



Philippine Skills Framework

Analytics & Artificial Intelligence



**ANALYTICS
& ARTIFICIAL
INTELLIGENCE**
ASSOCIATION OF THE PHILIPPINES



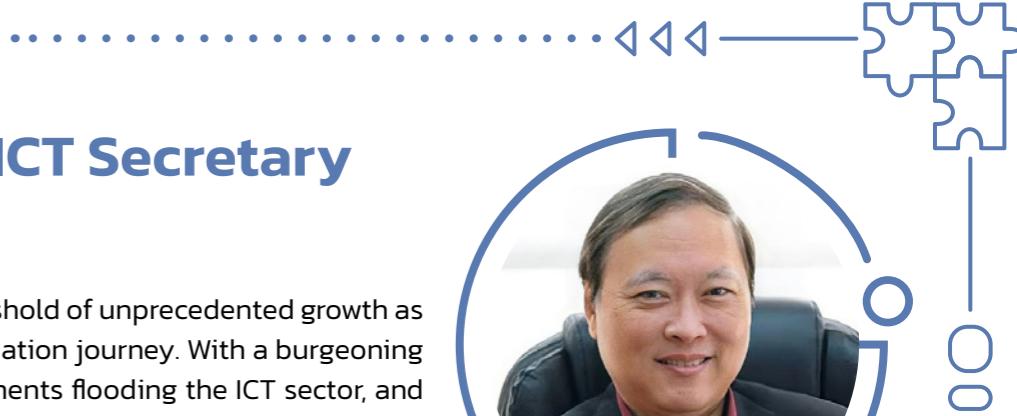
**DEPARTMENT OF INFORMATION AND
COMMUNICATIONS TECHNOLOGY**



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Messages



Message from DICT Secretary Ivan John E. Uy

The Philippines stands at the threshold of unprecedented growth as it embarks on its digital transformation journey. With a burgeoning digital economy, strategic investments flooding the ICT sector, and pioneering applications of frontier technologies reshaping industries, the nation is poised to further solidify its position as a globally competitive ICT hub.



Central to this transformative journey are our skilled and technologically adept ICT professionals, whose expertise is vital to realizing our collective vision of a prosperous digital nation. Ensuring a robust pipeline of ICT talent is essential to sustaining the Philippines' growth momentum and competitive edge. This objective can be achieved through a strategic approach that identifies key skills, competencies, and career trajectories for ICT professionals, equipping them with the knowledge needed to navigate the disruptive currents of the Fourth Industrial Revolution.

The Department of Information and Communications Technology (DICT), through its ICT Industry Development Bureau, has developed the Philippine Skills Frameworks for Analytics and Artificial Intelligence, Contact Center and Business Process Management, Software Development and Security, Healthcare Information Management Services, and Global In-house Center. These frameworks ensure that our professionals in these sectors remain agile and responsive to meet global industry demands, encapsulating our commitment to nurturing a vibrant ICT ecosystem by future-proofing the Filipino workforce. Formed through years of collaborative effort, the DICT extends its heartfelt gratitude to our industry stakeholders as well as government partners for their unwavering support in developing these frameworks. Recognizing that this is a living document, we pledge to maintain openness and deepen collaboration with concerned stakeholders to ensure the frameworks' continued relevance.

With the steadfast guidance of our government, we are committed to bridging all kababayans, ensuring that the benefits of digital transformation reach every Filipino, and making their lives better. These frameworks are a testament to our collective achievements in pursuing a common goal. The DICT remains steadfast in its support of the ICT industry, leveraging frontier technologies to drive economic growth and spur sustainable development in the country. Embodying the resilience and innovation inherent in Filipino workers across all sectors, we will work together towards a more digitally empowered, secure, and prosperous Bagong Pilipinas.

Maraming salamat po!

Ivan John E. Uy

Secretary

Department of Information and Communications Technology (DICT)



About the Cover

"Digital Arbor: Nurturing the Growth of Filipino Talent through Analytics & AI" is the title of the winning entry from Dr. Pejy Arce C. Casem in the PSF-AAI e-book cover contest that aimed to celebrate the fusion of AI technology and artistic expression.

The majestic tree represents the wisdom and strength derived from the framework. Its roots morph from a network of intricate digital streams while its branches reach out in diverse directions, each one signifying a path of guidance, of opportunity, and of growth. The luminous leaves represent every Filipino who, with the nurturing care of the framework, illuminates a path for our country to lead inclusive technological advancement worldwide.

Dr. Pejy Arce C. Casem is an Internal Medicine and Hypertension Specialist from La Union and is currently the head of the Digital Health Informatics Unit at the Ilocos Training and Regional Medical Center OPD. His research on Knowledge, Attitude and Practice of AI among Filipino physicians was recognized at the inaugural AI in Medicine Conference in Singapore (August 2023). He strives to blend healthcare expertise with a deep understanding of technology to advance the medical field.



Message from Atty. Jocelle E. Batapa-Sigue

"Skill is the new currency" is a statement that holds profound truth in today's world. Our urgent goal is to transform this statement into concrete strategies to ensure that the Philippines is rich in this essential form of wealth. A digitally skilled workforce will propel us to greater heights and enable us to reach our full potential as a nation. Therefore, it is imperative that every sector—government, industry, and academia—collaborates to future-proof our workforce.

The World Economic Forum's (WEF) recent survey unveils key insights from the Rise of Global Digital Jobs. As technology and digital accessibility continue to advance, the ability for people to work from anywhere is fundamentally transforming the nature of work globally. This new paradigm, characterized by "jobs that can be distributed across borders in different geographies," allows tasks to be performed, and communication and collaboration to occur, seamlessly through digital tools.

Jobs where all component tasks can be executed remotely, given the appropriate technological capabilities and connectivity, are becoming increasingly common. This shift presents a significant opportunity to harness global talent, allowing employers to expand their recruitment pools beyond geographical limitations. Consequently, countries can enhance their economic output by tapping into a diverse and skilled workforce, driving innovation and productivity. This global talent pool not only provides businesses with access to a broader range of skills but also fosters cross-cultural collaboration and knowledge exchange, further strengthening economic growth.

Understanding the evolving nature of work and developing effective strategies are crucial for the Philippines to remain competitive in the global digital economy. The Philippine Skills Framework (PSF) for the ICT Industry is a proactive approach that will not only enhance the skills of Filipino workers but also drive national growth and competitiveness. Investing in education, training, and digital infrastructure will ensure that the Philippines is well-positioned to seize opportunities in the digital age, fostering innovation and sustainable economic development.

The PSF offers a visionary roadmap for skills development, seamlessly aligning educational and vocational training programs with industry needs and global standards. This initiative is designed to equip Filipino workers with the essential work skills needed to excel in the rapidly evolving job market.

The PSF also fosters collaboration among government agencies, educational institutions, industry leaders, and international partners to create a cohesive and adaptive framework. By continuously updating the skills framework to reflect emerging trends, we can ensure that our workforce remains agile, innovative, and capable of meeting the demands of the global digital economy.

In essence, the Philippine Skills Framework embodies our collective commitment to building a robust, future-ready workforce that can drive national growth and competitiveness in the digital age. Through this visionary initiative, we are not just preparing for the future—we are shaping it.

Atty. Jocelle Batapa-Sigue

Undersecretary for ICT Industry Development

Department of Information and Communications Technology (DICT)



Message from Michelle S. Alarcon

Writing this is not a mandatory task but a celebration of a milestone in the history of the analytics and AI industry in the Philippines. The first nationwide skills framework may have seemed like a far-fetched goal to many, but to the Analytics & AI Association of the Philippines (AAP), it's an aspiration we have been working towards for the past five years.

In 2017, three individuals, who later became founding trustees of the AAP, participated in APEC Project DARE (Data Analytics Raising Employment) to identify data analytics competencies needed by employers to prepare APEC youth for the future job market.

By 2019, the AAP developed the Professional Maturity Model, detailing the competencies of data roles such as data scientist, data steward, data engineer, business analyst, and analytics manager. This model influenced job postings and curriculum development, leading to the launch of DOST's Project SPARTA in February 2020, designed from the model.

In 2021, inspired by the model's large-scale adoption, we aimed to establish it as the standard for academia, government, and industry in developing analytics talent. Over the next two years, we partnered with senior high schools and universities, engaged in curriculum discussions with CHED, DepEd, and TESDA, and maintained a network of private sector employers to provide industry insights. Our involvement in the Philippine Business for Education's A Future That Works program, supported by the Australian Government, led to our recognition by TESDA as the National Industry Board for Analytics and AI. Since then, AAP has expanded its scope to include AI.

What began as a small idea seven years ago evolved into significant contributions, culminating in the Philippine Skills Framework for Analytics & AI, such that, in December 2023, when the DICT entrusted the AAP to develop it, we were already ready.

The PSF-AAI is the realization of our aspiration and proof of a successful partnership with the government, private corporations, startups, academic institutions, learning providers, experts, practitioners, faculty, students, NGOs, and partner organizations. It also marks the beginning of our new aspiration to ensure and promote the responsible use of AI.

Congratulations to all on the launch of the first Philippine Skills Framework for Analytics & AI!

Michelle S. Alarcon

President

Analytics & Artificial Intelligence Association of the Philippines (AAP)





The Philippine Skills Framework – Analytics & Artificial Intelligence

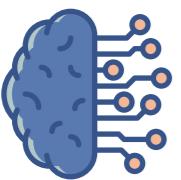
The Philippine Skills Framework (PSF) Initiative is a Philippine government inter-agency effort to build the skills and competencies of the country's human capital and to better prepare the workforce for the future economy, particularly for Industry 4.0. Its Memorandum of Understanding (MOU) were signed by ten departments and agencies, namely the Department of Trade and Industry (DTI), the Technical Education and Skills Development Authority (TESDA), the Department of Labor and Employment (DOLE), the Department of Education (DepEd), the Commission on Higher Education (CHED), the Professional Regulation Commission (PRC), the Department of Information and Communications Technology (DICT), the Department of Science and Technology (DOST), the Department of Tourism (DOT) and the Department of Agriculture (DA).

The initiative involves the development of sector-specific and cross-sectoral skills frameworks that will guide the country's workers in enhancing their skills for particular job roles. Such frameworks will also help employers design progressive human resource management and talent development plans and assist education and training institutions in revising existing curricula or designing new courses that are more relevant and responsive to current industry needs and emerging market demands.

The PSF Initiative prioritizes the construction, creatives, food (agriculture and fishery), health and wellness, IT-BPM (Information Technology & Business Process Management), logistics and supply chain, manufacturing, and tourism industries.

The Philippine Skills Framework for Analytics & Artificial Intelligence (PSF-AAI) is an endeavor developed for the Philippine workforce of all industries to address skills mastery and continuous learning in the cross-sectoral function of emerging technologies specifically analytics and AI (AAI). It is a collaborative development effort initiated and spearheaded by the Department of Information and Communication Technology (DICT) and the Analytics & Artificial Intelligence Association of the Philippines (AAP), with support from Thames International Business School. The initial version was done in consultation and in cooperation with key stakeholders of the Philippines AAI field including employers, education and training providers, and practitioners.

The seven career paths of the PSF-AAI consist of:



Business Intelligence & Strategy. This career path focuses on using data to inform business decisions and strategy. Professionals in this path analyze data trends to provide insights that drive business growth, efficiency, and innovation. They often work with management and leadership teams to understand business objectives and translate data findings into actionable strategies.



Data Stewardship. Data stewards are responsible for managing and overseeing an organization's data assets. Their role includes ensuring data quality, compliance, and governance. They develop and implement data policies and standards, and work to ensure that data is accurate, accessible, secure, and used responsibly.



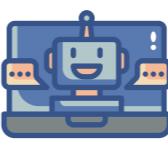
Data Engineering. Data engineers design, build, and maintain the systems and infrastructure that collect, process, and store data. They are responsible for the technical architecture of data projects, including the integration of disparate data sources, data transformation, and the creation of databases and data warehouses.



Data Science. Data scientists analyze and interpret complex data to help organizations make better decisions. They use statistical techniques, machine learning, and predictive modeling to extract insights from data. Their work involves not only analyzing data but also developing new algorithms and models to solve specific business problems.



AI Engineering. AI engineers focus on developing, deploying, and maintaining AI systems. This involves programming, algorithm development, and working with machine learning and deep learning models. They collaborate closely with data scientists to implement AI solutions and ensure that they are scalable, efficient, and effective.



Applied Data/AI Research. This career path is for professionals who conduct research in data analytics and AI. They work on developing new methods, algorithms, and technologies in the field. Their focus is often on pushing the boundaries of what is currently possible in analytics and AI, contributing to academic knowledge as well as practical applications.



Data/AI Education. This career path in data and AI education for teachers, trainers, and learning providers encompasses a journey from introductory instructional roles to advanced educational leadership. This path provides guidance for educators who specialize in shaping new teaching methods using cutting-edge analytics and AI knowledge and skills.

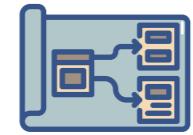
These verticals were chosen by Philippine AAI subject matter experts and consultants after meticulously reviewing the current analytics and AI landscape of the Philippines together with current trends in demand and supply (both locally and internationally) in the sector.

The PSF-AAI is a result of a thorough conduct of studies, desk research, and review. The methodology consisted of reviewing AAP's Professional Maturity Model (which was derived from the 2017 APEC Project DARE or Data Analytics Raising Employment project), as well as the results of the 2022 Labor Market Intelligence Report on the Analytics Sector which was created as part of Philippine Business for Education (PBEd) A Future That Works program, a workforce development initiative supported by the Australian Government.

This was followed by the formation of various teams including: the Contextualizers who reviewed the Singapore Skills Framework (as the primary reference), the Skills Framework for the Information Age (SFIA), and Job and Skills Australia (JSA) to adapt them to Philippine industry scenarios; and the Validators from the government, the private sector, academe, and practitioners who worked together to ascertain the validity of the draft PSF-AAI framework to local best practices but still allowing for the development of a globally competitive Philippine workforce in AAI.

After several drafts and the concurrence of the government representatives, consultants, and resource persons, the Philippine Skills Framework for Analytics & Artificial Intelligence version 1.0 was created, approved, and launched in May 2024.

The Philippine Skills Framework for Analytics & Artificial Intelligence provides useful information on:



Sector and Employment Opportunities

Career Pathways

Occupation and Job Roles

Functional Skills and Competencies

Enabling Skills and Competencies

Importance of the PSF-AAI

The PSF-AAI plays a crucial role across various sectors, offering numerous benefits and improvements for workforce development.

Employers can effectively assess their workforce requirements and tailor standard guidelines for work performance, key tasks, skills, and competencies. This adaptability aids in recruitment and selection, hiring processes, job rotation, and promotion decisions, ensuring a well-equipped and competent workforce.

Organizations, both private and public, can design comprehensive training programs to address existing skills gaps and promote the acquisition and enhancement of necessary skills and competencies. This alignment with industry standards ensures that employees remain competitive and proficient in their roles.

Educational and training institutions can align their curricula with industry needs, providing students and learners with a robust understanding of the AAI sector. This alignment facilitates the development of required skills and competencies, ensuring graduates are well-prepared for the workforce.

Individuals are empowered to make informed career choices and take proactive steps in skills upgrading and career planning. By assessing their career interests and identifying skills gaps, they can utilize quality

programs offered by training institutions and academia, guided by the PSF, to renew, upgrade, and deepen their skills.

Government and regulatory bodies can leverage the PSF to inform policy-making, ensuring that policies are aligned with industry needs and support the development of a skilled and competitive workforce in the analytics and AI sectors.

For more information and/or inquiries about the PSF-AAI, please email psf.aai@aap.ph.

The Journey to a Skills Framework for Analytics & Artificial Intelligence

Sherwin Pelayo, 2024

The inception of the Analytics Association of the Philippines (AAP) in 2017 was marked by an early commitment to establish a professional maturity framework. This framework was envisioned to delineate distinct analytics roles within the Philippines and outline the expected competencies and proficiency levels for current and prospective analytics professionals. In pursuit of this goal, AAP founding board members participated in APEC Project DARE (Data Analytics Raising Employment) in 2017, setting the stage for a comprehensive skills framework.

Historical Context and Initial Efforts

The journey towards creating a skills framework, however, started back in 2012 with the formation of the Analitika PH consortium. It was the first nationwide initiative which aimed to position the Philippines as a global center for smarter analytics, gathering stakeholders from the government, academia, and the private sector to meet the emerging demand for analytics talent. This effort led to the creation of the first two CHED memoranda for specialized tracks in Business Analytics for Information Technology Education and Business Administration, which are still offered by several institutions across the country.

Leveraging APEC Project DARE for Broader Impact

Fast forward to 2017, APEC Project DARE¹ emerged in response to the policy objectives of the Asia-Pacific Economic Cooperation regarding human capital development. This project aimed to mitigate the skills gap in data science and analytics, which was significantly affecting global revenue. Through collaboration among leaders from various sectors, Project DARE established the ten Recommended APEC Data Science and Analytics Competencies. These competencies were designed to guide academic and training institutions in APEC economies to better align their offerings with market needs.

The framework outlined a comprehensive set of skills, categorized into Business and Organizational Skills, Technical Skills, and Workplace Skills. These encompassed a broad range of capabilities, from domain knowledge application and data management to research methods, statistical techniques, and 21st-century skills vital for analytics professionals.

The AAP Professional Maturity Model

AAP further expanded the framework to define specific analytics roles, including Data Stewards, Data Engineers, Data Scientists, Functional Analysts, and Analytics Managers. This delineation of roles aimed to clarify the expectations for professionals and organizations within the analytics domain, ensuring alignment between job functions and career paths.



Figure 1: The ten recommended Data Science and Analytics competencies of APEC Project DARE.

1 APEC Project DARE: <https://www.apru.org/news/apec-project-dare-data-analytics-raising-employment>

| | Data Steward | Data Engineer | Data Scientist | Functional Analyst | Analytics Manager |
|--------|---|---|--|---|---|
| Role | Develops, enforces, and maintains an organization's data governance process to ensure the availability and ethical use of high-quality data | Designs, constructs, tests, and maintains data infrastructures including applications that extract, clean, transform, and load data from transactional systems to centralized data repositories | Leverages statistical techniques and creates analytical models to derive new insights from quantitative and qualitative data | Utilizes data and leverages on derived insights to help organizations make better decisions on a specific functional domain | Develops and guides data-driven projects, from initiation to planning, execution to performance monitoring, to closure. |
| Field | • Business • Industry | • Information Technology • Information Science • Computer Science | • Mathematics • Statistics | • Business • Industry | • Project Management |
| Titles | • Data Privacy Officer • Data Security Officer • Data Governance Manager • Data Curator • Data Librarian | • ETL Developer • Data Architect • Data Warehousing Professional • Big Data Engineer | • Statistician • Statistical Modeler • Advanced Analytics Professional | • Research Analyst • HR Analyst • Marketing Analyst • Financial Analyst • Operations Analyst | • Chief Data Officer • Project Manager • Data Engineering Manager • Data Science Manager • Analytics Translator |

Figure 2: The analytics job families.

The framework recognizes that there are numerous analytics job titles out there and that there are overlaps across these roles. The AAP believes, however, that the job families identified through this framework are differentiated enough especially in their role in the data value chain and in the identified areas of expertise. Such jobs require people with unique skills and experience to fill these roles. By understanding this distinction, organizations and analytics practitioners can share the same set of expectations to ensure that, one, organizations get the most out of their Analytics efforts and, two, that Analytics practitioners are positively engaged by performing tasks that are aligned to their profession and career path.

Implementing the AAP Professional Maturity Model

The AAP Professional Maturity Model's introduction marked a significant step forward, providing a shared understanding of analytics roles and competencies. One of the first large-scale implementations of the model is Project SPARTA². A project by the Department of Science and Technology (DOST) and now managed by the Development Academy of the Philippines (DAP), SPARTA, or Project Smarter Philippines through Data

| | Steward | Engineer | Scientist | Analyst | Manager |
|------------------------|--------------|--------------|--------------|--------------|---------|
| Domain Knowledge | Expert | Entry | Intermediate | Expert | Expert |
| Data Governance | Expert | Intermediate | Intermediate | Intermediate | Expert |
| Operational Analytics | Expert | Expert | Expert | Expert | Expert |
| Data Visualization | Intermediate | Entry | Intermediate | Expert | Expert |
| Research Methods | Entry | Entry | Expert | Entry | Entry |
| Data Engineering | - | Expert | Entry | - | Entry |
| Statistical Techniques | - | Entry | Expert | - | Entry |
| Methods & Algorithms | - | Entry | Expert | - | Entry |
| Computing | Entry | Intermediate | Expert | Entry | Entry |
| 21st Century Skills | Expert | Expert | Expert | Expert | Expert |

Figure 3: The AAP Professional Maturity Model Version 1.0.

2 Project SPARTA: <https://sparta.dap.edu.ph>

Analytics, R&D, Training, and Adoption, is dedicated to putting in place the necessary online education, research and development mechanisms, and infrastructure to enable the industry of analytics, and foster smart governance practices. At the end of 2023, Project SPARTA has produced 1,282 unique completers of its various pathways, and 2,620 unique completers of its various microspecializations.

National Recognition and A Future That Works

The model's success led to AAP's recognition by TESDA as the National Industry Board for Analytics & Artificial Intelligence in 2022, broadening its scope to include AI. This recognition as an industry board also came about through Philippine Business for Education (PBEd) A Future That Works³ program, a workforce development initiative supported by the Australian Government. The program focuses attention and investment on reducing the mismatch of jobs and skills, to ensure the competitiveness of the industry. One of the key deliverables of the project is the 2022 Labor Market Intelligence Study on the Analytics Sector of the Philippines⁴. The study identified several additional roles and competencies that necessitated an updated version of the AAP Professional Maturity Model. This paved the way for the Philippine Skills Framework for Analytics & AI (PSF-AAI), developed by the AAP in collaboration with the Department of Information and Communications Technology (DICT).

Future Directions

The Philippine Skills Framework for Analytics & AI represents a landmark achievement in aligning the nation's workforce development efforts with the evolving demands of the digital economy. By establishing clear guidelines for skills and competencies, the framework sets a solid foundation for nurturing the next generation of analytics and AI professionals in the Philippines. This is but the start, however, as the various relevant government agencies, the private sector, and the academe, adopt this framework in performance of their respective roles in workforce development. Ultimately, this PSF-AAI is for our current and future AAI workforce so that they may be provided with the right education and training that are aligned to industry needs leading eventually to gainful employment.



About Sherwin Pelayo

As the Executive Director and a founding member of the Analytics & Artificial Intelligence Association of the Philippines, Sherwin Pelayo orchestrates strategic national initiatives to nurture a robust analytics and AI ecosystem. His leadership extends to pioneering education programs, shaping industry standards, and driving policy reforms, all aimed at positioning the Philippines as a global contender in technology and innovation.

Sherwin's career is marked by distinguished roles in top consulting firms where he spearheaded digital transformation and capability development projects across diverse industries.

Sherwin served as the overall project lead and contextualizer of the Philippine Skills Framework for Analytics & Artificial Intelligence.

Performance, Skills, Ethics, Generative AI Adoption, and the Philippines

Dominic "Doc" Ligot, 2024

AI and Performance

An intriguing relationship is emerging between AI technologies and human performance. Recent studies conducted by prestigious institutions shed light on the transformative impact of AI, particularly in scenarios where human skills vary. Key findings from MIT, BCG, and the University of Minnesota highlight how AI, specifically GPT-4, can enhance productivity and performance.

The MIT/Stanford Study: Boosting Productivity Across the Board

A joint MIT/Stanford study¹ delved into the integration of ChatGPT in a call center environment. The results were remarkable – an overall productivity improvement of 14%. What is more intriguing is that less skilled agents experienced a staggering 34% boost in productivity. This suggests that AI has the potential to bridge skill gaps, providing substantial benefits to those who may initially lag in proficiency.

BCG's Experiment: GenAI Empowering Consultants

Boston Consulting Group (BCG) conducted an experiment² among their consultants, providing GPT-4 access to a selected group. The consultants who leveraged GenAI outperformed their peers, with consultants ranked below average witnessing a remarkable 43% increase in performance. This demonstrates the democratizing effect of AI, enabling individuals with varying skill levels to excel and contribute significantly.

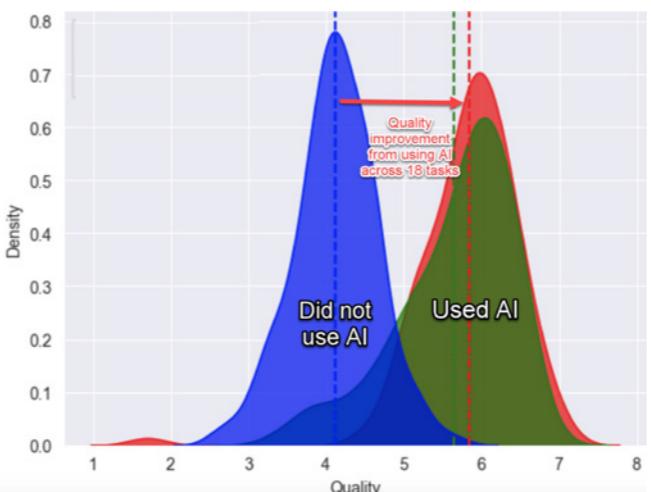


Figure 1: BCG Findings quality performance between non-users (Blue) and users of GPT-4 (Red and Green).

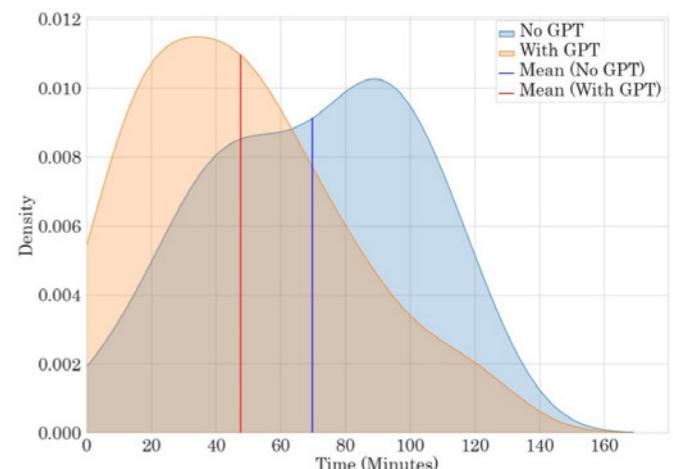


Figure 2: University of Minnesota findings, impact of GPT-4 on speed of drafting a contract.

University of Minnesota's RCT: Unleashing Potential in Legal Education

In a randomized controlled trial³ at the University of Minnesota's law school, students using GPT-4, or GenAI, exhibited improvements in output speed across the board. Notably, lower-skilled students saw

3 A Future That Works: <https://sectorskills.ph>

4 2022 Philippines Data Analytics Sector Labor Market Intelligence Report: https://www.researchgate.net/publication/358356552_Philippines_Data_Analytics_Sector_Labor_Market_Intelligence_Report

1 NBER, 2023, Generative AI at Work, <https://www.nber.org/papers/w31161>

2 Business Insider, 2023, Bad news, star employees: You're not the ones who'll benefit the most from AI, <https://www.businessinsider.com/ai-employees-lower-performers-most-impact-boston-consulting-group-2023-9?op=1>

3 Minnesota Legal Studies, 2023, Lawyering in the Age of Artificial Intelligence, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4626276

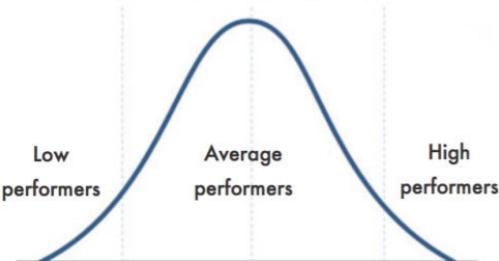


the most substantial increases in the quality of their output. This underscores AI's ability to not only enhance productivity but also elevate the proficiency of individuals with diverse skill sets.

The Power-Curve Paradigm: Unraveling AI's Impact on Human Performance

While AI output is often criticized for being the "average" of its training data, the MIT, BCG, and UOM cases challenge this notion. Humans do not adhere to a bell curve; rather, our performance aligns along a power-curve⁴, contributing to the Pareto rule. AI, as observed in these studies, has the potential to unlock value from the majority, emphasizing its role in empowering individuals across the skill spectrum.

The Bell Curve Normal Distribution



The Long Tail Power-Law Distribution



Figure 3: Bell curve vs. power-law curve in performance.

Philippines is a Bright Spot for AI

In a recent report⁵, the Philippines ranked the highest in monthly search volume per 100,000 population for AI tools. Another study⁶ observed the visits to popular AI tool sites, and found the Philippines ranked fourth in the world in terms of traffic to AI tool sites, exceeded only by the US, India, and Indonesia – countries with far larger populations. These indicators are promising signs against a backdrop of lackluster performance in the education sector. Reconciling these numbers against a bottom ranking in PISA scores⁷ and rising public clamor by the local academia to ban or censure⁸ the use of AI tools by students is difficult, perhaps indicating that the knowledge enhancement of AI is happening in spite of, not because of, the education system.

Builders, Users, Leaders, Trainers

To foster widespread AI adoption, a diverse set of skills is crucial. Key skills are needed to encourage the seamless adoption of AI, catering to builders, users, leaders, and trainers in the AI domain.

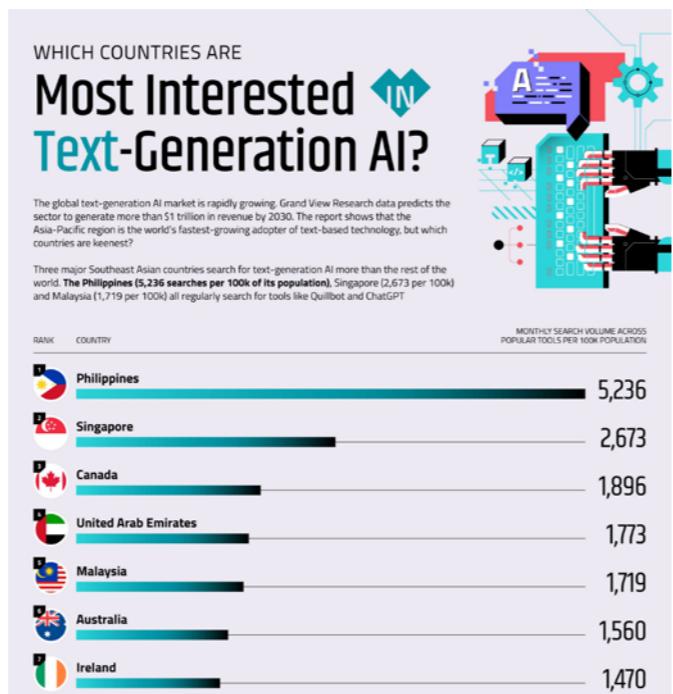


Figure 4: Electronics Hub: Global search Interest per 100,000 in Text AI tools.

⁴ Forbes, 2014, The Myth of The Bell Curve: Look for The Hyper-Performers, <https://www.forbes.com/sites/joshbersin/2014/02/19/the-myth-of-the-bell-curve-look-for-the-hyper-performers/?sh=4f032cf6bc0>

⁵ Electronics Hub, 2023, Generative AI Global Interest Report 2023, <https://www.electronicshub.org/generative-ai-global-interest-report-2023/>

⁶ Writerbuddy, 2023, AI Industry Analysis: 50 Most Visited AI Tools and Their 24B+ Traffic Behavior, <https://writerbuddy.ai/blog/ai-industry-analysis>

⁷ OECD, 2023, PISA 2022 Results: Factsheets, Philippines, <https://www.oecd.org/publication/pisa-2022-results/country-notes/philippines-a0882a2d/>

⁸ Interaksyon, 2023, UP AI professors warn students against use of AI tools in academic requirements, <https://interaksyon.philstar.com/trends-spot-lights/2023/01/18/240453/up-ai-professors-warn-students-against-use-of-ai-tools-in-academic-requirements/>

Top 20 Countries With the Most AI Users

| Country | Total Visits | % of Total Traffic |
|---------------|--------------|--------------------|
| United States | 5.5 B | 22.62% |
| India | 2.1 B | 8.52% |
| Indonesia | 1.4 B | 5.60% |
| Philippines | 1.3 B | 5.25% |
| Brazil | 1.3 B | 5.22% |

Figure 5: Writerbuddy: Top Countries with AI Traffic.

Builders: Crafting the Future of AI

Builders are the architects behind AI development, responsible for creating, refining, and deploying AI models. Proficiency in AI engineering, Retrieval Augmented Generation (RAG)⁹, and fine-tuning¹⁰ are indispensable for builders. Mastery of these skills ensures the creation of robust AI systems that can adapt to ever-changing needs, providing the foundation for a successful AI adoption journey.

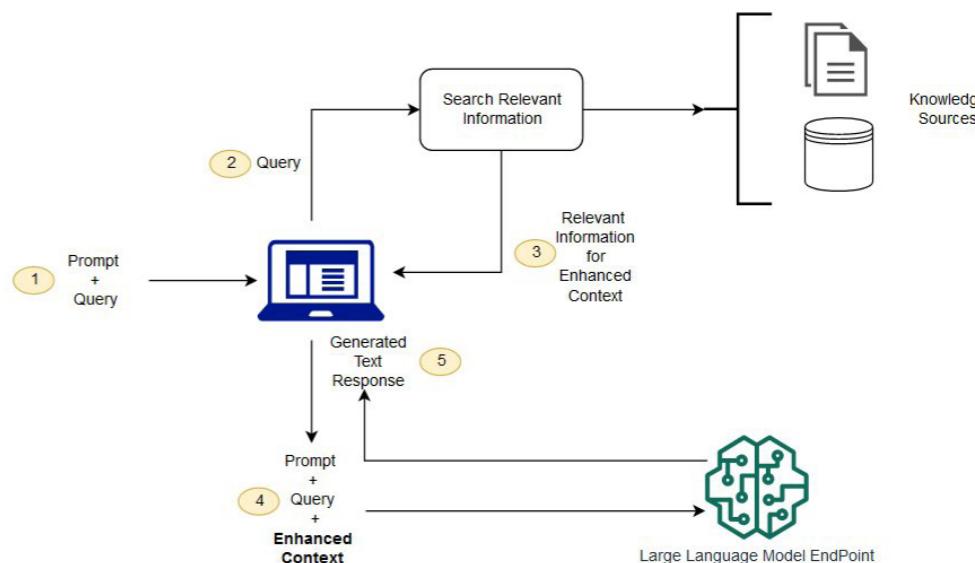


Figure 6: Amazon: Retrieval Augmented Generation (RAG).

