaluation of benchmarking results
- Spearhead product strategy through the use of consumer and market data

Build a user experience research roadmap

- Drive enhancements to the research roadmap based on customer journey, usability, and design
- Oversee research strategies throughout various product strategies from conceptualisation, prototyping, developing, launching to reviewing
- Spearhead improvements to qualitative and quantitative research methodologies to collect user data (e.g. data analysis, UAT testing, usability testing, eye tracking, testing across desktop, tablet, and mobile interfaces, card sorting, A/B Testing, multivariate testing, heuristic evaluations)
- Establish the process by placing UX guidance and improve the user research practice
- Forecast the latest developments in user research methodologies, best practices, and latest consumers' trends to incorporate them into the user research roadmap

Perform research and testing

- Drive improvements in the testing life cycle for product implementation and the core life operating system including end-to-end quality checks
- Foster an innovative mindset amongst various stakeholders such as designers, engineers, and product managers in the research process to elevate the research process to explore untapped opportunities for product development
- Endorse User Acceptance Testing (UAT) on product launches
- Oversee test data and monitor testing progress
- Drive the entire testing process



Critical Work Functions

Analyse product data

Key Tasks

- Establish the types of data needed to measure product performance, predict outcomes and make decisions
- Evaluate sourcing, acquiring, cleansing, and integrating product data
- Establish data and/or information quality metrics and lead data quality reviews
- Synthesise trends, patterns, and correlations from analyses to formulate product insights and actionable recommendation
- Drive the development of product improvements based on analyses

Present insights and improvements to the product roadmap

- Review data and market insights
- Evaluate narratives of key messages from analyses through storytelling
- Supervise the structure and tools to be applied in conceptualisation, design and building of visual dashboards and graphs



HEAD OF PRODUCT DESIGN

Job Description

The Head of Design strategises the design and development of the product line lifecycle, including the end-to-end iterative design process. He/She establishes design policy principles to drive product development in the conceptualisation and design phase, including endorsement of design strategies, and achieving design solutions based on insights researched by the team.

He provides insightful directives based on the evaluation of design concepts and drawings by the team to determine the best product and ensure that it is aligned to the latest market trends. He has a strong understanding on how product technologies and frameworks can formulate impactful design concepts, is well-versed in product development lifecycles and stays abreast of the latest emerging industry trends in terms of product design.

The Head of Design adopts a global mindset while distilling market trends to incorporate them into novel product design strategies, with a clear view of how this sits within the product development lifecycle. He is articulate and a strong communicator within internal and external stakeholders and manages stakeholders' expectations as well as coach the team to adopt innovative practices, mindset, and build their competencies in product design. He is an influential leader who inspires his team and stakeholders to achieve long-term strategic goals, and influence.

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

Artificial Intelligence Application in
Product Development

4

Automation Management in Product
Development

2

Budgeting

5

Business Agility

5

Business Development

5

Business Environment Analysis

5

Business Innovation

5

Business Needs Analysis

5

Business Requirements Mapping

5

Brand Management

5

Customer Experience Management

5

Data Analytics

5

Data Visualisation and Storyboarding

5

Demand Analysis

5

Design Concepts Generation

5

Design Thinking Practice

6

Emerging Technology Synthesis

4

Learning and Development

6

Manpower Planning

4

Market Research

5

Narrative Design in
Product Development

5

Networking

5

Partnership Management

5

People and Performance Management

4

Process Improvement and Optimisation

5

Product Management

6

Project Management

5

Quality Standards

5

Solution Architecture

4



HEAD OF PRODUCT DESIGN

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He provides insightful directives based on the evaluation of design concepts and drawings by the team to determine the best product and ensure that it is aligned to the latest market trends. He has a strong understanding on how product technologies and frameworks can formulate impactful design concepts, is well-versed in product development lifecycles and stays abreast of the latest emerging industry trends in terms of product design.

The Head of Design adopts a global mindset while distilling market trends to incorporate them into novel product design strategies, with a clear view of how this sits within the product development lifecycle. He is articulate and a strong communicator within internal and external stakeholders and manages stakeholders' expectations as well as coach the team to adopt innovative practices, mindset, and build their competencies in product design. He is an influential leader who inspires his team and stakeholders to achieve long-term strategic goals, and influence.

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

Strategy Planning

5

Stakeholder Management

5

Test Planning

5

User Experience Design

5

User Interface Design

5

User Testing and Usability Testing

5

Critical Core Skills (Top 5)

Proficiency Level

Customer Orientation

Advanced

Decision Making

Advanced

Developing People

Advanced

Influence

Advanced

Transdisciplinary Thinking

Advanced



Critical Work Functions

Key Tasks

Formulate ideas through various iterative processes

- Drive cross-functional product strategy workshops to facilitate ideations and creations of UX related artefacts for product scoping and delivery planning
- Influence design teams to develop empathy in understanding customers' pain points for product design improvement
- Foster an innovative and broad-based mindset for teams to focus on usability, interaction design and human-centred design thinking to create polished, production level, world class visual design
- Drive improvements in prototypes created by the team

Conceptualise the design strategy

- Spearhead the strategy for improvement plans for customer experience of products that have been launched
- Establish long-term plans for teams to lead various UX initiatives including strategising design sprints to define merchant problems, content mapping, sketching, wireframing, low and high-fidelity prototyping, and managing stakeholder reviews
- Drive the holistic vision with strategy and creativity within a product to anticipate and solve real customer pain points
- Influence teams to possess a design thinking mindset to create creative solutions to bring innovative ideas to a market while ensuring alignment to overall business goals

Perform data analysis

- Strategise for future product designs based on analysis made from compiled user insights
- Drive the UX/UI strategy of the design team based on these insights
- Leverage user flow charts, storyboards, wireframes, and related elements for clear data visualisation to drive improvements in the strategising of the product planning phase

Collaborate with various functions to run the design sprint for a product

- Drive collaboration with engineers, product managers, product researchers, and front-end developers to build product designs
- Empower the team to evangelise the value design can bring to a product to other functions in the organisation
- Influence stakeholders to achieve strategic goals and initiatives through

Manage people and organisation

- Forecast budget expenditure and allocation across teams and projects
- Establish key performance indicators of the team
- Review newly proposed operational strategies, policies and targets across teams and projects
- Review the utilisation of resources
- Drive the development of learning roadmaps for the team
- Implement workforce planning initiatives for the team

LEAD PRODUCT ANALYST

Job Description

The Lead Product Analyst translates market opportunities into actionable solutions for the organisation. He/She extracts and integrates data from various sources to create advanced models to create a business case. He supervises the gathering, cleaning, analysing and visualising of data to make actionable insights. He is responsible for developing guidelines on insight reporting for the team and oversees the end-to-end product analysis.

He is a key member of the product development team and is proficient in data analytics and visualisation. He is knowledgeable in various product offerings and provides data-driven insights.

The Lead Product Analyst has a strong analytical mind and uses critical thinking skills to identify underlying issues and develop practical solutions. He is an influential leader that advise 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

Artificial Intelligence Application in
Product Development

3

Automation Management in Product
Development

2

Budgeting

4

Business Development

4

Business Environment Analysis

4

Business Innovation

5

Business Needs Analysis

4

Business Requirements Mapping

5

Data Analytics

4

Data Design

5

Data Engineering

4

Data Ethics

4

Data Governance

4

Data Strategy

4

Data Visualisation and Storyboarding

5

Design Thinking Practice

4

Learning and Development

5

Manpower Planning

3

Market Research

5

Networking

4

Partnership Management

4

People and Performance Management

3

Performance Management

5

Project Management

4

Quality Standards

4

Stakeholder Management

4



LEAD PRODUCT ANALYST

Job Description

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He is a key member of the product development team and is proficient in data analytics and visualisation. He is knowledgeable in various product offerings and provides data-driven insights.

The Lead Product Analyst has a strong analytical mind and uses critical thinking skills to identify underlying issues and develop practical solutions. He is an influential leader that advise 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

Critical Core
Skills (Top 5)

Proficiency
Level

Communication

Advanced

Customer Orientation

Advanced

Decision Making

Advanced

Problem Solving

Advanced

Sense Making

Advanced



Critical Work Functions

Key Tasks

Identify market needs	• Evaluate needs of stakeholders to guide product decision-making • Review requirements and parameter configurations through customer journeys and user stories • Establish types of data and data sources needed to obtain market information and insights • Define market requirements of products for decision-making • Review insights and recommendations through evaluation of benchmarking results • Develop product strategy through the use of consumer and market data
Build a user experience research roadmap	• Review the research roadmap based on customer journey, usability and design • Review research strategies throughout various product stages from conceptualisation, prototyping, developing, launching to reviewing • Review qualitative and quantitative research to collect user data (e.g. data analysis, UAT testing, usability testing, eye tracking, testing across desktop, tablet, and mobile interfaces, card sorting, A/B Testing, multivariate testing, heuristic evaluations) • Lead the process by placing UX guidance and improve the user research practice • Keep abreast of the latest developments in user research methodologies, best practices, and latest consumers’ trends
Perform research and testing	• Assess testing life cycle for product implementation and the core life operating system including end-to-end quality checks • Lead discussions with various stakeholders such as designers, engineers, and product managers in the research process to deliver robust insights • Review User Acceptance Testing (UAT) on product launches • Review test data and test progress results • Design the entire testing process
Analyse product data	• Identify types of data needed to measure product performance, predict outcomes, and make decisions • Oversee sourcing, acquiring, cleansing, and integrating product data • Establish data and/or information quality metrics and lead data quality reviews • Synthesise trends, patterns and correlations from analyses to formulate product insights and actionable recommendations • Determine product improvements based on analyses
Present insights and improvements to the product roadmap	• Present data and market insights to product development team • Develop narratives to communicate key messages from analyses through storytelling • Define the structure and tools to be applied in conceptualisation, design and building of visual dashboards and graphs

LEAD PRODUCT DESIGNER

Job Description

The Lead Product Designer drives the design and development of the product line lifecycle, including the end-to-end iterative design process. He/She empowers the team to drive product development in the conceptualisation and design phase, including formulation of design strategies and achieving design solutions based on insights researched by the team.

He evaluates design concepts and drawings to determine the best product. He has a strong understanding on how product technologies and frameworks can formulate impactful design concepts, is well-versed in product development lifecycles and stays abreast of the latest emerging industry trends in terms of product design.

The Lead Product Designer translates market insights, emerging industry trends and feedback from teams, into novel product design strategies, with a clear view of how this sits within the product development lifecycle. He is articulate and a strong communicator with internal and external stakeholders and manages stakeholders' expectations as well as coach the team to build their competencies in product design.

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

Artificial Intelligence Application in
Product Development

3

Automation Management in Product
Development

2

Budgeting

4

Business Agility

4

Business Development

5

Business Environment Analysis

4

Business Innovation

5

Business Needs Analysis

4

Business Requirements Mapping

5

Brand Management

5

Customer Experience Management

4

Data Analytics

4

Data Visualisation and Storyboarding

5

Demand Analysis

5

Design Concepts Generation

5

Design Thinking Practice

4

Emerging Technology Synthesis

3

Learning and Development

5

Manpower Planning

3

Market Research

5

Narrative Design in
Product Management

4

Networking

4

Partnership Management

4

People and Performance Management

3

Process Improvement and Optimisation

5

Product Management

5

Project Management

4

Quality Standards

4

Solution Architecture

4



LEAD PRODUCT DESIGNER

Job Description

The Lead Product Designer drives the design and development of the product line lifecycle, including the end-to-end iterative design process. He/She empowers the team to drive product development in the conceptualisation and design phase, including formulation of design strategies and achieving design solutions based on insights researched by the team.

He evaluates design concepts and drawings to determine the best product. He has a strong understanding on how product technologies and frameworks can formulate impactful design concepts, is well-versed in product development lifecycles and stays abreast of the latest emerging industry trends in terms of product design.

The Lead Product Designer translates market insights, emerging industry trends and feedback from teams, into novel product design strategies, with a clear view of how this sits within the product development lifecycle. He is articulate and a strong communicator with internal and external stakeholders and manages stakeholders’ expectations as well as coach the team to build their competencies in product design.

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	Critical Core Skills (Top 5)	Proficiency Level
Stakeholder Management	4	Creative Thinking	Advanced
Strategy Planning	4	Customer Orientation	Advanced
Test Planning	5	Decision Making	Advanced
User Experience Design	5	Problem Solving	Advanced
User Interface Design	5	Transdisciplinary Thinking	Advanced
User Testing and Usability Testing	5		



Critical Work Functions

Key Tasks

Formulate ideas through various iterative processes

- Oversee cross functional product strategy workshops to facilitate ideations and creations of UX related artefacts to help product scoping and delivery planning
- Guide design teams to develop empathy in understanding customers' pain points for product design improvement
- Guide teams to focus on usability, interaction design and human centred design thinking to create polished, production level, world class visual design
- Review prototypes created by the team to discern areas for improvement

Conceptualise the design strategy

- Drive the strategy for improvement plans for customer experience of products that have been launched
- Guide teams to lead various UX initiatives including strategising design sprints to define merchant problems, content mapping, sketching, wireframing, low and high-fidelity prototyping, and managing stakeholder reviews
- Drive the holistic vision with strategy and creativity within a product to anticipate and solve real customer pain points
- Guide teams to possess a design thinking mindset to create creative solutions to bring innovative ideas to a market

Perform data analysis

- Strategise for future product designs based on analysis made from compiled user insights
- Drive the UX/UI strategy of the design team based on these insights
- Evaluate user flow charts, storyboards, wire frames, and related elements to provide clear data visualisation to strategise the planning phase of a product

Collaborate with various functions to run the design sprint for a product

- Drive collaboration with engineers, product managers, product researchers, and front-end developers to explore, build and ship product designs
- Empower the team to evangelise the value design can bring to a product to other functions in the organisation
- Manage expectations of stakeholders and set clear vision to obtain buy-in from various cross-functional stakeholders within and beyond the organisation

Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- Track the achievement of the team's achievements and key performance indicators
- Propose new operational plans, including targeted budgets, work allocations and staff forecasts
- 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



LEAD PRODUCT MANAGER

Job Description

The Lead Product Manager develops the product portfolio roadmap, pricing and launch strategies and financial projections. He/She leads 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 oversee the development of business proposals for new opportunities.

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

The Lead Product Manager adopts a broad perspective when distilling market trends and synthesising opportunities for growth. He puts 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

Artificial Intelligence Application in
Product Development

3

Automation Management in Product
Development

3

Budgeting

5

Business Agility

4

Business Development

5

Business Environment Analysis

4

Business Innovation

5

Business Needs Analysis

4

Business Performance Management

5

Business Requirements Mapping

5

Customer Experience Management

4

Data Analytics

4

Demand Analysis

5

Design Concepts Generation

4

Design Thinking Practice

5

Emerging Technology Synthesis

4

Learning and Development

5

Manpower Planning

4

Market Research

4

Networking

4

Partnership Management

4

People and Performance Management

4

Performance Management

5

Portfolio Management

5

Pricing Strategy

4

Product Management

5

Project Management

4

Stakeholder Management

4

Strategy Implementation

4



LEAD PRODUCT MANAGER

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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

Critical Core
Skills (Top 5)

Proficiency
Level

Strategy Planning

5

Adaptability

Advanced

User Experience Design

4

Collaboration

Advanced

User Interface Design

5

Customer Orientation

Advanced

Global Perspective

Advanced

Transdisciplinary Thinking

Advanced



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
- Review the product requirement documents containing product specifications and requirements

Drive product development

- Lead the development for a suite of products
- Evaluate products and highlight gaps, issues with product interface, performance and product functionalities based on market feedback
- Integrate feedback and requests in the ideation and development of products
- Design 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
- Evaluate the feature roadmap for feasibility
- Oversee the development of business proposals for new opportunities
- Lead the team on business proposals for new opportunities
- Evaluate the feasibility of these innovative ideas to grow market share and improve customer experience

Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- Track the achievement of the team’s achievements and key performance indicators
- Propose new operational plans, including targeted budgets, work allocations and staff forecasts
- 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

PRODUCT ANALYST

Job Description

The Product Analyst translates market opportunities into actionable solutions for the product. He/she extracts and integrates data from various sources to create advanced models to create a business case. He supervises the gathering, cleaning, analysing and visualising of data to make actionable insights. He is responsible for end-to-end product analysis.

He is a key member of the product development team and is proficient in data analytics and visualisation. He is familiar with the product offerings and provides data-driven insights.

The Product Analyst has a strong analytical mind and uses critical thinking skills to identify problems and develop solutions. He is passionate in using data to resolve complex problems. He is a data storyteller and adopts 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		
Artificial Intelligence Application in Product Development	3	Market Research	3
Automation Management in Product Development	2	Partnership Management	3
Business Development	3	Performance Management	3
Business Environment Analysis	3	Project Management	3
Business Innovation	4	Quality Standards	4
Business Needs Analysis	3	Stakeholder Management	2
Business Requirements Mapping	3		
Data Analytics	3		
Data Design	4		
Data Engineering	3		
Data Ethics	3		
Data Governance	3		
Data Strategy	3		
Data Visualisation and Storyboarding	4		
Design Thinking Practice	3		
		Critical Core Skills (Top 5)	Proficiency Level
		Collaboration	Intermediate
		Communication	Intermediate
		Customer Orientation	Advanced
		Digital Fluency	Basic
		Sense Making	Advanced

Critical Work Functions

Key Tasks

Identify market needs

- Articulate needs of stakeholders to guide product decision-making
- Identify requirements and parameter configurations through customer journeys and user stories
- Analyse data for market information and insights
- Recommend market requirements of products to guide decision-making
- Develop insights and recommendations through evaluation of benchmarking results
- Review market surveys and interviews to collect data on consumer needs and determine product-market fit

Build a user experience research roadmap

- Design the research roadmap based on customer journey, usability, and design
- Design research strategies throughout various product stages from conceptualisation, prototyping, developing, launching to reviewing
- Design qualitative and quantitative research to collect user data (e.g. data analysis, UAT testing, usability testing, eye tracking, testing across desktop, tablet, and mobile interfaces, card sorting, A/B Testing, multivariate testing, heuristic evaluations)
- Develop a User Research Practice Framework for data collection and benchmarking
- Evaluate latest developments in user research methodologies, best practices, and latest consumers’ trends

Perform research and testing

- Develop testing life cycle for product implementation and the core life operating system including end-to-end quality checks
- Collaborate with various stakeholders such as designers, engineers, and product managers in the research process to deliver robust insights
- Design User Acceptance Testing (UAT) on product launches
- Analyse test data and test progress results
- Ensure proper completion and documentation of the entire testing process within stipulated timelines

Analyse product data

- Define data tracking requirements through data from internal and external sources
- Analyse large datasets with actionable insights
- Review data validation and quality control checks
- Analyse data for trends, patterns and correlations to support decision-making
- Propose data-driven solutions and recommendations

Present insights and improvements to the product roadmap

- Translate analyses into common business language to influence product decisions and/or actions
- Design data reports and visualisation tools to facilitate data understanding through storytelling
- Review the conceptualisation, design and building of visual dashboards and graphs

PRODUCT DESIGNER

Job Description

The Product Designer is responsible for the design and development of the product line lifecycle, including the end-to-end iterative design process. He/She leads product development in the conceptualisation and design phase, including research performance, job stories creation, journey mapping, content modelling, wire-framing, prototyping, user testing, and high-fidelity visuals generation to achieve design solutions.

He creates design concepts and drawings to determine the best product, and work with various teams to brainstorm product ideas and suggest iterations and improvements to product engineers on products based on market feedback. He is familiar with research methodology to review research outputs on product technologies and frameworks to implement them into design concepts, is well-versed in product development lifecycles and stays abreast of the latest emerging industry trends in terms of product design.

The Product Designer analyses market insights, emerging industry trends and feedback from teams, synthesising this information and applying them to product design. He visualises how this sits within the product development lifecycle. He is articulate and is a strong communicator 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

Artificial Intelligence Application
in Product Development

3

Automation Management in
Product Development

2

Brand Management

4

Business Development

4

Business Environment Analysis

3

Business Innovation

4

Business Needs Analysis

3

Business Requirements Mapping

4

Customer Experience Management

3

Data Analytics

3

Data Visualisation and Storyboarding

4

Demand Analysis

4

Design Concepts Generation

4

Design Thinking Practice

4

Emerging Technology Synthesis

3

Market Research

3

Narrative Design in
Product Development

3

Networking

3

Partnership Management

3

Process Improvement and Optimisation

4

Product Management

4

Project Management

3

Quality Standards

4

Stakeholder Management

3

Test Planning

4

User Experience Design

4

User Interface Design

4

User Testing and Usability Testing

4



PRODUCT DESIGNER

Job Description

The Product Designer is responsible for the design and development of the product line lifecycle, including the end-to-end iterative design process. He/She leads product development in the conceptualisation and design phase, including research performance, job stories creation, journey mapping, content modelling, wire-framing, prototyping, user testing, and high-fidelity visuals generation to achieve design solutions.

He creates design concepts and drawings to determine the best product, and work with various teams to brainstorm product ideas and suggest iterations and improvements to product engineers on products based on market feedback. He is familiar with research methodology to review research outputs on product technologies and frameworks to implement them into design concepts, is well-versed in product development lifecycles and stays abreast of the latest emerging industry trends in terms of product design.

The Product Designer analyses market insights, emerging industry trends and feedback from teams, synthesising this information and applying them to product design. He visualises how this sits within the product development lifecycle. He is articulate and is a strong communicator 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

Critical Core
Skills (Top 5)

Proficiency
Level

Collaboration

Intermediate

Communication

Intermediate

Creative Thinking

Intermediate

Customer Orientation

Intermediate

Problem Solving

Intermediate



Critical Work Functions

Key Tasks

Formulate ideas through various iterative processes

- Plan cross functional product strategy workshops to facilitate ideations and creations of UX related artefacts to help product scoping and delivery planning
- Partner with product researchers for the design team develop empathy for customers and apply these skills into design sprints
- Lead brainstorming sessions with the team to focus on usability, interaction design and human centred design thinking to create polished, production level, world class visual design
- Guide teams to prototype design solutions using various designing tools

Conceptualise the design strategy

- Develop an improvement plan for customer experience of products that have been launched
- Lead various UX in users' problems, content mapping, sketching, wireframing, low and high-fidelity prototyping
- Define the full scope of a typical user-centred design process to solve customer pain points
- Conceptualise creative solutions to bring innovative ideas to a market

Perform data analysis

- Analyse the compiled data on user behaviour and customer pain points to make informed decisions on design
- Analyse insights consolidated on industry UX/UI trends and from competitors' sites
- Review user flow charts, storyboards, wire frames, and related elements to provide clear data visualisation to aid the planning phase of a product

Collaborate with various functions to run the design sprint for a product

- Plan the areas of work for collaboration with engineers, product managers, product researchers, and front-end developers to explore, build and ship product designs
- Articulate the value design can bring to a product to other functions in the organisation
- Conduct meetings and discussion with stakeholders to obtain buy-in from various cross-functional stakeholders within and beyond the organisation

PRODUCT MANAGER

Job Description

The Product Manager manages 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 generates innovative ideas to grow market share, improves 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 draws connections and anticipates issues across all phases of the product life cycle. He also develops creative strategies to address them. He is an articulate and influential communicator to both internal and external stakeholders and works 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

Artificial Intelligence Application
in Product Development

3

Automation Management in
Product Development

2

Budgeting

4

Business Development

3

Business Environment Analysis

3

Business Innovation

4

Business Needs Analysis

3

Business Performance Management

4

Business Requirements Mapping

4

Customer Experience Management

3

Data Analytics

3

Demand Analysis

4

Design Thinking Practice

3

Emerging Technology Synthesis

3

Market Research

3

Networking

3

Partnership Management

3

Portfolio Management

4

Pricing Strategy

3

Product Management

4

Project Management

3

Stakeholder Management

3

Strategy Implementation

3

User Experience Design

4

User Interface Design

3

Critical Core Skills (Top 5)

Proficiency Level

Collaboration

Intermediate

Communication

Intermediate

Customer Orientation

Advanced

Global Perspective

Intermediate

Problem Solving

Advanced

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 the organisation’s product roadmap
- Coordinate internal and external product launches
- Prepare reports on revenue and profitability to meet revenue and profitability goals
- Manage the product line life cycle from strategic planning to tactical activities

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

- Analyse 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
- Formulate business proposals for new opportunities
- Generate innovative ideas to grow market share and improve customer experience

SKILLS FRAMEWORK
FOR ICT

INTRODUCTION

HOW TO USE THE TOOL

MAIN VIEW

TRACKS

DATA AND ARTIFICIAL
INTELLIGENCE

INFRASTRUCTURE

SOFTWARE AND APPLICATIONS

STRATEGY AND GOVERNANCE

OPERATIONS AND SUPPORT

CYBER SECURITY

SALES AND MARKETING

PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

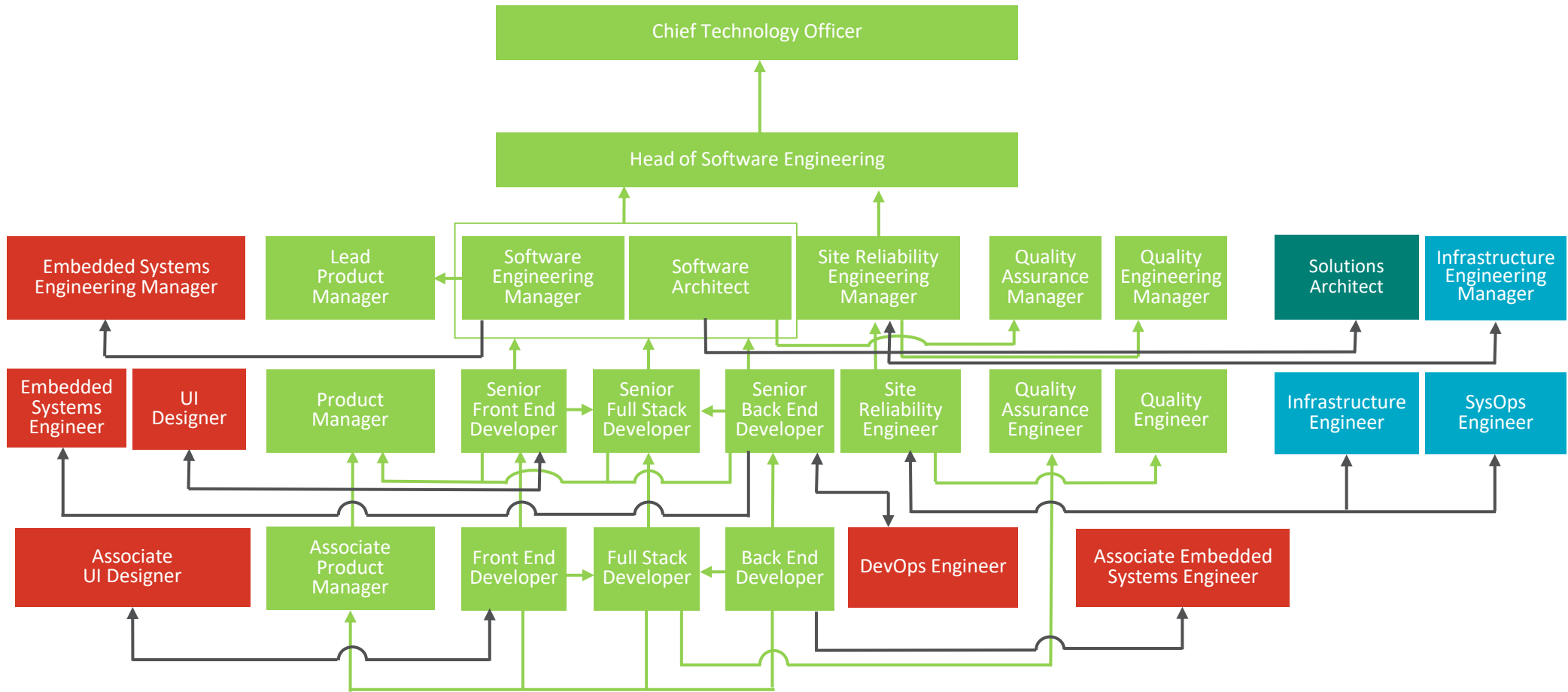
CRITICAL CORE SKILLS



SKILLSFuture SG

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

SOFTWARE
DEVELOPMENT



→ Lateral Movement

→ Vertical Progression

BACK END DEVELOPER

Job Description

The Back End Developer codes and develops server-side systems to support core product functionality and offering. He/She identifies security risks and ensures coding standards meet security requirements. He executes specifications and features for the next iteration of the product based on user needs and feedback, and continuously integrates code changes. He provides 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.

The Back End Developer is innovative in developing a range of product designs and solutions. He supports others in the team and is confident in communicating ideas to the team 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

Agile Software Development

3

Applications Development

3

Applications Integration

3

Applications Support and Enhancement

2

Business Environment Analysis

2

Business Needs Analysis

2

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Cloud Computing

3

Configuration Tracking

2

Continuous Integration and
Continuous Deployment

3

Data Design

3

Database Administration

2

Emerging Technology Synthesis

3

Performance Management

4

Problem Management

3

Product Management

3

Project Management

3

Quality Standards

4

Service Level Management

3

Software Configuration

2

Software Design

3

Software Testing

2

System Integration

3

Test Planning

2

Critical Core Skills (Top 5)

Proficiency Level

Communication

Intermediate

Creative Thinking

Intermediate

Learning Agility

Intermediate

Problem Solving

Intermediate

Self Management

Basic

Critical Work Functions

Key Tasks

Understand technical specifications required by the business

- Participate in discussions with stakeholders to understand user requirements
- Write technical requirements and specifications
- Execute software requirement specifications
- Recommend approaches that balance security, stability, and performance needs
- Support team with technical guidance on proposed solutions and alternatives

Manage the back-end design of software

- Develop scalable server-side systems and APIs
- Collaborate with stakeholders to improve new and existing products
- Deliver high quality, maintainable, and scalable codes
- Code new and/or current features for products
- Use simulation and prototypes to evaluate back-end software design quality
- Partner with the Site Reliability Engineering teams to develop reliable and scalable products
- Partner with business teams to align products with business goals and objectives
- Perform code re-factoring

Perform software testing

- Perform integration testing as part of the integration process
- Write unit tests for delivered codes
- Support final pre-release testing activities involving stakeholders
- Write success and failure criteria for unit and integration testing
- Execute the test environment and test case scenarios to ensure software resilience
- Specify test cases for the selected testing techniques including clean coding
- Gather defect arrival rate and failure intensity data
- Identify potential defects in software through testing



Critical Work Functions

Manage software configuration management (SCM)

Key Tasks

- Execute the SCM plan
- Assist in specifying the SCM measures to be used
- Support the development of tools for generating SCM audit reports
- Perform product readiness review in software configuration management
- Execute the building, verification, and implementation of software releases
- Support the procurement of SCM tools
- Maintain mechanisms for recording and reporting SCM information
- Ensure the execution and documentation of approved changes

Oversee security provisions in software

- Follow recommended coding standards and secure-coding principles to avoid security vulnerabilities
- Adhere to project standards in the collection of security assessment metrics
- Perform code reviews to identify security vulnerabilities
- Use security tools to address security vulnerabilities
- Support threat modelling to mitigate security risks
- Identify the attack surface of new and modified systems



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 approves the deployment of new technologies to enhance or develop new services and product offerings. He devises and implements long-term strategies focused on both current and new technologies that can help an organisation go to market more effectively, in turn increasing revenue through technological enhancements.