Users: Maximizing AI for Productivity and Creativity

Users play a pivotal role in AI adoption by harnessing its capabilities for enhanced productivity, creativity, and knowledge management. A fundamental skill for users is prompt engineering, which involves effectively instructing AI systems to generate desired outputs. Understanding how to leverage AI to its full potential empowers users to streamline tasks, boost creativity, and manage information efficiently.

Leaders: Designing the Future with Embedded AI

Leaders are tasked with designing products and processes that seamlessly integrate AI. Design thinking is a critical skill for leaders in the AI landscape, enabling them to envision and implement innovative solutions. By incorporating AI into the design phase, leaders can create products and services that are not only technologically advanced but also user-friendly and aligned with market demands.

⁹ Amazon, What Is RAG?, <https://aws.amazon.com/what-is/retrieval-augmented-generation/>

¹⁰ Towards Data Science, 2023, RAG vs Finetuning — Which Is the Best Tool to Boost Your LLM Application?, <https://towardsdatascience.com/rag-vs-finetuning-which-is-the-best-tool-to-boost-your-llm-application-94654b1eaba7>



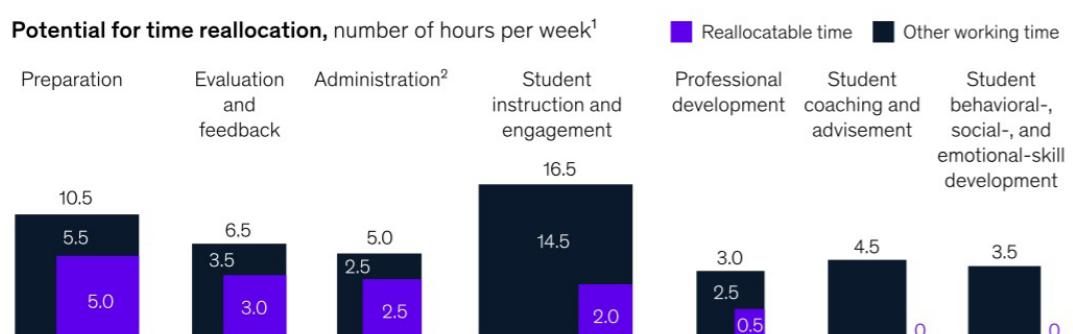
Teachers: Empowering Others through AI Education

Teachers hold the key to disseminating AI knowledge and skills across the spectrum. Proficiency in AI-driven education¹¹ and research equips teachers to educate and train individuals in the nuances of AI adoption. They play a crucial role in shaping the next generation of builders, users, and leaders, fostering a continuous cycle of learning and development.

The Need for AI Ethics

As Artificial Intelligence (AI) continues to revolutionize industries, the ethical implications of its deployment become increasingly crucial. AI Ethics, at its core, should seamlessly blend three essential components to ensure responsible and equitable use.

Technology can help teachers reallocate 20 to 30 percent of their time toward activities that support student learning.



¹Figures may not sum, because of rounding. Average for respondents in Canada, Singapore, United Kingdom, and United States.

²Includes a small "other" category.

Source: McKinsey Global Teacher and Student Survey

McKinsey & Company

Figure 7: WEF, McKinsey, Technology impact on teacher time.

Risk Management: Balancing Act for Ethical AI

Effective AI Ethics demands a delicate balance between risks and benefits. Organizations must navigate potential pitfalls, ensuring that the advantages brought by AI are not overshadowed by ethical concerns. Striking this equilibrium allows for the responsible integration of AI technologies while mitigating any unintended consequences. As data-powered systems become more independent, care must be put into AI safety.

Compliance: Upholding Legal Standards in the Digital Realm

Adhering to existing laws, such as data privacy (RA 10173)¹² and cybercrime prevention acts (RA 10175)¹³, is paramount in AI Ethics. Compliance ensures that AI applications operate within legal frameworks, safeguarding user privacy and protecting against illicit activities. Embracing legal standards creates a foundation for ethical AI that respects societal norms and regulations.

Values: Amplifying the Best of Humanity

AI Ethics should reflect and magnify the best aspects of human nature while curbing undesirable behaviors. Fostering a value-driven approach ensures that AI technologies align with societal norms, promoting

fairness, inclusivity, and empathy. By prioritizing human values, AI becomes a force for positive change, contributing to a more ethical and harmonious technological landscape.

The triad of risk management, compliance, and human values serves as a compass, guiding organizations towards responsible AI deployment that maximizes benefits while upholding legal standards and human virtues. Embracing this fusion is not just a necessity for ethical AI but a commitment to shaping a future where technology aligns seamlessly with our collective values and societal expectations.

Skills are the Key to Unlocking AI's Value

In conclusion, successful AI adoption requires a harmonious fusion of skills across multiple profiles. Builders, users, leaders, and teachers each contribute a unique set of skills essential for the comprehensive integration of AI into various aspects of life and business. By embracing these skills, individuals and organizations can unlock the full potential of AI, driving innovation and staying at the forefront of the ever-evolving technological landscape.

The synergy between AI and human performance goes beyond mere productivity enhancements. The studies from MIT, BCG, and the University of Minnesota illuminate how GenAI can bridge skill gaps, empower the less skilled, and unlock untapped potential across diverse domains.

AI Ethics should be at the forefront of initiatives to foster AI, with risk management, compliance, and human values underpinning all our efforts.

Finally, AI represents an opportunity for the education sector to turn trends around. Despite the country's recent performance in global education rankings, the Philippines remains a bright spot for AI.



About Dominic "Doc" Ligot

Doc is a data analyst, researcher, software developer, entrepreneur, and technologist. He is an advocate for data literacy, AI ethics, data ethics and social impact from data. He is the founder of CirroLytix, a social impact AI company, and Data Ethics PH, an online community focused on social issues such as data privacy, data security, AI-driven discrimination, data liabilities, data ownership rights, and data poverty.

Doc co-authored the Masters in Applied Business Analytics degree of the University of Asia and the Pacific, and led the development of the nationwide data science education program Project SPARTA. He co-founded the Analytics & Artificial Intelligence Association of the Philippines (AAP) and is a Board of Trustees member of the Philippine Center for Investigative Journalism (PCIJ).

¹¹ World Economic Forum, 2023, How AI can accelerate students' holistic development and make teaching more fulfilling, <https://www.weforum.org/agenda/2023/05/ai-accelerate-students-holistic-development-teaching-fulfilling/>

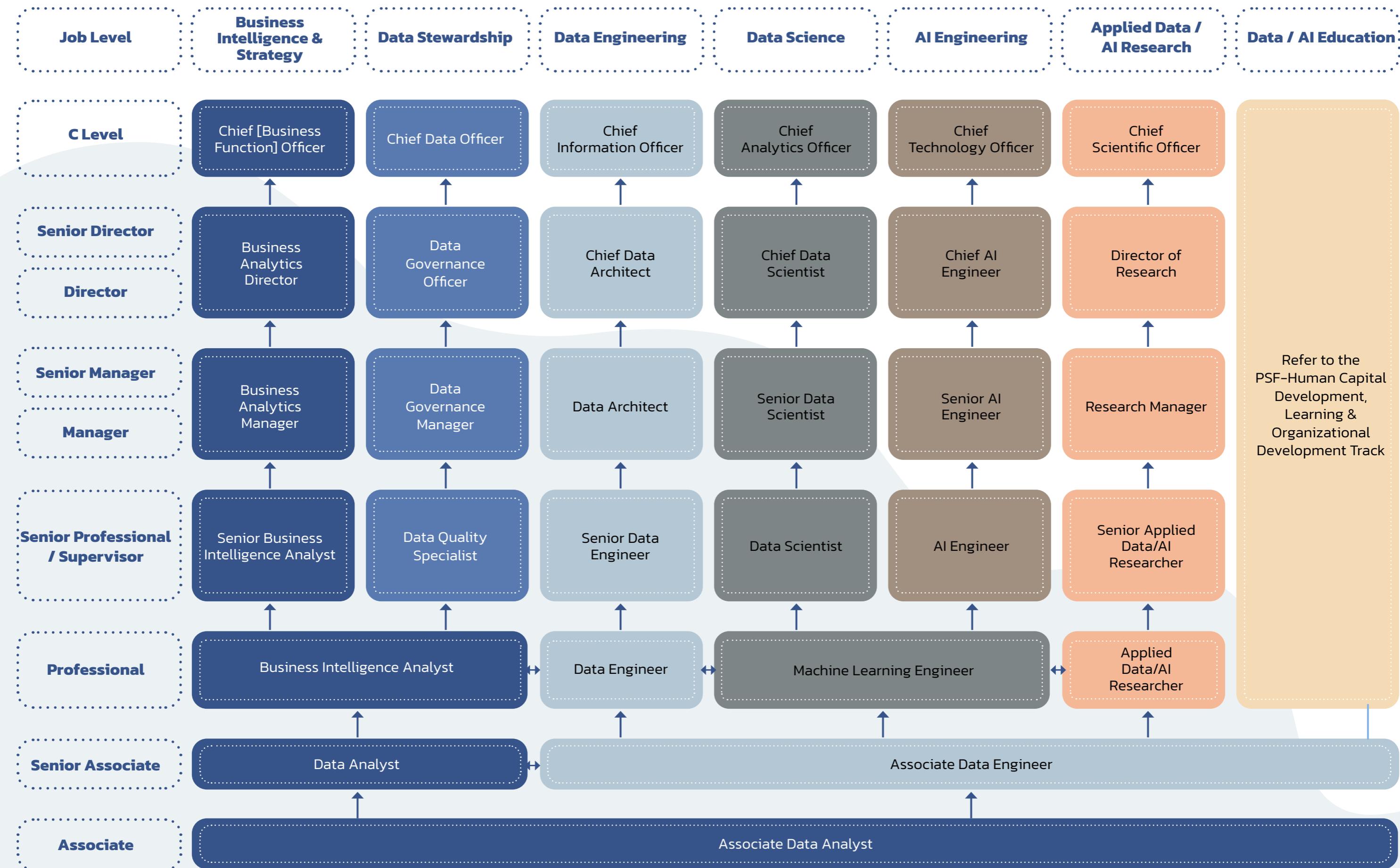
¹² RA 10173, Data Privacy Act, <https://privacy.gov.ph/data-privacy-act/>

¹³ RA 10175, Cybercrime Prevention Act, https://lawphil.net/statutes/reprints/ra2012/ra_10175_2012.html



Analytics & Artificial Intelligence Career Map

The Career Map presents the career pathways within the Sector, identifying the vertical tracks, as well as the horizontal job grades. It provides a general representation of the job roles from entry level to the top positions.





Associate Data Analyst

The Associate Data Analyst plays a supportive role in a data analytics team. They assist in the collection and organization of data, perform basic data analysis under supervision, learn to use data visualization tools and techniques, help maintain databases and data systems, assist in preparing reports and presenting findings in a clear manner, and collaborate with team members on data-related projects.



Data Analyst

The Data Analyst is a dynamic role focused on the independent handling of data-related tasks in a business environment. The Data Analyst has a solid foundation in data analysis, capable of working effectively without the need for constant supervision. The primary responsibilities include collecting, processing, and analyzing data to uncover trends and insights that inform and support business decisions. Key to this role is the ability to create detailed reports and visualizations, conveying complex data in a clear and comprehensible manner to team members and stakeholders. The Data Analyst is committed to continuous learning and adaptation to emerging technologies and methodologies in data analytics. Effective collaboration and communication skills are important, as this role involves working alongside various team members and departments to achieve shared objectives and drive data-driven strategies in the organization.



| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | | Performance Expectations |
|---|--------------------------|--|------------------|--|
| | Identify business needs | <ul style="list-style-type: none"> Assist in identifying potential business intelligence service offerings by supporting the analysis of business requirements. Aid in understanding the information needs of stakeholders for decision-making. Contribute to translating business needs into basic analytics and reporting requirements. | | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Prepare and analyze data | <ul style="list-style-type: none"> Perform elementary extract, transform, and load (ETL) tasks to prepare data for analysis. Assist in gathering data from internal systems and external sources. Conduct initial data validation and quality control checks. Participate in proposing basic solutions and recommendations to meet information needs. Execute data entry tasks in data collection systems. Assist in analyzing data to identify primary trends and patterns. | | |
| | Present insights | <ul style="list-style-type: none"> Support the development of simple data models and data output methods. Help in designing basic data reports and visualization tools for initial data interpretation. Assist in translating simple data analyses into understandable business language. | | |
| Functional Skills and Competencies | | Enabling Skills and Competencies | | |
| Applications Development | | Level 3 | Collaboration | Basic |
| Artificial Intelligence Ethics and Governance | | Level 2 | Communication | Basic |
| Business Needs Analysis | | Level 2 | Digital Fluency | Basic |
| Configuration Tracking | | Level 1 | Learning Agility | Basic |
| Cyber and Data Breach Incident Management | | Level 2 | | |
| Data Analytics | | Level 2 | | |
| Data Engineering | | Level 2 | | |
| Data Ethics | | Level 3 | | |
| Data Visualization | | Level 3 | | |
| Software Testing | | Level 2 | | |
| Stakeholder Management | | Level 2 | | |

| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | | Performance Expectations |
|---|-------------------------|--|------------------|--|
| | Identify business needs | <ul style="list-style-type: none"> Independently identify and evaluate potential business intelligence service offerings based on business needs. Determine the critical information needs of stakeholders for strategic decision-making. Translate intermediate business needs into detailed analytics and advanced reporting requirements. Recommend low-to-mid sophisticated types of data and data sources to obtain comprehensive insights. Review existing operational processes and suggest improvements | | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| Prepare and analyze data | | <ul style="list-style-type: none"> Conduct basic ETL activities to prepare and refine data for in-depth analysis. Collect and integrate data from diverse internal and external sources. Perform thorough data validation and implement quality control measures. Develop and propose innovative solutions and recommendations to fulfill simple information needs. Analyze data comprehensively to uncover in-depth trends, patterns, and correlations that will help inform strategic decisions. Regularly clean and update databases to ensure data accuracy and relevance. | | |
| Present insights | | <ul style="list-style-type: none"> Design and implement automated and simple data models and data output methods. Create detailed data reports and advanced visualization tools to enhance data understanding and storytelling. Effectively translate data analyses into business language to help influence strategic decisions and actions. | | |
| Functional Skills and Competencies | | Enabling Skills and Competencies | | |
| Applications Development | | Level 3 | Collaboration | Basic |
| Applications Integration | | Level 3 | Communication | Basic |
| Artificial Intelligence Ethics and Governance | | Level 2 | Digital Fluency | Basic |
| Business Needs Analysis | | Level 2 | Learning Agility | Basic |
| Configuration Tracking | | Level 2 | | |
| Cyber and Data Breach Incident Management | | Level 2 | | |
| Data Analytics | | Level 2 | | |
| Data Engineering | | Level 2 | | |
| Data Ethics | | Level 3 | | |
| Data Visualization | | Level 3 | | |
| Design Thinking Practice | | Level 3 | | |
| Software Testing | | Level 2 | | |
| Stakeholder Management | | Level 2 | | |



Business Intelligence Analyst

The Business Intelligence Analyst is pivotal in analyzing business data and translating it into actionable insights. This role involves understanding business needs, performing data analysis, and developing BI solutions aligned with organizational goals. They work closely with both IT and business units to transform business requirements into technical specifications for BI tools and systems. The analyst must be proficient in data analysis, data collection, and data visualization techniques. Strong analytical skills are essential. This role requires excellent communication skills to effectively liaise with management, providing data-driven insights for decision-making. The Business Intelligence Analyst must be adept at navigating complex data sets and be capable of making informed decisions in ambiguous situations, using sound judgment. Overall, the analyst is a strategic thinker who identifies how data-driven solutions can address business challenges, ensuring data is at the forefront of strategic decision-making.



Business Intelligence Analyst

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|-------------------------|---|---------|----------------------------------|--------------|
| | Application Development | Level 3 | Collaboration | Intermediate |
| | Artificial Intelligence Ethics and Governance | Level 3 | Communication | Intermediate |
| | Business Environment Analysis | Level 2 | Creative Thinking | Basic |
| | Business Needs Analysis | Level 3 | Decision Making | Basic |
| | Data Ethics | Level 3 | Digital Fluency | Intermediate |
| | Data Visualization | Level 4 | Learning Agility | Intermediate |
| | Design Thinking Practice | Level 3 | Sense Making | Basic |
| | Software Testing | Level 3 | Transdisciplinary Thinking | Basic |
| | Stakeholder Management | Level 2 | | |
| | Test Planning | Level 3 | | |

| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--|--|--|
| | Manage the implementation of new solutions and/or enhancements | <ul style="list-style-type: none"> Assist in developing procedures to address operational issues. Help in creating dashboards and compiling status reports for project managers. Support the translation of requirements documentation to systems requirement specifications. Contribute to resolving escalated issues as a secondary point of contact. Assist in User Acceptance Testing (UAT) and integration testing. Participate in reviews with team leaders or sponsors to secure their support. Support change management initiatives to promote the adoption of new technologies. | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Develop technical specifications | <ul style="list-style-type: none"> Assist in mapping out roadmaps for transitioning from current to future-state system requirements. Serve as a junior liaison between users and the technical team during the implementation cycle. Help identify risks in new solutions or enhancements and suggest mitigation strategies. Support incorporating business requirements into solution designs. Translate basic business requirements and user needs into functional specifications under supervision. Assist design and development teams in integrating solutions. | |
| | Identify business needs, systems, and requirements | <ul style="list-style-type: none"> Support the analysis of business technology requirements and compare them against the value and risk of potential solutions. Assist in balancing stakeholder requests and priorities to optimize value delivery. Participate in conducting cost-benefit and risk assessments for proposed solutions. Help in presenting business cases that outline benefits, efficient solutions, and associated risks. Contribute to scoping proof-of-concepts for AI and analytics projects. Translate business needs into potential AI and/or analytics problems under guidance. | |
| | Analyze systems and propose solutions | <ul style="list-style-type: none"> Identify areas where AI and analytics can meet business and user needs. Support the development of components within solutions or enhancements. Assist in evaluating the impact of proposed solutions or enhancements on business environments. Contribute to the assessment of proposed solutions for feasibility and efficiency. Help in designing solution blueprints, considering integration implications. Analyze system dependencies and connections under supervision. Recommend improvements to optimize processes, workflows, and systems based on analysis. Examine system interactions and performance issues at a basic level. | |

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Senior Business Intelligence Analyst

The Senior Business Intelligence Analyst plays a crucial role in analyzing and interpreting complex data to inform strategic business decisions. This position involves understanding data-driven roadmaps and implementation strategies, ensuring they align with the organization's goals. The Senior Business Intelligence Analyst collaborates closely with IT and business teams to guide the development and maintenance of BI standards and practices. They focus on understanding and addressing immediate data needs, aligning these with the broader business strategy and IT landscape. They are responsible for consulting on BI solutions, offering recommendations based on emerging trends and technologies in data analytics. They operate within a dynamic business environment, requiring agility and adaptability. Proficiency in BI methodologies, frameworks, and modeling tools is essential. The role also demands an understanding of how organizational design influences data strategies. Key responsibilities include problem-solving, decision-making, and synthesizing various business unit needs into cohesive BI strategies. Effective communication is paramount, as they must be capable of articulating the value of data insights to stakeholders and influencing decision-making processes.



| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--|--|--------------------------|
| Manage the implementation of new solutions and/or enhancements | <ul style="list-style-type: none"> Devise procedures to solve complex operational issues Develop dashboards and provide regular status reports to stakeholders Oversee the translation of requirements documentation to systems requirement specifications Act as the main point of contact for escalated issues Oversee the conduct of User Acceptance Testing (UAT) and integration testing Review work at critical milestones with team leader or sponsor to maintain their commitment and support Manage the conduct of change management programs and initiatives to drive the adoption of new and/or enhanced technologies including data- and AI-related solutions | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 | |
| Develop technical specifications | <ul style="list-style-type: none"> 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 Manage risks associated with new solutions and/or proposed enhancements Ensure that business requirements are incorporated into the solution design Translate business requirements and user needs into functional and technical specifications Guide the design and development teams towards smooth solutions integration | | |
| Analyze systems and propose solutions | <ul style="list-style-type: none"> Identify opportunities where AI and analytics can address business and user needs and create value Oversee the development of different components within the proposed solutions and/or enhancements Evaluate the feasibility, viability, and implications of proposed solutions and/or enhancements to systems on the current and future business environment Oversee the evaluation of proposed solutions and/or enhancements to ensure its feasibility, viability, and efficiency Design the solution blueprints for the specific areas of expertise with the consideration of implications for integration across the entire solution Analyze inter-dependencies and inter-linkages of systems and processes across the organization Recommend proposed solutions and/or enhancements to improve and optimize processes, workflows, performance, and systems Examine interactions between systems elements, performance, and issues | | |

Continue to next page



Senior Business Intelligence Analyst

| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|----------------------------------|--------------------------|
| Identify business needs, systems, and requirements | <ul style="list-style-type: none"> Analyze business technology requirements and specifications against value and risk of potential solutions Balance requests and competing priorities from key stakeholders to maximize the value delivered to the organization Conduct cost-benefit and risk assessment analyses for proposed solutions to determine suitability of solutions Present business cases defining potential benefits, solutions to increase efficiencies of business processes and associated risks Scope proof-of-concepts for AI and analytics related use cases and projects Translate business needs and requirements into potential Artificial Intelligence (AI) and/or analytics problems | | |
| Functional Skills and Competencies | | Enabling Skills and Competencies | |
| Artificial Intelligence Ethics and Governance | Level 3 | Adaptability | Basic |
| Business Environment Analysis | Level 3 | Building Inclusivity | Basic |
| Business Needs Analysis | Level 4 | Collaboration | Intermediate |
| Business Negotiation | Level 3 | Communication | Intermediate |
| Business Performance Management | Level 3 | Creative Thinking | Intermediate |
| Business Requirements Mapping | Level 3 | Customer Orientation | Basic |
| Business Risk Management | Level 3 | Decision Making | Intermediate |
| Change Management | Level 3 | Developing People | Basic |
| Data Ethics | Level 4 | Digital Fluency | Intermediate |
| Data Visualization | Level 4 | Influence | Basic |
| Design Thinking Practice | Level 4 | Learning Agility | Intermediate |
| Emerging Technology Synthesis | Level 3 | Problem Solving | Basic |
| Learning and Development | Level 4 | Self Management | Basic |
| Manpower Planning | Level 3 | Sense Making | Basic |
| Networking | Level 3 | Transdisciplinary Thinking | Basic |
| Partnership Management | Level 3 | | |
| People and Performance Management | Level 3 | | |
| Problem Management | Level 3 | | |
| Process Improvement and Optimization | Level 3 | | |
| Project Management | Level 3 | | |
| Software Testing | Level 3 | | |
| Stakeholder Management | Level 3 | | |
| Systems Thinking | Level 3 | | |
| Test Planning | Level 3 | | |



Business Analytics Manager

The Business Analytics Manager identifies and translates market opportunities into actionable recommendations for the organization. They supervise professionals in gathering and analyzing business intelligence (BI) data to help make informed business decisions. They manage the timely reporting of data analysis outcomes and effectively communicate findings, insights and recommendations to business leaders. They develop data and/or information quality metrics and research new technology and develop business cases to support enterprise-wide business intelligence solutions. They are responsible for developing guidelines on data insight reporting for the team. They are also responsible for managing BI-related projects from end to end. They manage a team and are proficient in the analytics tools and techniques required by the organization. They are also familiar with the relevant software platforms on which the solution is deployed on. The Business Analytics Manager has a deep passion for analyzing and resolving complex problems through a systematic approach. They display an intellectual curiosity as well as the capability to engage with stakeholders to understand business issues.



| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--------------------------------|--|--|
| | Prepare and analyze data | <ul style="list-style-type: none"> Define data and/or information quality metrics and lead data quality reviews Oversee data sourcing, acquisition, cleansing, integration, warehousing, exploration and delivery Manage the problem definition and hypothesis formulation process Synthesize trends, patterns and correlations from analyses to formulate insights and actionable recommendations Provide guidance on validation methodology and criteria Provide advice on the development of data analysis models based on project requirements | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Present insights | <ul style="list-style-type: none"> Advise the design of complex reporting and analytical solutions Develop narratives to communicate key messages from analyses through storytelling Develop roadmaps for optimizing the BI analysis insights Set the guidelines for the development of end user reports | |
| | Identify business needs | <ul style="list-style-type: none"> Influence integration of data from across the enterprise to enhance information accessibility Oversee the development of design and specification proposals including feasibility and functional studies Create new BI service offerings 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 | |
| | Manage people and organization | <ul style="list-style-type: none"> Manage the performance and development process, including providing coaching and development opportunities to maximize the potential of each individual Manage the budget expenditure and allocation across teams and projects Acquire, allocate and optimize the use of resources Propose new operational plans, including targeted budgets, work allocations and staff forecasts Develop learning roadmaps to support the professional development of the team Monitor and track the team's achievements and key performance indicators | |

Continue to next page



| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|---|------------------------------------|----------------------------|----------------------------------|-------|
| | Skill | Level | Competency | Level |
| | Functional Skill | Level | Enabling Competency | Level |
| Artificial Intelligence Ethics and Governance | Level 3 | Adaptability | Intermediate | |
| Budgeting | Level 4 | Building Inclusivity | Intermediate | |
| Business Agility | Level 4 | Collaboration | Intermediate | |
| Business Continuity | Level 4 | Communication | Intermediate | |
| Business Environment Analysis | Level 4 | Creative Thinking | Intermediate | |
| Business Innovation | Level 4 | Customer Orientation | Intermediate | |
| Business Needs Analysis | Level 5 | Decision Making | Intermediate | |
| Business Negotiation | Level 4 | Developing People | Intermediate | |
| Business Performance Management | Level 4 | Digital Fluency | Intermediate | |
| Business Process Re-engineering | Level 4 | Global Perspective | Basic | |
| Business Requirements Mapping | Level 4 | Influence | Intermediate | |
| Business Risk Management | Level 4 | Learning Agility | Intermediate | |
| Change Management | Level 4 | Problem Solving | Intermediate | |
| Data Analytics | Level 4 | Self Management | Basic | |
| Data Ethics | Level 4 | Sense Making | Intermediate | |
| Data Visualization | Level 5 | Transdisciplinary Thinking | Intermediate | |
| Design Thinking Practice | Level 4 | | | |
| Emerging Technology Synthesis | Level 4 | | | |
| Enterprise Architecture | Level 4 | | | |
| Learning and Development | Level 5 | | | |
| Manpower Planning | Level 4 | | | |
| Networking | Level 4 | | | |
| Organizational Analysis | Level 4 | | | |
| Organizational Design | Level 4 | | | |
| Partnership Management | Level 4 | | | |
| People and Performance Management | Level 4 | | | |
| Problem Management | Level 4 | | | |
| Process Improvement and Optimization | Level 4 | | | |
| Project Feasibility Assessment | Level 4 | | | |
| Project Management | Level 4 | | | |
| Software Testing | Level 4 | | | |
| Solution Architecture | Level 4 | | | |
| Stakeholder Management | Level 4 | | | |
| Strategy Implementation | Level 3 | | | |
| Strategy Planning | Level 4 | | | |
| Systems Thinking | Level 4 | | | |
| Test Planning | Level 4 | | | |



Business Analytics Director

The Business Analytics Director sets the strategy, vision, and policy for managing the day-to-day strategic and tactical operations of the business intelligence (BI) teams. They hold responsibilities associated with historical data sourcing and preparation, data storage, reporting, analytics, data exploration and information delivery. They work with the leadership team to understand and prioritize data and information requirements. They are responsible for setting up the BI Strategy within the organization. They oversee the development of testing methodology and criteria, standards, policies and procedures for the structure and attributes of the business intelligence tools and systems. They oversee budgeting and planning. They manage a team and are proficient in the analytics tools and techniques required by the organization. They are also familiar with the relevant software platforms on which the solution is deployed on. The Business Analytics Director has the ability to adopt a broader perspective and display analytical thinking for BI solutions. They are able to influence key stakeholders and spearhead a data-driven approach to resolve business issues.



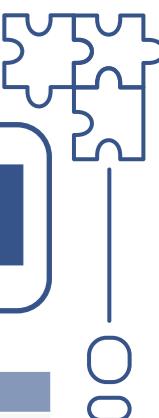
| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|--|--|
| | Present insights | <ul style="list-style-type: none"> Define the structure and tools to be applied in conceptualization, design, and building of visual dashboards and graphs 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 | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Establish BI standards and governance | <ul style="list-style-type: none"> 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 Develop standards, policies and procedures for the form, structure and attributes of the BI tools and systems | |
| | Manage people and organization | <ul style="list-style-type: none"> Review the utilization of resources Implement succession planning initiatives for key management positions Review operational strategies, policies and targets across teams and projects Oversee the development of learning roadmaps for teams and functions Establish performance indicators to benchmark effectiveness of learning and development programs against best practices Develop strategies for resource planning and utilization | |
| | Define analysis process for BI | <ul style="list-style-type: none"> Set guidelines for appropriate structuring and enrichment of data Advise on processes and procedures for gathering of operational data to examine past business performance Establish guidelines and criteria to direct historical data analytics, architecture, and technology | |
| | Set business intelligence (BI) strategy | <ul style="list-style-type: none"> Provide thought leadership to stakeholders in determining which BI solutions will enable the enterprise to achieve defined business goals Establish approach for identifying business and information needs to enhance decision-making, policies and processes Oversee ongoing development and operations of BI architecture Provide rationale, business cases and return on investment (ROI) models to get buy-in on the Business Intelligence investment Outline the organization's BI vision and strategy | |

Continue to next page



Business Analytics Director

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|---|------------------------------------|----------------------------|----------------------------------|-------|
| | Skill | Level | Competency | Level |
| Artificial Intelligence Ethics and Governance | Level 3 | Adaptability | Intermediate | |
| Budgeting | Level 5 | Building Inclusivity | Intermediate | |
| Business Agility | Level 5 | Collaboration | Advanced | |
| Business Continuity | Level 5 | Communication | Advanced | |
| Business Environment Analysis | Level 5 | Creative Thinking | Intermediate | |
| Business Innovation | Level 5 | Customer Orientation | Intermediate | |
| Business Needs Analysis | Level 5 | Decision Making | Advanced | |
| Business Negotiation | Level 5 | Developing People | Advanced | |
| Business Performance Management | Level 5 | Digital Fluency | Advanced | |
| Business Process Re-engineering | Level 5 | Global Perspective | Intermediate | |
| Business Requirements Mapping | Level 5 | Influence | Intermediate | |
| Business Risk Management | Level 5 | Learning Agility | Intermediate | |
| Change Management | Level 5 | Problem Solving | Intermediate | |
| Data Analytics | Level 5 | Self Management | Intermediate | |
| Data Ethics | Level 4 | Sense Making | Intermediate | |
| Data Visualization | Level 5 | Transdisciplinary Thinking | Intermediate | |
| Design Thinking Practice | Level 5 | | | |
| Emerging Technology Synthesis | Level 5 | | | |
| Enterprise Architecture | Level 5 | | | |
| Learning and Development | Level 6 | | | |
| Manpower Planning | Level 5 | | | |
| Networking | Level 5 | | | |
| Organizational Analysis | Level 5 | | | |
| Organizational Design | Level 5 | | | |
| Partnership Management | Level 5 | | | |
| People and Performance Management | Level 5 | | | |
| Problem Management | Level 5 | | | |
| Process Improvement and Optimization | Level 5 | | | |
| Project Feasibility Assessment | Level 5 | | | |
| Project Management | Level 5 | | | |
| Software Testing | Level 4 | | | |
| Solution Architecture | Level 5 | | | |
| Stakeholder Management | Level 5 | | | |
| Strategy Implementation | Level 4 | | | |
| Strategy Planning | Level 5 | | | |
| Systems Thinking | Level 4 | | | |
| Test Planning | Level 4 | | | |



Chief [Business Function] Officer

The Chief [Business Function] Officer is at the forefront of driving strategic initiatives and operational excellence within the organization. This senior executive role requires a dynamic blend of visionary leadership and practical expertise in a specific business function, whether it be Operations, Finance, Marketing, Human Resources, or another critical area. Their responsibilities will encompass formulating and executing key strategies that align with the organization's overall vision and goals. Drawing on their deep expertise in data analytics and business intelligence, they will make informed, data-driven decisions to steer their department and the organization towards sustainable growth and market leadership. In this capacity, they oversee the development and implementation of innovative business solutions, optimizing processes and systems to enhance efficiency and effectiveness. They are responsible for managing budgets, forecasting future needs, and ensuring financial stability and profitability. Collaborating closely with other C-suite executives, they play a pivotal role in cross-functional decision-making, contributing their unique insights to shape the organization's direction.