He is an inspiring leader with a futuristic mindset with an ability to drive innovative enhancements in the organisation. He foresees connections across diverse areas and influences 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

Agile Software Development

6

Applications Development

5

Artificial Intelligence Application

6

Automation Management

6

Budgeting

6

Business Agility

6

Business Continuity

6

Business Risk Management

6

Business Negotiation

5

Change Management

6

Continuous Integration and
Continuous Deployment

5

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

Service Level Management

6

Solution Architecture

6

Stakeholder Management

6

Strategy Planning

6

Software Design

6

Software Testing

4



CHIEF TECHNOLOGY OFFICER

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

Sustainability Management

6

System Integration

6

Test Planning

5

Critical Core Skills (Top 5)

Proficiency Level

Communication

Advanced

Decision Making

Advanced

Developing People

Advanced

Influence

Advanced

Transdisciplinary Thinking

Advanced



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
- Manage critical internal and external stakeholders' changes in needs and priorities
- Inspire stakeholders to pursue the organisation's technology vision
- Drive technology alignment with the organisation's business needs

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

FRONT END DEVELOPER

Job Description

The Front End Developer writes clean testable codes and develops client-side systems to support end user’s needs and experience. He/She gathers user feedback to propose improvements to the product’s interface. He provides technical support to develop an intuitive and responsive experience for end users. He supports usability testing to validate user interfaces. He also identifies security vulnerabilities and assists his senior in selecting security tools to aid his senior in addressing these vulnerabilities.

He works in a team and is proficient in programming languages required by the organisation to design and develop user interfaces. He is familiar with graphic designing tools and is also knowledgeable in commonly used design methods. He uses various tools to read codes and uncover security vulnerabilities.

The Front End Developer is innovative in designing compelling and intuitive user interfaces. He supports others in the team and is confident in communicating ideas to the team 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

Agile Software Development

3

Applications Development

3

Applications Integration

3

Applications Support and Enhancement

2

Business Environment Analysis

2

Business Needs Analysis

2

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Configuration Tracking

2

Continuous Integration and
Continuous Deployment

3

Data Design

3

Database Administration

2

Emerging Technology Synthesis

3

Performance Management

4

Problem Management

3

Product Management

3

Project Management

3

Quality Standards

4

Service Level Management

3

Software Configuration

2

Software Design

3

Software Testing

2

Test Planning

2

User Interface Design

3

Critical Core Skills (Top 5)

Proficiency Level

Communication

Intermediate

Creative Thinking

Intermediate

Learning Agility

Intermediate

Problem Solving

Intermediate

Self Management

Basic

Critical Work Functions

Key Tasks

Understand technical specifications required by the business

- Participate in discussions with stakeholders to understand user requirements
- Write technical requirements and specifications
- Execute software requirement specifications
- Recommend approaches that balance security, stability, and performance needs
- Support team with technical guidance on proposed solutions and alternatives

Manage the front-end design of software

- Develop front-end and integration components of products
- Collaborate with stakeholders to build and improve new and existing products
- Deliver high quality, maintainable, and scalable codes
- Collaborate with internal and external stakeholders to enhance the product offering and drive-up user engagement and adoption
- Execute improvements to front-end system
- Use simulation and prototypes to evaluate front-end software design quality
- Partner business teams to align products with business goals and objectives
- Perform code re-factoring

Perform software testing

- Perform integration testing as part of the integration process
- Write unit tests for delivered codes
- Support final pre-release testing activities involving stakeholders
- Write success and failure criteria for unit and integration testing
- Execute the test environment and test case scenarios to ensure software resilience
- Specify test cases for the selected testing techniques including clean coding
- Gather defect arrival rate and failure intensity data
- Identify potential defects in software through testing



Critical Work Functions

Manage software configuration management (SCM)

Key Tasks

- Execute the SCM plan
- Assist in specifying the SCM measures to be used
- Support the development of tools for generating SCM audit reports
- Perform product readiness review in software configuration management
- Execute the building, verification, and implementation of software releases
- Support the procurement of SCM tools
- Maintain mechanisms for recording and reporting SCM information
- Ensure the execution and documentation of approved changes

Oversee security provisions in software

- Use security tools to identify and address security vulnerabilities
- Adhere to project standards in the collection of security assessment metrics
- Perform code reviews to identify security vulnerabilities
- Use security tools to address security vulnerabilities
- Support threat modelling to identify and mitigate security risks
- Identify the attack surface of new and modified systems



FULL STACK DEVELOPER

Job Description

The Full Stack Developer codes and develops both front-end and back-end systems that balance product functionality with user experience and needs. He/She gathers user feedback to develop an intuitive and responsive experience for end users. He identifies security risks and ensures coding standards meet security requirements. He supports usability testing to validate user interfaces. He executes specifications and features for the next iteration of the product based on user needs and feedback, and continuously integrates code changes. He provides support to the quality testing teams.

He works in a team and is proficient in programming languages required by the organisation. He is familiar with graphic designing tools and is also knowledgeable in commonly used design methods. He uses various tools to read codes and uncover security vulnerabilities.

The Full Stack Developer is innovative in developing a range of product designs and solutions with compelling and intuitive user interfaces. He supports others in the team and is confident in communicating ideas to the team 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

Agile Software Development

4

Applications Development

4

Applications Integration

4

Applications Support and Enhancement

3

Business Environment Analysis

2

Business Needs Analysis

3

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Cloud Computing

3

Configuration Tracking

3

Continuous Integration and
Continuous Deployment

4

Data Design

4

Database Administration

2

Emerging Technology Synthesis

3

Performance Management

4

Problem Management

3

Product Management

3

Project Management

3

Quality Standards

5

Service Level Management

4

Software Configuration

3

Software Design

4

Software Testing

3

System Integration

3

Test Planning

2

User Interface Design

3



FULL STACK DEVELOPER

Job Description

The Full Stack Developer codes and develops both front-end and back-end systems that balance product functionality with user experience and needs. He/She gathers user feedback to develop an intuitive and responsive experience for end users. He identifies security risks and ensures coding standards meet security requirements. He supports usability testing to validate user interfaces. He executes specifications and features for the next iteration of the product based on user needs and feedback, and continuously integrates code changes. He provides support to the quality testing teams.

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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

Critical Core
Skills (Top 5)

Proficiency
Level

Communication

Intermediate

Creative Thinking

Intermediate

Learning Agility

Intermediate

Problem Solving

Intermediate

Self Management

Basic



Critical Work Functions

Key Tasks

Understand technical specifications required by the business

- Participate in discussions with stakeholders to understand user requirements
- Write technical requirements and specifications
- Execute software requirement specifications
- Recommend approaches that balance security, stability, and performance needs
- Support team with technical guidance on proposed solutions and alternatives

Manage the design of software

- Develop scalable front-end, back-end, and integration components of the product
- Collaborate with stakeholders to build and improve new and existing products
- Deliver high quality, maintainable, and scalable codes
- Execute improvements to both front-end and back-end systems
- Use simulation and prototypes to evaluate software design quality
- Partner the Site Reliability Engineering teams to develop reliable and scalable products
- Partner business teams to align products with business goals and objectives
- Perform code re-factoring

Perform software testing

- Perform integration testing as part of the integration process
- Write unit tests for delivered codes
- Support final pre-release testing activities involving stakeholders
- Write success and failure criteria for unit and integration testing
- Execute the test environment and test case scenarios to ensure software resilience
- Specify test cases for the selected testing techniques including clean coding
- Gather defect arrival rate and failure intensity data
- Identify potential defects in software through testing



Critical Work Functions

Manage software configuration management (SCM)

Key Tasks

- Execute the SCM plan
- Assist in specifying the SCM measures to be used
- Support the development of tools for generating SCM audit reports
- Perform product readiness review in software configuration management
- Execute the building, verification, and implementation of software releases
- Support the procurement of SCM tools
- Maintain mechanisms for recording and reporting SCM information
- Ensure the execution and documentation of approved changes

Oversee security provisions in software

- Use security tools to identify and address security vulnerabilities
- Adhere to project standards in the collection of security assessment metrics
- Perform code reviews to identify security vulnerabilities
- Use security tools to address security vulnerabilities
- Support threat modelling to identify and mitigate security risks
- Identify the attack surface of new and modified systems



HEAD OF SOFTWARE ENGINEERING

Job Description

The Head of Software Engineering defines the software development vision and strategy. He/She also ensures alignment with the organisation's architecture. He anticipates the impact of external technological developments on the organisation's software architecture and strategy, ensuring that the software development strategy and processes keep 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 the 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 communicates his ideas persuasively and engages with his 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

Infrastructure Design

5

Agile Software Development

6

IT Strategy

6

Applications Development

5

Learning and Development

5,6

Applications Integration

5

Manpower Planning

4,5

Budgeting

5

Networking

5

Business Environment Analysis

4

Organisational Analysis

5

Business Innovation

6

Partnership Management

5

Business Needs Analysis

5

People and Performance Management

5

Business Negotiation

5

Performance Management

5

Business Performance Management

5

Product Management

6

Business Requirements Mapping

5

Project Management

6

Change Management

5

Quality Standards

5,6

Continuous Integration and
Continuous Deployment

5

Service Level Management

6

Emerging Technology Synthesis

5

Software Design

4

Enterprise Architecture

4,5



HEAD OF SOFTWARE ENGINEERING

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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	Critical Core Skills (Top 5)	Proficiency Level
Software Testing	4	Communication	Advanced
Solution Architecture	5	Decision Making	Advanced
Stakeholder Management	5	Developing People	Advanced
Strategy Implementation	4	Problem Solving	Advanced
Strategy Planning	5	Transdisciplinary Thinking	Advanced
System Integration	6		
Test Planning	5		



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 the 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

SENIOR BACK END DEVELOPER

Job Description

The Senior Back End Developer designs, develops, tests, debugs and implements server-side systems to support core product functionality and offering. He/She identifies security risks and ensures coding standards meet security requirements. He determines specifications and features for the next iteration of the product based on user needs and feedback, and continuously integrates code changes. 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 proficient in software development tools and standards.

The Senior Back End Developer is innovative and methodical in developing new and improved product designs and solutions. He engages, leads others in the team, and is confident in communicating ideas to the team 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

Agile Software Development	4
Applications Development	4
Applications Integration	4
Applications Support and Enhancement	3
Business Environment Analysis	3
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	4
Data Design	4
Database Administration	3
Emerging Technology Synthesis	4
Performance Management	4

Problem Management	4
Product Management	4
Project Management	4
Quality Standards	5
Service Level Management	4
Software Configuration	3
Software Design	4
Software Testing	3
System Integration	3
Test Planning	3

Critical Core
Skills (Top 5)

Proficiency
Level

Adaptability	Intermediate
Collaboration	Intermediate
Developing People	Intermediate
Sense Making	Intermediate
Transdisciplinary Thinking	Intermediate

Critical Work Functions

Key Tasks

Understand technical specifications required by the business	- Participate in discussions with stakeholders to understand user requirements - Provide guidance on the technical requirements and specifications - Formulate software requirement specifications - Define approaches that balance security, stability, and performance needs - Provide technical guidance on proposed solutions and alternatives
Manage the back-end design of software	- Refine scalable server-side systems and APIs - Collaborate with stakeholders to build and improve new and existing products - Guide teams to deliver high quality, maintainable, and scalable codes - Code new and/or current features for products - Develop simulation tools and prototypes to evaluate front-end software design quality - Devise strategies with the Site Reliability Engineering teams to develop reliable and scalable products - Devise strategies with business departments to achieve business goals and objectives - Perform code re-factoring
Perform software testing	- Perform integration testing as part of the integration process - Guide team to write quality unit tests for delivered codes - Engage stakeholders participating in final pre-release testing activities and evaluate outcomes of these tests - Write success and failure criteria for unit and integration testing - Execute the test environment and test case scenarios to ensure software resilience - Specify test cases for the selected testing techniques including clean coding - Analyse defect arrival rate and failure intensity data - Resolve potential defects in software found through software tests



Critical Work Functions

Manage software configuration management (SCM)

Key Tasks

- Develop the SCM plan
- Specify the SCM measures to be used
- Develop tools for generating SCM audit reports
- Guide teams to execute the product readiness review in software configuration management
- Oversee the building, verification, and implementation of software releases
- Procure SCM tools
- Maintain mechanisms for recording and reporting SCM information
- Ensure the execution and documentation of approved changes

Oversee security provisions in software

- Identify recommended coding standards and secure-coding principles to avoid security vulnerabilities
- Set project standards in the collection of security assessment metrics
- Perform code reviews to mitigate security vulnerabilities
- Keep abreast of the latest security vulnerabilities and use security tools to identify and address these vulnerabilities
- Perform threat modelling to identify and mitigate security risks
- Identify the attack surface of new and modified systems



SENIOR FRONT END DEVELOPER

Job Description

The Senior Front End Developer reviews and guides teams in writing clean testable codes, developing designs, tests, and debugs, and implements client-side systems to support end user’s needs and experience. He/She synthesises user feedback to implement and design improvements to the product’s interface. He provides technical expertise to develop an intuitive and responsive experience for end users. He conducts usability testing to validate user interfaces. He also evaluates security vulnerabilities and use security tools to address vulnerabilities.

He works in a team and is proficient in programming languages required by the organisation to design and develop user interfaces. He is proficient with graphic designing tools and is also knowledgeable in current and emerging design methods. He uses various tools to evaluate these codes and mitigate security vulnerabilities.

The Senior Front End Developer is innovative in designing compelling and intuitive user interfaces. He engages, leads others in the team, and is confident in communicating ideas to the team 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

Agile Software Development

4

Applications Development

4

Applications Integration

4

Applications Support and Enhancement

3

Business Environment Analysis

3

Business Needs Analysis

3

Business Requirements Mapping

3

Business Risk Management

3

Change Management

3

Configuration Tracking

3

Continuous Integration and
Continuous Deployment

4

Data Design

4

Database Administration

3

Emerging Technology Synthesis

4

Performance Management

4

Problem Management

4

Product Management

4

Project Management

4

Quality Standards

4

Service Level Management

5

Software Configuration

4

Software Design

3

Software Testing

3

Test Planning

3

User Interface Design

4

Critical Core Skills (Top 5)

Proficiency Level

Adaptability

Intermediate

Collaboration

Intermediate

Developing People

Intermediate

Sense Making

Intermediate

Transdisciplinary Thinking

Intermediate

Critical Work Functions

Key Tasks

Understand technical specifications
required by the business

- Participate in discussions with stakeholders to understand user requirements
- Provide guidance on the technical requirements and specifications
- Formulate software requirement specifications
- Define approaches that balance security, stability, and performance needs
- Provide technical guidance on proposed solutions and alternatives

Manage the front-end design of software

- Review front-end and integration components of products
- Collaborate with stakeholders to build and improve new and existing products
- Guide team to deliver high quality, maintainable, and scalable codes
- Oversee the collaboration with internal and external stakeholders to enhance the product offering and drive-up user engagement and adoption
- Review front-end system improvements
- Develop simulation tools and prototypes to evaluate front-end software design quality
- Devise strategies with business departments to achieve business goals and objectives
- Perform code re-factoring

Perform software testing

- Perform integration testing as part of the integration process
- Guide team to write quality unit tests for delivered codes
- Engage stakeholders participating in final pre-release testing activities and evaluate outcomes of these testing
- Write success and failure criteria for unit and integration testing
- Execute the test environment and test case scenarios to ensure software resilience
- Specify test cases for the selected testing techniques including clean coding
- Analyse defect arrival rate and failure intensity data
- Resolve potential defects in software found through software tests



Critical Work Functions

Manage software configuration management (SCM)

Key Tasks

- Develop the SCM plan
- Specify the SCM measures to be used
- Develop tools for generating SCM audit reports
- Guide teams to execute the product readiness review in software configuration management
- Oversee the building, verification, and implementation of software releases
- Procure SCM tools
- Maintain mechanisms for recording and reporting SCM information
- Ensure the execution and documentation of approved changes

Oversee security provisions in software

- Identify recommended coding standards and secure-coding principles to avoid security vulnerabilities
- Set project standards in the collection of security assessment metrics
- Perform code reviews to mitigate security vulnerabilities
- Keep abreast of the latest security vulnerabilities and use security tools to identify and address these vulnerabilities
- Perform threat modelling to identify and mitigate security risks
- Identify the attack surface of new and modified systems



SENIOR FULL STACK DEVELOPER

Job Description

The Senior Full Stack Developer reviews and guides teams in developing both front end and back-end systems that balances product functionality with user experience and needs. He/She synthesises user feedback to implement and design improvements to the product's interface. He provides technical expertise to develop an intuitive and responsive experience for end users. He conducts usability testing to validate user interfaces. He determines specifications and features for the next iteration of the product based on user needs and feedback, and continuously integrates code changes. He also evaluates security vulnerabilities and uses security tools to address vulnerabilities.