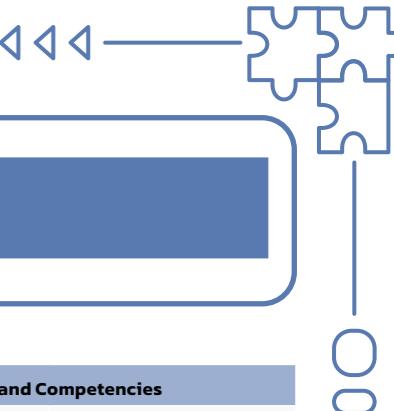
| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|--|--|
| | Develop business opportunities | <ul style="list-style-type: none"> Review organizational analysis Direct organizational performance roadmap and plans Develop business continuity strategies, policies and guidelines Lead formulation of technology strategies and roadmaps Direct new market entry strategies | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Drive organization's vision, mission and values | <ul style="list-style-type: none"> Articulate organizational strategic priorities, directions and plans Develop organization vision, mission, values and culture Provide organizational leadership, direction and governance | |
| | Drive innovation and productivity | <ul style="list-style-type: none"> Develop framework for productivity and innovation initiatives Transform service through strategic innovation Promote productivity and innovation culture in the organization | |
| | Foster relationships with stakeholders | <ul style="list-style-type: none"> Develop strategic leadership networks Represent and promote the organization | |

Continue to next page



Chief [Business Function] Officer

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|-------------------------|---|---------|----------------------------------|--------------|
| | Artificial Intelligence Ethics and Governance | Level 6 | Adaptability | Advanced |
| | Budgeting | Level 6 | Building Inclusivity | Intermediate |
| | Business Agility | Level 6 | Collaboration | Advanced |
| | Business Continuity | Level 6 | Communication | Advanced |
| | Business Innovation | Level 6 | Creative Thinking | Advanced |
| | Business Negotiation | Level 6 | Customer Orientation | Intermediate |
| | Business Performance Management | Level 6 | Decision Making | Advanced |
| | Business Risk Management | Level 6 | Developing People | Advanced |
| | Change Management | Level 6 | Digital Fluency | Advanced |
| | Data Ethics | Level 6 | Global Perspective | Advanced |
| | Design Thinking Practice | Level 6 | Influence | Advanced |
| | Emerging Technology Synthesis | Level 6 | Learning Agility | Intermediate |
| | Enterprise Architecture | Level 6 | Problem Solving | Advanced |
| | Infrastructure Strategy | Level 6 | Self-Management | Intermediate |
| | IT Strategy | Level 6 | Sense Making | Advanced |
| | Organizational Analysis | Level 6 | Transdisciplinary Thinking | Advanced |
| | Organizational Design | Level 6 | | |
| | Partnership Management | Level 6 | | |
| | Performance Management | Level 6 | | |
| | Project Management | Level 6 | | |
| | Quality Standards | Level 6 | | |
| | Solution Architecture | Level 6 | | |
| | Strategy Planning | Level 6 | | |
| | Sustainability Management | Level 6 | | |
| | Systems Thinking | Level 5 | | |
| | Technical Sales Support | Level 5 | | |



Data Quality Specialist

The Data Quality Specialist plays a crucial role in ensuring the integrity, accuracy, and completeness of data within an organization. This individual works closely with data teams and business stakeholders to understand data usage, requirements, and expectations to establish and maintain high-quality data standards across all data systems.



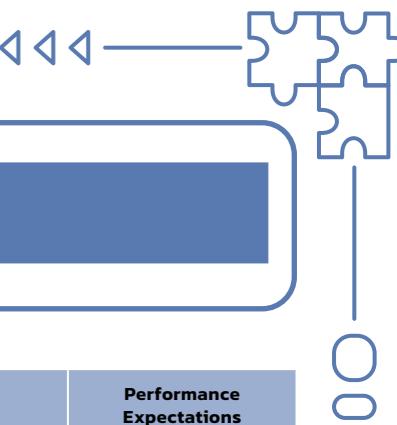
| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|---|--|
| | Develop data quality standards | <ul style="list-style-type: none"> Analyze development processes to identify data quality standards at each stage of the process Identify user requirements and expectations to develop data quality standards for end products Develop data quality standards that incorporates international standards and best practices in quality Identify matrices to assess for data quality Develop user guides on data quality standards to define requirements, specifications, guidelines, and characteristics of processes and products Analyze compliance level to data quality standards and identify areas for change Conduct assessments of existing data quality standards against evolving user requirements, business needs and regulatory changes | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Develop data quality testing processes | <ul style="list-style-type: none"> Identify data quality testing types and variations for each phase of the product development process or lifecycle based on business needs and requirements Identify objectives of data quality tests for each phase of the development process or lifecycle Outline steps in the data quality test process required to achieve test objectives Identify applicable and relevant international standards and practices Develop data quality testing processes for each phase of the development process or lifecycle | |
| | Develop plans to execute data quality testing | <ul style="list-style-type: none"> Identify suitable data quality measures for testing based on product attributes valued most by users Develop test plans Develop data 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 data quality testing | <ul style="list-style-type: none"> Conduct data quality tests across phases of the product development process or lifecycle to assess performance of quality measures under different operational and usage conditions Analyze data from quality tests to determine optimal operational and usage conditions Utilize tools to test and analyze 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 data 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 | |

Continue to next page



Data Quality Specialist

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|-------------------------|---|---------|----------------------------------|--------------|
| | Artificial Intelligence Ethics and Governance | Level 3 | Adaptability | Basic |
| | Audit and Compliance | Level 3 | Building Inclusivity | Basic |
| | Business Risk Management | Level 3 | Collaboration | Intermediate |
| | Change Management | Level 3 | Communication | Intermediate |
| | Cyber and Data Breach Incident Management | Level 3 | Creative Thinking | Basic |
| | Data Ethics | Level 3 | Decision Making | Intermediate |
| | Data Protection Management | Level 3 | Developing People | Basic |
| | Data Sharing | Level 3 | Digital Fluency | Intermediate |
| | Design Thinking Practice | Level 4 | Influence | Basic |
| | Learning and Development | Level 4 | Learning Agility | Basic |
| | Manpower Planning | Level 3 | Problem Solving | Basic |
| | People and Performance Management | Level 3 | Self-Management | Basic |
| | Problem Management | Level 3 | Transdisciplinary Thinking | Basic |
| | Project Management | Level 3 | | |
| | Stakeholder Management | Level 3 | | |
| | Systems Thinking | Level 3 | | |



Data Governance Manager

The Data Governance Manager executes data governance policies and procedures. They ensure that relevant data protection regulations are implemented and enforced in the organization, and amongst the respective teams and users. They collaborate with business and project teams in projects and ensure alignment and compliance with the organization's data protection guidelines and policies, and with industry standards and guidelines. They also direct a team of professionals and third-party vendors or service providers to achieve organizational goals in accordance with the data governance and data protection policies. They manage risks and data breach incidents. The Data Governance Manager is knowledgeable in areas of data governance, compliance, and data protection policies and frameworks, and works within and across teams to mitigate data breaches. They are expected to be proficient in the requirements of various relevant global regulations on data protection. The Data Governance Manager adopts a broad and global perspective in their work, and is confident in making critical decisions and handling competing resource needs that may have implications on various projects and stakeholders.



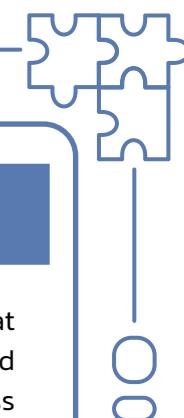
| | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|---|--|
| Critical Work Functions, Key Tasks and Performance Expectations | Drive awareness of data protection requirements in the organization | <ul style="list-style-type: none"> Develop training programs to educate staff on personal data protection policies and processes Oversee activities to foster personal data protection awareness within the organization Foster a culture of organizational data protection within the organization 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 organization | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Manage data breaches | <ul style="list-style-type: none"> Consult with key departments in the event of data breaches Oversee the conduct of simulation exercises to test the data breach response plans to ensure operational readiness Conduct investigations into data protection breach incidents Conduct in-depth assessment of the data breaches to mitigate and address risks Report data breaches to regulatory authorities and senior management | |
| | Ensure organization's compliance to relevant data protection regulations | <ul style="list-style-type: none"> Oversee the maintenance of records required to demonstrate data protection compliance Evaluate the organization's data lifecycle and data processing activities to determine compliance and gaps in data protection Assess data protection audit findings and recommendations to introduce changes to ensure continued compliance with data protection regulations Create roadmaps to implement new requirements of data protection regulations Develop a Data Protection Management Program (DPMP) to ensure organization's compliance to data protection regulations Provide updates on data protection compliance to senior management Monitor the handling of organizational data across the organization | |
| | Handle queries, complaints and disputes on the organization's management of organizational data | <ul style="list-style-type: none"> Propose and implement measures to safeguard data based on the vulnerability and criticality of the types of data sources Maintain oversight over access and correction requests to personal data Act as the organization's key point of contact with data protection regulatory authorities and to data subjects when exercising their individual data rights Analyze complaints relating to the organization's management of personal data and respond with remedial action Provide advice on data protection, privacy and compliance | |

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| | Critical Work Functions | Key Tasks | | Performance Expectations |
|-------------------------|---|--|--|--------------------------|
| | Critical Work Functions, Key Tasks and Performance Expectations | Advise on data innovation projects in the organization | Manage people and organization | |
| | Manage risks associated with collection, use, disclosure and storage of organizational data | <ul style="list-style-type: none"> Participate in data innovation projects to provide guidance on regulatory and compliance requirements Ensure a balanced approach in resolving data protection and data innovation issues Act as the organization's subject matter expert in data protection matters Act as a liaison for data protection and privacy during the entire data-related product development lifecycle Ensure compliance with the data protection regulations when sharing data | <ul style="list-style-type: none"> Manage the performance and development process, including providing coaching and development opportunities to maximize the potential of each individual Manage the budget expenditure and allocation across teams and projects Acquire, allocate and optimize the use of resources Propose new operational plans, including targeted budgets, work allocations and staff forecasts Develop learning roadmaps to support the professional development of the team Monitor and track the team's achievements and key performance indicators | |
| | Functional Skills and Competencies | | Enabling Skills and Competencies | |
| Skills and Competencies | Artificial Intelligence Ethics and Governance | Level 4 | Adaptability | Intermediate |
| | Audit and Compliance | Level 4 | Building Inclusivity | Intermediate |
| | Business Agility | Level 4 | Collaboration | Intermediate |
| | Business Continuity | Level 4 | Communication | Intermediate |
| | Business Negotiation | Level 4 | Creative Thinking | Intermediate |
| | Business Performance Management | Level 4 | Decision Making | Intermediate |
| | Business Risk Management | Level 4 | Developing People | Intermediate |
| | Change Management | Level 4 | Digital Fluency | Intermediate |
| | Crisis Management | Level 3 | Global Perspective | Basic |
| | Cyber and Data Breach Incident Management | Level 4 | Influence | Intermediate |
| | Cyber Risk Management | Level 4 | Learning Agility | Intermediate |
| | Data Ethics | Level 4 | Problem Solving | Intermediate |
| | Data Governance | Level 4 | Self-Management | Basic |
| | Data Protection Management | Level 4 | Transdisciplinary Thinking | Intermediate |
| | Data Sharing | Level 4 | | |

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Data Governance Manager

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies |
|-------------------------|------------------------------------|---------|----------------------------------|
| | Learning and Development | Level 5 | |
| | Manpower Planning | Level 4 | |
| | People and Performance Management | Level 4 | |
| | Problem Management | Level 4 | |
| | Project Management | Level 4 | |
| | Stakeholder Management | Level 4 | |
| | Strategy Implementation | Level 3 | |
| | Strategy Planning | Level 4 | |
| Systems Thinking | Level 4 | | |



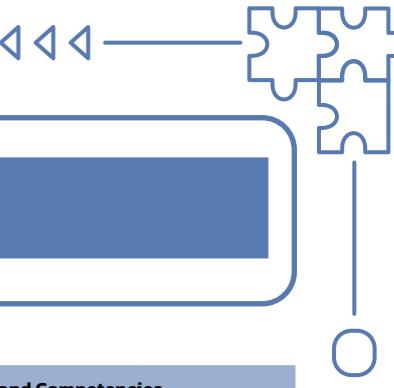
Data Governance Officer

The Data Governance Officer executes data governance policies and procedures. They ensure that relevant data protection regulations are implemented and enforced within the respective teams and users within the organization. They partner with business and project teams to support business objectives and strategies and align them with the organization's data protection guidelines and policies. They direct a team of professionals and third-party vendors or service providers towards reaching organizational goals in accordance with the data governance and data protection policies. They manage risks and data breach incidents. The Data Governance Officer is an expert in local and regional data protection practices and legislative requirements. They also provide expert advice to the organization on the potential implications of data protection on the organization's policies, procedures, and projects. The Data Governance Officer is an expert in understanding the nuances of data protection laws, and keeps abreast of the changing landscape to be able to advise and guide the organization towards compliance. They are experts in communicating across cultures and domains, and are able to drive the organization's data protection culture.



| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|---|--|
| | Drive awareness of data protection requirements in the organization | <ul style="list-style-type: none"> Manage the assignment of responsibilities to deliver compliance with data protection laws and policies of the organization Collaborate with regional offices to ensure compliance with cross border data protection requirements Act as a subject matter expert in cross-border data protection compliance Champion the organization's data protection culture Formulate strategies and standards on due diligence policies and frameworks for the entire organization | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Manage data breaches | <ul style="list-style-type: none"> Lead in public communication of data breaches to regulatory authorities and stakeholders Oversee the conduct of investigations into data breaches Evaluate the organization's response to the data breach incident | |
| | Ensure organization's compliance to relevant data protection regulations | <ul style="list-style-type: none"> Oversee the assignment of roles and responsibilities to ensure compliance with the data protection Advise on data ethics and data governance, and facilitate business functions in their strategic utilization of data assets to generate business value for the organization Inform and advise on data protection laws and the organization's policies Endorse the organization's data protection policies and Data Protection Management Program (DPMP) Drive the development of the organization's DPMP 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 | |
| | Handle queries, complaints and disputes on the organization's management of organizational data | <ul style="list-style-type: none"> Oversee requests for disclosure of data to public agencies, courts, and law enforcement agencies Represent the organization 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 | |
| Critical Work Functions, Key Tasks and Performance Expectations | Manage people and organization | <ul style="list-style-type: none"> Review the utilization of resources Implement succession planning initiatives for key management positions Review operational strategies, policies and targets across teams and projects Oversee the development of learning roadmaps for teams and functions Establish performance indicators to benchmark effectiveness of learning and development programs against best practices Develop strategies for resource planning and utilization | |

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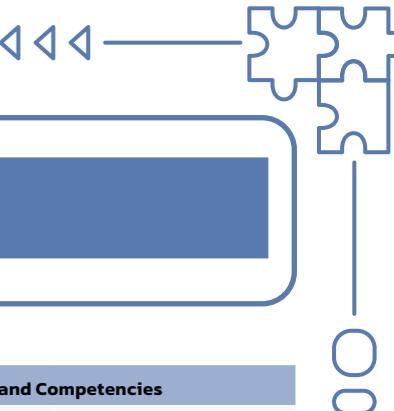
Data Governance Officer

| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | | Performance Expectations |
|---|---|---|----------------------------|--------------------------|
| | | | | |
| | Advise on data innovation projects in the organization | <ul style="list-style-type: none"> Formulate data protection and privacy strategies during the entire data-related product development lifecycle Explore new ways to harness data in delivering innovative products and/or services Keep abreast of evolving data innovation needs and expectations and its impact on the organization Generate potential use cases of data from the ecosystem the organization operates in Determine the need to value the organization's data to gain competitive advantage | | |
| | Manage risks associated with collection, use, disclosure and storage of organizational data | <ul style="list-style-type: none"> Oversee measures for the safeguarding of data protection for internal data sources Establish guidelines for cloud and on-site storage practices that would ensure protection of data from threats Develop strategies and guidelines on ethical data collection and usage practices Commission the conduct of Data Protection Impact Assessments (DPIA) Approve the DPIA plan and proposed action plans and solutions arising from the DPIA Develop remediation actions to minimize the risk of personal data protection breach, and managing data breach incidents at group/regional level | | |
| Functional Skills and Competencies | | Enabling Skills and Competencies | | |
| Artificial Intelligence Ethics and Governance | | Level 5 | Adaptability | Intermediate |
| Audit and Compliance | | Level 5 | Building Inclusivity | Intermediate |
| Budgeting | | Level 5 | Collaboration | Advanced |
| Business Agility | | Level 5 | Communication | Advanced |
| Business Continuity | | Level 5 | Creative Thinking | Intermediate |
| Business Performance Management | | Level 5 | Decision Making | Advanced |
| Business Risk Management | | Level 5 | Developing People | Advanced |
| Change Management | | Level 5 | Digital Fluency | Advanced |
| Crisis Management | | Level 4 | Global Perspective | Intermediate |
| Cyber and Data Breach Incident Management | | Level 5 | Influence | Intermediate |
| Cyber Risk Management | | Level 5 | Learning Agility | Intermediate |
| Data Ethics | | Level 5 | Problem Solving | Intermediate |
| Data Governance | | Level 5 | Self-Management | Intermediate |
| Data Protection Management | | Level 5 | Transdisciplinary Thinking | Intermediate |
| Data Sharing | | Level 5 | | |
| Data Strategy | | Level 5 | | |
| Design Thinking Practice | | Level 5 | | |
| Disaster Recovery Management | | Level 5 | | |
| IT Standards | | Level 5 | | |
| Learning and Development | | Level 6 | | |
| Manpower Planning | | Level 5 | | |

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| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies |
|-----------------------------------|------------------------------------|---------|----------------------------------|
| | | | |
| Organizational Analysis | | Level 5 | |
| People and Performance Management | | Level 5 | |
| Problem Management | | Level 5 | |
| Project Management | | Level 5 | |
| Research | | Level 5 | |
| Stakeholder Management | | Level 5 | |
| Strategy Implementation | | Level 4 | |
| Strategy Planning | | Level 5 | |
| Systems Thinking | | Level 4 | |



Chief Data Officer

The Chief Data Officer establishes the organization's data strategy, and ethics and governance framework, fostering a culture of compliance with data privacy regulations. They are accountable for the quality, accessibility, analysis, and management of data to inform business strategy, decision-making, and drive performance. They design initiatives and programs to realize the optimal business value derivable from the organization's data assets. They formulate data project prioritization and resourcing strategies and establish performance measures to evaluate the outcomes of data-driven solutions. They create a shared vision and objectives on using data in the organization and building strategic relationships with key business and industry stakeholders to achieve business goals. The Chief Data Officer is highly skilled in influencing and engaging stakeholders to secure their buy-in and support. They have strong business acumen, are highly innovative, and are able to make calculated-risk decisions, performing effectively in a complex and difficult environment. They possess the strong leadership and management skills required to develop the organization's data capabilities.



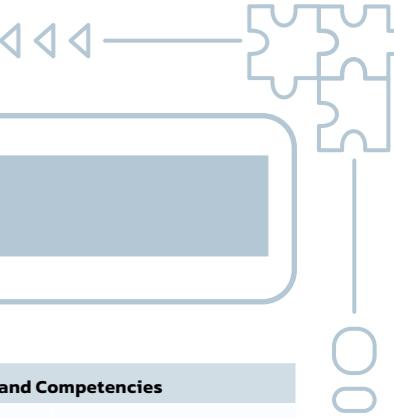
| | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|---|--|
| | | | |
| Critical Work Functions, Key Tasks and Performance Expectations | Establish data strategy | <ul style="list-style-type: none"> Formulate approaches to maximize the value of data analytics capabilities and technological investments for the organization Align data strategy, priorities and plans of the data function to the organization's vision and mission Develop strategies to ensure seamless integration of technologies with workflows and processes across the organization Promote the adoption of industry-leading practices and new data management technologies across the organization Drive the organization's culture of compliance to data privacy policies, relevant ethics and governance frameworks Establish the organization's data strategy, data privacy policies, and relevant ethics and governance frameworks Review ethics and governance framework and measures to ensure continued relevance and effectiveness | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Optimize business value from data | <ul style="list-style-type: none"> Lead the identification of high business value business opportunities through the application of data solutions Design data-driven initiatives to leverage the value of data assets in the organization 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 on existing business processes | |
| | Formulate objectives and requirements from a business perspective | <ul style="list-style-type: none"> Advise the team on new and innovative tools and techniques to derive greater value from data Establish performance measures to evaluate data initiatives, programs, and value derived from effective data management Oversee the implementation of data-driven initiatives across the organization Formulate project prioritization and resourcing strategies for data projects across the organization | |
| | Build strategic relationships | <ul style="list-style-type: none"> Lead engagement initiatives with key leaders and senior stakeholders to obtain buy-in for data initiatives Build strategic relationships and alliances with key business and industry stakeholders, and partners to achieve organizational objectives and maximize the value of investments Source for data analytics opportunities for the business and ensure data compliance with business policies and external legal requirements Develop stakeholder management plans to create shared vision and objectives on the use of data in the organization | |

Continue to next page



Chief Data Officer

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|---|------------------------------------|----------------------------|----------------------------------|--|
| | | | | |
| Artificial Intelligence Ethics and Governance | Level 6 | Adaptability | Advanced | |
| Budgeting | Level 6 | Building Inclusivity | Intermediate | |
| Business Agility | Level 6 | Collaboration | Advanced | |
| Business Continuity | Level 6 | Communication | Advanced | |
| Business Risk Management | Level 6 | Creative Thinking | Advanced | |
| Change Management | Level 6 | Decision Making | Advanced | |
| Crisis Management | Level 5 | Developing People | Advanced | |
| Cyber and Data Breach Incident Management | Level 6 | Digital Fluency | Advanced | |
| Cyber Risk Management | Level 6 | Global Perspective | Advanced | |
| Data Ethics | Level 6 | Influence | Advanced | |
| Data Governance | Level 6 | Learning Agility | Intermediate | |
| Data Protection Management | Level 5 | Problem Solving | Advanced | |
| Data Sharing | Level 5 | Self-Management | Intermediate | |
| Data Strategy | Level 6 | Transdisciplinary Thinking | Advanced | |
| Design Thinking Practice | Level 6 | | | |
| Disaster Recovery Management | Level 6 | | | |
| Enterprise Architecture | Level 6 | | | |
| Infrastructure Strategy | Level 6 | | | |
| IT Governance | Level 6 | | | |
| IT Standards | Level 6 | | | |
| IT Strategy | Level 6 | | | |
| Organizational Analysis | Level 6 | | | |
| Organizational Design | Level 6 | | | |
| Partnership Management | Level 6 | | | |
| Performance Management | Level 6 | | | |
| Project Management | Level 6 | | | |
| Quality Standards | Level 6 | | | |
| Research | Level 5 | | | |
| Stakeholder Management | Level 6 | | | |
| Strategy Planning | Level 6 | | | |
| Sustainability Management | Level 6 | | | |
| Systems Thinking | Level 5 | | | |



Associate Data Engineer

The 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. They use development tools to generate reports, dashboards, clean and prepare the data and analytical solutions according to business rules and specifications. They are a part of important projects and coordinate with internal teams to develop projections on outcomes of implementing business strategies that result in actionable insights. They also assist in the data collection, processing and warehousing tasks, which may also include collection, parsing, analyzing and visualizing large sets of data.

They work in a team setting and are proficient in the analytics tools and techniques required by the organization. They are also familiar with the relevant software platforms on which the solution is deployed on.

The Associate Data Engineer is meticulous and detailed-oriented. They enjoy working with data and displays willingness to learn. They adopt an analytical approach to solving problems and display confidence when communicating ideas.



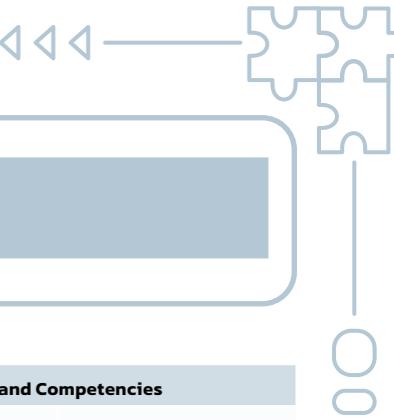
| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--------------------------|---|--|
| | Prepare and analyze data | <ul style="list-style-type: none"> • Perform basic extract, transform and load related activities to prepare data for analysis or transfer • Gather data from internal systems and external sources • Perform data validation and quality control checks • Propose solutions and recommendations to address information need • Perform data entry tasks in data collection systems • Analyze data to identify trends, patterns and correlations to support decision-making • Clean and update databases to remove duplicated, outdated or irrelevant information | In accordance with: <ul style="list-style-type: none"> • Relevant Philippine Analytics & AI Governance Framework • Philippine National Standards on AI • Republic Act 10173: Data Privacy Act of 2012 |
| | Present insights | <ul style="list-style-type: none"> • Develop automated and logical data models and data output methods • Design data reports and visualization tools to facilitate data understanding through storytelling • Translate analyses into common business language to influence business decisions or actions | |
| | Identify business needs | <ul style="list-style-type: none"> • Assist in identifying potential business intelligence service offerings required by the business • 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 | |

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Associate Data Engineer

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|------------------------------------|------------------|----------------------------------|-------------|
| | Level | Description | Level | Description |
| Applications Development | Level 3 | Collaboration | Basic | |
| Applications Integration | Level 3 | Communication | Basic | |
| Artificial Intelligence Ethics and Governance | Level 2 | Digital Fluency | Basic | |
| Business Needs Analysis | Level 2 | Learning Agility | Basic | |
| Cloud Computing | Level 3 | | | |
| Configuration Tracking | Level 2 | | | |
| Continuous Integration and Continuous Deployment | Level 3 | | | |
| Cyber and Data Breach Incident Management | Level 2 | | | |
| Data Design | Level 3 | | | |
| Data Engineering | Level 2 | | | |
| Data Ethics | Level 3 | | | |
| Data Migration | Level 3 | | | |
| Data Visualization | Level 3 | | | |
| Database Administration | Level 2 | | | |
| Design Thinking Practice | Level 3 | | | |
| Software Configuration | Level 2 | | | |
| Software Testing | Level 2 | | | |
| Stakeholder Management | Level 2 | | | |
| System Integration | Level 2 | | | |
| Test Planning | Level 2 | | | |



Data Engineer

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. They focus on defining optimal solutions to data collection, processing and warehousing. They design, code and test data systems and work on implementing those into the internal infrastructure. They focus on collecting, parsing, managing, analyzing and visualizing large sets of data to turn information into insights accessible through multiple platforms.

They are proficient in database systems, scripting and programming languages required by the organization. They are 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. They have a keenness for understanding business processes and resolving challenges in order to provide solutions with the help of clean and interlinked databases and architectures.



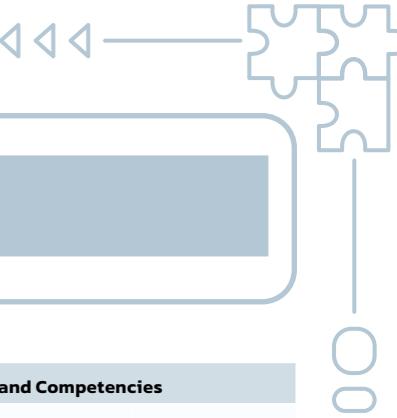
| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|----------------------------------|--|--|
| | Optimize solution performance | <ul style="list-style-type: none"> Develop tools to improve data flows between internal and/or external systems and the data warehouse Test data system configurations to increase efficiency Automate the data collection and analysis processes, data releasing and reporting tools Assist in the integration of data systems with existing infrastructure | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Identify business needs | <ul style="list-style-type: none"> Determine technical system requirements based on data needs Identify suitable data structures based on business needs to ensure availability and accessibility of data Keep abreast of latest technologies and products in database and data processing software, and technologies | |
| | Build and maintain data pipeline | <ul style="list-style-type: none"> Develop backup data archiving systems to ensure system continuity Consolidate and create data storage solutions for storage and retrieval of information Support the handling and logging of errors Develop clean code and self-documenting scripts to process structured and unstructured data in real-time from a variety of data sources Build data flow channels and processing systems to extract, transform, load and integrate data Build a metadata system to ensure documentation and cataloguing of all available data Monitor data system performance Implement and monitor data security and privacy measures on existing data solutions Assist in building scalable data pipelines to extract, transform, load and integrate data Test data pipelines for scalability and reliability to process high data volume, variety and velocity Develop prototypes and Proof-of-Concepts for data solutions | |

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Data Engineer

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|------------------------------------|----------------------------|----------------------------------|-------------|
| | Level | Description | Level | Description |
| Agile Software Development | Level 3 | Collaboration | Basic | |
| Applications Development | Level 3 | Communication | Basic | |
| Applications Integration | Level 3 | Creative Thinking | Basic | |
| Artificial Intelligence Ethics and Governance | Level 3 | Decision Making | Basic | |
| Business Needs Analysis | Level 3 | Digital Fluency | Basic | |
| Change Management | Level 3 | Learning Agility | Basic | |
| Cloud Computing | Level 3 | Transdisciplinary Thinking | Basic | |
| Configuration Tracking | Level 2 | | | |
| Continuous Integration and Continuous Deployment | Level 3 | | | |
| Cyber and Data Breach Incident Management | Level 2 | | | |
| Data Design | Level 3 | | | |
| Data Engineering | Level 3 | | | |
| Data Ethics | Level 3 | | | |
| Data Migration | Level 3 | | | |
| Data Visualization | Level 3 | | | |
| Database Administration | Level 3 | | | |
| Design Thinking Practice | Level 3 | | | |
| Security Architecture | Level 3 | | | |
| Software Configuration | Level 2 | | | |
| Software Design | Level 3 | | | |
| Software Testing | Level 3 | | | |
| Stakeholder Management | Level 2 | | | |
| System Integration | Level 3 | | | |
| Test Planning | Level 3 | | | |



Senior Data Engineer

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. They assist data scientists with the extraction of valuable insights from data sets to derive valuable and actionable insights and recommendations that support business requirements. They are involved in rollouts, upgrades, implementation, and release of data system changes as required for streamlining of internal practices.

They are proficient in database systems, scripting, and programming languages required by the organization. They are also familiar with the relevant software platforms on which the solution is deployed on.

The Senior Data Engineer possesses a natural inclination for understanding business processes and relevant data requirements. They easily build rapport with others and are able to put forth their ideas and recommendations in a persuasive manner, to influence stakeholders and decisions.



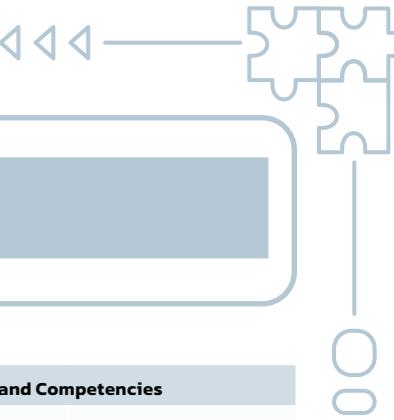
| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|-----------------------------------|---|--|
| | Optimize performance of solutions | <ul style="list-style-type: none"> Evaluate existing technologies and technology practices Automate processes focusing on repeatability and reliability Identify opportunities for improvements and optimization to systems and processes Resolve data integrity, performance, and availability issues | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Identify business needs | <ul style="list-style-type: none"> Translate business data needs to technical system requirements Evaluate the suitability of technologies and products in database and data processing for integration and storage Assess the suitability of data structures to ensure availability, integrity, quality, scalability and accessibility of data | |
| | Build and maintain data pipeline | <ul style="list-style-type: none"> Create data storage plans and solutions for information storage and extraction Build and validate 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 Lead project rollouts, upgrades, implementation and release of data system changes Build and validate a metadata system to ensure documentation and cataloguing of all available data Analyze data system performance and develop solutions for improvements Ensure the security, privacy and anonymity of users accessing data systems Formulate data backup and fail-safe plans as part of business continuity planning | |

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Senior Data Engineer

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|------------------------------------|----------------------------|----------------------------------|-------------|
| | Level | Description | Level | Description |
| Agile Software Development | Level 3 | Adaptability | Basic | |
| Applications Development | Level 4 | Building Inclusivity | Basic | |
| Applications Integration | Level 4 | Collaboration | Intermediate | |
| Artificial Intelligence Ethics and Governance | Level 3 | Communication | Intermediate | |
| Business Needs Analysis | Level 4 | Creative Thinking | Basic | |
| Change Management | Level 3 | Decision Making | Intermediate | |
| Cloud Computing | Level 4 | Developing People | Basic | |
| Configuration Tracking | Level 3 | Digital Fluency | Intermediate | |
| Continuous Integration and Continuous Deployment | Level 4 | Influence | Basic | |
| Cyber and Data Breach Incident Management | Level 3 | Learning Agility | Basic | |
| Data Design | Level 4 | Problem Solving | Basic | |
| Data Engineering | Level 4 | Self-Management | Basic | |
| Data Ethics | Level 4 | Transdisciplinary Thinking | Basic | |
| Data Migration | Level 4 | | | |
| Data Visualization | Level 3 | | | |
| Database Administration | Level 3 | | | |
| Design Thinking Practice | Level 4 | | | |
| Emerging Technology Synthesis | Level 3 | | | |
| Learning and Development | Level 4 | | | |
| Manpower Planning | Level 3 | | | |
| People and Performance Management | Level 3 | | | |
| Problem Management | Level 3 | | | |
| Project Management | Level 3 | | | |
| Security Architecture | Level 3 | | | |
| Software Configuration | Level 3 | | | |
| Software Design | Level 4 | | | |
| Software Testing | Level 3 | | | |
| Stakeholder Management | Level 3 | | | |
| System Integration | Level 4 | | | |
| Systems Thinking | Level 3 | | | |
| Test Planning | Level 3 | | | |



Data Architect

The Data Architect is responsible for designing and developing systems that enable efficient access to and retrieval of information. This role involves planning and crafting internal information-delivery solutions and data models, with an emphasis on enhancing user experience. The Data Architect collaborates closely with end users to understand and incorporate their requirements, ensuring that the designed solutions align with internal and client goals. Proficiency in database systems, scripting, and programming languages relevant to the organization is essential. Additionally, the Data Architect must be familiar with the software platforms where solutions are deployed. This role requires adherence to data privacy policies, ethical standards, and governance frameworks. The Data Architect, working within a team environment, brings a creative approach to problem-solving and solution development, integrating various internal needs and perspectives.