He works in a team and is proficient in programming languages required by the organisation. He is proficient with graphic designing tools and is also knowledgeable in current and emerging design methods. He uses various tools to evaluate these codes and mitigate security vulnerabilities.

The Senior Full Stack Developer is innovative in developing a range of product designs and solutions with compelling and intuitive user interfaces. He engages, leads others in the team and is confident in communicating ideas to the team 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

Agile Software Development

4

Applications Development

4

Applications Integration

4

Applications Support and Enhancement

3

Business Environment Analysis

3

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

4

Data Design

4

Database Administration

3

Emerging Technology Synthesis

4

Performance Management

4

Problem Management

4

Product Management

4

Project Management

4

Quality Standards

5

Service Level Management

4

Software Configuration

3

Software Design

4

Software Testing

3

System Integration

3

User Interface Design

4



SENIOR FULL STACK DEVELOPER

Job Description

The Senior Full Stack Developer reviews and guides teams in developing both front end and back-end systems that balances product functionality with user experience and needs. He/She synthesises user feedback to implement and design improvements to the product’s interface. He provides technical expertise to develop an intuitive and responsive experience for end users. He conducts usability testing to validate user interfaces. He determines specifications and features for the next iteration of the product based on user needs and feedback, and continuously integrates code changes. He also evaluates security vulnerabilities and uses security tools to address vulnerabilities.

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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

Critical Core
Skills (Top 5)

Proficiency
Level

Adaptability

Intermediate

Collaboration

Intermediate

Developing People

Intermediate

Sense Making

Intermediate

Transdisciplinary Thinking

Intermediate



Critical Work Functions

Key Tasks

Understand technical specifications required by the business

- Participate in discussions with stakeholders to understand user requirements
- Provide guidance on the technical requirements and specifications
- Formulate software requirement specifications
- Define approaches that balance security, stability, and performance needs
- Provide technical guidance on proposed solutions and alternatives

Manage the design of software

- Review front-end, back-end integration components of the product
- Collaborate with stakeholders to improve new and existing products
- Guide teams to deliver high quality, maintainable, and scalable codes
- Review improvements to both front-end and back-end systems
- Develop simulation tools and prototypes to evaluate software design quality
- Devise strategies with the Site Reliability Engineering teams to develop reliable and scalable products
- Devise strategies with business departments to achieve business goals and objectives
- Perform code re-factoring

Perform software testing

- Perform integration testing as part of the integration process
- Guide team to write quality unit tests for delivered codes
- Engage stakeholders participating in final pre-release testing activities and evaluate outcomes of these tests
- Write success and failure criteria for unit and integration testing
- Execute the test environment and test case scenarios to ensure software resilience
- Specify test cases for the selected testing techniques including clean coding
- Analyse defect arrival rate and failure intensity data
- Resolve potential defects in software found through software tests



Critical Work Functions

Manage software configuration management (SCM)

Key Tasks

- Develop and maintain the SCM plan
- Specify the SCM measures to be used
- Develop tools for generating SCM audit reports
- Guide teams to execute the product readiness review in software configuration management
- Oversee the building, verification, and implementation of software releases
- Procure SCM tools
- Maintain mechanisms for recording and reporting SCM information
- Ensure the execution and documentation of approved changes

Oversee security provisions in software

- Identify recommended coding standards and secure-coding principles to avoid security vulnerabilities
- Set project standards in the collection of security assessment metrics
- Perform code reviews to mitigate security vulnerabilities
- Keep abreast of the latest security vulnerabilities and use security tools to identify and address these vulnerabilities
- Perform threat modelling to identify and mitigate security risks
- Identify the attack surface of new and modified systems



SITE RELIABILITY ENGINEER

Job Description

The Site Reliability Engineer is responsible for monitoring the performance, reliability, availability, latency and security of systems, ensuring that they meet the requirements of internal and external users. He/She optimises system performance with automation to improve system quality and reliability. He conducts regular system maintenance and is responsible for incident response.

He possesses a high level of proficiency in developing scalable systems. He is familiar with cloud platforms and managing system infrastructure. He works well with internal and external stakeholders to manage the demands of both. He collaborates with the development team to provide solutions that meet operational demands for high reliability and security.

The Site Reliability Engineer is a problem solver who takes charge of investigating and solving complex problems. He is an analytical thinker who makes data-driven decisions and understands the business and consumer 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 Software Development

3

Applications Development

4

Applications Integration

3

Business Environment Analysis

3

Change Management

3

Cloud Computing

4

Continuous Integration and
Continuous Deployment

3

Cyber and Data Breach
Incident Management

3

Disaster Recovery Management

4

Emerging Technology Synthesis

4

Infrastructure Support

3

Network Security

3

Partnership Management

3

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

4

Product Management

4

Quality Standards

5

Security Administration

2

Service Level Management

4

Software Configuration

3

Software Testing

4

Stakeholder Management

3

Test Planning

3

Critical Core
Skills (Top 5)

Proficiency
Level

Communication

Intermediate

Customer Orientation

Advanced

Learning Agility

Intermediate

Problem Solving

Intermediate

Sense Making

Intermediate

Critical Work Functions

Key Tasks

Monitor systems and optimise performance

- Monitor overall performance, reliability, availability, latency, and security of systems
- Develop reports on performance, reliability, availability, and latency of systems by review of service uptime, utilisation and throughput
- Monitor critical system functions to ensure availability and reliability during key business hours
- Evaluate feasibility of integrating new functions into the system without compromising system performance and health
- Propose suggestions to enhance infrastructure architecture
- Carry out testing and release procedures to ensure rigour of systems

Automate system operations

- Support initiatives to improve the system and service delivery through automation and virtualization
- Develop tools and scripts to automate deployments and optimise performance
- Develop an operating environment for monitoring, alerting, self-healing and automated recovery

Resolve incidents

- Address gaps in performance or availability based on identified metrics
- Utilise monitoring systems and diagnose the root cause of incidents
- Resolve escalations or issues relating to system operations
- Simulate user problems in performing end-to-end diagnosis for infrastructure incidents
- Document system outages to provide critical insights on system health
- Manage incident response process and system recovery
- Provide regular feedback to product development team to improve system performance and reliability

SITE RELIABILITY ENGINEERING MANAGER

Job Description

The Site Reliability Engineering Manager drives the strategy for system operations and maintenance, ensuring highly reliable and scalable systems. He/She addresses multi-faceted issues and presents solutions to enhance and improve systems' health and performance. He champions automation in developing resilient systems.

He has expertise in both technical and business aspects of system development to bridge the gap between development and business functions. He is proficient in various security technologies, as well as cloud computing models and services. He works well with internal and external stakeholders to manage the demands of both. He collaborates with the development team to provide solutions that meet operational demands for high reliability and security.

The Site Reliability Engineering Manager is a strategic thinker that develops robust application systems that meets business requirements. He adopts an innovative mindset to recommend new and emerging solutions. He is a strong communicator who effectively influence 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

Agile Coaching

4

Agile Software Development

4,5

Applications Development

5

Application Integration

3

Budgeting

4

Business Environment Analysis

4

Change Management

4

Cloud Computing

5

Continuous Integration and
Continuous Deployment

4

Cyber and Data Breach
Incident Management

4

Disaster Recovery Management

5

Emerging Technology Synthesis

5

Infrastructure Support

4

Learning and Development

4

Manpower Planning

3

Network Security

4

Networking

4

Partnership Management

4

People and Performance Management

3

Performance Management

5

Problem Management

4

Process Improvement and Optimisation

5

Product Management

5

Project Feasibility Assessment

4

Quality Standards

5

Security Administration

3

Service Level Management

5

Software Configuration

4



SITE RELIABILITY ENGINEERING 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

Software Testing

5

Stakeholder Management

4

Test Planning

4

Critical Core Skills (Top 5)

Proficiency Level

Collaboration

Advanced

Decision Making

Advanced

Developing People

Advanced

Global Perspective

Advanced

Self Management

Advanced



Critical Work Functions

Key Tasks

Monitor systems and optimise performance

- Oversee adherence to system performance indicators to ensure compliance with Service Level Agreements (SLAs)
- Synthesise system health indicators to evaluate long-term system trends and capabilities
- Conduct capacity workload modelling and availability analysis
- Evaluate the feasibility of integrating or adopting emerging cloud and infrastructure technologies
- Recommend process, product or service improvements, resource optimisation and cost savings
- Develop roadmaps to achieve desired future-state system

Automate system operations

- Identify opportunities to enhance operational workflows, systems and processes through automated deployment
- Recommend enhancements to improve systems availability, reliability, and performance through automation
- Evaluate monitoring, alerting, self-healing, and automated recovery techniques

Resolve incidents

- Monitor system performance and availability to ensure compliance with Service Level Agreements (SLAs)
- Recommend solutions to resolve system issues and prevent future incidents
- Advise senior management on system issues and operations
- Simulate user problems on end-to-end diagnosis for infrastructure incidents
- Diagnose system health and propose changes and/or enhancements to system
- Design and implement disaster recovery plans
- Engage stakeholders in driving improvements on system performance and reliability

Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- 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



SOFTWARE ARCHITECT

Job Description

The Software Architect analyses, designs, and develops roadmaps and implementation plans based on a current versus future state business architecture. He/She also reviews recommendations to software architectural standards for approval. He 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, as well as the integration and formulation of the concepts 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 analyse, resolve complex issues and interacts 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

Agile Coaching

4

Agile Software Development

4

Applications Development

5

Application Integration

5

Business Environment Analysis

4

Business Innovation

5

Business Needs Analysis

5

Business Requirements Mapping

4

Business Risk Management

4

Change Management

4

Cloud Computing

5

Continuous Integration and
Continuous Deployment

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

4

Quality Standards

5

Security Architecture

4

Software Design

5

Software Testing

4

Solution Architecture

4

Stakeholder Management

5

System Integration

4,5

Test Planning

3,4



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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

Critical Core
Skills (Top 5)

Proficiency
Level

Communication

Intermediate

Creative Thinking

Intermediate

Decision Making

Advanced

Learning Agility

Advanced

Transdisciplinary Thinking

Advanced



Critical Work Functions

Key Tasks

Develop architecture requirements and maintain oversight

- Analyse 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 for weaknesses and opportunities for improvement
- 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

Managing software development governance

- Develop software governance guidelines in alignment with development and business strategy
- Establish guidelines and frameworks for development, operational, and deployment processes
- Develop roadmaps and implementation plans based on a current versus future state
- Design standard configurations and patterns
- Deploy automation capabilities into the product development lifecycle
- Monitor product team's adherence to organisational guidelines and frameworks
- Set software coding standards and platforms to be used for the end-to-end product development process

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/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 and deploy solutions on relevant software platforms.

The Software Engineering Manager applies critical and analytical thinking toward developing optimal application solutions. He is a strong leader, is decisive, engages, influences and communicates 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

Agile Software Development

4

Applications Development

5

Application Integration

5

Application Support and Enhancement

4

Budgeting

4

Business Environment Analysis

4

Business Innovation

5

Business Needs Analysis

4

Business Negotiation

4

Business Performance Management

4

Business Requirements Mapping

4

Business Risk Management

4

Change Management

4

Configuration Tracking

4

Continuous Integration and
Continuous Deployment

4

Data Design

4

Emerging Technology Synthesis

5

Learning and Development

4

Manpower Planning

3

Networking

4

Organisational Analysis

4

People and Performance Management

3

Performance Management

5

Problem Management

4

Product Management

5

Project Feasibility Assessment

4

Project Management

5

Quality Standards

5

Service Level Agreement

5



SOFTWARE ENGINEERING 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

Critical Core Skills (Top 5)

Proficiency Level

Software Configuration

4

Adaptability

Advanced

Software Design

5

Collaboration

Intermediate

Software Testing

4

Communication

Intermediate

Solution Architecture

4

Developing People

Advanced

Stakeholder Management

5

Problem Solving

Advanced

System Integration

4,5

Test Planning

4,5

User Interface Design

4

Vendor Management

4



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
- Establishes organisation coding standards to avoid security vulnerabilities
- Establishes organisation standards for security assessment processes
- 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
- Leads code reviews and inspections

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

Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- Track the team's achievements and key performance indicators
- Propose new operational plans, including targeted budgets, work allocations and staff forecasts
- Optimise the use of resources
- Develop learning roadmaps to support the professional development of the team
- Manage the performance and development process, including providing coaching and development opportunities to maximise the potential of each individual

SKILLS FRAMEWORK
FOR ICT

INTRODUCTION

HOW TO USE THE TOOL

MAIN VIEW

TRACKS

DATA AND ARTIFICIAL
INTELLIGENCE

INFRASTRUCTURE

SOFTWARE AND APPLICATIONS

STRATEGY AND GOVERNANCE

OPERATIONS AND SUPPORT

CYBER SECURITY

SALES AND MARKETING

PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

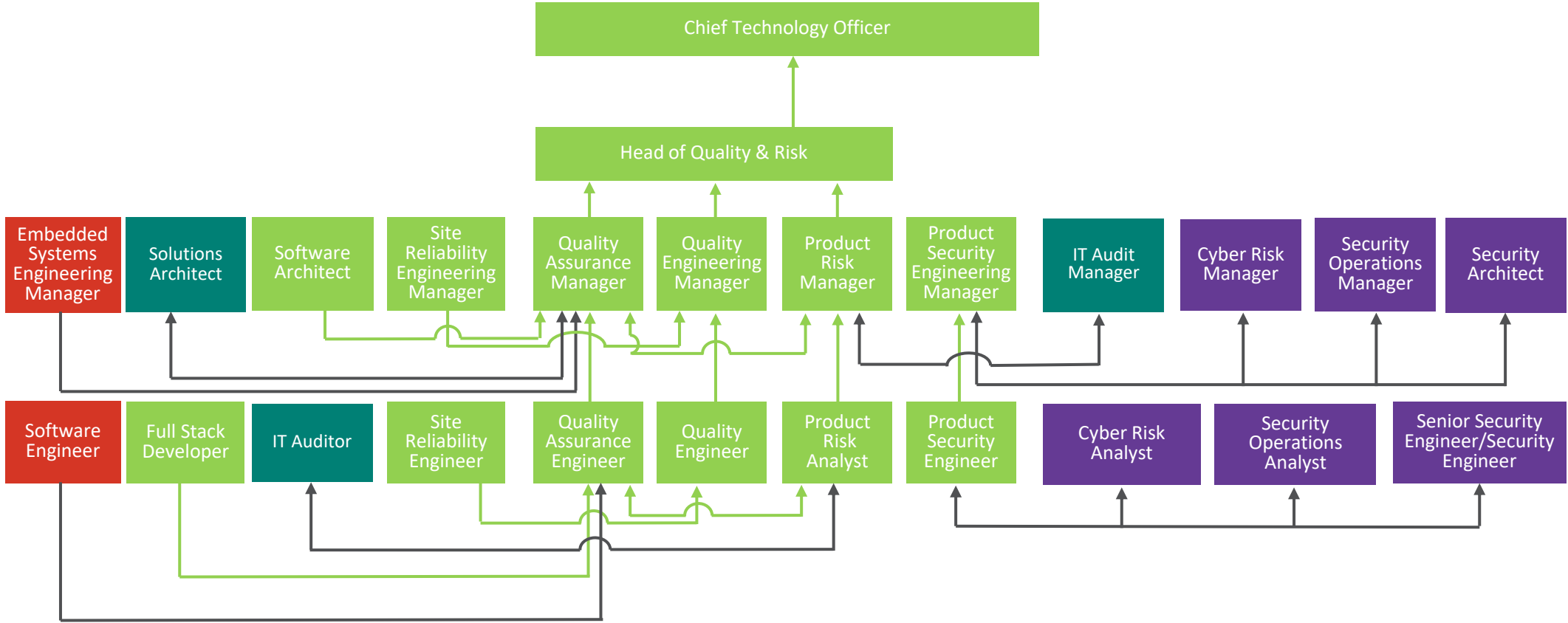
CRITICAL CORE SKILLS



SKILLSFuture SG

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

QUALITY, RISK
AND SECURITY



→ Lateral Movement

→ Vertical Progression

HEAD OF QUALITY AND RISK

Job Description

The Head of Quality & Risk is responsible for development a quality and risk assessment strategy that addresses all phases of product development, as well as governance frameworks for managing quality and test automation. He/She reviews quality and risk 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 and risk standards for adoption, documentation for test reporting and risk assessments, and review of quality and risk standards. He provides technical inputs on approaches and conduct of quality testing and risk assessments and recommend solutions to resolve significant quality lapses and potential risks that may emerge. He also reviews quality test reports, risk assessments 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 and risk management standards and processes, as well as applicable test automation tools.

The Head of Quality & Risk manages the quality of and risk in infocomm technology products from end to end and is able to readily integrate and apply knowledge from multiple disciplines. He develops 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 Software Development

5

AI Ethics and Governance

5

Applications Development

5

Budgeting

5

Business Agility

5

Business Continuity

6

Business Needs Analysis

5

Business Performance Management

5

Business Requirements Mapping

5

Business Risk Management

5

Data Analytics

5

Data Ethics

5

Data Governance

5

Emerging Technology Synthesis

5

Internal Controls in
Product Development

5

Learning and Development

5

Manpower Planning

5

Networking

5

Partnership Management

5

People and Performance Management

5

Problem Management

5

Process Validation

5

Process Improvements
and Optimisation

5

Product Management

5

Product Risk Analytics

5

Product Risk Assessment

6

Project Management

5

Quality Assurance

5

Quality Engineering

5

Quality Standards

6



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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

Critical Core Skills (Top 5)

Proficiency Level

Risk and Crisis Management

5

Communication

Advanced

Risk Compliance and Governance

6

Decision Making

Advanced

Software Design

5

Developing People

Advanced

Software Testing

4

Problem Solving

Advanced

Stakeholder Management

5

Transdisciplinary Thinking

Advanced

Strategy Planning

6

Systems Thinking

5

Test Planning

5



Critical Work Functions

Key Tasks

Manage the organisation’s quality and risk strategy

- Formulate quality and risk strategies to address all phases of product development
- Develop governance frameworks for managing quality, risk assessments and test automation
- Review quality and risk 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, risk management and excellence
- Anticipate new quality tests required and potential risk areas based on organisational strategy and product development trends
- Develop roadmaps for the implementation of Agile methodologies and practices in a quality testing and risk assessment functions respectively

Develop quality standards and risk framework

- Define the approach and procedures in the identification, selection and assessment of quality standards and risks assessment framework for implementation
- Advise on the selection of quality standards and risk guidelines to ensure quality of outputs and potential risks being mitigated at each stage of the process
- Align quality and risk assessment standards with best practices, industry standards and organisational goals
- Establish processes and mechanisms for inspecting and reporting quality and risk issues
- Develop policies and procedures for documentation of end-user experience
- Formulate the approach to enhance organisational quality standards and risk framework

Perform quality testing and risk assessments

- Lead the implementation of quality and quality assurance testing and risk assessment frameworks, procedures, test infrastructure and tools
- Oversee the execution of risk assessment and quality assurance testing including end-user experience tests
- Provide technical inputs on approaches and conduct of quality testing and risk assessment
- Advise on recommend solutions to resolve significant quality lapses and mitigate potential risks
- Drive the achievement of higher quality and risk standards
- Evaluate outcomes of quality test reports and risk assessments 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 and risk assessments to automate and the implementation of automated quality tests and risk assessments



Critical Work Functions

Key Tasks

Optimise quality and risk assessment processes

- Drive continuous improvement in quality and quality assurance testing and risk assessment processes
- Develop sustainable quality and quality assurance testing and risk assessment processes
- Endorse improvements to optimise quality, quality assurance testing and risk assessment processes
- Establish quality improvement programs and risk mitigation programs to detect, address and prevent quality issues and risks in processes
- Secure buy-in for new investments in quality and quality assurance testing and risk assessment 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 and risk assessment functions in an Agile environment



PRODUCT RISK ANALYST

Job Description

The Product Risk Analyst identifies potential risks and controls by analysing user patterns, track changes and report these changes to the Product Risk Manager. He/She supports risk mitigation activities, perform research on targeted scope determined by the manager to deliver data-driven insights. He is also responsible for supporting the maintenance of the risk management framework within the full product development lifecycle. He ensures that risk management checks are performed with documentations duly completed and ensure internal controls are in place.

He performs risk assessments based on directives from the manager and drafts the written report. He is familiar with the format and requirements of such reports and applies risk management guidelines throughout the full product development lifecycle. He is also analytical in applying these risk management concepts and thinking skills to product development and propose recommendations to enhance the current risk management framework and policies.

The Product Risk Analyst synthesises information from risk management assessments and is confident in communicating findings to the team 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

Agile Software Development

3

AI Ethics and Governance

2,3

Applications Development

3

Business Continuity

4

Business Needs Analysis

3

Business Requirements Mapping

3

Business Risk Management

3

Configuration Tracking

2

Data Analytics

3

Data Ethics

3

Data Visualisation and Storyboarding

3

Emerging Technology Synthesis

3

Internal Controls in
Product Development

2,3

Networking

3

Partnership Management

3

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

3

Product Management

3

Product Risk Analytics

3

Product Risk Assessment

4

Quality Assurance

3

Quality Standards

4

Risk and Crisis Management

3

Risk Compliance and Governance

4

Software Testing

2,3

Stakeholder Management

2,3

Strategy Implementation

3

Systems Thinking

3

Test Planning

2,3



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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

Critical Core
Skills (Top 5)

Proficiency
Level

Collaboration

Intermediate

Decision Making

Basic

Problem Solving

Intermediate

Sense Making

Intermediate

Transdisciplinary Thinking

Basic



Critical Work Functions

Key Tasks

Identify potential risks and controls

- Support execution of routine risk mitigation activities
- Discover potential risks by analysing user patterns and the full product usage process during the testing phase
- Track changes in threats, impacts and control effectiveness in products
- Research on insights related to regional product risk governance approvals, trends, emerging risks, and external markets to assess possible risks
- Work with Governance, Risk and Control (GRC) automation tools and Enterprise Risk Management (ERM) tools to support risk assessment processes in products that are in its' development and launch stages
- Deliver regular communication to educate product teams on technical skills and breach management processes required to facilitate risk breach incidents and risk mitigation

Maintain end-to-end product risk management framework

- Supports control mapping to risks and associated security risk frameworks
- Ensure relevant controls are performed as required
- Provide evidence to support the organisation's monitoring processes and internal audit reviews of each product
- Ensure formal documentations in risk registers and maintenance logs, detailing pre-launch and post-launch conditions against stipulated risk assessment metrics

Present findings and documentations to relevant stakeholders

- Develop written reports on risk assessment of products pre-launch and post-launch
- Present insights and findings and for senior management and for firmwide training purposes.
- Acts as a trusted risk advisor for risk management in product teams across the organisation
- Engage with counterparts in other control functions, business segments, and countries for clarification and/or explanation of ambiguous or missing inputs in the risk assessment reports

Implement new risk management policies and solutions

- Implement policies and risk management strategies on new products and platforms
- Creatively problem solve complex and difficult situations with product teams to ensure risks are mitigated
- Propose suggestions in enhancing existing risk management policies and framework
- Provide support to various product teams on risk management procedures through process re-engineering the product lifecycle

PRODUCT RISK MANAGER

Job Description

The Product Risk Manager evaluates potential risks and controls based on findings provided by the Product Risk Analyst. He/She implement risk mitigation activities and determines the targeted scope of research on risk management issues. He is also responsible for driving the monitoring and maintenance of the product risk management process. He reviews risk management documentations and evaluates current controls to seek improvements.

He provides strategic direction in risk assessments and reviews the written report. He is familiar with the format and requirements of such reports and applies risk management guidelines to various products. He is also analytical in applying these risk management concepts and thinking skills to product development and evaluate the feasibility of the proposed recommendations in enhancing the current risk management framework and policies.

The Product Risk Manager anticipate issues across all phases of the product life cycle and strategise solutions to mitigate risk management issues. He is an articulate and influential communicator to both internal and external stakeholders and works 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

Agile Software Development

4

AI Ethics and Governance

4

Applications Development

4

Business Continuity

5

Business Needs Analysis

4

Business Requirements Mapping

4

Business Risk Management

4

Configuration Tracking

3

Data Analytics

4

Data Ethics

4

Data Governance

4

Data Visualisation and Storyboarding

4

Emerging Technology Synthesis

4

Internal Controls in
Product Development

4

Learning and Development

4

Manpower Planning

4

Networking

3

Partnership Management

4

Performance Management

4

Problem Management

4

Process Improvement and Optimisation

4

Product Management

3

Product Risk Analytics

4

Product Risk Assessment

5

Quality Assurance

3

Quality Standards

4

Risk and Crisis Management

4

Risk Compliance and Governance

5

Software Testing

4

Stakeholder Management

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

Strategy Implementation

4

Systems Thinking

4

Test Planning

4

Critical Core Skills (Top 5)

Proficiency Level

Decision Making

Intermediate

Developing People

Intermediate

Problem Solving

Advanced

Sense Making

Intermediate

Transdisciplinary Thinking

Intermediate



Critical Work Functions

Key Tasks

Identify potential risks and controls

- Implement mitigation actions and controls for identified risks
- Develop appropriate strategies to control identified priority areas of risks in accordance with risk management frameworks and inputs from product teams
- Manage changes in threats, impacts and control effectiveness in products
- Assess risk impact of external markets, trends and changing regulations for decision-making on the need for new or updated risk controls for each product
- Work with Governance, Risk and Control (GRC) automation tools and Enterprise Risk Management (ERM) tools to evaluate risk assessment processes in products that are in its' development and launch stages
- Ensure technical upskilling for product teams through training and robustness of technology platforms and breach management processes to facilitate continuity post-crisis

Maintain end-to-end product risk management framework

- Review control mapping to risks and associated security risk frameworks
- Evaluate the relevant controls that are put in place, ensuring that they are constantly updated according to the latest risk assessments
- Drive the organisation's monitoring processes and internal audit reviews of each product
- Review formal documentations in risk registers and maintenance logs, detailing pre-launch and post-launch conditions against stipulated risk assessment metrics

Present findings and documentations to relevant stakeholders

- Refine written reports on risk assessment pre-launch and post-launch, emphasising on key risk areas to drive mitigative solutions
- Drive firmwide trainings for risk management in product development based on insights and findings
- Drive the strategic implementation risk management and mitigation for product development through external collaboration with relevant stakeholders
- Collaborate with relevant teams to develop cross-functional risk management initiatives and projects that impact multiple risk disciplines across diverse ranges of products



Critical Work Functions

Key Tasks

Implement new risk management policies and solutions

- Provide strategic direction on the latest risk management policies and procedures for new products and platforms
- Evaluate solutions provided for iteration to ensure that difficult situations and complex risks can be mitigated within various product teams
- Evaluate feasibility of suggestions proposed to enhance existing risk management policies and framework
- Provide strategic direction to various product teams on risk management procedures through process re-engineering the product lifecycle

Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- Track the team’s achievements and key performance indicators
- Propose new operational plans, including targeted budgets, work allocations and staff forecasts
- 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



PRODUCT SECURITY ENGINEER

Job Description

The Product Security Engineer conducts cyber risk assessment in support of product development, existing product upgrades and new launches to help identify IT related risk and determines appropriate controls to mitigate risks. He/She monitors, identify recurring security issues in each product, 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 also responsible for performing real-time analysis of products and trending of security log data from various security devices and systems on products. He responds to user incident reports and evaluates the type and severity of security events.

He is familiar with cyber security standards, protocols and frameworks, and acts in accordance with the Cyber Security Act 2018. He uses various cyber security monitoring and analysis tools and techniques depending on the organisation's needs and requirements.

The Product Security Engineer is vigilant and systematic in identifying cyber risks, and takes an analytical approach to performing real-time analysis and investigating issues. He communicates well both verbally and in writing.

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

AI Ethics and Governance

2,3

Applications Development

3

Audit and Compliance

3

Business Continuity

4

Business Needs Analysis

3

Cyber and Data Breach
Incident Management

3

Cyber Forensics

2

Cyber Risk Management

4

Data Analytics

3

Data Governance

4

IT Governance

4

Network Security

4

Partnership Management

3

Process Improvement and Optimisation

3

Product Management

3

Quality Standards

4

Security Administration

3

Security Education and Awareness

3,4

Security Governance

4

Security Programme Management

3

Software Design

3

Software Testing

2,3

Stakeholder Management

2,3

Strategy Implementation

3

Strategy Planning

4

Test Planning

2,3

Threat Analysis and Defence

2

Threat Intelligence and Detection

2



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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

Critical Core Skills (Top 5)

Proficiency Level

Collaboration

Intermediate

Decision Making

Basic

Problem Solving

Intermediate

Sense Making

Intermediate

Transdisciplinary Thinking

Basic



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

Mitigate cyber security risks and respond to cyber security incidents

- Determine cause of security violations in products
- Assist in establishing procedures for handling detected cyber security incidents in products
- Recommend corrective actions or appropriate controls to mitigate technical risks in products
- Assist in the implementation of preventive measures against intrusion, frauds, attacks or leaks and correction of cybersecurity breaches in products
- Track remediation efforts for security and audit deficiencies in products

• As above

PRODUCT SECURITY ENGINEERING MANAGER

Job Description

The Product Security Engineering Manager guides the assessment of information and cyber risks associated with product development 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, as well as provide strategic direction on the monitoring and maintenance of security operations and incident response. He manages employees and is held accountable for the performance and results of a team. He guides security measures and protocols to stakeholders.