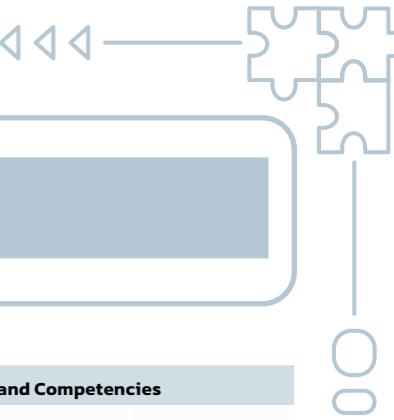


| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--------------------------------|--|--|
| | Design data architecture | <ul style="list-style-type: none"> Define the desired state of information flows through the organization to determine the organization's data architecture Communicate the data architecture, design and recommendations to stakeholders Guide the alignment of information management standards with the enterprise architectural plan and information security standards Assess existing systems to evaluate their usability, usefulness, visual design and content Develop strategies for seamless and low-risk migration of data between systems | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Identify business needs | <ul style="list-style-type: none"> Advise on latest machine learning libraries, strategies, and products in database and data processing software based on business requirements Determine data engineering requirements across all systems, platforms and applications based on artificial intelligence solutions Establish and implement data ethics, privacy and security guidelines and policies for potential new business cases that involve data engineering processes Advise the business on data requirements based on information and insights desired | |
| | Manage people and organization | <ul style="list-style-type: none"> Review the utilization of resources Implement succession planning initiatives for key management positions Review operational strategies, policies and targets across teams and projects Oversee the development of learning roadmaps for teams and functions Establish performance indicators to benchmark effectiveness of learning and development programs against best practices Develop strategies for resource planning and utilization | |

Continue to next page



| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|------------------------------------|----------------------------|----------------------------------|-------|
| | Skill | Level | Competency | Level |
| Agile Software Development | Level 4 | Adaptability | Intermediate | |
| Applications Development | Level 5 | Building Inclusivity | Intermediate | |
| Applications Integration | Level 5 | Collaboration | Intermediate | |
| Artificial Intelligence Ethics and Governance | Level 3 | Communication | Intermediate | |
| Business Agility | Level 4 | Creative Thinking | Intermediate | |
| Business Continuity | Level 4 | Decision Making | Intermediate | |
| Business Innovation | Level 4 | Developing People | Intermediate | |
| Business Needs Analysis | Level 5 | Digital Fluency | Intermediate | |
| Change Management | Level 4 | Global Perspective | Basic | |
| Cloud Computing | Level 4 | Influence | Intermediate | |
| Configuration Tracking | Level 4 | Learning Agility | Intermediate | |
| Continuous Integration and Continuous Deployment | Level 4 | Problem Solving | Intermediate | |
| Data Design | Level 5 | Self-Management | Basic | |
| Data Engineering | Level 5 | Transdisciplinary Thinking | Intermediate | |
| Data Ethics | Level 4 | | | |
| Data Migration | Level 4 | | | |
| Database Administration | Level 4 | | | |
| Design Thinking Practice | Level 4 | | | |
| Disaster Recovery Management | Level 4 | | | |
| Emerging Technology Synthesis | Level 4 | | | |
| Learning and Development | Level 5 | | | |
| Manpower Planning | Level 4 | | | |
| People and Performance Management | Level 4 | | | |
| Portfolio Management | Level 4 | | | |
| Problem Management | Level 4 | | | |
| Project Management | Level 4 | | | |
| Security Architecture | Level 4 | | | |
| Software Configuration | Level 4 | | | |
| Software Design | Level 5 | | | |
| Software Testing | Level 4 | | | |
| Solution Architecture | Level 4 | | | |
| Stakeholder Management | Level 4 | | | |
| Strategy Planning | Level 4 | | | |
| System Integration | Level 4 | | | |
| Systems Design | Level 4 | | | |
| Systems Thinking | Level 4 | | | |
| Test Planning | Level 4 | | | |



Chief Data Architect

The Chief Data Architect oversees the strategic planning and advanced design of information systems to optimize information access and discovery. This role extends beyond development, focusing on leading and influencing the architectural strategy to align with broad organizational objectives. The Chief Data Architect collaborates with key stakeholders and clients to define high-level requirements, ensuring solutions meet complex internal and external demands. A significant aspect of this role involves setting and maintaining information management standards, practices, and compliance with data governance. As a leader, the Chief Data Architect mentors and guides the data architecture team, fostering an environment of innovation and continuous improvement. Proficiency in advanced database systems, programming languages, and software platforms is crucial. The role demands exceptional leadership and communication skills to effectively manage cross-functional teams and influence decision-making at the highest levels.



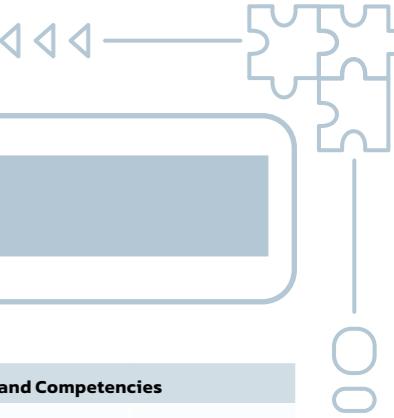
| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--------------------------------|---|--|
| | Design data architecture | <ul style="list-style-type: none"> Envision and articulate the future state of data flow throughout the organization, shaping the overarching data architecture strategy. Effectively communicate the conceptualized data architecture and its implications to key stakeholders, ensuring alignment with organizational objectives. Lead the integration of information management standards with the enterprise's architectural framework and information security policies. Conduct comprehensive assessments of existing systems to determine their effectiveness, usability, and alignment with the organization's data strategy. Strategize and oversee complex data migration projects, ensuring minimal risk and seamless transition between systems. | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Identify business needs | <ul style="list-style-type: none"> Provide strategic guidance on the latest advancements in machine learning, database technologies, and data processing tools, aligning them with business needs. Spearhead the determination of data engineering requirements, integrating artificial intelligence solutions across various systems and platforms. Champion the development and enforcement of data ethics, privacy, and security guidelines, particularly for emerging business scenarios involving advanced data engineering. Offer expert advice to business units on data requirements, focusing on deriving actionable insights and intelligence from data. | |
| | Manage people and organization | <ul style="list-style-type: none"> Conduct high-level reviews of resource allocation and utilization within the data architecture domain. Lead succession planning for critical management roles, ensuring continuity and leadership development. Oversee and refine operational strategies, policies, and objectives across multiple teams and projects, aligning them with the department's vision. Direct the creation and implementation of comprehensive learning roadmaps, fostering skill development and knowledge enhancement across teams. Establish key performance indicators to evaluate the effectiveness of learning and development programs against industry best practices. Develop and execute strategic plans for resource planning and optimization, ensuring efficient use of talent and resources in line with organizational goals. | |

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Chief Data Architect

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|------------------------------------|----------------------------|----------------------------------|-------------|
| | Level | Requirement | Level | Requirement |
| Agile Software Development | Level 5 | Adaptability | Intermediate | |
| Applications Development | Level 5 | Building Inclusivity | Intermediate | |
| Applications Integration | Level 5 | Collaboration | Advanced | |
| Artificial Intelligence Ethics and Governance | Level 3 | Communication | Advanced | |
| Budgeting | Level 5 | Creative Thinking | Intermediate | |
| Business Agility | Level 5 | Decision Making | Advanced | |
| Business Continuity | Level 5 | Developing People | Advanced | |
| Business Innovation | Level 5 | Digital Fluency | Advanced | |
| Business Needs Analysis | Level 5 | Global Perspective | Intermediate | |
| Change Management | Level 5 | Influence | Intermediate | |
| Cloud Computing | Level 5 | Learning Agility | Intermediate | |
| Configuration Tracking | Level 4 | Problem Solving | Intermediate | |
| Continuous Integration and Continuous Deployment | Level 5 | Self-Management | Intermediate | |
| Data Design | Level 5 | Transdisciplinary Thinking | Intermediate | |
| Data Engineering | Level 5 | | | |
| Data Ethics | Level 4 | | | |
| Database Administration | Level 5 | | | |
| Design Thinking Practice | Level 5 | | | |
| Disaster Recovery Management | Level 5 | | | |
| Emerging Technology Synthesis | Level 5 | | | |
| Learning and Development | Level 6 | | | |
| Manpower Planning | Level 5 | | | |
| Organizational Analysis | Level 5 | | | |
| People and Performance Management | Level 5 | | | |
| Portfolio Management | Level 5 | | | |
| Problem Management | Level 5 | | | |
| Project Management | Level 5 | | | |
| Security Architecture | Level 5 | | | |
| Software Design | Level 6 | | | |
| Software Testing | Level 4 | | | |
| Solution Architecture | Level 5 | | | |
| Stakeholder Management | Level 5 | | | |
| Strategy Planning | Level 5 | | | |
| System Integration | Level 5 | | | |
| Systems Design | Level 5 | | | |
| Systems Thinking | Level 4 | | | |
| Test Planning | Level 4 | | | |



Chief Information Officer

The Chief Information Officer leads the IT function and provides strategic directions, solutions and policies to support business goals. They develop 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. They direct and promote governance policies and standards in relation to security, quality, risk and project management. They lead important innovation initiatives and have ultimate accountability for the function. They provide the highest level of advice and recommendations to the heads of organizations or business units. They have the ability to leverage on new and innovative technology to develop strategic directions for the IT functions alignment with the organization objectives. They engage and communicate with their industry peers.

They are able to propose solutions and influence key stakeholders to drive commitment for initiatives across the organization.

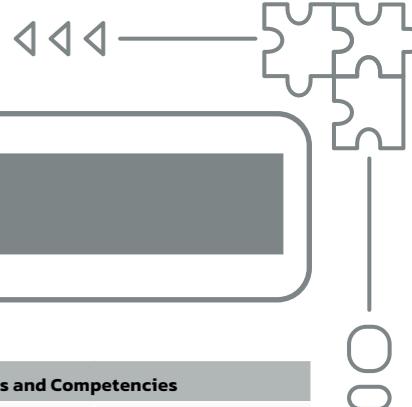


| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--|---|--|
| | Develop IT policies and standards | <ul style="list-style-type: none"> • Agreements (SLAs), policies and standards • Establish objectives and Key Performance Indicators (KPI) for the IT function • Establish plans for the offshoring and outsourcing of IT service delivery • Set direction for the development and maintenance of Service Level • Establish organization-wide IT policies and governance framework | In accordance with: <ul style="list-style-type: none"> • Relevant Philippine Analytics & AI Governance Framework • Philippine National Standards on AI • Republic Act 10173: Data Privacy Act of 2012 |
| | Facilitate continuous improvement through technology | <ul style="list-style-type: none"> • Endorse opportunities for automation and/or streamlining of IT processes • Foster an environment conducive to innovation and technological change • Develop high-level strategy and guidelines for roll out of IT process changes and/or improvements • Foster IT awareness and savviness within the organization | |
| | Manage IT development and operation risk | <ul style="list-style-type: none"> • Review results from risk assessments for mitigation • Establish organization wide risk assessment and management frameworks • Guide risk management strategies, disaster recovery and business continuity efforts • Advise policy reviews in line with evolving internal and external environments | |
| | Manage people and organization | <ul style="list-style-type: none"> • Review the utilization of resources • Implement succession planning initiatives for key management positions • Review operational strategies, policies and targets across teams and projects • Oversee the development of learning roadmaps for teams and functions • Establish performance indicators to benchmark effectiveness of learning and development programs against best practices • Develop strategies for resource planning and utilization • Advise stakeholders toward reaching compromises and agreeing on expectations | |
| | Manage stakeholders | <ul style="list-style-type: none"> • Guide the dissemination of IT information throughout the organization • Inspire internal and external stakeholders to pursue the organization's technology vision • Manage internal and external stakeholders' expectations • Drive the organization's technology alignment with business needs • Build strategic relationships and alliances with stakeholders to achieve common goals | |
| | Establish information strategy | <ul style="list-style-type: none"> • Establish the whole-of-enterprise IT vision and strategy • Define the IT roadmap • Secure investments for IT initiatives to enable business operations • Establish systems that facilitate data analytics throughout the organization • Communicate the organization's information strategy to partners, management, investors and employees • Advise senior leaders on technology trends to influence the formulation of business strategy • Build an IT landscape responsive to business changes | |

Continue to next page



| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|---|------------------------------------|-------------|----------------------------------|--------------|
| | Level | Description | Level | Description |
| Artificial Intelligence Ethics and Governance | Level 6 | | Adaptability | Advanced |
| Budgeting | Level 6 | | Building Inclusivity | Intermediate |
| Business Agility | Level 6 | | Collaboration | Advanced |
| Business Continuity | Level 6 | | Communication | Advanced |
| Business Innovation | Level 6 | | Creative Thinking | Advanced |
| Business Performance Management | Level 6 | | Decision Making | Advanced |
| Change Management | Level 6 | | Developing People | Advanced |
| Cyber and Data Breach Incident Management | Level 6 | | Digital Fluency | Advanced |
| Data Ethics | Level 6 | | Global Perspective | Advanced |
| Design Thinking Practice | Level 6 | | Influence | Advanced |
| Disaster Recovery Management | Level 6 | | Learning Agility | Intermediate |
| Emerging Technology Synthesis | Level 6 | | Problem Solving | Advanced |
| Enterprise Architecture | Level 6 | | Self-Management | Intermediate |
| Infrastructure Strategy | Level 6 | | Transdisciplinary Thinking | Advanced |
| IT Governance | Level 6 | | | |
| IT Standards | Level 6 | | | |
| IT Strategy | Level 6 | | | |
| Networking | Level 5 | | | |
| Organizational Analysis | Level 6 | | | |
| Organizational Design | Level 6 | | | |
| Performance Management | Level 6 | | | |
| Portfolio Management | Level 6 | | | |
| Project Management | Level 6 | | | |
| Quality Standards | Level 6 | | | |
| Solution Architecture | Level 6 | | | |
| Stakeholder Management | Level 6 | | | |
| Strategy Planning | Level 6 | | | |
| Sustainability Management | Level 6 | | | |
| System Integration | Level 6 | | | |
| Systems Design | Level 6 | | | |
| Systems Thinking | Level 5 | | | |



Machine Learning Engineer

The Machine Learning Engineer supports the production of scalable and optimized machine learning (ML) models. They focus on building algorithms for the extraction, transformation and loading of large volumes of real-time, unstructured data in order to deploy ML solutions from theoretical data science models. They run experiments to test the performance of deployed models, and identify and resolve bugs that arise in the process. They work in a team setting and are proficient in statistics, scripting and programming languages required by the organization. They are also familiar with the relevant software platforms in which the models are deployed. They should be knowledgeable of the requirements of data governance frameworks and data protection regulations in the course of their work on ML models. The Machine Learning 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.

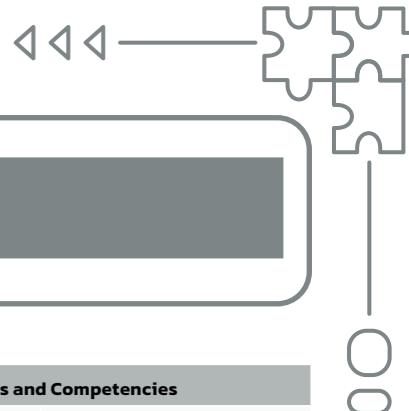


| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--|---|--|
| | Deploy ML models in solutions | <ul style="list-style-type: none"> Research and implement machine learning algorithms and tools for ML model development Prepare documentation to outline data sources, models and algorithms used and developed Perform statistical analysis and fine tuning of the models using test results Test the operation and performance of the deployed models Engage in code reviews to improve ML models Identify bugs during deployment and create bug fixes to address issues | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Build and assess ML models | <ul style="list-style-type: none"> Scale ML models for production Support continuous improvement of ML solutions Develop ML development pipeline and infrastructure Develop codes to package the ML models for scaling | |
| | Conduct research on ML models and algorithms | <ul style="list-style-type: none"> Select appropriate datasets and data representation methods for analysis Identify appropriate algorithms based on user requirements Research and implement ML algorithms and tools for ML model development Evaluate ML models for production | |

Continue to next page



| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|------------------------------------|----------------------------|----------------------------------|-------------|
| | Level | Description | Level | Description |
| Agile Software Development | 3 | Collaboration | | Basic |
| Applications Development | 3 | Communication | | Basic |
| Applications Integration | 3 | Creative Thinking | | Basic |
| Artificial Intelligence Ethics and Governance | 3 | Decision Making | | Basic |
| Business Needs Analysis | 3 | Digital Fluency | | Basic |
| Change Management | 3 | Learning Agility | | Basic |
| Cloud Computing | 3 | Transdisciplinary Thinking | | Basic |
| Computational Modelling | 3 | | | |
| Computer Vision Technology | 4 | | | |
| Configuration Tracking | 2 | | | |
| Continuous Integration and Continuous Deployment | 3 | | | |
| Cyber and Data Breach Incident Management | 2 | | | |
| Data Analytics | 2 | | | |
| Data Engineering | 2 | | | |
| Data Ethics | 3 | | | |
| Data Visualization | 3 | | | |
| Design Thinking Practice | 3 | | | |
| Intelligent Reasoning | 4 | | | |
| Pattern Recognition Systems | 4 | | | |
| Research | 3 | | | |
| Security Architecture | 3 | | | |
| Self-Learning Systems | 3 | | | |
| Software Configuration | 2 | | | |
| Software Design | 3 | | | |
| Software Testing | 2 | | | |
| Stakeholder Management | 2 | | | |
| System Integration | 3 | | | |
| Test Planning | 2 | | | |
| Text Analytics and Processing | 4 | | | |



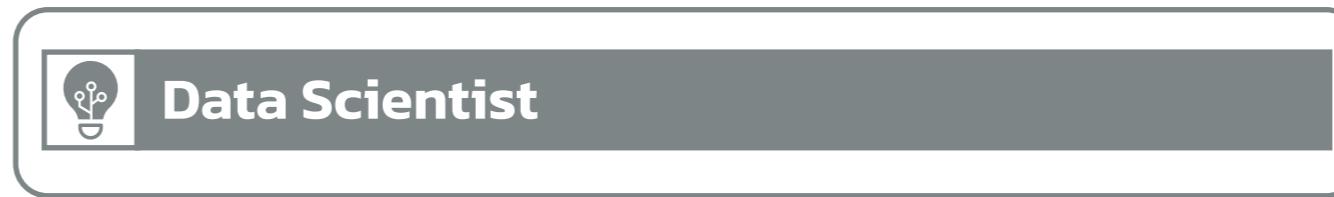
Data Scientist

The Data Scientist plays a crucial role in the development of advanced data analytics techniques and solutions, encompassing the entire process from design and prototyping to testing. The role involves extracting and integrating data from various sources, exploring complex datasets to unearth incremental business value, and creating advanced statistical models tailored for specific business use cases. An integral part of the role is conducting thorough testing of these models, interpreting the findings, and evaluating model performance for scalability and deployment. The Data Scientist is also responsible for developing clear and compelling communication materials to facilitate stakeholder understanding and buy-in. This role demands strong analytical skills to identify and solve complex business problems, proficiency in statistics, scripting, and programming languages relevant to the organization, and familiarity with software platforms for deploying solutions. The Data Scientist is passionate about analyzing data, displays intellectual curiosity, possesses strong critical thinking skills, and has the ability to narrate and present data findings effectively to influence stakeholders and promote a data-driven approach to resolving business issues.

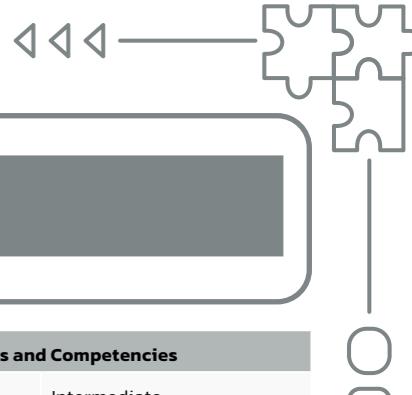


| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|--|--|
| | Present data driven business value of data science models | <ul style="list-style-type: none"> Contribute to the creation of leading-edge resources, including playbooks, guides, blog posts, videos, etc. Develop compelling, logically structured presentations including storytelling of research and/or analytics findings to secure stakeholder commitment Create reports and deliverables based on insights derived from the model results | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Build and assess models | <ul style="list-style-type: none"> Document modelling techniques used and assumptions made against test outcomes Conduct testing on final model in real-time business conditions prior to deployment Enable end user capability to use data science products effectively Initiate autonomous monitoring to scale human oversight Scale and deploy models in real-time business conditions for end user consumption | |
| | Manage data preparation and modelling | <ul style="list-style-type: none"> Interpret and evaluate model performance for scaling and deployment Select the best model based on pre-defined evaluation criteria Perform model comparison to draw inferences on variable importance Develop multiple models and algorithms suitable for the use case Analyze 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 Account for data ethics and policies in model selection and evaluation process Define objectives and hypothesis for research on data models | |

Continue to next page



| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|------------------------------------|----------------------------|----------------------------------|-------------|
| | Level | Description | Level | Description |
| Agile Software Development | Level 3 | Adaptability | Basic | |
| Applications Development | Level 4 | Building Inclusivity | Basic | |
| Applications Integration | Level 4 | Collaboration | Intermediate | |
| Artificial Intelligence Ethics and Governance | Level 3 | Communication | Intermediate | |
| Business Needs Analysis | Level 4 | Creative Thinking | Basic | |
| Change Management | Level 3 | Decision Making | Intermediate | |
| Cloud Computing | Level 4 | Developing People | Basic | |
| Computational Modelling | Level 4 | Digital Fluency | Intermediate | |
| Computer Vision Technology | Level 4 | Influence | Basic | |
| Configuration Tracking | Level 3 | Learning Agility | Basic | |
| Continuous Integration and Continuous Deployment | Level 4 | Problem Solving | Basic | |
| Cyber and Data Breach Incident Management | Level 3 | Self-Management | Basic | |
| Data Analytics | Level 3 | Transdisciplinary Thinking | Basic | |
| Data Engineering | Level 3 | | | |
| Data Ethics | Level 4 | | | |
| Data Visualization | Level 3 | | | |
| Design Thinking Practice | Level 4 | | | |
| Emerging Technology Synthesis | Level 3 | | | |
| Intelligent Reasoning | Level 4 | | | |
| Learning and Development | Level 4 | | | |
| Manpower Planning | Level 3 | | | |
| Pattern Recognition Systems | Level 4 | | | |
| People and Performance Management | Level 3 | | | |
| Problem Management | Level 3 | | | |
| Project Management | Level 3 | | | |
| Research | Level 3 | | | |
| Security Architecture | Level 3 | | | |
| Self-Learning Systems | Level 4 | | | |
| Software Configuration | Level 3 | | | |
| Software Design | Level 4 | | | |
| Software Testing | Level 3 | | | |
| Stakeholder Management | Level 3 | | | |
| System Integration | Level 4 | | | |
| Systems Thinking | Level 3 | | | |
| Test Planning | Level 3 | | | |
| Text Analytics and Processing | Level 4 | | | |



Senior Data Scientist

The Senior Data Scientist is a critical leadership role within the data analytics domain. This role extends beyond the technical aspects of data science to include strategic planning and team management. The Senior Data Scientist is responsible for overseeing the development and implementation of advanced data analytics techniques and solutions, ensuring the alignment of these initiatives with the organization's strategic objectives. Key responsibilities include managing a team of data scientists and analysts, guiding them through the entire process of data extraction, integration, analysis, and model development. This role requires a deep understanding of statistical models and their application in various business scenarios, along with the ability to conduct rigorous testing and evaluation for scalability and deployment.

As a leader, the Senior Data Scientist is tasked with fostering a collaborative environment, mentoring team members, and facilitating their professional growth. Effective communication is paramount, as this role involves developing and presenting complex data-driven insights to stakeholders at all levels, including non-technical audiences. The Senior Data Scientist must possess strong problem-solving skills, an analytical mindset, and the ability to influence and drive data-centric decision-making within the organization. Proficiency in advanced statistical techniques, and programming languages, and familiarity with the latest data analytics platforms and tools are essential. The Senior Data Scientist is someone who is not only passionate about data analysis but also excels in strategic thinking, team leadership, and stakeholder management.

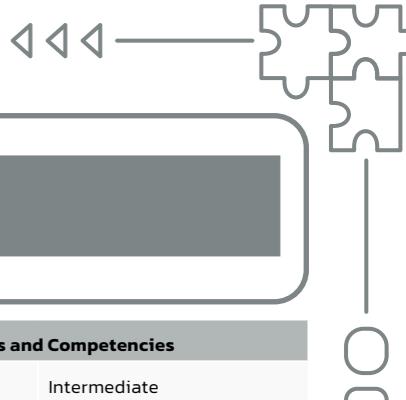


| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|--|--|
| | Present data driven business value of data science models | <ul style="list-style-type: none"> Lead in the development of advanced resources such as playbooks, guides, blog posts, and videos, showcasing the business impact of data science. Craft and present detailed, story-driven analysis of research and analytics to key stakeholders, ensuring buy-in and support. Oversee the creation of comprehensive reports and deliverables, translating complex model insights into actionable business strategies. | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Build and assess models | <ul style="list-style-type: none"> Oversee the documentation of sophisticated modeling techniques and assumptions, comparing them against test outcomes for optimization. Lead the testing of models under real-time business conditions, ensuring readiness for deployment. Empower users with the skills and tools needed to effectively utilize data science products. Implement advanced autonomous monitoring systems to enhance scalability and reduce the need for continuous human supervision. Champion the scaling and deployment of models in real-time business environments, ensuring seamless integration for end users. | |
| | Manage data preparation and modelling | <ul style="list-style-type: none"> Evaluate and interpret model performance, making strategic decisions about scaling and deployment. Select optimal models based on rigorous evaluation criteria, guiding the team in making informed decisions. Conduct comprehensive model comparisons to understand variable significance and influence on outcomes. Develop a variety of models and algorithms, tailoring them to specific use cases. Analyze potential dataset biases and implement strategies to mitigate these in safety protocols and deployment plans. Supervise the extraction and integration of data from diverse sources, ensuring robust feature representation. Enforce data ethics and compliance with policies throughout the model selection and evaluation process. Set clear objectives and hypotheses for research projects, guiding the team in exploring innovative data model applications. | |

Continue to next page

Senior Data Scientist

| Skills and Competencies | Functional Skills and Competencies | Enabling Skills and Competencies | |
|-------------------------|--|----------------------------------|--|
| | Agile Software Development | Level 4 | Adaptability Intermediate |
| | Applications Development | Level 5 | Building Inclusivity Intermediate |
| | Applications Integration | Level 5 | Collaboration Intermediate |
| | Artificial Intelligence Ethics and Governance | Level 3 | Communication Intermediate |
| | Business Agility | Level 4 | Creative Thinking Intermediate |
| | Business Continuity | Level 4 | Decision Making Intermediate |
| | Business Innovation | Level 4 | Developing People Intermediate |
| | Business Needs Analysis | Level 5 | Digital Fluency Intermediate |
| | Change Management | Level 4 | Global Perspective Basic |
| | Cloud Computing | Level 4 | Influence Intermediate |
| | Computational Modelling | Level 5 | Learning Agility Intermediate |
| | Computer Vision Technology | Level 5 | Problem Solving Intermediate |
| | Configuration Tracking | Level 4 | Self-Management Basic |
| | Continuous Integration and Continuous Deployment | Level 4 | Transdisciplinary Thinking Intermediate |
| | Data Analytics | Level 4 | |
| | Data Engineering | Level 3 | |
| | Data Ethics | Level 4 | |
| | Design Thinking Practice | Level 4 | |
| | Emerging Technology Synthesis | Level 4 | |
| | Intelligent Reasoning | Level 5 | |
| | Learning and Development | Level 5 | |
| | Manpower Planning | Level 4 | |
| | Pattern Recognition Systems | Level 5 | |
| | People and Performance Management | Level 4 | |
| | Problem Management | Level 4 | |
| | Project Management | Level 4 | |
| | Research | Level 4 | |
| | Security Architecture | Level 4 | |
| | Self-Learning Systems | Level 4 | |
| | Software Configuration | Level 4 | |
| | Software Design | Level 5 | |
| | Software Testing | Level 4 | |
| | Solution Architecture | Level 4 | |
| | Stakeholder Management | Level 4 | |
| | Strategy Planning | Level 4 | |
| | System Integration | Level 4 | |
| | Systems Design | Level 4 | |
| | Systems Thinking | Level 4 | |
| | Test Planning | Level 4 | |
| | Text Analytics and Processing | Level 5 | |



Chief Data Scientist

The Chief Data Scientist is a strategic and visionary leader, responsible for formulating and implementing data science strategies to maximize the business value derived from data assets. In this role, the Chief Data Scientist will oversee the development of advanced data analytics solutions, guiding strategic decision-making and driving performance improvements across the organization. This position involves leading a team of data scientists and analysts, nurturing their technical and leadership skills, and ensuring alignment with the organization's overall objectives. The Chief Data Scientist will review and refine data models and algorithms, ensuring their feasibility and effectiveness in addressing business needs.

Proficiency in statistics, scripting, and programming languages relevant to the organization, as well as familiarity with the necessary software platforms, is essential. The role demands a highly effective communicator who can articulate the value and impact of data science initiatives to key business stakeholders, influencing and driving a data-driven culture. The Chief Data Scientist is proactive, innovative, and adaptable, with a strong drive to succeed in an evolving business environment. Responsibilities also include ensuring compliance with the organization's data privacy policies, ethics and governance framework, and intellectual property legislation. The Chief Data Scientist is expected to lead by example, fostering a culture of continuous learning and innovation within the data science team.

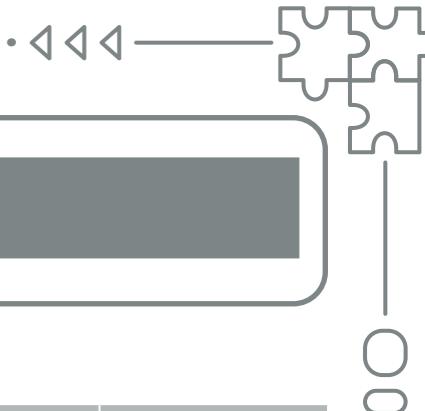


| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--|---|--|
| | Implement data science strategy | <ul style="list-style-type: none"> Develop and execute strategies for data acquisition, processing, and utilization. Lead the adoption of advanced data management technologies. Ensure that research and development in data science align with the organization's goals and strategy. Promote understanding and value of data science within the organization. Enforce compliance with data privacy, ethics, and governance policies. Create policies for ongoing data model optimization to reflect evolving customer behaviors. Spearhead the organization's data science research and development, focusing on current and future needs. Guide the direction of data science research to meet organizational objectives. | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Formulate objectives and requirements from a business perspective | <ul style="list-style-type: none"> Conduct feasibility studies for data science projects, assessing business needs and expected outcomes. Validate data science solutions based on cost-benefit analysis and market feasibility. Analyze market trends and environmental factors to support data science project feasibility. Forge partnerships to foster data science adoption across industries. Relay feasibility study insights to stakeholders for informed decision-making. | |
| | Manage intellectual property (IP) strategies, processes and procedures | <ul style="list-style-type: none"> Collaborate with vendors for IP-related matters in data science. Identify and exploit IP commercialization opportunities in data science. Adhere to IP laws and regulations in data science initiatives. | |
| | Present data driven business value of data science models | <ul style="list-style-type: none"> Communicate the business impact of data science solutions. Share data science insights and model results with stakeholders. Develop and distribute resources like guides and videos on data science. | |
| | Manage people and organization | <ul style="list-style-type: none"> Optimize resource allocation in data science teams. Plan for leadership succession in key data science roles. Set operational goals and review policies in data science teams. Direct learning and development plans for data science personnel. Establish benchmarks for data science training effectiveness. Strategize for efficient use of data science resources and personnel. | |

Continue to next page



| Functional Skills and Competencies | Enabling Skills and Competencies | | |
|--|----------------------------------|----------------------------|--------------|
| Agile Software Development | Level 5 | Adaptability | Intermediate |
| Applications Development | Level 5 | Building Inclusivity | Intermediate |
| Applications Integration | Level 5 | Collaboration | Advanced |
| Artificial Intelligence Ethics and Governance | Level 3 | Communication | Advanced |
| Budgeting | Level 5 | Creative Thinking | Intermediate |
| Business Agility | Level 5 | Decision Making | Advanced |
| Business Continuity | Level 5 | Developing People | Advanced |
| Business Innovation | Level 5 | Digital Fluency | Advanced |
| Business Needs Analysis | Level 5 | Global Perspective | Intermediate |
| Change Management | Level 5 | Influence | Intermediate |
| Cloud Computing | Level 5 | Learning Agility | Intermediate |
| Computational Modelling | Level 5 | Problem Solving | Intermediate |
| Computer Vision Technology | Level 5 | Self-Management | Intermediate |
| Configuration Tracking | Level 4 | Transdisciplinary Thinking | Intermediate |
| Continuous Integration and Continuous Deployment | Level 5 | | |
| Data Analytics | Level 5 | | |
| Data Ethics | Level 4 | | |
| Design Thinking Practice | Level 5 | | |
| Emerging Technology Synthesis | Level 5 | | |
| Intelligent Reasoning | Level 5 | | |
| Learning and Development | Level 6 | | |
| Manpower Planning | Level 5 | | |
| Organizational Analysis | Level 5 | | |
| Pattern Recognition Systems | Level 5 | | |
| People and Performance Management | Level 5 | | |
| Performance Management | Level 5 | | |
| Problem Management | Level 5 | | |
| Project Management | Level 5 | | |
| Research | Level 5 | | |
| Security Architecture | Level 5 | | |
| Self-Learning Systems | Level 5 | | |
| Software Design | Level 6 | | |
| Software Testing | Level 4 | | |
| Solution Architecture | Level 5 | | |
| Stakeholder Management | Level 5 | | |
| Strategy Planning | Level 5 | | |
| System Integration | Level 5 | | |
| Systems Design | Level 5 | | |
| Systems Thinking | Level 4 | | |
| Test Planning | Level 4 | | |
| Text Analytics and Processing | Level 6 | | |



Chief Analytics Officer

The Chief Analytics Officer plays a pivotal role in shaping and driving the organization's analytics strategy, focusing on leveraging data for insightful analysis and informed decision-making. This executive is primarily responsible for ensuring the integrity, accessibility, and effective utilization of data to influence business strategy and performance. With a keen eye on analytics, the Chief Analytics Officer leads initiatives to maximize the business value derived from data assets, prioritizing and resourcing analytics projects aligned with organizational goals.