He is familiar with cyber security standards, protocols, and frameworks, and ensures the organisation's compliance with the Cyber Security Act 2018. He uses various cyber security monitoring and analysis tools and techniques depending on the organisation's needs and requirements. He also uses cyber risk mitigation strategies and protocols to solve cybersecurity issues in products

The Product Security Engineering Manager is sharp, analytical and anticipates cyber security risks in products to mitigate them ahead of time. He is an excellent communicator 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

Agile Software Development

4

AI Ethics and Governance

3

Applications Development

4

Audit and Compliance

4

Budgeting

5

Business Continuity

5

Business Needs Analysis

4

Cyber and Data Breach
Incident Management

4

Cyber Forensics

3

Cyber Risk Management

5

Data Analytics

4

Data Governance

4

IT Governance

5

Learning and Development

4

Manpower Planning

4

Network Security

5

Networking

4

Partnership Management

4

People and Performance Management

4

Process Improvement and Optimisation

4

Product Management

3

Quality Standards

4

Security Administration

4

Security Education and Awareness

5

Security Governance

5

Security Programme Management

4

Software Design

4

Software Testing

4

Stakeholder Management

4

Strategy Implementation

4



PRODUCT SECURITY ENGINEERING MANAGER

Job Description

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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

Critical Core
Skills (Top 5)

Proficiency
Level

Strategy Planning

5

Decision Making

Intermediate

Test Planning

4

Developing People

Intermediate

Threat Analysis and Defence

3

Problem Solving

Advanced

Threat Intelligence and Detection

3

Sense Making

Intermediate

Transdisciplinary Thinking

Intermediate



Critical Work Functions

Key Tasks

Performance Expectations

Implement cyber security risk strategy for products

- Manage the strategic development and improvement of risk frameworks, methodologies, and requirements for products
- Recommend strategies to address key risk areas in cyber security for each product
- Assess business needs for product launch against cyber security concerns and legal and/or regulatory requirements
- Provide strategic risk guidance to stakeholders in the implementation and execution of cyber risk strategies for products pre-launch and post-launch
- Manage the strategic development and improvement of cyber security risk frameworks, methodologies and requirements

In accordance with:

- Cyber Security Act 2018, Cyber Security Agency of Singapore

Establish cyber security standards and policies for products

- Formulate governance procedures for documenting and updating security policy, standards, guidelines and procedures for products
- Plan the implementation of information systems and cyber security policies on products
- Develop the organisation's Cyber Risk Maturity model in application to product launches
- Develop policies and frameworks for conducting cyber security risk assessments and compliance audits on products

- As above

Manage cyber risks and assessments

- Advise the development of techniques and procedures for the conduct of cyber risk assessments on products
- Develop plans for cyber risk assessment activities on products
- Coordinate the ongoing cyber risk assessment activities for existing and new products
- Provide strategic and technical recommendations following identification of vulnerabilities in operating systems
- Incorporate emerging security and risk management trends, issues, and alerts into the risk assessment framework into product upgrades and new products
- Advise the development of techniques and procedures for the conduct of cyber risk assessments on products

- As above



Critical Work Functions

Key Tasks

Performance Expectations

Mitigate cyber security risks and respond to cyber security incident

- Develop programmes and initiatives to strengthen the capability to mitigate risks in existing products and new launches
- Oversee prioritisation of alerts and resources for incident responses on products
- Oversee the planning and conduct of organisational cyber security exercises for products
- Act as a subject matter expert in cyber security incident and breach investigations and post-breach remediation work
- Propose procedures to prevent future incidents and improve cyber security in products

- 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

- As above



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 the 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 delivers quality service to internal stakeholders and is meticulous in conducting tests to ensure product quality requirements are met. He anticipates problems in the development process 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

AI Ethics and Governance

2,3

Business Needs Analysis

3

Business Performance Management

3

Configuration Tracking

2

Networking

3

Partnership Management

3

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

3

Product Management

3

Project Management

3

Quality Assurance

3

Quality Engineering

3

Quality Standards

4

Risk Compliance and Governance

4

Software Design

3

Software Testing

2,3

Stakeholder Management

2,3

Strategy Implementation

3

Test Planning

2,3

Critical Core Skills (Top 5)

Proficiency Level

Collaboration

Intermediate

Communication

Intermediate

Global Perspective

Basic

Problem Solving

Intermediate

Sense Making

Intermediate

Critical Work Functions

Key Tasks

Develop plans to execute quality testing

- Support execution of routine risk mitigation activities
- Discover potential risks by analysing user patterns and the full product usage process during the testing phase
- Track changes in threats, impacts and control effectiveness in products
- Research on insights related to regional product risk governance approvals, trends, emerging risks, and external markets to assess possible risks
- Work with Governance, Risk and Control (GRC) automation tools and Enterprise Risk Management (ERM) tools to support risk assessment processes in products that are in its development and launch stages
- Deliver regular communication to educate product teams on technical skills and breach management processes required to facilitate risk breach incidents and risk mitigation

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 time and cost optimisation opportunities on system quality processes
- Propose improvements for quality testing process optimisation and quality systems
- Conduct research on industry best practices and new methodologies, practices, and tools for quality processes optimisation

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 applies knowledge from multiple disciplines to develop innovative improvement solutions and communicate 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

AI Ethics and Governance

4

Budgeting

4

Business Agility

4

Business Needs Analysis

4

Business Performance Management

4

Configuration Tracking

3

Learning and Development

4

Manpower Planning

4

Networking

4

Partnership Management

4

People and Performance Management

4

Performance Management

4

Problem Management

4

Process Improvement and Optimisation

4

Product Management

3

Project Management

4

Quality Assurance

4

Quality Engineering

4

Quality Standards

5

Risk Compliance and Governance

4

Software Design

4

Software Testing

4

Stakeholder Management

4

Strategy Implementation

4

Test Planning

4

Critical Core Skills (Top 5)

Proficiency Level

Decision Making

Intermediate

Developing People

Intermediate

Global Perspective

Intermediate

Problem Solving

Advanced

Sense Making

Intermediate

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 for refinement 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 for adherence to quality standards

Optimise quality processes

- Evaluate the efficiency and outcomes of existing quality processes
- Review recommendations to optimise quality testing processes and improve quality systems
- Assess new quality testing processes, practices, and tools for implementation to enhance quality systems

Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- Track the team’s achievements and key performance indicators
- Propose new operational plans, including targeted budgets, work allocations and staff forecasts
- 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

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, and uses 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 work dynamically.

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

AI Ethics and Governance

2,3

Applications Development

3

Business Needs Analysis

3

Business Performance Management

3

Networking

3

Partnership Management

3

Performance Management

4

Problem Management

3

Process Improvement and Optimisation

3

Process Validation

3

Product Management

3

Project Management

3

Quality Assurance

3

Quality Engineering

3

Quality Standards

4

Software Design

3

Software Testing

2,3

Stakeholder Management

2,3

Strategy Implementation

3

Test Planning

2,3

Critical Core Skills (Top 5)

Proficiency Level

Communication

Intermediate

Collaboration

Intermediate

Decision Making

Basic

Digital Fluency

Intermediate

Problem Solving

Intermediate

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

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, and uses 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 work dynamically.

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 Validation

4

Agile Software Development

4

Product Management

3

AI Ethics and Governance

4

Project Management

4

Applications Development

4

Quality Assurance

4

Budgeting

4

Quality Engineering

4

Business Agility

4

Quality Standards

5

Business Needs Analysis

4

Software Design

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Business Performance Management

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Software Testing

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Learning and Development

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Stakeholder Management

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Manpower Planning

4

Strategy Implementation

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Networking

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Test Planning

4

Partnership Management

4

People and Performance Management

4

Performance Management

4

Problem Management

4

Process Improvement and Optimisation

4



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, and uses 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 work dynamically.

Critical Work Functions
and Key Tasks

View details

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

Critical Core
Skills (Top 5)

Proficiency
Level

Communication

Advanced

Collaboration

Advanced

Decision Making

Intermediate

Developing People

Intermediate

Problem Solving

Advanced



Critical Work Functions

Key Tasks

Develop quality standards

- Determine quality standards at each stage of the development process to ensure quality of outputs
- Synthesise user requirements and expectations to determine suitable quality standards for end products
- Determine the suitability of including international standards and best practices in quality standards
- Evaluate suitability of quality matrices
- Oversee the development of user guides on quality standards
- Address issues of non-compliance with quality standards and specifications
- Review appropriateness and suitability of quality standards in the development process and for end products

Develop quality testing processes

- Determine types and variations of quality tests for each phase of the product development process or lifecycle to fulfil business needs and requirements
- Assess objectives of quality tests for feasibility and relevancy to each phase of the development process or lifecycle
- Review steps in the quality test process against test objectives
- Ensure quality testing processes complies with regulatory and other relevant requirements
- Develop quality systems for the organisation

Develop plans to execute quality testing

- Synthesise product performance against user feedback to prioritise quality measures for testing
- Determine quality testing objectives, assumptions, and hypotheses
- Determine timelines, test environment, tools and approaches required, work allocation and responsibilities in quality testing
- Review test plans for refinements to ensure robustness of testing
- Review test scenarios for compliance with established testing procedures and guidelines



Critical Work Functions

Key Tasks

Perform quality testing

- Manage the conduct of quality tests across phases of the product development process or lifecycle on quality measures under different operational and usage conditions
- Provide technical inputs on quality gaps to the development team to improve product quality
- Develop quality systems to mitigate or prevent failure from occurring or to enable early detection of failure
- Validate operating and usage conditions in which performance of quality measures drops
- Develop reports documenting quality testing outcomes for the relevant development teams
- Recommend new technologies, tools, and infrastructures, as well as practices and changes to processes
- Guide the development of tools to automate quality testing for suitable types of tests
- Evaluate automated test cases and codes for enhancements
- Ensure the conduct of applicable security tests with relevant functional teams
- Manage the resolution of quality issues to ensure achievement of quality standards in an Agile Environment

Manage people and organisation

- Manage the budget expenditure and allocation across teams and projects
- Track the team's achievements and key performance indicators
- Propose new operational plans, including targeted budgets, work allocations and staff forecasts
- 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



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- CRITICAL CORE SKILLS

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Stakeholder and Contract Management

Design and Architecture

Operations and User Support

Strategy Planning and Implementation

Proficiency Levels					Proficiency Levels					
Agile Coaching			4	5	6	Business Risk Management	3	4	5	6
Business Agility			4	5	6	Change Management	3	4	5	6
Business Continuity			4	5	6	Crisis Management	3	4	5	
Business Environment Analysis	2	3	4	5		Demand Analysis	3	4	5	
Business Innovation			4	5	6	Disaster Recovery Management		4	5	6
Business Needs Analysis	2	3	4	5		Emerging Technology Synthesis	3	4	5	6
Business Process Re-engineering			4	5		Manpower Planning	3	4	5	
Business Requirements Mapping		3	4	5		Portfolio Management		4	5	6



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Project Feasibility Assessment

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Business
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Business Finance



Design and
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General
Management



Governance and
Compliance



Operations and
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People
Development



Sales and Marketing



Stakeholder and
Contract Management



Strategy Planning and
Implementation



Proficiency Levels

Business Negotiation

3

4

5

6

Data Analytics

2

3

4

5

Networking

3

4

5

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Budgeting

3

4

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Strategy Planning and
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Proficiency Levels

Data Design

3 4 5

Design Thinking Practice

3 4 5 6

Embedded Systems Integration

3 4 5

Embedded Systems Interface Design

4 5

Enterprise Architecture

4 5 6

Infrastructure Design

3 4 5

Organisational Design

4 5 6

Security Architecture

3 4 5

Software Design

3 4 5 6

Solution Architecture

4 5 6

Systems Design

4 5 6

User Experience Design

2 3 4 5

User Interface Design

3 4 5

Proficiency Levels

Click on any TSC Category to view titles and levels

Business and Project
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Development



Business Finance



Design and
Architecture



Development and
Implementation



General
Management



Governance and
Compliance



Operations and
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People
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Sales and Marketing



Stakeholder and
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Strategy Planning and
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Proficiency Levels

Agile Software Development

3 4 5 6

Applications Development

3 4 5

Applications Integration

3 4 5

Cloud Computing

3 4 5 6

Computational Modelling

3 4 5

Computer Vision Technology

4 5

Configuration Tracking

1 2 3 4

Continuous Integration and Continuous
Deployment

3 4 5

Proficiency Levels

Control System Programming

2 3 4

Data Engineering

2 3 4 5

Data Visualisation

3 4 5

Embedded Systems Programming

4 5

Failure Analysis

3 4 5

Infrastructure Deployment

1 2 3 4

Intelligent Reasoning

4 5

Network Configuration

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Click on any TSC Category to view titles and levels

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Design and Architecture

Operations and User Support

Strategy Planning and Implementation

Proficiency Levels				Proficiency Levels					
Network Security	3	4	5	Security Assessment and Testing	2	3	4	5	
Network Slicing		4	5	Security Programme Management		3	4	5	
Pattern Recognition Systems		4	5	Self-Learning Systems		3	4	5	
Process Validation	3	4	5	Software Configuration	2	3	4		
Quality Assurance	3	4	5	Software Testing	2	3	4		
Quality Engineering	3	4	5	System Integration		3	4	5	6
Radio Frequency Engineering	3	4	5	Test Planning	2	3	4	5	
Research	3	4	5	Text Analytics and Processing			4	5	6

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Audit and Compliance	3	4	5	Quality Standards	4	5	6	
Cyber Risk Management		4	5	6	Security Governance	4	5	6
Data Ethics	3	4	5	6				
Data Governance		4	5	6				
Data Protection Management	3	4	5					
Data Sharing	3	4	5					
IT Governance		4	5	6				
IT Standards		4	5	6				

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Cyber and Data Breach Incident Management

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3

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5

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Data Centre Facilities Management

2

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Data Migration

3

4

Database Administration

2

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Infrastructure Support

1

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IT Asset Management

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Proficiency Levels

Network Administration and Maintenance

1

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Performance Management

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Problem Management

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Security Administration

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Security Education and Awareness

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Threat Analysis and Defence

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Threat Intelligence and Detection

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Brand Management

3 4 5

Business Development

3 4 5 6

Consumer Intelligence Analysis

2 3 4 5

Content Management

2 3 4 5

Content Strategy

4 5

Customer Behaviour Analysis

2 3 4 5

Customer Experience Management

2 3 4 5

Design Concepts Generation

3 4 5

Integrated Marketing

3 4 5

Market Research

2 3 4 5

Market Trend Analysis

2 3 4 5

Marketing Campaign Management

3 4 5

Marketing Communications Plan
Development

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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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Partnership Management

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Data Strategy	4	5	6
Infrastructure Strategy	4	5	6
IT Strategy	4	5	6
Organisational Analysis	4	5	6
Security Strategy	4	5	6
Strategy Implementation	3	4	

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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Artificial Intelligence Application in Product Development

Apply algorithmic and statistical knowledge to integrate Artificial Intelligence into the design and development of a product as well as in maintenance processes.

Proficiency Level 3

Deploy Artificial Intelligence (AI) workflows for enhancing the efficiency of product development and maintenance processes.

Proficiency Level 4

Evaluate the effectiveness and sustainability of Artificial Intelligence (AI) workflows for process improvements.

Proficiency Level 5

Formulate new Artificial Intelligence (AI) workflows to streamline project execution, product development and maintenance processes in line with organisational strategy

Proficiency Level 6

Explore wider applications of Artificial Intelligence (AI) methods in the organisation by using expertise within the field to transform product development, project execution and maintenance workflows

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AI Ethics and Governance

Establish and drive Artificial Intelligence Ethics and Governance frameworks to ensure compliance, manage risks and commercial benefits in product design.

Proficiency Level 2

Identify AI Ethics and Governance principles as well as processes to apply these in daily activities.

Proficiency Level 3

Check for adherence to relevant AI Ethics and Governance framework and apply it to projects with AI components.

Proficiency Level 4

Evaluate and roll-out AI Ethics and Governance framework as well as ensure compliance within projects with AI components.

Proficiency Level 5

Formulate AI Ethics and Governance frameworks within the organisation on projects with AI components.

Proficiency Level 6

Establish, review and drive AI Ethics and Governance frameworks.

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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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Automation Management in Product Development

Oversee automation systems to ensure operation requirements for product development are met as well as propose strategies for automation systems performance improvement.

Proficiency Level 2	Proficiency Level 3	Proficiency Level 4	Proficiency Level 5	Proficiency Level 6
Apply procedural knowledge of automation technologies and emerging technologies to execute development tasks in the product development process.	Interpret workflow plan and recommendations from the product developer for the use of automation technologies in products.	Review performance of automation technologies in products to assess areas of improvements and possible iterations to be made in products pre- and post-launch after A/B testing.	Formulate new processes in product development that adopt automation technologies to enhance efficiency in the product development process, as well as product improvements to better meet the needs of consumers.	Spearhead the use of wide applications of automation technologies in the product development teams to transform the product development track and processes.
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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.