Central to the Chief Analytics Officer's role is collaborating with the Chief Data Officer in the establishment of a robust framework for data governance and ethics, ensuring compliance with data privacy regulations and best practices in data management. The Chief Analytics Officer is instrumental in fostering a culture that values data-driven insights, guiding the organization in the analysis and interpretation of data to inform strategic decisions and drive business success.

The Chief Analytics Officer also identifies opportunities for intellectual property creation through sophisticated data analysis and stays abreast of market intelligence to advise on potential IP infringements. By creating a shared vision for data analytics, the Chief Analytics Officer builds strategic relationships with key stakeholders, demonstrating strong business acumen and innovative thinking to support and achieve business objectives. This role requires exceptional leadership and stakeholder management skills, enabling the Chief Analytics Officer to effectively navigate complex environments and lead the organization's journey towards advanced analytics capabilities.



| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|---|--|--------------------------|
| Establish data analytics strategy | <ul style="list-style-type: none"> Formulate approaches to maximize the value of data analytics capabilities and technological investments for the organization Align data analytics strategy, priorities and plans of the data function to the organization's vision and mission Develop strategies to ensure seamless integration of technologies with workflows and processes across the organization Promote the adoption of industry leading practices and new data management technologies across the organization Drive the organization's culture of compliance to data privacy policies, relevant ethics and governance frameworks Review ethics and governance framework and measures to ensure continued relevance and effectiveness | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 | |
| Optimize business value from data | <ul style="list-style-type: none"> Lead the identification of high business value business opportunities through application of data solutions Design data-driven initiatives to leverage the value of data assets in the organization 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 | | |
| Formulate objectives and requirements from a business perspective | <ul style="list-style-type: none"> Advise the team on new and innovative tools and techniques to derive greater value from data Establish performance measures to evaluate data initiatives, programs, and value derived from effective data management Oversee the implementation of analytics initiatives across the organization Formulate project prioritization and resourcing strategies for data analytics projects across the organization | | |

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Chief Analytics Officer

| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | | Performance Expectations |
|---|--|--|----------------------------|--------------------------|
| | Manage intellectual property (IP) strategies, processes and procedures | <ul style="list-style-type: none"> Review emerging trends and intelligence, and analyze technology landscape reports and analyses to identify potential IP opportunities Act as a subject matter expert and resource person for infringements against the organization's IP related to data solutions and/or models Oversee systems and processes to manage IP related to data solutions and/or models | | |
| | Build strategic relationships | <ul style="list-style-type: none"> Lead engagement initiatives with key leaders and senior stakeholders to obtain buy-in for data analytics initiatives Build strategic relationships and alliances with key business and industry stakeholders, and partners to achieve organizational objectives and maximize the value of investments Source for data analytics opportunities for the business and ensure data compliance with business policies and external legal requirements Develop stakeholder management plans to create shared vision and objectives on the use of data in the organization | | |
| | Develop organization's data analytics capabilities | <ul style="list-style-type: none"> Drive talent management initiatives to attract, motivate and retain talent for data analytics teams Develop strategies and plans to build capabilities within the data analytics function Ensure data solutions and deployment are guided by organization's corporate values Lead succession planning and management for key leadership roles in the data analytics function | | |
| Functional Skills and Competencies | | Enabling Skills and Competencies | | |
| Artificial Intelligence Ethics and Governance | | Level 6 | Adaptability | Advanced |
| Budgeting | | Level 6 | Building Inclusivity | Intermediate |
| Business Agility | | Level 6 | Collaboration | Advanced |
| Business Continuity | | Level 6 | Communication | Advanced |
| Business Innovation | | Level 6 | Creative Thinking | Advanced |
| Business Performance Management | | Level 6 | Decision Making | Advanced |
| Business Risk Management | | Level 6 | Developing People | Advanced |
| Change Management | | Level 6 | Digital Fluency | Advanced |
| Cyber and Data Breach Incident Management | | Level 6 | Global Perspective | Advanced |
| Data Ethics | | Level 6 | Influence | Advanced |
| Design Thinking Practice | | Level 6 | Learning Agility | Intermediate |
| Emerging Technology Synthesis | | Level 6 | Problem Solving | Advanced |
| Enterprise Architecture | | Level 6 | Self-Management | Intermediate |
| Infrastructure Strategy | | Level 6 | Transdisciplinary Thinking | Advanced |

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Chief Analytics Officer

| Functional Skills and Competencies | | Enabling Skills and Competencies |
|------------------------------------|---------|----------------------------------|
| IT Governance | Level 6 | |
| IT Standards | Level 6 | |
| IT Strategy | Level 6 | |
| Networking | Level 5 | |
| Organizational Analysis | Level 6 | |
| Organizational Design | Level 6 | |
| Partnership Management | Level 6 | |
| Performance Management | Level 6 | |
| Project Management | Level 6 | |
| Quality Standards | Level 6 | |
| Solution Architecture | Level 6 | |
| Stakeholder Management | Level 6 | |
| Strategy Planning | Level 6 | |
| Sustainability Management | Level 6 | |
| System Integration | Level 6 | |
| Systems Design | Level 6 | |
| Systems Thinking | Level 5 | |



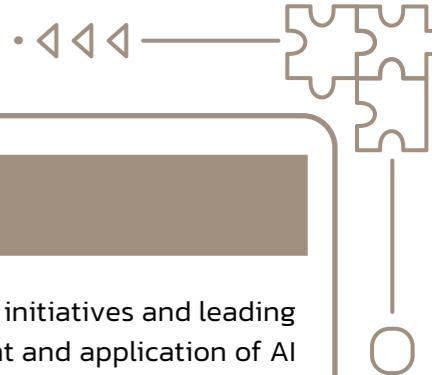
AI Engineer

The AI Engineer specializes in the development and application of artificial intelligence technologies. This role is focused on leading the creation of new and advanced AI methodologies and analytical solutions, including architecting specialized database and computing environments tailored for AI applications. The AI Engineer is responsible for identifying and developing key AI components essential for the delivery of projects, conducting rigorous testing on AI models, interpreting results, and assessing model performance for practical deployment. An important aspect of this role is the ability to develop communication materials that effectively facilitate stakeholder buy-in for AI-driven solutions. The AI Engineer must work effectively in team settings and demonstrate proficiency in programming languages and AI-related software platforms. The AI Engineer is deeply passionate about leveraging AI to address complex business challenges and should have an innate curiosity towards AI innovations, coupled with a strong ability to influence through effective communication and data storytelling.



| Skills and Competencies | Critical Work Functions | Key Tasks | Performance Expectations |
|-------------------------|-------------------------------------|--|--|
| | Manage AI/ML projects | <ul style="list-style-type: none"> Plan the end-to-end deployment of AI/ML solutions from initial testing, and deployment, to optimization in terms of system performance and run time Deliver scalable AI/ML solutions Communicate project objectives at critical junctures to obtain buy-in from all stakeholders Set project timelines and work quality guidelines Lead project estimations and code reviews Apply project management tools and processes to ensure the project is cost-effective | In accordance with: <ul style="list-style-type: none"> • Relevant Philippine Analytics & AI Governance Framework • Philippine National Standards on AI • Republic Act 10173: Data Privacy Act of 2012 |
| | Deploy AI/ML models | <ul style="list-style-type: none"> Create test plans for post-deployment Lead the development and deployment of supervised and/or unsupervised techniques for problem solving Oversee the deployment of AI/ML solutions Communicate deployment issues and resolution plans to stakeholders | |
| | Develop AI/ML models for production | <ul style="list-style-type: none"> Drive optimization of AI solutions to increase performance Review scaled AI/ML models to ensure desired performance can be achieved when deployed Evaluate AI/ML model scaling and packaging codes for refinement Lead the extraction, transformation, loading and integration of unstructured data for modelling Assess performance of production-level AI/ML models for scalability Manage AI/ML development pipeline and infrastructure | |

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AI Engineer

| Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|---------|----------------------------------|--------------|
| Agile Software Development | Level 3 | Adaptability | Basic |
| Applications Development | Level 4 | Building Inclusivity | Basic |
| Applications Integration | Level 4 | Collaboration | Intermediate |
| Artificial Intelligence Ethics and Governance | Level 3 | Communication | Intermediate |
| Business Needs Analysis | Level 4 | Creative Thinking | Basic |
| Change Management | Level 3 | Decision Making | Intermediate |
| Cloud Computing | Level 4 | Developing People | Basic |
| Computational Modelling | Level 4 | Digital Fluency | Intermediate |
| Computer Vision Technology | Level 4 | Influence | Basic |
| Configuration Tracking | Level 3 | Learning Agility | Basic |
| Continuous Integration and Continuous Deployment | Level 4 | Problem Solving | Basic |
| Cyber and Data Breach Incident Management | Level 3 | Self-Management | Basic |
| Data Analytics | Level 3 | Transdisciplinary Thinking | Basic |
| Data Engineering | Level 3 | | |
| Data Ethics | Level 4 | | |
| Data Visualization | Level 3 | | |
| Design Thinking Practice | Level 4 | | |
| Emerging Technology Synthesis | Level 3 | | |
| Intelligent Reasoning | Level 4 | | |
| Learning and Development | Level 4 | | |
| Manpower Planning | Level 3 | | |
| Pattern Recognition Systems | Level 4 | | |
| People and Performance Management | Level 3 | | |
| Problem Management | Level 3 | | |
| Product Management | Level 3 | | |
| Project Management | Level 3 | | |
| Research | Level 3 | | |
| Security Architecture | Level 3 | | |
| Self-Learning Systems | Level 4 | | |
| Software Configuration | Level 3 | | |
| Software Design | Level 4 | | |
| Software Testing | Level 3 | | |
| Stakeholder Management | Level 3 | | |
| System Integration | Level 4 | | |
| Systems Thinking | Level 3 | | |
| Test Planning | Level 3 | | |
| Text Analytics and Processing | Level 4 | | |



Senior AI Engineer

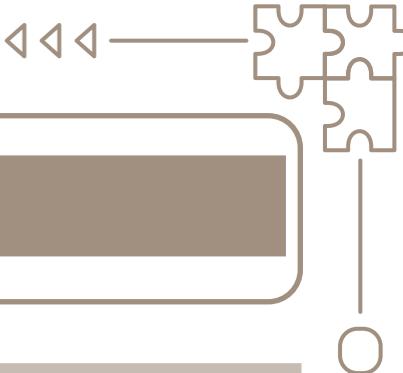
The Senior AI Engineer plays a pivotal role in steering the organization's AI initiatives and leading a team of AI professionals. This position involves the strategic development and application of AI technologies in alignment with the organization's goals. The Senior AI Engineer is responsible for leading the creation of innovative AI methodologies and analytical solutions, architecting specialized environments for AI applications, and overseeing the development of key AI components for project delivery.

In this leadership role, the Senior AI Engineer manages a team of AI specialists, providing guidance and mentorship while fostering an environment conducive to innovation and professional development. This position requires robust testing and evaluation of AI models for practical deployment and scalability. Strong communication skills are essential, as the Senior AI Engineer must effectively convey AI-driven insights and strategies to stakeholders across various departments, including those with limited technical expertise. The role demands proficiency in AI-related programming languages and software platforms, along with a deep understanding of the latest trends and advancements in the field of AI. The Senior AI Engineer is deeply passionate about AI, demonstrates exceptional problem-solving abilities, and has a proven track record in leading teams to successfully implement AI solutions that address complex business challenges. This role requires a balance of technical acumen, strategic thinking, and effective team and stakeholder management.



| Skills and Competencies | Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|-------------------------|---|-------------------------------------|---|---|
| | | Manage AI/ML projects | <ul style="list-style-type: none"> Spearhead the strategic planning and execution of AI/ML initiatives, ensuring end-to-end deployment from testing to optimization for system performance. Develop and implement scalable AI/ML strategies. Facilitate effective communication of project goals at critical stages to secure stakeholder engagement and alignment. Define project milestones and establish standards for work quality and performance. Lead project estimations and oversee comprehensive code reviews. Implement advanced project management methodologies to enhance cost-efficiency and resource allocation. | In accordance with: • Relevant Philippine Analytics & AI Governance Framework • Philippine National Standards on AI • Republic Act 10173: Data Privacy Act of 2012 |
| | | Deploy AI/ML models | <ul style="list-style-type: none"> Architect and direct comprehensive test strategies for post-deployment evaluation. Guide the development and deployment of sophisticated supervised and unsupervised AI/ML techniques for complex problem-solving. Oversee and ensure the successful deployment of AI/ML solutions. Manage communication regarding deployment challenges and resolutions to stakeholders, ensuring transparency and collaboration. | |
| | | Develop AI/ML models for production | <ul style="list-style-type: none"> Drive the optimization of AI solutions, enhancing performance and efficiency. Conduct high-level reviews of scaled AI/ML models to guarantee optimal performance upon deployment. Oversee the evaluation and refinement of AI/ML model scaling and packaging processes. Lead initiatives in data handling, including extraction, transformation, loading, and integration of unstructured data for model development. Evaluate the performance of AI/ML models in production, focusing on scalability and effectiveness. Administer the AI/ML development pipeline and infrastructure, ensuring seamless integration and deployment of new technologies. | |

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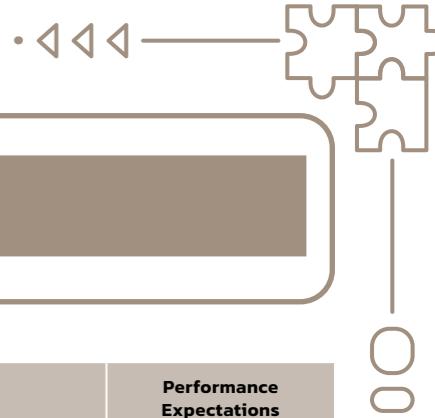


Senior AI Engineer

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|--|---------|----------------------------------|--------------|
| | Name | Level | Name | Level |
| Agile Software Development | Agile Software Development | Level 4 | Adaptability | Intermediate |
| Applications Development | Applications Development | Level 5 | Building Inclusivity | Intermediate |
| Applications Integration | Applications Integration | Level 5 | Collaboration | Intermediate |
| Artificial Intelligence Ethics and Governance | Artificial Intelligence Ethics and Governance | Level 3 | Communication | Intermediate |
| Business Agility | Business Agility | Level 4 | Creative Thinking | Intermediate |
| Business Continuity | Business Continuity | Level 4 | Decision Making | Intermediate |
| Business Innovation | Business Innovation | Level 4 | Developing People | Intermediate |
| Business Needs Analysis | Business Needs Analysis | Level 5 | Digital Fluency | Intermediate |
| Change Management | Change Management | Level 4 | Global Perspective | Basic |
| Cloud Computing | Cloud Computing | Level 4 | Influence | Intermediate |
| Computational Modelling | Computational Modelling | Level 5 | Learning Agility | Intermediate |
| Computer Vision Technology | Computer Vision Technology | Level 5 | Problem Solving | Intermediate |
| Configuration Tracking | Configuration Tracking | Level 4 | Self-Management | Basic |
| Continuous Integration and Continuous Deployment | Continuous Integration and Continuous Deployment | Level 4 | Transdisciplinary Thinking | Intermediate |
| Data Analytics | Data Analytics | Level 4 | | |
| Data Engineering | Data Engineering | Level 3 | | |
| Data Ethics | Data Ethics | Level 4 | | |
| Design Thinking Practice | Design Thinking Practice | Level 4 | | |
| Emerging Technology Synthesis | Emerging Technology Synthesis | Level 4 | | |
| Intelligent Reasoning | Intelligent Reasoning | Level 5 | | |
| Learning and Development | Learning and Development | Level 5 | | |
| Manpower Planning | Manpower Planning | Level 4 | | |
| Pattern Recognition Systems | Pattern Recognition Systems | Level 5 | | |
| People and Performance Management | People and Performance Management | Level 4 | | |
| Portfolio Management | Portfolio Management | Level 4 | | |
| Problem Management | Problem Management | Level 4 | | |
| Product Management | Product Management | Level 4 | | |
| Project Management | Project Management | Level 4 | | |
| Research | Research | Level 4 | | |
| Security Architecture | Security Architecture | Level 4 | | |
| Self-Learning Systems | Self-Learning Systems | Level 4 | | |
| Software Configuration | Software Configuration | Level 4 | | |
| Software Design | Software Design | Level 5 | | |
| Software Testing | Software Testing | Level 4 | | |

Continue to next page

| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|-------------------------------|------------------------------------|---------|----------------------------------|-------|
| | Name | Level | Name | Level |
| Solution Architecture | Solution Architecture | Level 4 | | |
| Stakeholder Management | Stakeholder Management | Level 4 | | |
| Strategy Planning | Strategy Planning | Level 4 | | |
| System Integration | System Integration | Level 4 | | |
| Systems Design | Systems Design | Level 4 | | |
| Systems Thinking | Systems Thinking | Level 4 | | |
| Test Planning | Test Planning | Level 4 | | |
| Text Analytics and Processing | Text Analytics and Processing | Level 5 | | |



Chief AI Engineer

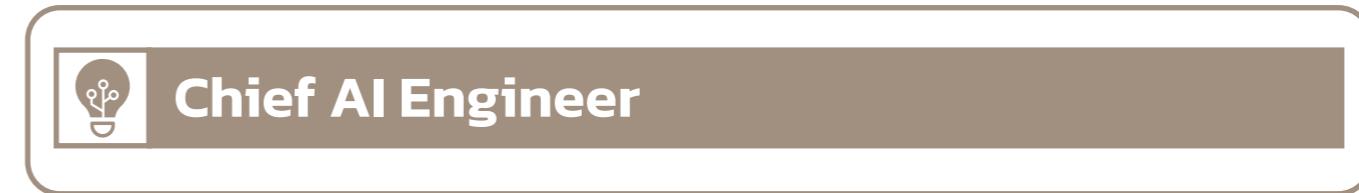
The Chief AI Engineer plays a pivotal role in shaping the organization's AI strategy and initiatives. This role involves guiding the AI research direction, creating new algorithms and models, and translating research and development outcomes into practical AI solutions that enhance business processes and decision-making. The Chief AI Engineer will manage a team of AI professionals, driving the development of AI solutions and overseeing their deployment to ensure they align with business strategies and goals.

A key part of this role is identifying potential intellectual property commercialization opportunities for AI solutions and models, including overseeing the preparation and application for intellectual property rights. The Chief AI Engineer must be proficient in AI-related programming languages and familiar with the relevant software platforms. As a leader, this role requires excellent communication skills to effectively convey the potential value and impact of AI solutions to key stakeholders, promoting an AI-driven approach within the organization. The Chief AI Engineer is proactive, innovative, and possesses a strong drive to excel in a dynamic business landscape. Additionally, this role includes developing the technical and leadership capabilities of the AI team and ensuring adherence to the organization's data privacy, ethics, and governance frameworks. The Chief AI Engineer is expected to be a thought leader in AI, fostering a culture of innovation and excellence within the team.



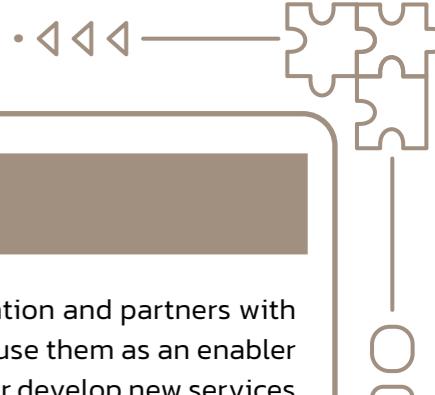
| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--|--|--|
| | Implement artificial intelligence (AI) strategy | <ul style="list-style-type: none"> Devise and implement AI strategies for model selection and application. Lead the integration of cutting-edge AI technologies. Review AI project outcomes for alignment with organizational vision and strategy. Drive organizational understanding and adoption of AI. Ensure adherence to AI ethics, privacy, and governance standards. Set up processes for continuous AI model refinement based on customer behavior changes. Direct the organization's AI engineering research and development focus. Steer AI research towards meeting immediate and long-term organizational needs. | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Formulate objectives and requirements from a business perspective | <ul style="list-style-type: none"> Plan feasibility analysis for AI engineering projects according to business requirements. Approve AI engineering solutions after thorough cost-benefit and feasibility assessments. Gather insights from market research to inform AI project feasibility. Build cross-industry partnerships to enhance AI engineering initiatives. Communicate AI project feasibility and strategy insights to business stakeholders. | |
| | Manage intellectual property (IP) strategies, processes and procedures | <ul style="list-style-type: none"> Coordinate with external parties on AI-related IP matters. Explore commercial opportunities for AI models and solutions. Comply with AI-focused IP laws and guidelines. | |

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| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | | Performance Expectations |
|---|---|--|----------------------------------|--------------------------|
| | Present data driven business value of artificial intelligence (AI) models | <ul style="list-style-type: none"> Highlight the business benefits of AI engineering solutions. Present AI engineering insights and outcomes to stakeholders. Produce educational and promotional AI engineering content. | | |
| Skills and Competencies | Functional Skills and Competencies | | Enabling Skills and Competencies | |
| | Agile Software Development | Level 5 | Adaptability | Intermediate |
| | Applications Development | Level 5 | Building Inclusivity | Intermediate |
| | Applications Integration | Level 5 | Collaboration | Advanced |
| | Artificial Intelligence Ethics and Governance | Level 3 | Communication | Advanced |
| | Budgeting | Level 5 | Creative Thinking | Intermediate |
| | Business Agility | Level 5 | Decision Making | Advanced |
| | Business Continuity | Level 5 | Developing People | Advanced |
| | Business Innovation | Level 5 | Digital Fluency | Advanced |
| | Business Needs Analysis | Level 5 | Global Perspective | Intermediate |
| | Change Management | Level 5 | Influence | Intermediate |
| | Cloud Computing | Level 5 | Learning Agility | Intermediate |
| | Computational Modelling | Level 5 | Problem Solving | Intermediate |
| | Computer Vision Technology | Level 5 | Self-Management | Intermediate |
| | Configuration Tracking | Level 4 | Transdisciplinary Thinking | Intermediate |
| | Continuous Integration and Continuous Deployment | Level 5 | | |
| | Data Analytics | Level 5 | | |

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Chief AI Engineer

| | Functional Skills and Competencies | Enabling Skills and Competencies |
|--------------------------------|---|---|
| | Data Ethics | Level 4 |
| | Design Thinking Practice | Level 5 |
| | Emerging Technology Synthesis | Level 5 |
| | Intelligent Reasoning | Level 5 |
| | Learning and Development | Level 6 |
| | Manpower Planning | Level 5 |
| | Organizational Analysis | Level 5 |
| | Pattern Recognition Systems | Level 5 |
| | People and Performance Management | Level 5 |
| | Performance Management | Level 5 |
| | Portfolio Management | Level 5 |
| | Problem Management | Level 5 |
| Skills and Competencies | Product Management | Level 5 |
| | Project Management | Level 5 |
| | Research | Level 5 |
| | Security Architecture | Level 5 |
| | Self-Learning Systems | Level 5 |
| | Software Design | Level 6 |
| | Software Testing | Level 4 |
| | Solution Architecture | Level 5 |
| | Stakeholder Management | Level 5 |
| | Strategy Planning | Level 5 |
| | System Integration | Level 5 |
| | Systems Design | Level 5 |
| | Systems Thinking | Level 4 |
| | Test Planning | Level 4 |
| | Text Analytics and Processing | Level 6 |



Chief Technology Officer

The Chief Technology Officer oversees all technical aspects of the organization and partners with key stakeholders within the business to evaluate new IT opportunities and use them as an enabler for growth. They approve the deployment of new technologies to enhance or develop new services and products offerings. They devise and implement long-term strategies focused on both current and new technology that can help an organization go to market more effectively and in turn increase revenue through technological enhancements. They engage and communicate with their industry peers.

They are inspiring leaders with a futuristic mind-set with an ability to drive innovative enhancements in the organization. They are able to foresee connections across diverse areas and influence key stakeholder decisions.



| | Critical Work Functions | Key Tasks | Performance Expectations |
|--|--|---|--|
| Critical Work Functions, Key Tasks and Performance Expectations | Manage portfolio of technology solutions | <ul style="list-style-type: none"> • Govern the integration of all solutions to ensure smooth and efficient flow of information within the organization • Set objectives for IT investments, projects, services and activities to meet current and future business needs | In accordance with: <ul style="list-style-type: none"> • Relevant Philippine Analytics & AI Governance Framework • Philippine National Standards on AI • Republic Act 10173: Data Privacy Act of 2012 |
| | Establish technology strategy | <ul style="list-style-type: none"> • Develop enterprise-wide digital strategy • Provide leadership in identifying, assessing and managing technology needs within an organization • Advise senior leadership on business opportunities arising from technology developments • Develop a technology roadmap to align to the organization's overall strategy and growth plans • Influence strategic decisions on future business initiatives related to technology | |
| | Develop technology solutions | <ul style="list-style-type: none"> • 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 | |
| | Enable innovation to improve organization's goal | <ul style="list-style-type: none"> • Act as a Technology Evangelist to explore and adopt appropriate technology • Foster an environment conducive to innovation and technological change • Evaluate new approaches to redesign IT systems or optimize performance, quality and speed of services and/or products • Set the direction for research as well as a framework for measuring innovation research outcomes | |
| | Manage people and organization | <ul style="list-style-type: none"> • Review the utilization of resources • Implement succession planning initiatives for key management positions • Review operational strategies, policies and targets across teams and projects • Oversee the development of learning roadmaps for teams and functions • Establish performance indicators to benchmark effectiveness of learning and development programs against best practices • Develop strategies for resource planning and utilization • Advise stakeholders toward reaching compromises and agreeing on expectations | |
| | Manage stakeholders | <ul style="list-style-type: none"> • Drive technology alignment with the organization's business needs • Build strategic relationships and alliances with internal and external stakeholders • Inspire stakeholders to pursue the organization's technology vision • Manage critical internal and external stakeholders' changes in needs and priorities | |

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Chief Technology Officer

| Functional Skills and Competencies | | Enabling Skills and Competencies | |
|---|---------|----------------------------------|--------------|
| Artificial Intelligence Ethics and Governance | Level 6 | Adaptability | Advanced |
| Budgeting | Level 6 | Building Inclusivity | Intermediate |
| Business Agility | Level 6 | Collaboration | Advanced |
| Business Continuity | Level 6 | Communication | Advanced |
| Business Innovation | Level 6 | Creative Thinking | Advanced |
| Business Performance Management | Level 6 | Decision Making | Advanced |
| Business Risk Management | Level 6 | Developing People | Advanced |
| Change Management | Level 6 | Digital Fluency | Advanced |
| Cyber and Data Breach Incident Management | Level 6 | Global Perspective | Advanced |
| Data Ethics | Level 6 | Influence | Advanced |
| Design Thinking Practice | Level 6 | Learning Agility | Intermediate |
| Emerging Technology Synthesis | Level 6 | Problem Solving | Advanced |
| Enterprise Architecture | Level 6 | Self-Management | Intermediate |
| Infrastructure Strategy | Level 6 | Transdisciplinary Thinking | Advanced |
| IT Governance | Level 6 | | |
| IT Standards | Level 6 | | |
| IT Strategy | Level 6 | | |
| Networking | Level 5 | | |
| Organizational Analysis | Level 6 | | |
| Organizational Design | Level 6 | | |
| Partnership Management | Level 6 | | |
| Performance Management | Level 6 | | |
| Portfolio Management | Level 6 | | |
| Product Management | Level 6 | | |
| Project Management | Level 6 | | |
| Quality Standards | Level 6 | | |
| Solution Architecture | Level 6 | | |
| Stakeholder Management | Level 6 | | |
| Strategy Planning | Level 6 | | |
| Sustainability Management | Level 6 | | |
| System Integration | Level 6 | | |
| Systems Design | Level 6 | | |
| Systems Thinking | Level 5 | | |

Skills and Competencies



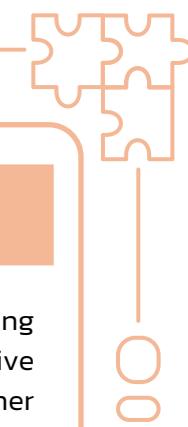
Applied Data/AI Researcher

The Applied Data/AI Researcher is responsible for supporting the development of innovative data and AI solutions. This role involves assisting in the design and implementation of data and AI algorithms and models, conducting basic research under the guidance of senior researchers, and analyzing data to derive insights. The Applied Data/AI Researcher collaborates with team members to validate findings and contribute to academic papers or internal reports. Familiarity with programming languages and statistical analysis tools is required. This role is ideal for someone beginning their career in AI research, possessing a keen interest in exploring the potential of AI and data analytics in real-world applications.



| Critical Work Functions, Key Tasks and Performance Expectations | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--|--|--|
| | Manage data collection and preparation | <ul style="list-style-type: none"> Evaluate potential biases in datasets and contribute to developing safety measures to mitigate these biases Assist in verifying the quality and appropriateness of data used in AI research projects Support the assessment of data extraction methods to ensure they align with specific research needs Participate in the exploration of new data sources and methodologies to augment the effectiveness of research initiatives | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Manage intellectual property (IP) processes and procedures | <ul style="list-style-type: none"> Conduct basic evaluations to determine the potential patentability of newly developed AI solutions Support the process of drafting and filing IP applications for AI innovations, ensuring compliance with legal requirements Contribute to IP due diligence activities and participate in analyzing the AI IP landscape to identify opportunities for new patents | |
| | Build data and AI models | <ul style="list-style-type: none"> Assist in designing and executing experiments for testing AI models under the guidance of senior researchers Contribute to the analysis of results from various AI research projects to help identify potential new areas of research Support the development of new AI models, learning from team guidance on appropriate methods and techniques Participate in the analysis and preliminary testing of AI models to ensure their accuracy and effectiveness Assist in the initial stages of developing AI solution prototypes, focusing on scalability and efficiency Aid in improving the understandability of AI algorithms by working on aspects of explainability, repeatability, and traceability | |
| | Conduct data and AI research and development | <ul style="list-style-type: none"> Assist in reviewing AI-related literature to stay informed about current trends, methods, and technologies in the field. Engage with academic communities and institutions under supervision to foster collaborative relationships. Support the planning and designing of AI research and development projects. Help in synthesizing research findings to uncover potential use cases and suggest new research directions. Participate in evaluating existing AI research methodologies and processes, identifying possible areas for refinement. Contribute to managing timelines and documentation for ongoing AI research projects. Assist in preparing AI research and development reports for presentation to senior management and stakeholders. | |

Continue to next page



Applied Data/AI Researcher

| | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|---|------------------------------------|----------------------------|----------------------------------|--|
| Artificial Intelligence Ethics and Governance | Level 3 | Collaboration | Basic | |
| Business Needs Analysis | Level 3 | Communication | Basic | |
| Computer Vision Technology | Level 4 | Creative Thinking | Basic | |
| Cyber and Data Breach Incident Management | Level 2 | Decision Making | Basic | |
| Data Analytics | Level 2 | Digital Fluency | Basic | |
| Data Ethics | Level 3 | Learning Agility | Basic | |
| Data Visualization | Level 3 | Transdisciplinary Thinking | Basic | |
| Design Thinking Practice | Level 3 | | | |
| Intelligent Reasoning | Level 4 | | | |
| Pattern Recognition Systems | Level 4 | | | |
| Research | Level 3 | | | |
| Self-Learning Systems | Level 3 | | | |
| Software Configuration | Level 2 | | | |
| Software Testing | Level 2 | | | |
| Stakeholder Management | Level 2 | | | |
| Test Planning | Level 2 | | | |
| Text Analytics and Processing | Level 4 | | | |



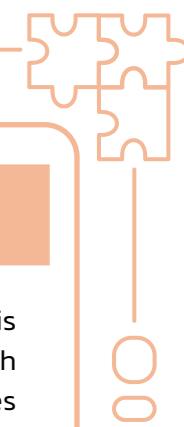
Senior Applied Data/AI Researcher

The Senior Applied Data/AI Researcher leads advanced research projects in data and AI, focusing on the development of groundbreaking methods and technologies. This role involves extensive data analysis, algorithm design, and model development. The Senior Applied Data/AI Researcher mentors junior team members, collaborates with cross-functional teams to integrate AI solutions into business processes, and contributes to strategic decision-making. They also play a key role in publishing research findings and representing the organization at industry conferences. This position requires a deep understanding of data analytics and AI, robust experience in research, and strong leadership skills.



| | Critical Work Functions | Key Tasks | Performance Expectations |
|--|--|--|--|
| | Manage data collection and preparation | <ul style="list-style-type: none"> Lead the analysis of dataset biases and implement advanced strategies to address these in research safety protocols Oversee the evaluation and validation of data quality, ensuring its optimal use in AI research and development Direct the assessment and selection of suitable data extraction methods, tailoring them to complex research requirements Innovate in identifying and leveraging novel data sources and techniques to significantly improve research outcomes | In accordance with: <ul style="list-style-type: none"> • Relevant Philippine Analytics & AI Governance Framework • Philippine National Standards on AI • Republic Act 10173: Data Privacy Act of 2012 |
| | Manage intellectual property (IP) processes and procedures | <ul style="list-style-type: none"> Lead detailed analyses on the patentability of advanced AI solutions, making recommendations based on findings Oversee the creation and submission of IP applications, ensuring robust protection for AI technologies developed Direct comprehensive IP due diligence and landscape analysis to strategically position the organization's AI innovations in the market | |
| | Build data and AI models | <ul style="list-style-type: none"> Lead the design and implementation of complex experiments to validate the efficacy of AI models Analyze insights from multiple AI research initiatives to uncover innovative research topics Mentor junior team members in developing cutting-edge AI models, advising on advanced learning and modeling methods Oversee detailed analysis, simulations, and rigorous testing of AI models to ensure their robustness and reliability Direct the development of AI solution prototypes, preparing them for large-scale implementation Enhance the clarity and accountability of AI algorithms by focusing on advanced concepts of explainability and traceability | |
| | Conduct data and AI research and development | <ul style="list-style-type: none"> Conduct in-depth reviews of AI literature to identify and leverage emerging trends and best practices. Initiate and maintain collaborative connections with academics and research institutions. Lead the planning and design of complex AI research and development projects. Analyze and synthesize research findings to identify innovative use cases and future R&D activities. Critically assess and improve AI research methodologies and processes. Oversee project plans and schedules for multiple AI research initiatives. Present detailed AI research and development outcomes to senior executives and at public forums. | |

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Senior Applied Data/AI Researcher

| Functional Skills and Competencies | | Enabling Skills and Competencies | |
|---|---------|----------------------------------|--------------|
| Artificial Intelligence Ethics and Governance | Level 3 | Adaptability | Basic |
| Business Needs Analysis | Level 4 | Building Inclusivity | Basic |
| Computer Vision Technology | Level 4 | Collaboration | Intermediate |
| Cyber and Data Breach Incident Management | Level 3 | Communication | Intermediate |
| Data Analytics | Level 3 | Creative Thinking | Basic |
| Data Ethics | Level 4 | Decision Making | Intermediate |
| Data Visualization | Level 3 | Developing People | Basic |
| Design Thinking Practice | Level 4 | Digital Fluency | Intermediate |
| Emerging Technology Synthesis | Level 3 | Influence | Basic |
| Intelligent Reasoning | Level 4 | Learning Agility | Basic |
| Learning and Development | Level 4 | Problem Solving | Basic |
| Pattern Recognition Systems | Level 4 | Self-Management | Basic |
| People and Performance Management | Level 3 | Transdisciplinary Thinking | Basic |
| Problem Management | Level 3 | | |
| Project Management | Level 3 | | |
| Research | Level 3 | | |
| Self-Learning Systems | Level 4 | | |
| Software Configuration | Level 3 | | |
| Software Testing | Level 3 | | |
| Stakeholder Management | Level 3 | | |
| Systems Thinking | Level 3 | | |
| Test Planning | Level 3 | | |
| Text Analytics and Processing | Level 4 | | |



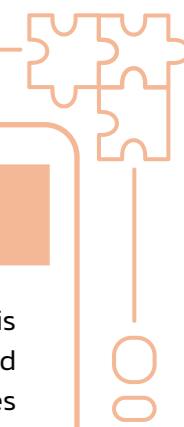
Research Manager

The Research Manager oversees the daily operations of the data and AI research team. This role involves project management, resource allocation, and setting research goals aligned with organizational objectives. The Research Manager ensures the research team adheres to deadlines and quality standards, facilitates collaboration across departments, and maintains an innovative research environment. They also review and approve research findings before publication or presentation. The Research Manager has excellent leadership skills, a strong background in AI and data analytics, and the ability to translate research outcomes into actionable business insights.



| Skills and Competencies | Critical Work Functions | Key Tasks | Performance Expectations |
|-------------------------|--|--|--|
| | Manage data collection and preparation | <ul style="list-style-type: none"> Manage the team's efforts in analyzing and mitigating dataset biases to uphold research integrity and safety Ensure the team consistently achieves high standards in data quality and relevance for AI research applications Supervise the evaluation of data extraction methods, ensuring efficiency and alignment with research objectives Guide the team in exploring and integrating new data sources and methods to enhance research productivity and insights | In accordance with: <ul style="list-style-type: none"> Relevant Philippine Analytics & AI Governance Framework Philippine National Standards on AI Republic Act 10173: Data Privacy Act of 2012 |
| | Manage intellectual property (IP) processes and procedures | <ul style="list-style-type: none"> Manage the team's efforts in assessing the patentability of AI solutions, ensuring alignment with organizational IP strategies Coordinate the development and execution of IP applications, and oversee the assignment of legal rights for AI technologies Supervise the IP due diligence process and landscape analysis, guiding the team in identifying valuable new IP opportunities | |
| | Build data and AI models | <ul style="list-style-type: none"> Coordinate the team's efforts in designing and conducting AI model testing experiments, ensuring alignment with project goals Facilitate the synthesis of insights across projects to identify promising new research directions Provide strategic guidance to researchers on the creation of innovative AI models, emphasizing state-of-the-art methods Manage the comprehensive analysis and testing of AI models, ensuring adherence to best practices and standards Lead the team in developing prototypes for AI solutions, focusing on scalability and real-world applicability Champion the enhancement of algorithm transparency in AI models, prioritizing explainability, repeatability, and traceability | |
| | Conduct data and AI research and development | <ul style="list-style-type: none"> Oversee the review process of AI literature to guide the team's focus on relevant trends and technologies Manage partnerships with academic institutions and research bodies, enhancing collaborative research efforts Coordinate and oversee the design and execution of AI research and development projects Synthesize insights from various projects to drive new research initiatives and practical applications Evaluate and refine AI research methodologies and processes within the team Ensure efficient management of project timelines and deliverables for all AI research activities Supervise the documentation and presentation of AI research outcomes to key stakeholders | |

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Research Manager

| Functional Skills and Competencies | | Enabling Skills and Competencies | |
|---|---------|----------------------------------|--------------|
| Artificial Intelligence Ethics and Governance | Level 3 | Adaptability | Intermediate |
| Business Agility | Level 4 | Building Inclusivity | Intermediate |
| Business Continuity | Level 4 | Collaboration | Intermediate |
| Business Innovation | Level 4 | Communication | Intermediate |
| Business Needs Analysis | Level 5 | Creative Thinking | Intermediate |
| Computer Vision Technology | Level 5 | Decision Making | Intermediate |
| Data Analytics | Level 4 | Developing People | Intermediate |
| Data Ethics | Level 4 | Digital Fluency | Intermediate |
| Design Thinking Practice | Level 4 | Global Perspective | Basic |
| Emerging Technology Synthesis | Level 4 | Influence | Intermediate |
| Intelligent Reasoning | Level 5 | Learning Agility | Intermediate |
| Learning and Development | Level 5 | Problem Solving | Intermediate |
| Pattern Recognition Systems | Level 5 | Self-Management | Basic |
| People and Performance Management | Level 4 | Transdisciplinary Thinking | Intermediate |
| Problem Management | Level 4 | | |
| Project Management | Level 4 | | |
| Research | Level 4 | | |
| Self-Learning Systems | Level 5 | | |
| Software Configuration | Level 4 | | |
| Software Testing | Level 4 | | |
| Stakeholder Management | Level 4 | | |
| Strategy Planning | Level 4 | | |
| Systems Thinking | Level 4 | | |
| Test Planning | Level 4 | | |
| Text Analytics and Processing | Level 5 | | |



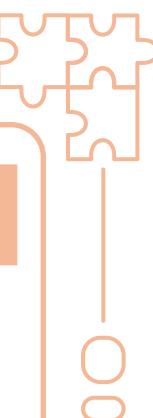
Director of Research

The Director of Research leads the organization's research strategy in AI and data analytics. This role involves setting long-term research goals, securing funding, overseeing major projects, and maintaining relationships with academic and industry partners. The Director of Research ensures that research activities align with the organization's vision and market trends. They are responsible for building and maintaining a high-performing research team and fostering a culture of innovation. The position requires extensive experience in data analytics and AI research, strategic planning skills, and the ability to drive research initiatives that have a significant impact on the organization.



| Skills and Competencies | Critical Work Functions | Key Tasks | Performance Expectations |
|-------------------------|--|---|--|
| | Manage data collection and preparation | <ul style="list-style-type: none"> Strategize and oversee the organization-wide approach to identifying and addressing biases in datasets Lead the quality assurance of data across all research projects, setting standards for data suitability in AI research Champion the adoption of innovative data extraction methods that align with the organization's strategic research goals Spearhead initiatives to explore and capitalize on emerging data sources and techniques, driving forward research advancements | In accordance with: <ul style="list-style-type: none"> • Relevant Philippine Analytics & AI Governance Framework • Philippine National Standards on AI • Republic Act 10173: Data Privacy Act of 2012 |
| | Manage intellectual property (IP) processes and procedures | <ul style="list-style-type: none"> Strategize and direct organization-wide initiatives to analyze and secure patents for AI solutions Lead the planning and implementation of comprehensive IP strategies, encompassing creation, application, and assignment processes Champion the execution of extensive IP due diligence and landscape analysis to identify and capitalize on strategic IP opportunities | |
| | Build data and AI models | <ul style="list-style-type: none"> Strategize and oversee the design of experiments for AI model testing across various research teams Lead the integration of insights from diverse AI research efforts to define new and impactful research agendas Set the direction for the development of sophisticated AI models, ensuring the adoption of cutting-edge learning and modeling techniques Guide the comprehensive analysis and validation of AI models, ensuring they meet the highest standards of performance and accuracy Oversee the advanced development of AI solution prototypes, preparing them for efficient and effective large-scale deployment Ensure the transparency and accountability of AI algorithms across all projects, emphasizing advanced principles of explainability and traceability | |
| | Conduct data and AI research and development | <ul style="list-style-type: none"> Strategically guide the review of AI literature to inform the organization's research direction. Lead initiatives to establish and strengthen relationships with leading academics and research institutions. Direct the overall planning and execution of major AI research and development projects. Integrate research findings across projects to identify new opportunities for innovative R&D activities. Oversee the evaluation and enhancement of AI research methodologies and processes at an organizational level. Manage the overall project portfolio, ensuring timely completion of AI research initiatives. Represent the organization in communicating AI research and development achievements to external stakeholders and at industry events. | |

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Director of Research

| | Functional Skills and Competencies | | Enabling Skills and Competencies | |
|-------------------------|---|---------|----------------------------------|--------------|
| Skills and Competencies | Artificial Intelligence Ethics and Governance | Level 3 | Adaptability | Intermediate |
| | Budgeting | Level 5 | Building Inclusivity | Intermediate |
| | Business Agility | Level 5 | Collaboration | Advanced |
| | Business Continuity | Level 5 | Communication | Advanced |
| | Business Innovation | Level 5 | Creative Thinking | Intermediate |
| | Business Needs Analysis | Level 5 | Decision Making | Advanced |
| | Computer Vision Technology | Level 5 | Developing People | Advanced |
| | Data Analytics | Level 5 | Digital Fluency | Advanced |
| | Data Ethics | Level 4 | Global Perspective | Intermediate |
| | Design Thinking Practice | Level 5 | Influence | Intermediate |
| | Emerging Technology Synthesis | Level 5 | Learning Agility | Intermediate |
| | Intelligent Reasoning | Level 5 | Problem Solving | Intermediate |
| | Learning and Development | Level 6 | Self-Management | Intermediate |
| | Pattern Recognition Systems | Level 5 | Transdisciplinary Thinking | Intermediate |
| | People and Performance Management | Level 5 | | |
| | Problem Management | Level 5 | | |
| | Project Management | Level 5 | | |
| | Research | Level 4 | | |
| | Self-Learning Systems | Level 5 | | |
| | Stakeholder Management | Level 5 | | |
| | Strategy Planning | Level 5 | | |
| | Systems Thinking | Level 4 | | |
| | Text Analytics and Processing | Level 6 | | |



Chief Scientific Officer

The Chief Scientific Officer is the top executive responsible for driving the organization's scientific vision and strategy in AI and data analytics. The Chief Scientific Officer shapes the research agenda, oversees the integration of data and AI technologies across the organization, and advises on the ethical implications of data and AI deployment. They represent the organization in scientific, regulatory, and industry forums, building the organization's reputation as a leader in data and AI innovation. The Chief Scientific Officer collaborates with other C-level executives to align scientific goals with business objectives. This role requires a distinguished career in data and AI research, exceptional leadership qualities, and a visionary approach to leveraging data and AI for organizational growth and societal benefit.



| | Critical Work Functions | Key Tasks | Performance Expectations |
|---|--|--|--|
| Critical Work Functions, Key Tasks and Performance Expectations | Manage data collection and preparation | <ul style="list-style-type: none"> Set the vision and policies for managing dataset biases, ensuring ethical and effective deployment of AI solutions Establish organizational standards for data quality and suitability, aligning them with overarching scientific and business goals Define the strategic direction for data extraction methodologies, ensuring they support high-level research and development aims Lead the charge in identifying and integrating cutting-edge data sources and methods to keep the organization at the forefront of AI research | In accordance with: <ul style="list-style-type: none"> • Relevant Philippine Analytics & AI Governance Framework • Philippine National Standards on AI • Republic Act 10173: Data Privacy Act of 2012 |
| | Manage intellectual property (IP) processes and procedures | <ul style="list-style-type: none"> Establish high-level policies and guidelines for analyzing the patentability of AI solutions across the organization Set the direction for the organization's IP creation, application, and management, ensuring alignment with corporate objectives Oversee the organization's IP due diligence and landscape analysis, shaping the strategic approach to securing and leveraging IP in AI | |
| | Build data and AI models | <ul style="list-style-type: none"> Define the organizational vision for experimenting and testing AI models, ensuring alignment with the company's strategic goals Lead the organization-wide initiative to draw actionable insights from AI research, paving the way for groundbreaking new research areas Establish high-level guidelines for the development of innovative AI models, focusing on best-in-class methodologies and technologies Oversee the strategic analysis and testing processes of AI models, ensuring they are industry-leading in terms of performance and reliability Direct the prototype development of AI solutions for large-scale deployment, emphasizing scalability, efficiency, and market readiness Champion the advancement of algorithm transparency in AI, setting the standard for explainability, repeatability, and traceability across the industry | |
| | Conduct data and AI research and development | <ul style="list-style-type: none"> Define the strategic direction for reviewing AI literature, aligning it with the organization's long-term goals Foster high-level collaborations with academia and research institutions to advance organizational research capabilities Set the vision for the planning and development of groundbreaking AI research and development projects Lead the synthesis of research across the organization to identify cutting-edge use cases and direct future R&D strategies Establish and monitor best practices for AI research methodologies and process improvements Oversee the management of the entire AI research project lifecycle, ensuring alignment with business objectives Present key AI research and development achievements to senior executives, stakeholders, and at prestigious public forums, shaping the organization's reputation in the field | |

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Chief Scientific Officer

| | Functional Skills and Competencies | | Enabling Skills and Competencies |
|-------------------------|---|---------|----------------------------------|
| Skills and Competencies | Artificial Intelligence Ethics and Governance | Level 6 | Adaptability |
| | Budgeting | Level 6 | Building Inclusivity |
| | Business Agility | Level 6 | Collaboration |
| | Business Continuity | Level 6 | Communication |
| | Business Innovation | Level 6 | Creative Thinking |
| | Business Performance Management | Level 6 | Decision Making |
| | Cyber and Data Breach Incident Management | Level 6 | Developing People |
| | Data Ethics | Level 6 | Digital Fluency |
| | Design Thinking Practice | Level 6 | Global Perspective |
| | Emerging Technology Synthesis | Level 6 | Influence |
| | Enterprise Architecture | Level 6 | Learning Agility |
| | Infrastructure Strategy | Level 6 | Problem Solving |
| | IT Strategy | Level 6 | Self-Management |
| | Organizational Analysis | Level 6 | Transdisciplinary Thinking |
| | Organizational Design | Level 6 | |
| | Project Management | Level 6 | |
| | Quality Standards | Level 6 | |
| | Research | Level 5 | |
| | Stakeholder Management | Level 6 | |
| | Strategy Planning | Level 6 | |
| | Sustainability Management | Level 6 | |
| | Systems Thinking | Level 5 | |



The Career Path in Data/AI Education

Highlighting essential findings from the 2022 Philippines Data Analytics Sector Labor Market Intelligence Report, two critical needs were identified: the expansion of specialized courses in analytics [and AI], and the increase in qualified educators and trainers in these fields.

Educators and trainers thus play a pivotal role in realizing the vision of the Philippine Skills Framework for Analytics & AI (PSF-AAI). By integrating AI tools and methodologies into their teaching strategies, they can foster an adaptive learning environment that prepares students and learners for the demands of the analytics and AI sectors. This aligns with the Framework's goal of equipping the Filipino workforce with the necessary skills and competencies for the future, emphasizing the importance of educators and trainers in shaping a skilled, adaptable, and innovative Filipino workforce.

Currently, the PSF-AAI Data/AI Education career path is integrated with the Philippine Skills Framework for Human Capital Development, focusing on the Learning and Organization Development track. This serves as a guide for training providers and corporate trainers. Additional work with academic institutions and organizations is necessary to further tailor the framework for academic settings, ensuring educators are well-prepared to fulfill the PSF-AAI objectives.





Overview of Functional Skills & Competencies

| FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | |
|---------------------------------|-------------------------------|---|--------------------|-------------------|-------------------|-------------------|-------------------|---------|
| | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 |
| Analytical Thinking | 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 | | AAI-ATH1-3001-1.1 | AAI-ATH1-4001-1.1 | AAI-ATH1-5001-1.1 | | |
| | 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 | | | AAI-BPM1-4001-1.1 | AAI-BPM1-5001-1.1 | AAI-BPM1-6001-1.1 | |
| | 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. | | | AAI-BPM1-4002-1.1 | AAI-BPM1-5002-1.1 | AAI-BPM1-6002-1.1 | |
| Business and Project Management | 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 | AAI-BPM1-2003-1.1 | AAI-BPM1-3003-1.1 | AAI-BPM1-4003-1.1 | AAI-BPM1-5003-1.1 | | |
| | Business Innovation | Identify and evaluate digitization 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 | | | AAI-BPM1-4004-1.1 | AAI-BPM1-5004-1.1 | AAI-BPM1-6004-1.1 | |
| | 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 | | AAI-BPM1-3005-1.1 | AAI-BPM1-4005-1.1 | AAI-BPM1-5005-1.1 | | |
| | 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, minimize their impact or effectively manage such business risks | | AAI-BPM1-3006-1.1 | AAI-BPM1-4006-1.1 | AAI-BPM1-5006-1.1 | AAI-BPM1-6006-1.1 | |

| FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | |
|---------------------------------|--------------------------------------|--|--------------------|---------|---------|---------|-------------------|-------------------|
| | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 |
| Business and Project Management | Change Management | Plan and systematic execution of processes to facilitate the transition of individuals, teams and organizations 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 maximize adoption. | | | | | AAI-BPM1-3007-1.1 | AAI-BPM1-4007-1.1 |
| | Crisis Management | Develop and implement crisis management plans for organizational preparedness of disruptive events within the broader context of business continuity management | | | | | AAI-BPM1-3008-1.1 | AAI-BPM1-4008-1.1 |
| | 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 organization's disaster recovery plan and processes. | | | | | AAI-BPM1-4009-1.1 | AAI-BPM1-5009-1.1 |
| | 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 | | | | | AAI-BPM1-3010-1.1 | AAI-BPM1-4010-1.1 |
| | Manpower Planning | Estimate and fulfil manpower requirements to achieve business goals and targets | | | | | AAI-BPM1-3011-1.1 | AAI-BPM1-4011-1.1 |
| | 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 utilization of IT resources and/or assets and any changes to IT processes or services offered | | | | | AAI-BPM1-4012-1.1 | AAI-BPM1-5012-1.1 |
| | Process Improvement and Optimization | Establish systems to discover critical processes and maximize these processes to achieve maximum efficiency in accordance with organization procedures | | | | | AAI-BPM1-3013-1.1 | AAI-BPM1-4013-1.1 |
| | 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 conceptualization 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. | | | | | AAI-BPM1-3014-1.1 | AAI-BPM1-4014-1.1 |

Functional Skills and Competencies (FSC)



| FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | | FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | | |
|---------------------------------|--------------------------------|---|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------------------|----------------------------|--|--------------------|---------|---------|-------------------|-------------------|-------------------|-------------------|
| | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | |
| Business and Project Management | Project Feasibility Assessment | Assess the business environment and organizational capabilities to evaluate and determine the feasibility of a project | | | AAI-BPM1-4015-1.1 | AAI-BPM1-5015-1.1 | | | Design and Architecture | Enterprise Architecture | Operationalize 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 prioritization of market trends, evaluation of alternative strategies, as well as the strategic evaluation and utilization of enterprise capability and technology to support business requirements | | | | | AAI-DAR1-4003-1.1 | AAI-DAR1-5003-1.1 | AAI-DAR1-6003-1.1 |
| | Project Management | Perform planning, organization, monitoring and control of all aspects of an IT program and the strategic utilization 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 | | AAI-BPM1-3016-1.1 | AAI-BPM1-4016-1.1 | AAI-BPM1-5016-1.1 | AAI-BPM1-6016-1.1 | | | Organizational Design | Develop and facilitate the implementation of organizational design to ensure its effectiveness and alignment with stakeholders' priorities | | | | AAI-DAR1-4004-1.1 | AAI-DAR1-5004-1.1 | AAI-DAR1-6004-1.1 | |
| | Strategy Planning | Develop organisational strategies and policies by analysing the impact of internal and external influencing factors and seeking consultation from relevant stakeholders | | | AAI-BPM1-4017-1.1 | AAI-BPM1-5017-1.1 | AAI-BPM1-6017-1.1 | | | 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 | | | | AAI-DAR1-3005-1.1 | AAI-DAR1-4005-1.1 | AAI-DAR1-5005-1.1 | |
| | 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. | | | AAI-BPM1-4018-1.1 | AAI-BPM1-5018-1.1 | AAI-BPM1-6018-1.1 | | | 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 | | | | AAI-DAR1-3006-1.1 | AAI-DAR1-4006-1.1 | AAI-DAR1-5006-1.1 | AAI-DAR1-6006-1.1 |
| | | | AAI-BDE1-3001-1.1 | AAI-BDE1-4001-1.1 | AAI-BDE1-5001-1.1 | AAI-BDE1-6001-1.1 | | | | 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 | | | | AAI-DAR1-4007-1.1 | AAI-DAR1-5007-1.1 | AAI-DAR1-6007-1.1 | |
| Business Development | Business Negotiation | Conduct negotiations to establish win-win outcomes for the organization | | | | | | | | 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 | | | | AAI-DAR1-4008-1.1 | AAI-DAR1-5008-1.1 | AAI-DAR1-6008-1.1 | |
| | Data Analytics | Implementing data analytics within the organization to generate business insights and intelligence through the use of statistical and computational techniques and tools, algorithms, predictive data modelling and data visualization. | AAI-BDE1-2002-1.1 | AAI-BDE1-3002-1.1 | AAI-BDE1-4002-1.1 | AAI-BDE1-5002-1.1 | | | | | | | | | | | | |
| Business Finance | Networking | Identifying, evaluating and strategizing to seize new business opportunities to grow the organization's business operations. | | AAI-BDE1-3003-1.1 | AAI-BDE1-4003-1.1 | AAI-BDE1-5003-1.1 | | | | 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 | | | | AAI-DIM1-3001-1.1 | AAI-DIM1-4001-1.1 | AAI-DIM1-5001-1.1 | AAI-DIM1-6001-1.1 |
| | Budgeting | Preparing organisational budgets to support short- and long-term business plans through forecasting, allocation and financial policy setting. | | | AAI-BFI1-3001-1.1 | AAI-BFI1-4001-1.1 | AAI-BFI1-5001-1.1 | AAI-BFI1-6001-1.1 | | | | | | | | | | |
| Design and Architecture | 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 | | | AAI-DARI-3001-1.1 | AAI-DARI-4001-1.1 | AAI-DARI-5001-1.1 | | Development and Implementation | | | | | | | | | |
| | Design Thinking Practice | Manage design thinking methodologies and processes to solve specific challenges for the organization, and guide stakeholders through the phases of inspiration, empathy, ideation and implementation | | | AAI-DARI-3002-1.1 | AAI-DARI-4002-1.1 | AAI-DARI-5002-1.1 | AAI-DARI-6002-1.1 | | | | | | | | | | |



| FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | | FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | | |
|--------------------------------|--|--|--|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------------------|-------------------------------|--|--------------------|---------|---------|-------------------|-------------------|-------------------|-------------------|
| | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | |
| Development and Implementation | 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. | | | AAI-DIM1-3002-1.1 | AAI-DIM1-4002-1.1 | AAI-DIM1-5002-1.1 | | Development and Implementation | 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 | | | | AAI-DIM1-4011-1.1 | AAI-DIM1-5011-1.1 | | |
| | 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 | | | AAI-DIM1-3003-1.1 | AAI-DIM1-4003-1.1 | AAI-DIM1-5003-1.1 | | | Pattern Recognition Systems | Develop and apply intelligent pattern recognition systems and techniques to analyze data and derive useful hidden patterns to solve problems | | | | AAI-DIM1-4012-1.1 | AAI-DIM1-5012-1.1 | | |
| | Cloud Computing | Implement cloud solutions to enhance business performance and security of IT systems | | | AAI-DIM1-3004-1.1 | AAI-DIM1-4004-1.1 | AAI-DIM1-5004-1.1 | AAI-DIM1-6004-1.1 | | Research | Research on a concept or idea to provide inputs for content development | | | | AAI-DIM1-3013-1.1 | AAI-DIM1-4013-1.1 | AAI-DIM1-5013-1.1 | |
| | 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 | | | AAI-DIM1-3005-1.1 | AAI-DIM1-4005-1.1 | AAI-DIM1-5005-1.1 | | | Self-Learning Systems | Design and develop self-learning systems using reinforcement learning and evolutionary learning techniques | | | | AAI-DIM1-3014-1.1 | AAI-DIM1-4014-1.1 | AAI-DIM1-5014-1.1 | |
| | Computer Vision Technology | Develop and deploy vision analytics algorithm and spatial sensing and/or reasoning systems | | | | AAI-DIM1-4006-1.1 | AAI-DIM1-5006-1.1 | | | 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 | | | | AAI-DIM1-2015-1.1 | AAI-DIM1-3015-1.1 | AAI-DIM1-4015-1.1 | |
| | 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 | AAI-DIM1-1007-1.1 | AAI-DIM1-2007-1.1 | AAI-DIM1-3007-1.1 | AAI-DIM1-4007-1.1 | | | | 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 | | | | AAI-DIM1-2016-1.1 | AAI-DIM1-3016-1.1 | AAI-DIM1-4016-1.1 | |
| | 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 | | | AAI-DIM1-3008-1.1 | AAI-DIM1-4008-1.1 | AAI-DIM1-5008-1.1 | | | 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 | | | | AAI-DIM1-3017-1.1 | AAI-DIM1-4017-1.1 | AAI-DIM1-5017-1.1 | AAI-DIM1-6017-1.1 |
| | 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 analyzed according to business requirements | | | AAI-DIM1-2009-1.1 | AAI-DIM1-3009-1.1 | AAI-DIM1-4009-1.1 | AAI-DIM1-5009-1.1 | | 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 | | | | AAI-DIM1-2018-1.1 | AAI-DIM1-3018-1.1 | AAI-DIM1-4018-1.1 | AAI-DIM1-5018-1.1 |
| | Data Visualization and Storytelling | 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 | | | AAI-DIM1-3010-1.1 | AAI-DIM1-4010-1.1 | AAI-DIM1-5010-1.1 | | | Text Analytics and Processing | Identify, extract and analyse text data using text analytics solutions to discover themes, patterns and trends | | | | AAI-DIM1-4019-1.1 | AAI-DIM1-5019-1.1 | AAI-DIM1-6019-1.1 | |
| | General Management | Business Performance Management | Implement organizational performance systems to meet business plans and objectives by establishing performance indicators, tracking progress and addressing gaps | | | | | | | | | | | | AAI-GMA1-3001-1.1 | AAI-GMA1-4001-1.1 | AAI-GMA1-5001-1.1 | AAI-GMA1-6001-1.1 |



| FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | | FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | | |
|-----------------------------|---|---|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------------------------|---|---|--------------------|---------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | |
| Governance and Compliance | 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 | | | AAI-GCO1-3001-1.1 | AAI-GCO1-4001-1.1 | AAI-GCO1-5001-1.1 | | Operations and User Support | Data Migration | Plan and perform activities to migrate data between computer storage types or file formats | | | AAI-OUS1-3002-1.1 | AAI-OUS1-4002-1.1 | | | |
| | 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 prioritization 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 | | | AAI-GCO1-4002-1.1 | AAI-GCO1-5002-1.1 | AAI-GCO1-6002-1.1 | | | Database Administration | Perform Installation, coordination and upgrading of databases and database servers, performance monitoring and troubleshooting. This includes monitoring user access to database and optimization of database performance, planning for backup and recovery, archived data maintenance and reporting | | | AAI-OUS1-2003-1.1 | AAI-OUS1-3003-1.1 | AAI-OUS1-4003-1.1 | AAI-OUS1-5003-1.1 | |
| | Data Ethics | Apply legal and ethical principles in the collection, use, storage and disposal of data | | | AAI-GCO1-3003-1.1 | AAI-GCO1-4003-1.1 | AAI-GCO1-5003-1.1 | AAI-GCO1-6003-1.1 | | Performance Management | Evaluate and optimize network, system and/or software performance against user and business requirements. This involves the introduction and utilization of new tools and mechanisms to gather, analyze and fully optimize 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 | | | AAI-OUS1-4004-1.1 | AAI-OUS1-5004-1.1 | AAI-OUS1-6004-1.1 | | |
| | Data Governance | Develop and implement guidelines, laws, and regulations across the organization 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 | | | AAI-GCO1-4004-1.1 | AAI-GCO1-5004-1.1 | AAI-GCO1-6004-1.1 | | | Problem Management | Manage the lifecycle of problems to prevent problems and incidents from occurring, eliminate recurring incidents and minimize impact of unavoidable incidents | | | AAI-OUS1-3005-1.1 | AAI-OUS1-4005-1.1 | AAI-OUS1-5005-1.1 | | |
| | Data Protection Management | Develop and implement a Data Protection Management Program to comply with the Personal Data Protection Act 2012 | | | AAI-GCO1-3005-1.1 | AAI-GCO1-4005-1.1 | AAI-GCO1-5005-1.1 | | People Development | Learning and Development | Manage employees' learning and development activities to maximize employee potential and capabilities to contribute to the organization | | | AAI-PDE1-4001-1.1 | AAI-PDE1-5001-1.1 | AAI-PDE1-6001-1.1 | | |
| | Data Sharing | Assess the value of data to achieve a competitive advantage and business objectives | | | AAI-GCO1-3006-1.1 | AAI-GCO1-4006-1.1 | AAI-GCO1-5006-1.1 | | | People and Performance Management | Establish organization-wide performance management strategies to facilitate performance management, including identification of key performance indicators and employee performance assessment | | | AAI-PDE1-3002-1.1 | AAI-PDE1-4002-1.1 | AAI-PDE1-5002-1.1 | | |
| | IT Governance | Set and monitor IT infrastructure, information, digital services and associated technology. This involves developing policies and practices to govern the organization'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 | | | AAI-GCO1-4007-1.1 | AAI-GCO1-5007-1.1 | AAI-GCO1-6007-1.1 | | Project Management | 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 programs 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 | | | AAI-PDE1-2003-1.1 | AAI-PDE1-3003-1.1 | AAI-PDE1-4003-1.1 | AAI-PDE1-5003-1.1 | |
| | 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 organization 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 organization | | | AAI-GCO1-4008-1.1 | AAI-GCO1-5008-1.1 | AAI-GCO1-6008-1.1 | | | Risk Management, Governance and Regulatory Compliance | Establish and drive Artificial Intelligence Ethics and Governance frameworks to ensure compliance, manage risks and commercial benefits in product design | | | AAI-RMG1-2001-1.1 | AAI-RMG1-3001-1.1 | AAI-RMG1-4001-1.1 | AAI-RMG1-5001-1.1 | AAI-RMG1-6001-1.1 |
| Operations and User Support | 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. | AAI-OUS1-2001-1.1 | AAI-OUS1-3001-1.1 | AAI-OUS1-4001-1.1 | AAI-OUS1-5001-1.1 | AAI-OUS1-6001-1.1 | | Sales and Marketing | 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 | | | AAI-SMA1-2001-1.1 | AAI-SMA1-3001-1.1 | AAI-SMA1-4001-1.1 | AAI-SMA1-5001-1.1 | |



| FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | | FSC Category | FSC Title | FSC Description | Proficiency Levels | | | | | | | | |
|--------------------------------------|---------------------------------|---|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------|-------------------------|---|--|---------|---------|---------|---------|-------------------|-------------------|-------------------|--|
| | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | | | | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 | | | |
| Stakeholder and Contract Management | Partnership Management | Build cooperative partnerships with inter-organizational and external stakeholders and leveraging of relations to meet organizational objectives. This includes coordination and strategizing with internal and external stakeholders through close cooperation and exchange of information to solve problems | | | AAI-SCM1-3001-1.1 | AAI-SCM1-4001-1.1 | AAI-SCM1-5001-1.1 | AAI-SCM1-6001-1.1 | | 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 programs with the strategy to optimize the business value from IT | | | | | | AAI-SPII-4003-1.1 | AAI-SPII-5003-1.1 | AAI-SPII-6003-1.1 | |
| | 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 | | AAI-SCM1-2002-1.1 | AAI-SCM1-3002-1.1 | AAI-SCM1-4002-1.1 | AAI-SCM1-5002-1.1 | AAI-SCM1-6002-1.1 | | | | | | | | | AAI-SPII-4004-1.1 | AAI-SPII-5004-1.1 | AAI-SPII-6004-1.1 | |
| Strategy and Architecture | Business Process Re-engineering | Analyze business processes and workflows within the organization and identification of new approaches to completely redesign business activities or optimize 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 | | | AAI-SAR1-4001-1.1 | AAI-SAR1-5001-1.1 | | | | Organizational Analysis | Evaluate factors that can affect the organization's performance as well as strategically assessing the organization's own resources and potential for improvement | | | | | | AAI-SPII-4004-1.1 | AAI-SPII-5004-1.1 | AAI-SPII-6004-1.1 | |
| | 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 | | | AAI-SAR1-4002-1.1 | AAI-SAR1-5002-1.1 | AAI-SAR1-6002-1.1 | | | | | | | | | | AAI-SPII-3005-1.1 | AAI-SPII-4005-1.1 | | |
| Strategy Planning and Implementation | Data Strategy | Develop a robust and coherent data strategy and support architectures, policies, practices and procedures that enable the organization to manage and utilize data in an effective manner. This includes introduction of innovative ways of organizing, managing and integrating the data of the organization 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 | | | | AAI-SPII-4001-1.1 | AAI-SPII-5001-1.1 | AAI-SPII-6001-1.1 | | | Strategy Implementation | Execute and implement operational and tactical-level action plans in alignment with the organisation's business strategies | | | | | | AAI-SPII-3005-1.1 | AAI-SPII-4005-1.1 | |
| | Infrastructure Strategy | Develop a robust strategy and plan for defining and managing a future-ready IT infrastructure, optimizing its capacity, availability and synchronization to enable an organization'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 | | | | AAI-SPII-4002-1.1 | AAI-SPII-5002-1.1 | AAI-SPII-6002-1.1 | | | | | | | | | | AAI-SPII-3005-1.1 | AAI-SPII-4005-1.1 | |