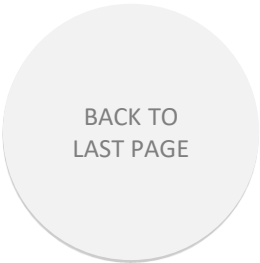
Proficiency Level 2	Proficiency Level 3	Proficiency Level 4	Proficiency Level 5	Proficiency Level 6
Provide real-time incident and status reporting, and identify affected systems and user groups	Troubleshoot incidents, escalate alerts to relevant stakeholder, and analyse root causes and implications of incidents	Develop incident management procedures and synthesise incident-related analyses to distil key insights, resolve incidents and establish mitigating and preventive solutions	Formulate incident response strategies and direct teams in the remediation, resolution, communication and post-mortem of large-scale, unpredictable cyber and data incidents	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	Proficiency Level 3	Proficiency Level 4	Proficiency Level 5	Proficiency Level 6
Scan, retrieve and preserve digital evidence from various sources, following authorised protocols	Coordinate the collection and preservation of evidence and analyse forensic evidence to draw inferences	Develop a digital forensic investigation plan, and integrate analysis of evidence, outlining key conclusions, insights and recommendations	Establish digital forensic investigation policies and protocols for the organisation, and manage multiple investigations	Define new cyber forensics tools, techniques and methodologies and lead cyber forensics investigations on an international scale



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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Internal Controls in Product Development

Evaluate effectiveness and efficiency of internal controls during product development.

Proficiency Level 2	Proficiency Level 3	Proficiency Level 4	Proficiency Level 5	Proficiency Level 6
Interpret organisation's frameworks for internal controls.	Identify organisation's internal controls established and control gaps.	Assess effectiveness of internal controls established using internal control framework established.	Evaluate and recommend improvements to internal control framework.	Develop internal control frameworks and influence internal controls for the organisation.

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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 asses 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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Narrative Design in Product Development

Develop the flow of the content through designing narrative elements within product development and at the product launch stages to create an engaging audience experience.

Proficiency Level 2

Research ideas to support the design of impactful narrative elements in line with product considerations and product launch plans.

Proficiency Level 3

Construct specific narrative elements towards the development of the overall content narrative in line with product considerations and product launch plans.

Proficiency Level 4

Design the blueprint for the content narrative and lead the development of the overall narrative in line with product considerations and product launch plans.

Proficiency Level 5

Guide content narrative development and refine narrative based on product considerations and product launch plans.

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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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LAST PAGE

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	Proficiency Level 4	Proficiency Level 5	Proficiency Level 6
Identify competitor, consumer and technology trends impacting the product, and manage the product lifecycle and performance	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	Anticipate future industry trends, and define the product incubation strategy and business model	Re-define thinking and inspire the conceptualisation of new and innovative products that create significant industry impact

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Product Risk Analytics

Utilise quantitative methods, stress testing approaches and risk modelling to support robust integrated risk management frameworks and methodologies for products.

Proficiency Level 3

Understand and analyse quantitative models and implement basic stress testing approaches to monitor and measure risks, while also implementing risk response activities.

Proficiency Level 4

Design and deploy analysis of quantitative models, risk scenarios, and stress testing processes to facilitate risk management approaches across the organisation and functions.

Proficiency Level 5

Develop and drive organisation’s strategy for designing and implementing quantitative analytics models, scenario analyses and stress testing approaches aligned to the organisation’s integrated risk management approaches.

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Product Risk Assessment

Perform assessment of risks through understanding the product development lifecycle.

Proficiency Level 4

Understand the business and its market environment relevant to risk assessment.

Proficiency Level 5

Identify and assess risks through understanding the business and its market environment.

Proficiency Level 6

Determine responses to risks through understanding the business and its market environment.

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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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LAST PAGE

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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Risk Compliance and Governance

Enforce corporate governance and risk compliance within the organisation through the establishment of policies, compliance programmes and management systems.

Proficiency Level 4

Evaluate and review compliance with applicable legislation and regulations on enterprise risk for the business unit.

Proficiency Level 5

Establish processes for the management of non-compliance to governance requirements.

Proficiency Level 6

Endorse the principles of corporate governance and compliance in the organisation.

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Risk and Crisis Management

Apply strategies designed to enable an organisation to deal with disruptive events by planning for responses to potential crises, establishing monitoring systems and training systems, communicating both internally and externally, and leading recovery processes.

Proficiency Level 3

Execute plans in response to disruptive events and collate post-crisis feedback from stakeholders.

Proficiency Level 4

Manage crisis assessment situations, determine recovery activities and conduct post-crisis analysis including delivery of training programmes to relevant stakeholders.

Proficiency Level 5

Develop crisis management plans and recovery strategies for the organisation.

Proficiency Level 6

Provide leadership during crisis situations, anticipate potential disruptions and develop business continuity strategies.

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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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Systems Thinking

Understand complexity of cause-and-effect relationships of systems and processes across the organisation, as well as evaluate systems based on the value-creation and contribution to specific issues.

Proficiency Level 3

Understand the interrelationship of various processes affecting work activities, assess processes and systems holistically and examine aggregates rather than individual activities

Proficiency Level 4

Monitor the interrelationship of systems and processes across the organisation and evaluate these systems based on value creation and contribution to specific issues

Proficiency Level 5

Understand complexity of cause-and-effect relationships of systems and processes across the organisation and provide direction to improve organisational systems based on gaps identified

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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

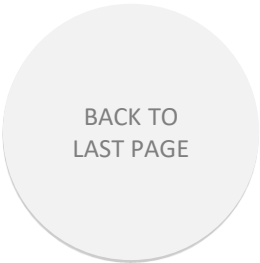
Formulate the organisation’s service delivery standards and strategy, drive a service level agreement (SLA)-oriented mindset, and establish strategic networks and partnerships

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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	Proficiency Level 3	Proficiency Level 4	Proficiency Level 5	Proficiency Level 6
Identify key stakeholder relationships, needs and interests, and coordinate with stakeholders on a day-to-day basis	Serve as the organisation's main contact point for stakeholder communications, clarifying responsibilities among stakeholders, and engaging them to align expectations	Develop a stakeholder engagement plan and negotiate with stakeholders to arrive at mutually-beneficial arrangements	Define a strategic stakeholder management roadmap, and lead critical discussions and negotiations, addressing escalated issues or problems encountered	Establish the overall vision for the alignment of organisation's and stakeholders' objectives, co-creating shared goals and strategic initiatives with senior stakeholders



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	Proficiency Level 3	Proficiency Level 4	Proficiency Level 5	Proficiency Level 6
Install security applications and interpret logs to detect anomalous activity, intrusions and threats	Implement intrusion detection technology and analyse multi-source information to identify vulnerabilities, potential exploits, methods, motives, and capabilities	Develop strategies to monitor threats and project future technical cyber threat scenarios and present mission reports to key stakeholders	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	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

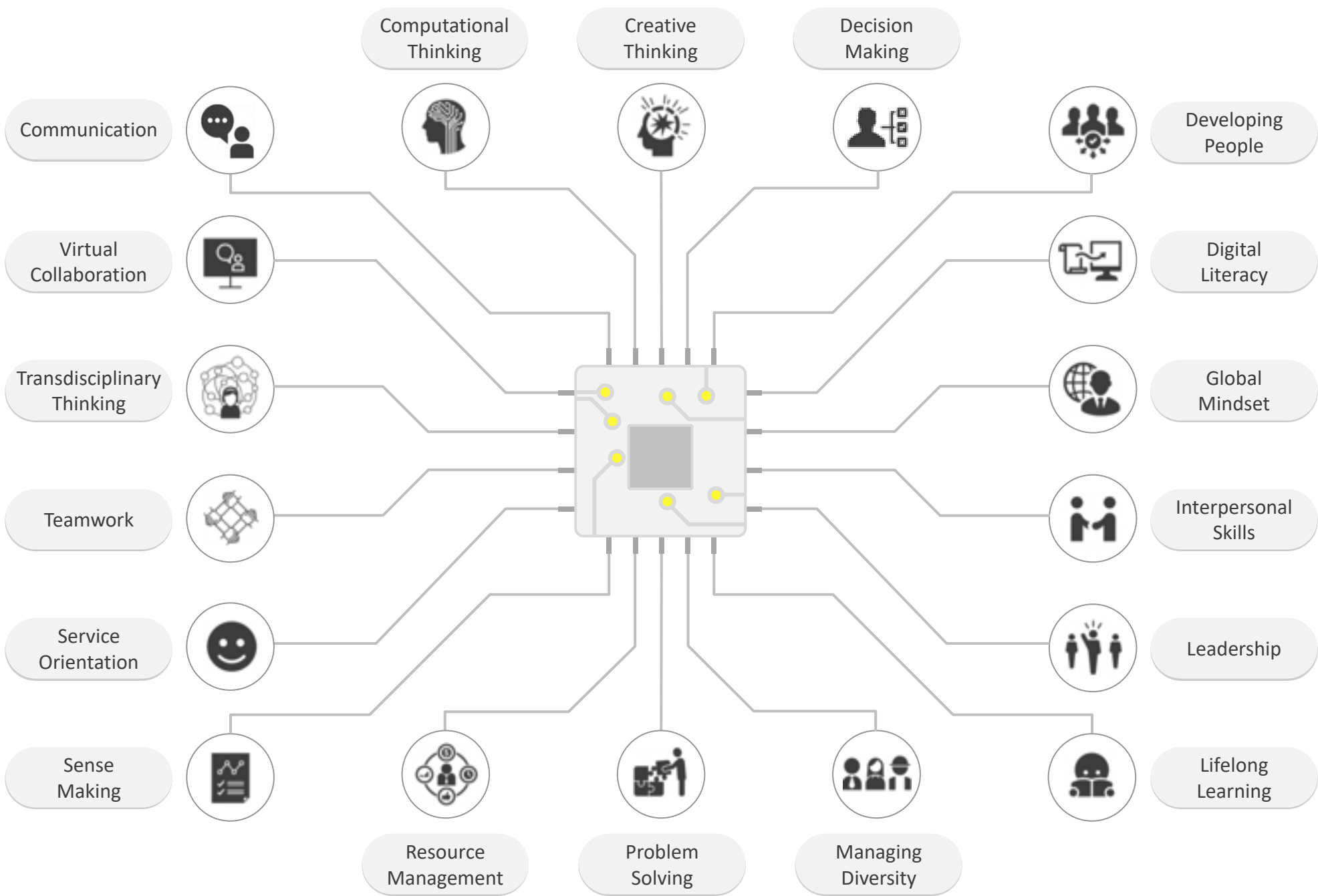
Proficiency Level 5

Establish organisation’s expectations of vendors and manage critical vendor interactions

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SKILLS FRAMEWORK
FOR ICT

- INTRODUCTION
- HOW TO USE THE TOOL
- MAIN VIEW
- TRACKS
 - DATA AND ARTIFICIAL INTELLIGENCE
 - INFRASTRUCTURE
 - SOFTWARE AND APPLICATIONS
 - STRATEGY AND GOVERNANCE
 - OPERATIONS AND SUPPORT
 - CYBER SECURITY
 - SALES AND MARKETING
 - PRODUCT DEVELOPMENT
- TECHNICAL SKILLS & COMPETENCIES
- CRITICAL CORE SKILLS



Adaptability

Exercise flexibility in behaviours or approaches to respond to changes and evolving contexts.

Basic

Modify behaviours and approaches to respond to changes and evolving contexts.

Intermediate

Manage change in evolving contexts.

Advanced

Foster a culture of flexibility that caters to changes and evolving contexts.

BACK TO
LAST PAGE

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.

BACK TO
LAST PAGE

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.

BACK TO
LAST PAGE

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.

BACK TO
LAST PAGE

Customer Orientation

Identify the needs of customers, both internal and external, to deliver an effective customer experience.

Basic

Demonstrate an understanding of customer needs or objectives to respond in a way which delivers an effective customer experience.

Intermediate

Build relationships with customers to anticipate needs and solicit feedback to improve the customer experience.

Advanced

Foster the creation of an effective customer experience.

BACK TO
LAST PAGE

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.

BACK TO
LAST PAGE

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.

BACK TO
LAST PAGE

Digital Fluency

Leverage digital technology tools, systems, and software across work processes and activities to solve problems, drive efficiency and facilitate information sharing.

Basic

Perform work processes and activities using identified digital technology tools, systems and software.

Intermediate

Identify opportunities and evaluate risks of integrating digital technology tools, systems and software across work processes and activities.

Advanced

Drive the creation of a digital culture and environment, educating stakeholders across the organisation on the benefits and risks of digital technology tools, systems and software.

BACK TO
LAST PAGE

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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LAST PAGE

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.

BACK TO
LAST PAGE

Global Perspective

Operate in cross-cultural environments, demonstrating an awareness of the wider global context and markets to identify potential opportunities and risks.

Basic

Demonstrate an understanding of global challenges and opportunities to work effectively in a cross-cultural environment.

Intermediate

Develop global networks and determine impact of global context and trends on the organisation’s vision, objectives and operating climate.

Advanced

Lead the resolution of the challenges of operating in a cross-cultural environment and build the organisation’s capabilities to compete in a global environment.

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LAST PAGE

Influence

Influence behaviours, beliefs or attitudes in order to achieve desired outcomes and solutions.

Basic

Demonstrate empathy to understand the feelings and actions of others and communicate in ways that limit misunderstandings and influence others on operational issues.

Intermediate

Develop relationships with stakeholders to build confidence, alignment and communicate desired purpose, goals or objectives.

Advanced

Build consensus with stakeholders to achieve desired outcomes on matters of strategic importance.

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LAST PAGE

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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LAST PAGE

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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Learning Agility

Deploy different learning approaches which enable continuous learning across different contexts to drive self-development and the achievement of long-term career goals.

Basic

Identify opportunities and targets for learning to facilitate continuous career development.

Intermediate

Deploy various learning approaches in different settings to maximise opportunities for learning and self-reflection and measure their impact on the achievement of career goals.

Advanced

Establish an organisational culture of continuous learning to encourage the adoption of new learning approaches and identification of new learning opportunities.

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LAST PAGE

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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LAST PAGE

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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LAST PAGE

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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LAST PAGE

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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LAST PAGE

Self Management

Take ownership of managing one’s personal effectiveness, personal brand and holistic physical, mental, emotional and social well-being.

Basic

Exercise self-awareness by monitoring own behaviours and ways of working in personal and professional capacities, and implement techniques for improvement.

Intermediate

Analyse own well-being and personal effectiveness to develop strategies to regulate self and build personal brand.

Advanced

Evaluate strategies to manage own well-being, personal effectiveness and personal brand.

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LAST PAGE

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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LAST PAGE

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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LAST PAGE

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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LAST PAGE

Collaboration

Manage relationships and work collaboratively and effectively with others to achieve goals.

Basic

Contribute to a positive and cooperative working environment by fulfilling own responsibilities, managing interpersonal relationships and providing support to others to achieve goals.

Intermediate

Build relationships and work effectively with internal and external stakeholders to create synergies in working towards shared goals.

Advanced

Establish team effectiveness and manage partnerships to create a cooperative working environment which enables the achievement of goals.