FSC Proficiency Level Descriptors

| Proficiency Level | Knowledge and Abilities | Autonomy and Complexity | Responsibility |
|-------------------|---|--|--|
| | Required to support work as described under Responsibility, Autonomy and Complexity | Degree of decision-making and degree of difficulty of situations and tasks | Degree of supervision and accountability |
| 1 | Knowledge and skills that are manual or concrete or practical and/or operational in focus. | Applied in activities that are set in a limited range of highly familiar and predictable contexts; involve straightforward, routine issues which are addressed by following set rules, guidelines or procedures. | In conditions where there is very close support, guidance or supervision, minimum judgment or discretion is needed. |
| 2 | Knowledge and skills that are manual, practical and/or operational in focus with a variety of options. | Applied in activities that are set in a range of familiar and predictable contexts; involve routine issues which are identified and addressed by selecting from and following a number of set rules, guidelines or procedures. | In conditions where there is substantial support, guidance or supervision, limited judgment or discretion is needed. |
| 3 | Knowledge and skills that are a balance of theoretical and/or technical and practical. Work involves understanding the work process, contributing to problem solving, and making decisions to determine the process, equipment, and materials to be used. | Applied in activities that are set in contexts with some unfamiliar or unpredictable aspects; involve routine and non-routine issues which are identified and addressed by interpreting and/or applying established guidelines or procedures with some variations. | Application at this level may involve individual responsibility or autonomy, and/ or may involve some responsibility for others. Participation in teams including team or group coordination may be involved. |
| 4 | Knowledge and skills that are mainly theoretical and/or abstract with significant depth in one or more areas; contributing to technical solutions of a non-routine or contingency nature; evaluation and analysis of current practices and development of new criteria and procedures. | Applied in activities that are set in a range of contexts, most of which involve a number of unfamiliar and/ or unpredictable aspects; involve largely non-routine issues which are addressed using guidelines or procedures that require interpretation and/ or adaptation. | Work involves some leadership and guidance when organizing activities of self and others. |
| 5 | Knowledge and skills that are mainly theoretical and/or abstract with significant depth in some areas together with wide-ranging, specialized technical, creative and conceptual skills. Perform work activities demonstrating breadth, depth and complexity in the planning and initiation of alternative approaches to skills and knowledge applications across a broad range of technical and/or management requirements, evaluation and coordination. | Applied in activities that are supervisory, complex and non-routine which require an extensive interpretation and/or adaptation/ innovation. | In conditions where there is broad guidance and direction, where judgment is required in planning and selecting appropriate equipment, services and techniques for self and others. Undertake work involving participation in the development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organizing others. |
| 6 | Demonstrated advanced knowledge and skills in a specialized or multi-disciplinary field of study for professional practice, self-directed research and/or lifelong learning. | Applied in professional/creative work or research that requires self-direction and/ or leadership in a specialized or multi-disciplinary professional work/research. | High substantial degree of independence that involves exercise of leadership and initiative individual work or in teams of multi-disciplinary field. |

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|------------------------------------|---------|---------|---|---|---|---|
| FSC Code | | | AAI-DIM1-3001-1.1 | AAI-DIM1-4001-1.1 | AAI-DIM1-5001-1.1 | AAI-DIM1-6001-1.1 |
| FSC Proficiency Description | | | Adopt Agile software development methodologies to develop, improve and deploy software applications | Plan Agile software development processes for software applications development | Lead Agile software development processes and ensure end-to-end management of processes for seamless development, deployment and delivery of software applications | Establish the organization's policies, standards and guidelines for Agile software development to drive adoption of the Agile methodologies and its practices |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Types of software development tools and methodologies in Agile setting • Standards and protocols in software development • Agile practices and processes for software development • Values and principles of Agile methodologies • Syntax and structures of commonly-used programming languages and their respective Application Programming Interfaces (API) • Type of tools and techniques required for programming • Software tests and processes for executing unit testing • Debugging tools and techniques | <ul style="list-style-type: none"> • Types of Agile methodologies, practices and processes for software development • Long-term and immediate objectives of software in the organization • Process of developing effective Agile software development approaches and policies • Continuous integration and continuous deployment (CI/CD) strategies and protocols • Intervention strategies and protocols for process change • Collaboration management processes and strategies between development team and end users | <ul style="list-style-type: none"> • Resistance management strategies • Objectives of Agile software development in the organization's and customer's context • Industry best practices in Agile software development • Models of team development • Types of team management strategies | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|--|---------|---|--|--|---|
| Skills Application | | | <ul style="list-style-type: none"> Schedule Agile meetings with relevant stakeholders for software development and deployment Organize daily briefings for the Agile software development team to provide clarity of immediate tasks and goals Re-use developed components to streamline the software development process Suggest new software components or features to improve the software as per change requirements Merge code change or branch to code repository Suggest specific development areas and actionable feedback for the Agile software development team Facilitate feedback sessions to improve Agile team performance in software development Identify repetitive and routine tasks in the software development process that can be automated | <ul style="list-style-type: none"> Develop Agile software development plans to guide the development of software Determine software testing techniques and tools for implementation Evaluate test results against desired performance and usability outcomes Manage iterations and changes to software in the development process to enhance software functionality and usability Analyze software issues, errors or problems encountered, and determine suitable debugging tools and techniques Develop plans for reconfiguration, integration, removal or addition of software components Address impediments and issues regarding the development of software in an Agile team setting Manage the integration of code changes or branches to master code repository Assess the conduct of Agile practices against established Agile processes and standards Rectify repetitive and routine tasks to streamline the software development process | <ul style="list-style-type: none"> Establish implementation plans to transition teams to Agile software development frameworks, processes and standards Develop processes, standards and requirements for Agile software development Establish roles and responsibilities for team members in an Agile software development setting Evaluate Agile tools and software for adoption in developing software Evaluate implications of new and emerging trends on software development in an Agile setting Lead the end-to-end development of software in an Agile setting Evaluate feasibility of software development at each stage of the software lifecycle Plan integration and deployment strategies Evaluate performance of automated activities in the software development process for improvement | <ul style="list-style-type: none"> Establish the organization's Agile software development frameworks, processes and standards Establish organizational assessment tools to determine readiness and maturity of software development teams to transition into an Agile setting Establish the purpose, mindset and functions of individuals in an Agile software development team Ensure training in Agile methodologies and practices is planned for and conducted to implement Agile software development Endorse recommendations to improve the overall functionality and usability of the software, against cost, efficiency and viability considerations |
| Range of Application | Agile methodologies and frameworks may include but not limited to: | | | | | |
| | <ul style="list-style-type: none"> Agile Scrum Methodology Lean or Agile Software Development Kanban Extreme Programming (XP) Crystal Dynamic Systems Development Method (DSDM) Native / Mobile application development Web application development Desktop application development Augmented reality application development Virtual reality / context-aware application development Game development | | | | | |

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 behavior 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.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|--|---------|
| FSC Code | | | AAI-DIMI-3002-1.1 | AAI-DIMI-4002-1.1 | AAI-DIMI-5002-1.1 | |
| FSC Proficiency Description | | | Develop basic applications with secure features, run routine application tests, and conduct debugging to resolve errors | Plan the application development process, program applications and secure features, applying suitable debugging techniques to resolve complex errors | Lead large-scale or business-critical application development projects and explore the incorporation of analytics and advanced capabilities to enhance the application | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> Application development tools and methodologies Syntax and structures of commonly-used programming languages and their respective Application Programming Interfaces (API) Clean coding methods and best practices Tools and techniques required for performing coding and/or programming Organizational standards in application development and documentation Process of embedding user interface templates Software tests and process for executing unit testing Application development standards Commonly-encountered application errors Basic debugging tools and techniques Security threats and vulnerabilities facing software and applications Functional requirements of security features Virtual machines and containerization of application code set-up for consistent deployment and utilization | <ul style="list-style-type: none"> Software development life cycle models for applications Broad range of application development frameworks, tools and methodologies, and their various uses A range of programming languages and effectiveness in different contexts Code refactoring techniques and best practices Types of software or application testing techniques, and pros and cons of various tests Internal and external quality, safety and security standards or benchmarks in application development Quality assurance practices for application development review Range of tests and testing techniques for applications Multiple debugging techniques and tools and suitability for different contexts Feasibility analysis for reconfiguration, integration or portability of applications Emerging security threats and impact on software and applications Evaluation guidelines for software and applications security Types of security and secure features for software and applications | <ul style="list-style-type: none"> Long term vision and immediate objectives of the application Key characteristics, pros and cons of different application development methodologies New and emerging trends in application development Advanced programming languages and tools, and their uses in different contexts for different application features Applicability and reusability of externally developed codes and components Relative criticality or importance of different application components or properties Various debugging processes and suitability for different contexts Feasibility analysis for incorporating new, complex or advanced features or capabilities Measures of software complexity Industry best practices in secure software and applications development New and emerging secure software and applications development techniques, tools and approaches New and emerging techniques for seamless software deployment | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|--|--|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> Develop and/or program simple applications or components according to agreed specifications Write codes that are clean, testable and maintainable Re-use externally developed components in creation of applications Identify possible security features required to address potential security risks and vulnerabilities Embed user interface templates into applications according to design guidelines and specifications Run routine software tests to identify defects, errors and/or security vulnerabilities Perform unit testing of each unit of the codes to ensure that the code works according to application requirements Apply basic debugging tools and techniques to reproduce, simplify and resolve application errors or problems Make simple revisions and modifications to existing application Add new application components or features, according to endorsed recommendations Document the internal design of the application for future maintenance and enhancement Write application programming interfaces (APIs) Perform bundling of application code and relevant files to enhance the deployment and utilization of the application code | <ul style="list-style-type: none"> Create a project plan to guide the application development process Determine the server, scripting and mark-up languages required to develop applications Determine key security requirements, standards and features for the application Develop applications in line with design specifications, utilizing a range of tools, methodologies, programming, and externally developed codes Guide team to adopt clean coding practices to ensure that codes are clean, testable and maintainable Design templates for reusable user interface patterns for applications Assess suitability of various software security and software testing techniques and select appropriate tests, according to the application properties of interest Evaluate test results against desired performance, standards, and usability outcomes Analyze application and/or security issues encountered, and determine actions required to resolve identified issues Resolve functional, performance, and security issues in applications Plan a series of steps which potentially includes reconfiguration, integration, removal or addition of application components to enhance the application's functionality, usability and security Plan bundling of application code and relevant files to enhance the deployment and utilization of the application code Set up virtual machine instances and containerization for the deployment and utilization of the application code across multiple infrastructures | <ul style="list-style-type: none"> Evaluate implications of new and emerging trends on application development Plan large-scale or business-critical application development projects Determine application development methodologies, tools, and programming languages Manage interdependencies of multiple work streams and complexity in applications development Establish best practices in clean coding Establish an efficient and effective application testing process that includes vulnerability assessments and secure testing Oversee application development approaches and plans to ensure achievement of quality, safety and security standards Establish debugging process for application issues encountered Review recommendations to improve the overall functionality, usability and security of applications, against cost, efficiency and viability considerations Evaluate new technologies, secure coding and practices that will enhance security capabilities in applications development Evaluate feasibility and incorporate predictive behavior or data analytics, geo-spatial capabilities and other advanced features in application development | |
| Range of Application | | | | | | |

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 utilization of appropriate middleware to optimize the connectivity and performance of disparate applications across target environments

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|--|---|---------|
| FSC Code | | | AAI-DIM1-3003-1.1 | AAI-DIM1-4003-1.1 | AAI-DIM1-5003-1.1 | |
| FSC Proficiency Description | | | Integrate data and functions across application programs, and perform follow up tests to verify proper functioning | Oversee end-to-end process of application integration, determining suitable middleware and testing procedures and resolving issues that arise | Establish a business case for application integration and introduce new middleware tools and methodologies to enable both intra- and inter-enterprise application integration | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> Types of middleware and their features Proper usage of middleware Different types of platforms on which applications run Potential technical, compatibility or performance issues in application integration Functions of Application Programming Interfaces (APIs) | <ul style="list-style-type: none"> Key elements of an application integration plan Pros, cons and applications of various middleware Programming languages used for middleware Features of target environment or platforms on which applications operate Testing procedures to verify success of application integration Diagnosis and troubleshooting of application integration issues Principles and protocols for API-level integration | <ul style="list-style-type: none"> Business value and strategic considerations of enterprise application integration New and emerging middleware products, tools and methodologies in the industry Programming languages and tools that enable cross-enterprise application integration Feasibility of performing API-level integration Implications of performing API-level integration | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|--|---------|--|--|---|---------|
| Skills Application | | | <ul style="list-style-type: none"> Identify opportunities for creating connections among various devices, databases, software and applications Perform feasibility scan and assessment to identify potential middleware to be used Utilize middleware to integrate data and functions across application programs within an enterprise Support API-level integration Perform tests and checks on the connections between disparate application programs Verify proper functioning of modules and applications across multiple or integrated platforms Highlight technical, compatibility or performance issues following integration of applications or platforms on which they are used Implement modifications to middleware or the programming process to enhance the integration and connections of application programs | <ul style="list-style-type: none"> Evaluate opportunities for creating connections among various hardware and applications Develop an application integration plan to bring data and functionalities of different applications together Evaluate suitable middleware to be used for integrating existing applications Program middleware or other tools to enable effective integration of applications within Perform API-level integration Oversee the end-to-end process of application integration to the target environment Enable optimal functioning of modules or applications in newly-integrated environments and platforms Develop testing procedures to ensure proper application integration and performance thereafter Investigate issues or failures of application integration Facilitate modifications to improve the success of integration between application programs | <ul style="list-style-type: none"> Establish organizational strategy for the integration of different applications across target environments and platforms Make decisions to spearhead innovative and inventive opportunities and ways to connect and integrate various types of hardware and software Build a business case for the integration of multiple applications Develop an application integration strategy Introduce new and emerging middleware products, tools and methodologies for application integration Develop new middleware products to enable cross-enterprise application integration Assess feasibility of API-level integration Approve modifications and enhancements to the application integration plan and approach | |
| Range of Application | <p>Types of applications may include, but are not limited to:</p> <ul style="list-style-type: none"> Mobile/Native Applications PC Applications Web Applications Hybrid Applications | | | | | |

Artificial Intelligence Ethics and Governance

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---|--|--|--|---|
| FSC Code | | AAI-RMG1-2001-1.1 | AAI-RMG1-3001-1.1 | AAI-RMG1-4001-1.1 | AAI-RMG1-5001-1.1 | AAI-RMG1-6001-1.1 |
| FSC Proficiency Description | | Identify AI Ethics and Governance principles as well as processes to apply these in daily activities | Check for adherence to relevant AI Ethics and Governance framework and apply it to projects with AI components | Evaluate and roll-out AI Ethics and Governance framework as well as ensure compliance within projects with AI components | Formulate AI Ethics and Governance frameworks within the organization on projects with AI components | Establish, review and drive AI Ethics and Governance frameworks |
| Underpinning Knowledge | | <ul style="list-style-type: none"> AI Ethics and Governance frameworks AI Ethics and Governance principles AI Ethics and Governance processes Relevant code of conduct for AI Ethics and Governance | <ul style="list-style-type: none"> AI Ethics and Governance principles and market best practices Organization's AI ethical culture | <ul style="list-style-type: none"> AI Ethics and Governance principles and policies AI Ethics and Governance framework Best practices in AI Ethics and Governance | <ul style="list-style-type: none"> AI Ethics and Governance principles and policies AI Ethics and Governance framework Best practices in AI Ethics and Governance Role of practitioners in the organization in adherence to AI Ethics and Governance | <ul style="list-style-type: none"> AI Ethics and Governance framework Best practices in AI Ethics and Governance Relations between governance and ethical culture Stakeholder management techniques |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---|---------|---------|---------|---------|---------|
| Skills Application | <ul style="list-style-type: none"> Identify AI Ethics and Governance principles and processes Uphold and comply with relevant AI Ethics and Governance pronouncements or code of conduct and ethics during performance of individual duties and responsibilities Identify the linkages and apply the growing importance of AI Ethics and Governance to govern its' deployment in AI related projects Identify AI Ethics and Governance principles and processes Apply safeguards to deter situations that may result in non-adherence or breach of these principles to the organization Identify implications for non-adherence or breach of these principles to the organization and communicate these implications to teams Identify situations which may give rise to ethical conflicts in accordance with the principles of AI Ethics and Governance Develop plans to negate occurrence of AI Ethics and Governance breaches Monitor AI components within projects and check for adherence to AI Ethics and Governance principles Interpret and implement AI Ethics and Governance principles and policies in AI related projects Manage biasness for specific features in the deployment of models Evaluate deployed models for transparency for ease of understanding and capability scoring Review data to ensure traceability with data lineage available and measurable data quality Articulate how AI should be used to stakeholders Align industry requirements to AI Ethics and Governance principles, taking into consideration the associated impact and risks and inputs from functional leads Develop organization framework, standards and best practices on AI Ethics and Governance Engage organizations and provide advice on establishing the AI Ethics and Governance practice Advocate senior management buy-in for AI Ethics and Governance and drive the application of inputs from functional leads for AI Ethics and Governance within all AI related projects Establish and enhance principles and policies as the industry around AI and AI Ethics evolve Keep abreast with new regulations locally and regionally and update the principles and practices to stay relevant Engage organizations and provide advice on establishing the AI Ethics and Governance practice Advocate senior management buy-in for AI Ethics and Governance and drive the application of inputs from functional leads for AI Ethics and Governance within all AI related projects | | | | | |
| Range of Application | | | | | | |

Audit and Compliance

Develop compliance processes and audit strategy for the organization to review adherence to statutory regulatory and standards. Assessment and enhancement of the thoroughness of compliance and/or governance processes and organization's internal controls to align with changing compliance standards. This also includes the actual conduct and/or performance of audit activities

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|---|---|---------|
| FSC Code | | | AAI-GCO1-3001-1.1 | AAI-GCO1-4001-1.1 | AAI-GCO1-5001-1.1 | |
| FSC Proficiency Description | | | Conduct audits, analyze results and implement changes to address identified gaps | Develop and enhance compliance processes based on an evaluation of gaps in business and IT operations | Establish audit and compliance strategy and objectives for the organization, ensuring robustness of internal controls are strengthened | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> Methodologies and tools for the conduct of audit activities Interpretation and analysis of audit results Identification of non-compliance Internal and external compliance and regulatory guidelines | <ul style="list-style-type: none"> Elements and considerations in development of compliance processes Evolving statutory and regulatory standards Application and relevance of external standards to organization's context Process gap analysis for business and IT operations | <ul style="list-style-type: none"> Process and key considerations in audit and compliance strategy development Emerging trends, approaches and industry best practices in internal audit and compliance Impact of business priorities and external regulations on audit strategy Root cause evaluation of non-compliance in business and IT processes | |

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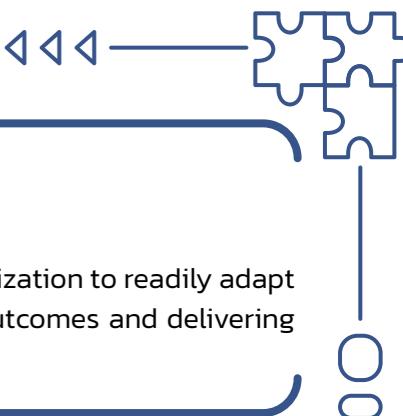
| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | | |
|-----------------------------|---------|---------|--|---------|---------|---------|--|--|
| Skills Application | | | <ul style="list-style-type: none"> Conduct audit activities in line with the organization's compliance processes and guidelines, using appropriate methodologies and tools Analyze audit results and highlight identified process gaps or key instances of non-compliance Propose improvements to existing compliance processes and measures to address major risks Implement changes in the performance of audits in alignment with changes in internal compliance standards or external regulatory guidelines Develop compliance processes in accordance with the organization's strategy and internal and external guidelines Establish audit and compliance strategy and objectives for the organization, considering emerging trends, approaches and industry best practices Evaluate audit results to identify reasons for gaps or non-compliance in business and IT operations Recommend enhancements to compliance processes to strengthen the organization's internal controls Oversee alignment of audit and compliance strategy with internal business requirements and priorities as well as external regulations and standards Evaluate root causes and potential organizational impact or risks of non-compliance so as to prioritize the areas that require further enhancement Endorse enhancements to critical compliance processes, to improve the robustness of the organization's internal controls | | | | | |
| Range of Application | | | | | | | | |

Budgeting

Preparing organizational budgets to support short- and long-term business plans through forecasting, allocation and financial policy setting.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|------------------------------------|---------|---------|--|--|---|--|
| FSC Code | | | AAI-BFI1-3001-1.1 | AAI-BFI1-4001-1.1 | AAI-BFI1-5001-1.1 | AAI-BFI1-6001-1.1 |
| FSC Proficiency Description | | | Prepare business unit's operational budgets | Manage budgeting and forecasting for annual financial and business planning within the business unit | Develop long-term financial plans and budget requirements | Endorse organizational financial and treasury management policies, systems, budgets and plans |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> Objectives, parameters and types of budgets Key principles of accounting and financial systems Types of data sources and data required to prepare a budget Accounting principles and practices related to budget preparation Key principles of budgetary control and budget plans, budgetary control techniques Requirements of Singapore's taxation policies Functional objectives and key requirements Organizational financial data Financial analytical techniques and methodology Stakeholders to consult on budget calculations | <ul style="list-style-type: none"> Analyze business function strategies, functional objectives and operational plans Carry out forecasting and budgeting for the financial year Calculate the business unit's cash flow requirements Determine the business unit's financing needs for the financial year Compare budget data with estimations to highlight discrepancies Report budget calculations and discrepancies to organization management to facilitate decisions on budget allocation Ensure adherence to financial controls in accordance with relevant organizational corporate governance and financial policies, legislation and regulations | <ul style="list-style-type: none"> Recommend parameters and assumptions for budget forecasting in accordance with organizational needs and market conditions Prepare financial forecasts to facilitate financial and business planning Implement budget plans to manage resource allocation to business activities Manage actual budget to enable financial operation to be measured against forecasted business plans Monitor budget outcomes to ensure proper utilization and accounting of resources against their intended purposes Present financial forecasts, budgets and budget outcomes to immediate supervisors for review and approval | <ul style="list-style-type: none"> Determine short- and long-term financial needs to assess current financial situations Formulate financial plans aligned to overall organizational strategies Allocate budget resources in accordance with organizational financial plans Review financial forecasts to anticipate changes in business and operational circumstances Review draft budgets in accordance with organizational guidelines Monitor and evaluate actual expense figures against budget to identify and address variances Report findings, recommendations and options to organization management for review in accordance with organizational policies |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | | | |
|-----------------------|---------|---------|---|---------|---------|---------|--|--|--|
| Skills Application | | | <ul style="list-style-type: none"> Analyze business function strategies, functional objectives and operational plans Carry out forecasting and budgeting for the financial year Calculate the business unit's cash flow requirements Determine the business unit's financing needs for the financial year Compare budget data with estimations to highlight discrepancies Report budget calculations and discrepancies to organization management to facilitate decisions on budget allocation Ensure adherence to financial controls in accordance with relevant organizational corporate governance and financial policies, legislation and regulations Recommend parameters and assumptions for budget forecasting in accordance with organizational needs and market conditions Prepare financial forecasts to facilitate financial and business planning Implement budget plans to manage resource allocation to business activities Manage actual budget to enable financial operation to be measured against forecasted business plans Monitor budget outcomes to ensure proper utilization and accounting of resources against their intended purposes Present financial forecasts, budgets and budget outcomes to immediate supervisors for review and approval Determine short- and long-term financial needs to assess current financial situations Formulate financial plans aligned to overall organizational strategies Allocate budget resources in accordance with organizational financial plans Review financial forecasts to anticipate changes in business and operational circumstances Review draft budgets in accordance with organizational guidelines Monitor and evaluate actual expense figures against budget to identify and address variances Report findings, recommendations and options to organization management for review in accordance with organizational policies Set direction for organizational budget planning in consultation with stakeholders Align budget plans with organization's strategic plans Review organizational financial and treasury management policies, systems, budgets and plans Evaluate effectiveness in increasing business value Evaluate implications of financial and treasury management policies, systems, budgets and plans on the organization Advise senior management on refinements to financial and treasury management policies, systems, budgets and plans for endorsement purposes | | | | | | |
| Range of Application | | | | | | | | | |

Business Agility

Organize the business, work activities and people in ways that enable the organization to readily adapt to changes in its internal or external environment, whilst achieving desired outcomes and delivering value to customers

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|--|---|
| FSC Code | | | | AAI-BPMI-4001-1.1 | AAI-BPMI-5001-1.1 | AAI-BPMI-6001-1.1 |
| FSC Proficiency Description | | | | Lead the implementation of operational initiatives to enhance business agility | Adapt overall processes and create a working environment of business agility | Establish policies that enable adaptability and foster a culture of business agility in the organization |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> Methods to analyze current and future business operating landscapes Methods to analyze current and future customer needs and preferences Organizational policies, processes and standards Types of change management methodologies, tools and practices Types of team composition and formation models Values and principles of Agile methodologies Types of Agile methodologies and practices | <ul style="list-style-type: none"> Design thinking methodologies and models Organizational structures, frameworks, operating models, processes and standards Types of methodologies, and tools to measure performance, culture and engagement Organization culture development methodologies, tools and practices Types of innovation management methodologies, tools and practices Value stream mapping frameworks and techniques Types of Agile performance metrics and measurement tools | <ul style="list-style-type: none"> Customer journey models and tools Objectives and Key Results (OKR) frameworks Organizational vision and customer strategy Organizational values, mission and vision Organizational long-term strategies and objectives Organizational workforce capability requirements Industry best practices in terms of workplace culture, Agile and innovation development Strategic partnership planning and management frameworks and practices |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|---|--|
| Skills Application | | | | <ul style="list-style-type: none"> Share information actively within and across teams to bridge operational barriers Organize work in alignment with operational priorities Implement Agile or lean practices to reduce waste and defects in operating procedures and practices Measure progress against targets for defined business outcomes on a regular basis Experiment with new ideas, products or services Assess work performance and quality to ensure continuous improvement Manage individual work responsibilities and take ownership of individual and team outcomes | <ul style="list-style-type: none"> Empower localized decision-making in teams to achieve operational priorities Design operational structures and processes that enable transparency and information sharing to enhance decision-making Monitor operational effectiveness in alignment with the organization's vision and strategic outcomes Lead the adoption of Agile or lean frameworks, methodologies and tools that maximize value creation for customers Adjust operational plans in a timely manner based on progress against targets for defined business outcomes Oversee the formation of dynamic, cross-functional teams that are organized to meet business outcomes Guide the experimentation and development of new ideas, products or services to encourage learning across teams Develop measures to improve the efficiency and effectiveness of work performance and quality Manage business outcomes and decision making in collaboration with teams across the organization | <ul style="list-style-type: none"> Cascade organizational objectives into business outcomes and goals for teams Drive transparency and information sharing across levels and teams Establish the organization's vision and strategic outcomes in anticipation of changes in the internal or external environment Design organizational policies and processes which focus on customer value creation Devise funding models for products and services based on business and customer outcomes achieved Adapt organization structures in tandem with customer and market demands Create a safe environment for learning and experimentation with new ideas, products or services Foster organizational culture of learning and excellence Engender buy-in and commitment to the organization's strategy |
| Range of Application | | | | | | |

Business Continuity

Develop internal infrastructure to ensure organizational 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.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|--|
| FSC Code | | | | AAI-BPMI-4002-I.I | AAI-BPMI-5002-I.I | AAI-BPMI-6002-I.I |
| FSC Proficiency Description | | | | Implement business continuity and contingency procedures and exercises | Develop business continuity plans, and direct resources to establish and maintain business continuity processes | Define the optimal business continuity strategy and objectives for business continuity and contingency plans |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> Critical business processes, systems and stakeholders Resources required for business continuity plans Steps involved in implementation of business continuity and contingency procedures Business continuity tests and exercises | <ul style="list-style-type: none"> Inter-linkages between critical business processes, information systems and people Potential risks to business process and operations reliability Business continuity and contingency procedures Business continuity test planning and design Interpretation of results from business continuity exercises or tests | <ul style="list-style-type: none"> Regulatory requirements and industry best practices for business continuity strategy and plans Potential risks and impact analysis of disruptions vis-a-vis costs of business continuity and contingency plans Information Systems or Information Technology Systems business continuity strategies Industry standards for continuity assessment benchmarks Implications of business continuity test results on the business |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|--|---|
| Skills Application | | | | <ul style="list-style-type: none"> Analyze existing data, information and processes from business functions to identify critical business elements, processes and systems Identify interdependencies among the critical business components Identify risks to availability, integrity and reliability of business processes and operations Secure resources required to establish and maintain business continuity and contingency procedures Oversee implementation of business continuity and contingency procedures for business functions based on recommended strategies Implement tests or business continuity exercises based on defined objectives, test, action plans and assessment criteria Analyze test results to propose follow-up actions to achieve desired levels of business continuity | <ul style="list-style-type: none"> Coordinate key analyses and interactions with different business functions, to facilitate identification of critical business parts and processes Analyze the interdependencies among the critical business processes, systems and people in the formation of business continuity plans Assess the relative impact of potential risks to the availability, integrity and reliability of key business components Manage resources required to establish and maintain business continuity and contingency procedures Develop detailed business continuity and contingency procedures with tasks, responsibilities and schedules, based on the organization's direction and strategy, to maintain desired levels of continuity Develop a business continuity test or exercise plan, including its objectives, procedures, assessment criteria and roles and responsibilities of involved personnel Conduct debrief sessions to evaluate and communicate results Recommend process enhancements to achieve improved levels of business continuity | <ul style="list-style-type: none"> Define the organization's key objectives and direction for business continuity and contingency plans, based on a synthesis of organizational needs, industry best practices and regulatory standards Evaluate critical risks associated with key components of business operations to determine priority areas for review and enhancement Chart the organization's desired business continuity strategy Analyze resource requirements to achieve the desired level of business continuity to determine optimal cost-benefit trade off for approval by senior management Establish continuity assessment benchmarks to ensure that plans are relevant, adequate and closely aligned with the organization's needs and priorities Review overall results of business continuity exercises and success of contingency plans, to determine implications on the business Approve process enhancements and initiatives to achieve desired levels of business continuity |
| Range of Application | | | | | | |

Business Environment Analysis

Analyze data pertaining to the business landscape and environment, including competitor-analysis, trends and developments in laws and regulations and the impact on the business