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SKILLS FRAMEWORK
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OPERATIONS AND SUPPORT

CYBER SECURITY

SALES AND MARKETING

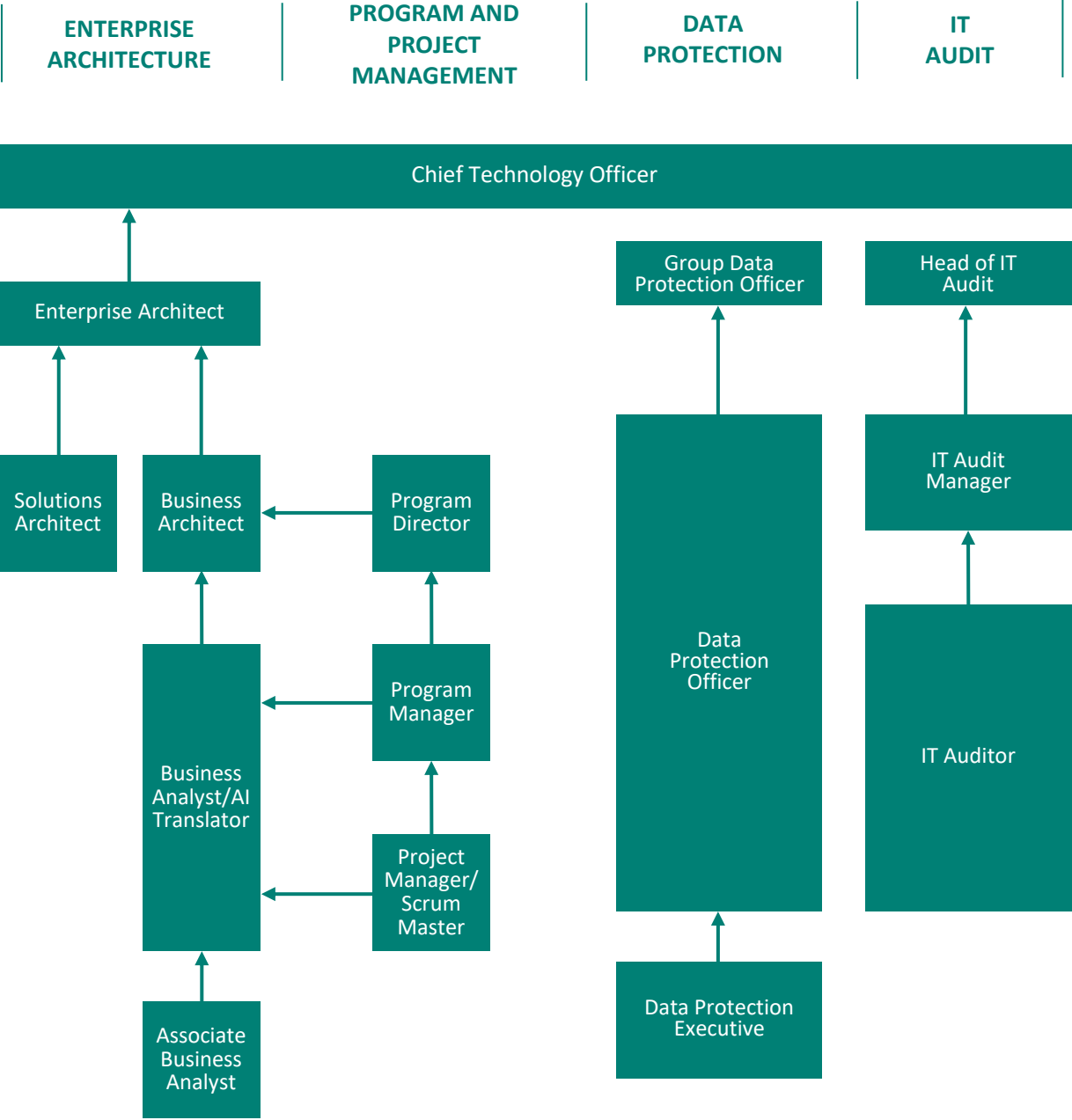
PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



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



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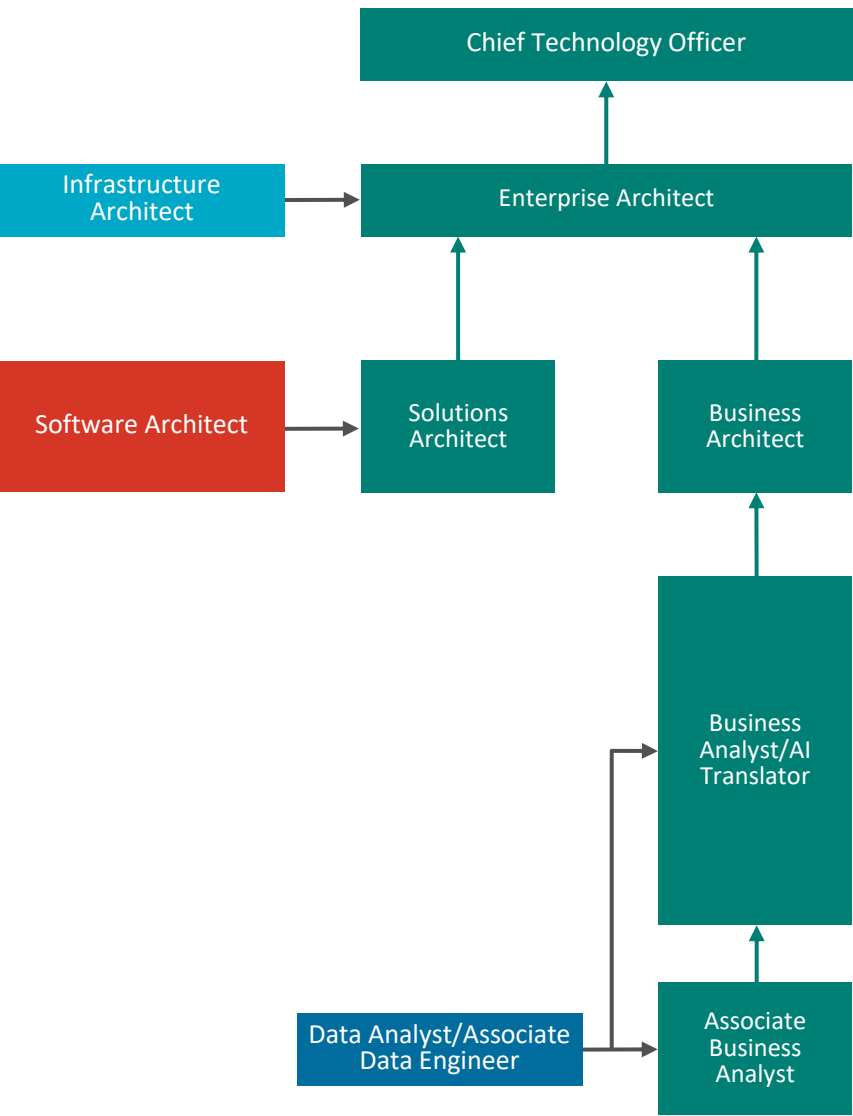
CRITICAL CORE SKILLS



SKILLSFuture SG

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

ENTERPRISE
ARCHITECTURE



→ Lateral Movement

→ Vertical Progression

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

Critical Core Skills (Top 5)

Proficiency Level

Business Environment Analysis

2

Business Needs Analysis

2

Business Requirements Mapping

3

Change Management

3

Data Visualisation

3

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

Problem Solving

Intermediate

Lifelong Learning

Intermediate

Transdisciplinary Thinking

Intermediate

Virtual Collaboration

Intermediate

Decision Making

Intermediate

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

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

Critical Core Skills (Top 5)

Proficiency Level

Decision Making

Intermediate

Interpersonal Skills

Intermediate

Leadership

Advanced

Lifelong Learning

Intermediate

Problem Solving

Intermediate

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

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**

[View details](#)

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

Critical Core Skills (Top 5)	Proficiency Level
Decision Making	Advanced
Interpersonal Skills	Advanced
Leadership	Advanced
Problem Solving	Advanced
Resource Management	Advanced



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

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		



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.

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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

4

System Integration

5

Critical Core Skills (Top 5)

Proficiency Level

Decision Making

Advanced

Interpersonal Skills

Intermediate

Problem Solving

Intermediate

Leadership

Advanced

Resource Management

Intermediate



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

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

Critical Core Skills (Top 5)

Proficiency Level

Decision Making

Advanced

Interpersonal Skills

Advanced

Leadership

Advanced

Problem Solving

Advanced

Resource Management

Advanced

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

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 approves the deployment of new technologies to enhance or develop new services and product offerings. He devises and implements long-term strategies focused on both current and new technologies that can help an organisation go to market more effectively, in turn increasing revenue through technological enhancements.

He is an inspiring leader with a futuristic mindset with an ability to drive innovative enhancements in the organisation. He foresees connections across diverse areas and influences 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

Agile Software Development

6

Applications Development

5

Artificial Intelligence Application

6

Automation Management

6

Budgeting

6

Business Agility

6

Business Continuity

6

Business Risk Management

6

Business Negotiation

5

Change Management

6

Continuous Integration and
Continuous Deployment

5

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

Service Level Management

6

Solution Architecture

6

Stakeholder Management

6

Strategy Planning

6

Software Design

6

Software Testing

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	Critical Core Skills (Top 5)	Proficiency Level
Sustainability Management	6	Communication	Advanced
System Integration	6	Decision Making	Advanced
Test Planning	5	Developing People	Advanced
		Influence	Advanced
		Transdisciplinary Thinking	Advanced



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
- Manage critical internal and external stakeholders’ changes in needs and priorities
- Inspire stakeholders to pursue the organisation's technology vision
- Drive technology alignment with the organisation's business needs

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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OPERATIONS AND SUPPORT

CYBER SECURITY

SALES AND MARKETING

PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

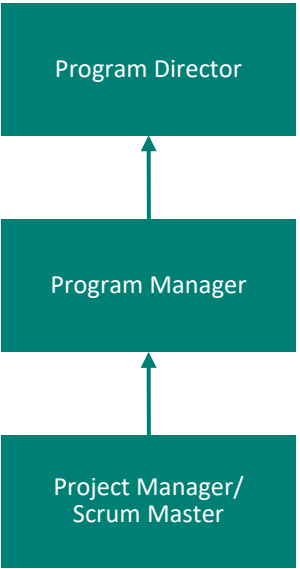
CRITICAL CORE SKILLS



SKILLSfuture SG

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

PROGRAM AND
PROJECT
MANAGEMENT



→ Lateral Movement

→ Vertical Progression

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	Networking	3
Budgeting	3	Partnership Management	3
Business Agility	4	People and Performance Management	3
Business Environment Analysis	2,3	Process Improvement and Optimisation	3
Business Needs Analysis	2,3	Project Management	3,4
Business Performance Management	3	Solution Architecture	4
Business Requirements Mapping	3	Stakeholder Management	2,3
Business Risk Management	3	Strategy Implementation	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		
		Critical Core Skills (Top 5)	Proficiency Level
		Transdisciplinary Thinking	Advanced
		Interpersonal Skills	Intermediate
		Sense Making	Advanced
		Resource Management	Advanced
		Virtual Collaboration	Advanced

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

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

4

Strategy Implementation

4

Data Visualisation

4

Strategy Planning

4

Design Thinking Practice

4

Emerging Technology Synthesis

4



PROGRAM MANAGER

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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

Critical Core Skills (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	Strategy Planning	5
Design Thinking Practice	5		
Emerging Technology Synthesis	5		



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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

Critical Core Skills (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

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TECHNICAL SKILLS &
COMPETENCIES

CRITICAL CORE SKILLS



SKILLSfuture SG

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

DATA
PROTECTION

Group Data
Protection Officer



Data
Protection
Officer



Data Protection
Executive

→ Lateral Movement

→ Vertical Progression

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	Critical Core Skills (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		

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

- Identify risks and review the proposed standard operating procedures (SOPs) with business process owners to mitigate risks
- Establish monitoring mechanisms to monitor activities and performance of vendors against contract terms
- Identify performance problems or contractual issues relating to personal data processing, and measure the performance of data intermediaries in the fulfilment of service level agreements
- Propose enhancements to risk countermeasures and contingency plans
- Manage contracts with third parties and data intermediaries for products and services
- Assist users on the various techniques that an organisation can use to anonymise personal data

• As above

Manage data breaches

- Report all suspected and/or confirmed data breaches in accordance with the data breach management plans
- 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 plans
- Support the data incident response and data breach notification procedures
- Assist in the conduct of investigations relating to data protection breaches

• As above



Critical Work Functions	Key Tasks	Performance Expectations
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 of due diligence policies and frameworks across teams in the organisations	In accordance with: Personal Data Protection Act 2012 by the Personal Data Protection Commission
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
Advise on data innovation projects in the organisation	- Maintain oversight of the organisation’s data assets and taxonomy - Provide guidance on data protection requirements for data innovation projects - Assist in the stock-take of the organisation’s data assets - Adhere to PDPA and other data protection regulations in the conduct of data innovation-related projects - Assist with external providers and internal stakeholders in data valuation exercises	As above



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

Critical Core Skills (Top 5)

Proficiency Level

Lifelong Learning

Intermediate

Interpersonal Skills

Intermediate

Leadership

Intermediate

Resource Management

Intermediate

Virtual Collaboration

Intermediate

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

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

5

Data Ethics

5

Data Governance

6

Data Protection Management

5

Data Sharing

5

Design Thinking Practice

5

IT Standards

5

Learning and Development

5

Manpower Planning

5

Networking

5

People and Performance Management

5

Project Management

5

Stakeholder Management

5

Strategy Implementation

4

Strategy Planning

5

Critical Core Skills (Top 5)

Proficiency Level

Interpersonal Skills

Advanced

Developing People

Advanced

Resource Management

Advanced

Lifelong Learning

Advanced

Communication

Advanced

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 form 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

SKILLS FRAMEWORK
FOR ICT

INTRODUCTION

HOW TO USE THE TOOL

MAIN VIEW

TRACKS

DATA AND ARTIFICIAL
INTELLIGENCE

INFRASTRUCTURE

SOFTWARE AND APPLICATIONS

STRATEGY AND GOVERNANCE

OPERATIONS AND SUPPORT

CYBER SECURITY

SALES AND MARKETING

PRODUCT DEVELOPMENT

TECHNICAL SKILLS &
COMPETENCIES

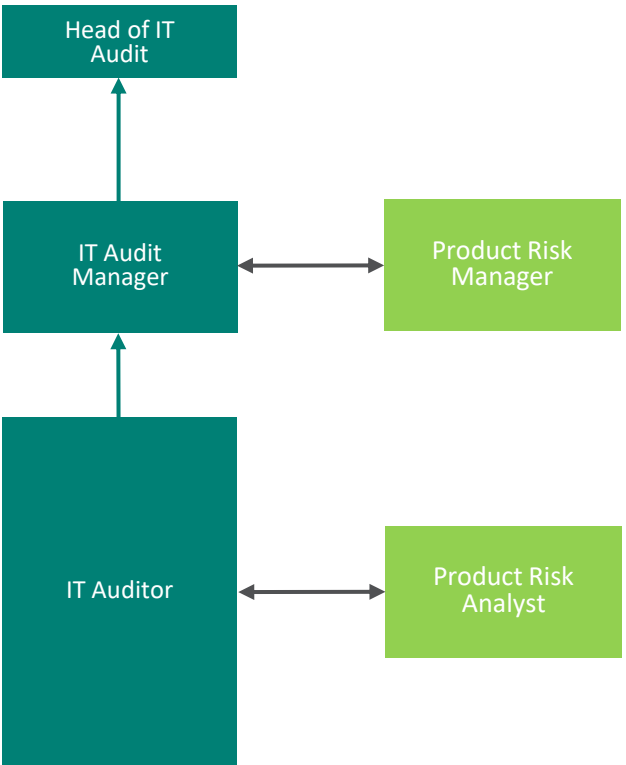
CRITICAL CORE SKILLS



SKILLS *future* SG

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

IT
AUDIT



→ Lateral Movement

→ Vertical Progression

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	Critical Core Skills (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

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

Critical Core Skills (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

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

6

Manpower Planning

5

Networking

5

Partnership Management

5

People and Performance Management

5

Process Improvement and Optimisation

5

Quality Standards

5

Security Governance

5

Stakeholder Management

5

Strategy Planning

5

Sustainability Management

5

Critical Core Skills (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