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|--|---|--|---|---------|
| FSC Code | | AAI-BPMI-2003-I.I | AAI-BPMI-3003-I.I | AAI-BPMI-4003-I.I | AAI-BPMI-5003-I.I | |
| FSC Proficiency Description | | Utilize a range of data sources to analyze information to derive business environmental patterns and produce reports to present findings | Utilize research instruments, quantitative and qualitative data to gather information on the business environment, evaluate data to draw out meaningful inferences that impact the organization's market positioning and provide feedback to management | Monitor the influence of external and internal factors on the critical business functions, report findings and recommend responses to management | 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 | |
| Underpinning Knowledge | | <ul style="list-style-type: none"> Data collection methodologies and approaches Data confidentiality issues associated with presenting statistical results Data preparation techniques Industry, market and competitors' profiles and trends | <ul style="list-style-type: none"> Data collection methodologies and approaches Data confidentiality issues associated with presenting statistical results Key metrics to drive desired outcomes Means of identifying potential competitors and the likelihood of their entries into the market Competitor profiles Industry, market and competitors' trends and forces Segment analysis techniques Demand and supply for industry and organization Strengths, weaknesses, opportunities and threats (SWOT) analysis techniques Political, economic, social, technological, environmental, legal (PESTEL) analysis techniques | <ul style="list-style-type: none"> Range of analytical techniques appropriate for environment analysis Microeconomic and macroeconomic principles Industry competitive forces evaluation methods Market segment differentiator strategies Business planning approaches Methods to calculate return on investment | <ul style="list-style-type: none"> Critical success factors of organizational and functional strategies Scope of the business environment analysis Market trends to prioritize key focus areas of the research efforts Techniques to synthesize patterns and trends Competition analysis frameworks Internal and external forces that shape organization strategies | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|--|--|---|--|---------|---------|
| Skills Application | <ul style="list-style-type: none"> • Consolidate information gathered through data collection processes • Maintain integrity of data collected and prepare data for analyses • Prepare graphical representations of data patterns • Identify both current and potential competitors in accordance with business priorities • Identify market trends locally and globally • Support research initiatives for business environment evaluations • Support analyses of data and information relating to business environment • Maintain proper documentation of research information | <ul style="list-style-type: none"> • Execute quantitative and qualitative analyses that translate data into actionable insights • Assist with development of database to gather, store and manage research information effectively • Describe types and longevity of impact of industry trends and competitive factors • Evaluate impact of current and potential competitors towards organization and market position • Understand demand and supply in relation to how industry and organization create value • Describe assessment of future prospects based on analysis findings | <ul style="list-style-type: none"> • Develop data collection approaches • Review and provide recommendations based on research outcomes • Communicate with stakeholders to understand and document research findings and implications • Analyze local and global data and market trends, to identify opportunities and threats to business strategies • Conduct basic financial analyses to understand impact of industry and market • Forecast return of investment based on environment analyses and identified impact • Propose business plans and strategies based on analyses and understanding of segment, market and industry | <ul style="list-style-type: none"> • Draw inferences of business landscape and environment to assess implications • Oversee competition analyses, as a part of business environment impact analyzes to determine potential changes in organizational strategies • Formulate the research methodologies, outcomes and strategies to leverage local and global market trends, opportunities and threats in driving key business decisions and growth strategies • Monitor the research processes and results • Establish procedures and guidelines for conducting business environment analyses | | |
| Range of Application | | | | | | |

Business Innovation

Identify and evaluate digitization 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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|--|---|
| FSC Code | | | | AAI-BPM1-4004-1.1 | AAI-BPM1-5004-1.1 | AAI-BPM1-6004-1.1 |
| FSC Proficiency Description | | | | Explore opportunities for business innovation and reform, and lead the implementation of innovative business initiatives | Prioritize business innovation opportunities and design digital architectures and processes to facilitate the creation of an innovative business environment | Inspire a culture of business and digital innovation within and beyond the organization |

| Underpinning Knowledge | | | | | | |
|------------------------|--|--|--|--|--|--|
| | <ul style="list-style-type: none"> • New and emerging innovative business processes / models deployed in the industry • Concept and principles of digitization • Factors to consider to assess the viability of business innovation for a given organization context • Success factors for implementation of business innovation | <ul style="list-style-type: none"> • Current and emerging industry-accepted technology services and business models • The organization's operating context, business priorities, domain and environment • Business planning process and methodologies relating to business innovation • Application of digitization to the business • Best practices in implementation process of business innovation • Legal, ethical and security issues relating to implementation of business innovation | <ul style="list-style-type: none"> • New and emerging trends in digitization and business innovation strategies • Current and future operating context and key priorities of the business • Critical business considerations for assessment of proposed innovation and its potential implications • Performance measurement techniques • Key business performance indicators in relation to process innovation and changes • Best practices and techniques in organization culture change and transformation | | | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|--|--|
| Skills Application | | | | <ul style="list-style-type: none"> • Compare current business model for the organization with the other business models in the industry • Explore potential opportunities for business innovation to be introduced within the organization • Identify ways in which digitization can be applied to the business • Conduct feasibility analysis and weigh the costs-benefits of potential business innovation opportunities • Implement business innovation processes in line with a defined action plan | <ul style="list-style-type: none"> • Investigate business strategies to identify business opportunities • Evaluate opportunities for viability, applicability to the organization and compatibility with business goals and objectives • Design digital architectures to structure the application of digital technologies to different parts of the business • Develop a viable action plan to implement the business innovation processes, in accordance with the organization's business strategies • Manage business innovation to review success of integration with the organization's business strategies • Facilitate information flow among key stakeholders to empower sharing and development of innovative ideas | <ul style="list-style-type: none"> • Inspire a culture and mind-set of digital innovation within and beyond the organization • Investigate business strategies to leverage on business opportunities for innovation and reform • Establish strategies to monitor and evaluate performance of current systems and processes • Review trends, opportunities and high-priority process changes for relevance to the organization • Approve ideas for innovation and continuous improvement • Inspire business process transformation, driven by business requirements and industry developments • Maintain oversight of performance reports and variance for all key result areas of the organization, in relation to current and future business imperatives • Create an organizational environment for continuous improvement and innovation • Establish objectives, measures and communication plans to guide implementation of processes for continuous improvement and innovation |
| Range of Application | | | | | | |

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 programs 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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|--|--|---|---|---------|
| FSC Code | | AAI-PDE1-2003-1.1 | AAI-PDE1-3003-1.1 | AAI-PDE1-4003-1.1 | AAI-PDE1-5003-1.1 | |
| FSC Proficiency Description | | Document business requirements and identify basic needs as well as potential solutions | Elicit and analyze business requirements from key stakeholders and assess relevant solutions and their potential impact | Investigate existing business processes, evaluate requirements and define the scope for recommended solutions and programs | Lead comprehensive analysis to understand underlying drivers and present a compelling business case for proposed IT solutions | |
| Underpinning Knowledge | | <ul style="list-style-type: none"> • Processes in business requirement documentation • Typical business processes and functional requirements • Existing or standard IT solutions and initiatives | <ul style="list-style-type: none"> • Business requirements from key stakeholders • Relevant solutions or programs • Types of business solutions | <ul style="list-style-type: none"> • End-to-end requirement elicitation process • Business process and priorities analysis • IT program / solution scoping techniques • Evaluation techniques or processes for IT solutions and initiatives • Business case elements | <ul style="list-style-type: none"> • Best practice methodologies in business requirement gathering • Strategic planning and prioritization for IT business requirements • Business modeling techniques and tools • Projection of long-term implications of IT solutions or changes • Business case development | |

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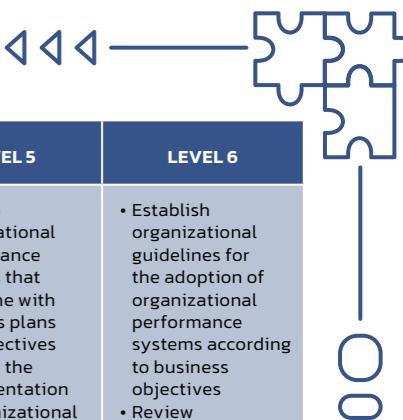


| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|---|---------|---------|---------|---------|---------|---------|
| Skills Application | | | | | | |
| <ul style="list-style-type: none"> • Document requirements from operational management or other stakeholders • Identify basic and immediate business needs and requirements • Conduct exploratory research or information scanning to consolidate relevant information, options or ideas that can be used • Support in the shortlisting or development of options or solutions for consideration • Elicit business requirements from operational management or other stakeholders using appropriate techniques • Review documentation to verify accuracy and understanding of business needs • Analyze data gathered to identify the business problems, requirements and opportunities presented • Assist in analysis of stakeholder objectives and their underlying drivers • Explore relevant solutions or programs, from an existing repertoire, that can address business needs • Present solution options for consideration • Explain how solutions will impact the business and address requirements • Lead business requirements elicitation effort, conversations and interactive processes with internal or external stakeholders • Analyze existing business processes and information gathered to understand short-mid term business requirements of varying complexity • Define scope and business priorities for small-medium sized initiatives and programs • Analyze requirements for alignment with business objectives and priorities • Obtain formal agreement by stakeholders or recipients to the scope, prioritized requirements and establishment of a baseline for commencement of solution delivery • Evaluate potential options and recommend effective solutions and programs that can be combined or customized to address root of business needs • Present business case for recommended solutions, defining potential benefits, options, associated risks and impact • Lead complex and comprehensive analysis of business processes and inputs gathered to understand long-term business requirements and their driving factors • Facilitate scoping and business priority setting for strategic and complex IT initiatives with senior stakeholders • Obtain formal agreement from stakeholders and recipients to the scope, prioritized requirements and establishment of a baseline for solution delivery • Manage effective business processes, through changes and enhancements in IT systems, management and processes • Establish the contribution that IT initiatives, programs and solutions can make to business objectives • Oversee development and implementation of solutions, taking into account the change implications to the organization and all stakeholders • Utilize in-depth analysis and business models to present a strong, compelling business case for proposed IT changes and solutions • Project long-term costs and benefits, options, risks and impact to senior stakeholders • Design requirement elicitation process, defining analysis and inputs required | | | | | | |
| Range of Application | | | | | | |

Business Negotiation

Conduct negotiations to establish win-win outcomes for the organization

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|--|---|--|
| FSC Code | | | AAI-BDE1-3001-1.1 | AAI-BDE1-4001-1.1 | AAI-BDE1-5001-1.1 | AAI-BDE1-6001-1.1 |
| FSC Proficiency Description | | | Apply negotiation skills and techniques and documenting negotiations. | Participating in negotiations | Manage and direct negotiations and refining negotiation policies | Direct negotiation policy and develop negotiation limits |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Negotiation objectives • Context of negotiation • Social and cultural differences which may affect negotiations • Interpersonal skills • Communication and conflict resolution techniques • Relevant precedents in past negotiations | <ul style="list-style-type: none"> • Negotiation objectives • Context of negotiation, which relates to negotiation objectives • Components of negotiation plans • Negotiation roles and responsibilities • Negotiation processes and techniques • Relevant precedents in past negotiations • Legislation and regulations pertaining to negotiations | <ul style="list-style-type: none"> • Negotiation styles • Results of effective negotiation • Conditions for successful negotiation • Organizational negotiation policy and guidelines • Legislation and regulations pertaining to negotiations | <ul style="list-style-type: none"> • Situations that negotiation may be used in organization • Negotiation policy and guidelines • Means of applying negotiation limits and guidelines • Legislation and regulations pertaining to negotiations |
| Skills Application | | | <ul style="list-style-type: none"> • Identify negotiation outcomes in commercial situations to establish organization's desired position in the negotiation • Identify roles and responsibilities needed to support negotiation objectives • Prepare relevant background information to understand other parties' position • Use negotiation processes and techniques to assist in achieving desired negotiation outcomes • Finalize negotiation and take necessary follow-up actions to close negotiation • Monitor and evaluate negotiation outcomes against objectives in accordance with organizational procedures | <ul style="list-style-type: none"> • Plan and prepare alternatives and outcomes for both parties in negotiations to support negotiation objectives • Apply communication and conflict resolution techniques to achieve desired negotiation outcomes • Record negotiations for evaluation and documentation purposes | <ul style="list-style-type: none"> • Plan and prepare for negotiation in accordance with negotiation strategies • Implement negotiation strategies according to negotiation guidelines during negotiation process • Provide feedback to relevant parties for negotiation policy refinement | <ul style="list-style-type: none"> • Drive the establishment of the organization's negotiation policy and limits • Set negotiation guidelines to be used during negotiation process • Evaluate and refine negotiation policy and limits based on negotiation outcomes |
| Range of Application | | | | | | |



Business Performance Management

Implement organizational performance systems to meet business plans and objectives by establishing performance indicators, tracking progress and addressing gaps

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|--|---|---|
| FSC Code | | | AAI-GMA1-3001-I.I | AAI-GMA1-4001-I.I | AAI-GMA1-5001-I.I | AAI-GMA1-6001-I.I |
| FSC Proficiency Description | | | Monitor performance of the department | Manage organization performance systems across departments | Formulate organizational performance systems and key performance indicators in alignment with organization's vision, mission and values | Establish organizational guidelines for performance systems according to organizational mission and objectives |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Types of performance systems • Department's policies, products and processes • Performance monitoring and testing procedures | <ul style="list-style-type: none"> • Industry best practices for implementing organizational performance systems • Gap analysis procedures | <ul style="list-style-type: none"> • Organization's policies, products and processes • Objectives of the organization's performance systems • Key performance indicators • Root cause analysis procedures • Relevant legal and regulatory requirements | <ul style="list-style-type: none"> • Organization's vision, mission and values • Industry best practices in organizational performance systems • Emerging trends and regulatory standards of organization performance management |

Continue to next page

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|--|--|--|
| Skills Application | | | <ul style="list-style-type: none"> • Document operational functions of the organizational performance systems within the department • Perform regular tests and checks on business processes according to monitoring and testing procedures • Track the progress and performance of business processes by comparing test results against key performance indicators • Evaluate performance of the department against goals set • Identify gaps in business processes based on test results and highlight areas for improvement • Perform modifications to close the gaps found in business functions according to requirements of action plans • Develop reports with Recommendations on how to address root causes and close gaps in the department • Translate blueprints into implementable action plans | <ul style="list-style-type: none"> • Implement organizational performance systems within the department whilst taking into account its unique requirements • Design monitoring and testing procedures for processes within the department that are aligned to the requirements of key performance indicators • Perform gap analysis on the gaps identified within the department • Identify root causes for gaps between current and future state of department based on the gap analysis • Develop reports with Recommendations on how to address root causes and close gaps in the department • Translate blueprints into implementable action plans | <ul style="list-style-type: none"> • Develop organizational performance systems that are in line with business plans and objectives • Oversee the implementation of organizational performance systems to ensure consistency across the organization • Develop key performance indicators to assess the overall performance of the organization based on emerging trends • Perform root cause analysis of organizational performance systems • Review reports and develop blueprints to address gaps identified | <ul style="list-style-type: none"> • Establish organizational guidelines for the adoption of organizational performance systems according to business objectives • Review organization performance systems to ensure their alignment with organizational vision, mission and values • Endorse key performance indicators in assessing organizational performance as per industry best practices and regulatory standard • Review blueprints for addressing gaps found in business processes to ensure their alignment with organizational mission and objectives |
| Range of Application | | | | | | |



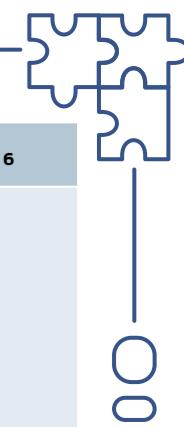
Business Process Re-Engineering

Analyze business processes and workflows within the organization and identification of new approaches to completely redesign business activities or optimize 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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|---------|
| FSC Code | | | | AAI-SAR1-4001-1.1 | AAI-SAR1-5001-1.1 | |
| FSC Proficiency Description | | | | Evaluate business processes and workflows, and develop a business process re-engineering plan | Establish a business process re-engineering strategy, determining the processes to be re-engineered and significantly redefining process flows | |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Business process analysis and assessment • Business process plan development • Business process evaluation and workflow analysis • Strengths, weaknesses, opportunities and threats (SWOT) analysis • Performance standard setting | <ul style="list-style-type: none"> • Business case preparation • Business process re-engineering cycle • Business process creation and re-design • Change and transition management • Principles and techniques in the evaluation of processes | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|---------------------------|---------|---------|---------|--|--|---------|
| Skills Application | | | | <ul style="list-style-type: none"> • Evaluate business processes and perform a SWOT analysis of workflows in the organization • Evaluate suitability of alternative processes and solutions • Drive enhancements and modifications to existing processes, leveraging technology and industry best practices • Draft a business process re-engineering (BPR) strategy and plan, detailing action steps and impact on various business units and stakeholders • Detail performance standards for new processes based on BPR plan and goals • Lead implementation and roll-out of BPR strategy according to the plan, utilizing allocated resources • Monitor new processes to measure performance levels and impact | <ul style="list-style-type: none"> • Prioritize processes based on boundaries, stakeholders and strategic importance of each process • Determine high priority processes to re-engineer considering potential costs and gains to the business • Redefine process flows to yield significant organizational benefits • Establish a business process re-engineering (BPR) strategy and plan, ensuring clarity of purpose and alignment with business strategy • Articulate key goals, objectives and performance indicators to assess success of re-engineered processes • Determine allocation of resources for implementation and process change • Manage long-term, continuous refinement of internal business processes | |



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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|--|---|---------|
| FSC Code | | | AAI-BPMI-3005-I.I | AAI-BPMI-4005-I.I | AAI-BPMI-5005-I.I | |
| FSC Proficiency Description | | | Analyze relevant information from stakeholders and map business requirements to existing processes to identify gaps and/or opportunities | Evaluate factors and ideas to identify key business requirements and objectives to be achieved. Test relevant solutions or programs and impact of solutions and/or programs against identified business requirements to propose adjustments | Define overall strategies, objectives and priorities to underscore business requirement mapping activities and assess alignment between solutions, requirements and eventual outcomes | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Sources of structured and unstructured data for business requirements • Stakeholder identification techniques • Information gathering and critical questioning techniques • Business process mapping methodologies • Evaluation techniques • Methods for gap and opportunity identification | <ul style="list-style-type: none"> • Data interpretation and analysis techniques • Stakeholder management techniques • Solution testing and evaluation methods • Causes of business requirement misalignment | <ul style="list-style-type: none"> • Organizational goals • Business domains • Business models and tools • Criteria for assessing alignment of business requirement mapping, solutions and intended outcomes • Strategy development techniques | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|--|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Identify relevant stakeholders in the organization and information sources to gather data • Record and identify business requirements • Determine needs of stakeholders within business process context • Develop preliminary mapping of business requirements to existing processes • Identify gaps or opportunities in existing processes • Manage stakeholders to align business requirements • Gather data on implementation outcomes | <ul style="list-style-type: none"> • Understand interests of key stakeholders and organization • Assess data collection methods • Verify and categorize business requirements • Analyze mapping of business requirements to existing processes and/or solutions to identify gaps or improvement opportunities • Prioritize findings to identify key requirements and objectives to be achieved • Develop solutions to identified gaps and opportunities in collaboration with stakeholders • Evaluate impact of solutions and programs in meeting identified business requirements • Identify common feasibility issues • Highlight adjustments required for better alignment between requirements and outcomes | <ul style="list-style-type: none"> • Define overall strategies, objectives and priorities for business requirement mapping and solutioning activities • Evaluate business requirements in line with business strategies, objectives and priorities • Determine priorities to address business requirements • Determine criteria for assessing alignment of business requirement mapping, solutions and intended outcomes • Review and suggest improvements for proposed solutions to address gaps and opportunities identified • Review and suggest solutions to address common feasibility issues and business requirement misalignment issues • Evaluate alignment between business solutions and intended outcomes • Propose improvements to business solutions | |
| Range of Application | | | | | | |



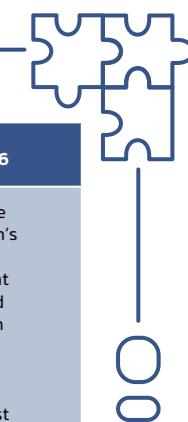
Business Risk Management

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, minimize their impact or effectively manage such business risks

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|--|---|--|
| FSC Code | | | AAI-BPM1-3006-1.1 | AAI-BPM1-4006-1.1 | AAI-BPM1-5006-1.1 | AAI-BPM1-6006-1.1 |
| FSC Proficiency Description | | | Identify risks and their business impact and propose measures to manage risks | Assess current and potential risks within a defined functional area, and develop risk countermeasures and contingency plans | Critically evaluate, review and drive organization-wide risk mitigation and management initiatives | Anticipate emerging threats and potential risks, and define the overarching risk management strategy for the business |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> Basic risk identification and assessment techniques Internal protocols, past solutions and widely-known best practices in risk management or prevention Risk management measures and implementation steps | <ul style="list-style-type: none"> Risk identification and assessment techniques for a functional area Risk assessment report development Complex or advanced methods to address risks and minimize their impact Implementation considerations and rationale for risk management processes Features and applicability of risk countermeasures and contingency plans | <ul style="list-style-type: none"> Risk identification and assessment techniques for the organization Potential impact of current and future risks Key considerations for evaluating risk mitigation and management initiatives Industry best practices in risk countermeasures and contingency plans | <ul style="list-style-type: none"> Industry standards in risk management Emerging trends in potential risks faced by organizations Strategic roadmap development Prioritization considerations for current and potential risks |

Continue to next page

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|--|---|---|
| Skills Application | | | <ul style="list-style-type: none"> Identify risks and conduct risk assessment on their business impact Highlight red flags and other key findings in risk assessment report Propose processes and action steps to address risks with reference to internal protocols, past solutions or external best practices Explain risk management measures to particular functional areas or Business Units (BU), to gain buy-in and ensure understanding Propose enhancements to risk countermeasures and contingency plans | <ul style="list-style-type: none"> Lead the assessment of current and potential risks within a defined functional or technical area of business Develop a risk assessment report, highlighting key areas for improvement Recommend possible solutions, plans and initiatives to address risks and minimize their impact on business operations Implement risk management processes and procedures for particular functional area or BU, ensuring that relevant parties are familiar with the tools, techniques and activities involved Develop risk countermeasures and contingency plans, and evaluate their viability and effectiveness for the business function | <ul style="list-style-type: none"> Lead identification and assessment of current and future risks to the overall business Evaluate potential business impact of risks Evaluate, organization-wide risk mitigation and management initiatives Develop implementation plan for organization-wide risk management processes and procedures Integrate knowledge of industry best practices and organization's context to guide the development of risk countermeasures and contingency plans | <ul style="list-style-type: none"> Define overarching risk management strategy and direction, based on business priorities and in line with industry standards and regulations Anticipate potential risks to the business based on emerging trends and threats in the industry or related sectors Establish a long term strategic roadmap for addressing existing and potential risks arising from business operations and developments Prioritize existing and potential risks to the business, based on business priorities and future strategic direction Set guiding principles for the development of risk countermeasures and contingency plans, with reference to industry best practices |



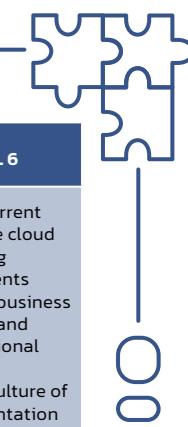
Change Management

Plan and systematic execution of processes to facilitate the transition of individuals, teams and organizations 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 maximize adoption.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|---|---|
| FSC Code | | | AAI-BPMI-3007-I.1 | AAI-BPMI-4007-I.1 | AAI-BPMI-5007-I.1 | AAI-BPMI-6007-I.1 |
| FSC Proficiency Description | | | Apply change control procedures in work processes, assess impact of change and develop communications to prepare stakeholders for the change | Recommend business activities required to integrate and roll out new changes and drive the execution of change control procedures, engaging stakeholders in the process | Develop business readiness plan and direct business activities, processes and resources to facilitate changes and transitions, and plan change control procedures for IT initiatives | Establish the organization's change management strategy, define key success indicators, and inspire shared commitment to the change |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> Change control procedures Costs and resources required for basic changes Impact of changes to employees Key performance benchmarks or indicators of success | <ul style="list-style-type: none"> Change implementation plans and procedures Impact of changes on business activities and processes Resources required to roll out changes effectively Assessment of change performance against benchmarks | <ul style="list-style-type: none"> Change control procedure development Business readiness assessment and planning Resource management for complex changes and transitions Critical stakeholders and touchpoints for change initiatives Components and steps to design effective change implementation plan Strategic resource management and allocation for change initiatives Critical stakeholder engagement messages | <ul style="list-style-type: none"> Change management frameworks Industry best practices in change management Selection of key performance benchmarks and success indicators for change initiatives Components and steps to design effective change implementation plan Strategic resource management and allocation for change initiatives Critical stakeholder engagement messages |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|--|---|--|---|
| Skills Application | | | <ul style="list-style-type: none"> Apply change control procedures in regular work processes based on endorsed changes Provide suggestions for tweaks to business processes or operations to support changes and transitions effectively Identify impact of change to employees and stakeholders Develop communication materials to inform and educate affected employees and stakeholders Identify associated costs and resources required to facilitate basic, small-scale changes Document change impact on workplace performance and processes, against key performance benchmarks or success indicators | <ul style="list-style-type: none"> Drive execution of change control procedures based on an implementation plan for endorsed change requests Identify business activities or processes required to integrate and roll out new changes in the business environment Analyze resources and cost-impact of changes, highlighting where people, resources or finances need to be redirected Deliver communications to engage and seek the buy-in of affected employees of the change Deliver training to equip affected employees to manage change and change impact Identify potential pitfalls, obstacles or challenges to smooth adoption and implementation of changes Assess change performance against new key performance benchmarks Implement follow-up actions to address any change performance issues | <ul style="list-style-type: none"> Articulate the purpose and reasons for a significant change Plan change control procedures for IT initiatives across the organization Develop business readiness plan, considering the resources, elements, capabilities and activities required for effective, smooth transition Determine readiness level of business users for upcoming changes and identify readiness gaps Plan a series of engagement activities to secure stakeholder commitment to the success of change implementation before introducing the change Drive stakeholder education or training initiatives to build internal capability and change readiness Direct internal resources, to facilitate the move to the desired end state of the change Maintain oversight of change performance against set goals and benchmarks post-implementation | <ul style="list-style-type: none"> Establish the organization's change management strategy and policies with reference to appropriate frameworks, industry best practices and business requirements Define vision and objectives for organization-wide change Determine key performance benchmarks and change success indicators Maintain a business perspective on how change initiatives are integrated into the business, considering potential impact on business cycles, stakeholders and operations Orchestrate the organization toward desired objectives and end state of a change or transition Design strategic implementation plan, covering all business activities, key personnel and resources required to prepare the organization for an IT change or transition Outline key stakeholder engagement messages to be communicated throughout the change process to generate shared commitment to and ownership of the change Approve finance usage to support transitions Ensure that the required internal and external resources are acquired, in place, and of sufficient quantity and quality to facilitate the change |
| Range of Application | | | | | | |



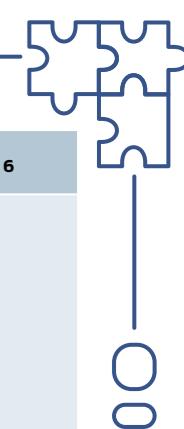
Cloud Computing

Implement cloud solutions to enhance business performance and security of IT systems

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|---|---|--|
| FSC Code | | | AAI-DIM1-3004-1.1 | AAI-DIM1-4004-1.1 | AAI-DIM1-5004-1.1 | AAI-DIM1-6004-1.1 |
| FSC Proficiency Description | | | Deploy cloud solutions and resolve cloud integration issues | Develop plans to implement cloud solutions | Evaluate the suitability of cloud solutions against organizational requirements and business needs | Build actionable strategy plans and policies for the introduction and adoption of cloud solutions across the organization |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Security and quality standards • Diagnostic tools for cloud-related problems • Types of installation tests for cloud solutions • Technical solutions or techniques to resolve cloud integration-related issues • Database administration and maintenance tools and techniques | <ul style="list-style-type: none"> • Requirements for implementation of cloud solutions • Impact analysis techniques for cloud solutions • Types of cloud platform integration tools and techniques • Range of installation tests and techniques for cloud solutions • Steps to align existing systems with cloud computing components • Elements and functioning of automated software deployment • Scripting and programming languages • Big data tools and techniques • Range of cloud computing platforms, software and services | <ul style="list-style-type: none"> • Interactions between various cloud and on-site components and systems • Impact of cloud component additions, changes or removals to the organization infrastructure and operations • Cloud solutions and associated components • Cloud specifications and implementation techniques • Cloud computing migration protocols and strategies • Trends and technologies in cloud solutions • Industry standards and protocols related to cloud solutions • Methods to evaluate the suitability of cloud solutions • Cost-benefit analysis techniques | <ul style="list-style-type: none"> • Objectives of cloud solutions adoption and implementation in the organization • Industry best practices in cloud solutions, technologies and implementation processes • Business impact of cloud deployment, modification, and migration • Organizational requirements and business needs • Trends and technologies in cloud solutions |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | |
|-----------------------------|---------|---------|---|---|--|---|--|
| Skills Application | | | <ul style="list-style-type: none"> • Set up environment for the implementation of cloud solutions in accordance to user requirements • Run tests for cloud solutions to minimize integration-related issues • Detect issues with cloud solutions to identify solutions • Resolve cloud integration and implementation issues • Conduct implementation tests on cloud solutions to measure its effectiveness against defined metrics • Develop implementation plans for implementing cloud solutions • Develop processes for the review of metrics associated with implementation of cloud solutions • Escalate unresolved issues related to implementation of cloud solutions | <ul style="list-style-type: none"> • Assess the performance of cloud solutions based on expected business needs, usage and traffic volume • Draft specifications for cloud solutions to address usage, performance and security requirements • Develop implementation plans for the review of metrics associated with implementation of cloud solutions • Evaluate the benefits and challenges of using cloud solutions • Develop costing for technology requirements for implementation of cloud solutions • Explore new cloud solutions to determine its suitability for organizational implementation • Endorse recommendations on proposed cloud solutions | <ul style="list-style-type: none"> • Evaluate organizational requirements and business needs for cloud solutions • Evaluate new and emerging cloud solutions to determine its efficacy and suitability against organizational requirements • Review performance of cloud solutions • Determine the purpose and functions of adopting and implementing cloud solutions at an organizational level • Define hypotheses to guide the experimental design of cloud solutions • Explore new cloud solutions to determine its suitability for organizational implementation • Endorse recommendations on proposed cloud solutions | <ul style="list-style-type: none"> • Project current and future cloud computing requirements based on business direction and organizational priorities • Foster a culture of experimentation and innovation in the adoption and usage of cloud solutions • Determine the purpose and functions of adopting and implementing cloud solutions at an organizational level • Define hypotheses to guide the experimental design of cloud solutions • Explore new cloud solutions to determine its suitability for organizational implementation • Endorse recommendations on proposed cloud solutions | |
| Range of Application | | | <p>Cloud Computing services and skills may include but not limited to:</p> <ul style="list-style-type: none"> • Amazon Web Services (AWS) • Microsoft Azure • Google Cloud Platform • Apache Hadoop • Python • Scala • Perl • Ruby • MongoDB • MySQL • PHP • Java • Microsoft .NET Framework | | | | |



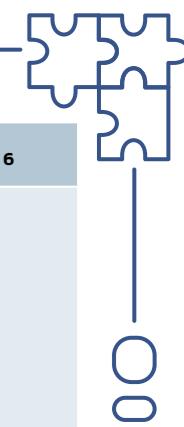
Computational Modeling

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 modeling techniques to explore and address a specific issues or requirements

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|---|---------|
| FSC Code | | | AAI-DIM1-3005-1.1 | AAI-DIM1-4005-1.1 | AAI-DIM1-5005-1.1 | |
| FSC Proficiency Description | | | Identify and utilize appropriate statistical algorithms and data models to test hypotheses and derive patterns or solutions | Develop and utilize new algorithms and advanced statistical models to enable the production of desired outcomes | Design advanced statistical and computational models, and spearhead the application of algorithms and modeling techniques to new domains | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Types of algorithms and advanced computational methods • Range and application of various statistical algorithms • Range and application of various types of data models • Usage of analytics platforms and tools • Statistical modeling techniques • Coding languages for programming of algorithms and signals • Potential reasons for unintended outcomes | <ul style="list-style-type: none"> • Range of statistical and advanced computational modeling techniques • Advanced mathematical models and theories • Elements of various algorithms • Features and applicability of various data models • Features, pros and cons of various statistical approaches, algorithms and tools • Testing procedures to evaluate statistical models • Impact of changes to algorithms and models on performance outcomes | <ul style="list-style-type: none"> • Industry developments and trends in analytics, algorithms and statistical modeling • New and emerging data analytics and modeling tools and methodologies • Broad range of algorithms and advanced programming techniques • Elements of complex or advanced algorithms and computational models • Applicability of various data analytics methodologies and techniques to address different business issues | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---|---------|---|--|---|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Identify appropriate statistical algorithms and data models to test hypotheses or theories • Use appropriate analytics platforms and analytical tools given specific analytics and reporting requirements • Utilize a range of statistical methods and analytics approaches to data • Conduct statistical modeling of data to derive patterns and/or solutions • Perform coding and configuration of software agents or programs based on a selected model or algorithm • Create learning models with a discrete set of environment states, actions and reinforcement signals • Develop testing procedures to evaluate the data model • Diagnose unintended outcomes produced by analytical models • Propose changes or updates to the model or algorithms applied • Implement changes to the coding and configuration of software agents or programs • Draw relevant trends and insights from data analysis to support decisions | <ul style="list-style-type: none"> • Evaluate prospective analytical tools and platforms for their functional capabilities and ability to meet requirements of the analytic environment • Develop new algorithms to enable the learning, improvement, adaptation or reproduction of outcomes • Develop regression models, including linear, multiple and logistic regression models • Develop mathematical models to isolate trends and optimize data-driven decision making • Conduct tests on the actions taken and outcomes to assess effectiveness of the model • Analyze root causes of any issues highlighted • Facilitate changes to statistical models, to optimize performance and yield intended outcomes • Apply complex and advanced statistical analysis and modelling techniques • Uncover underlying relationships among different variables | <ul style="list-style-type: none"> • Direct data analytics and statistical modeling efforts across the organization • Make decisions on appropriate data analytics and computational methodologies to the problem • Design complex or advanced statistical and computational models • Evaluate a broad range of algorithms and advanced computational methods to determine suitability for business context • Spearhead the application of algorithms, models and computational techniques to new domains • Establish guidelines for the creation and selection of effective algorithms and statistical models • Synthesize critical findings and insights to address a significant business need or problem | |
| Range of Application | <p>Types or sub-specialties of algorithms and advanced computational methods may include, but are not limited to:</p> <ul style="list-style-type: none"> • Machine learning • Natural language processing • Geospatial algorithms • IoT time series • Deep learning • Reinforcement learning models | | | | | |



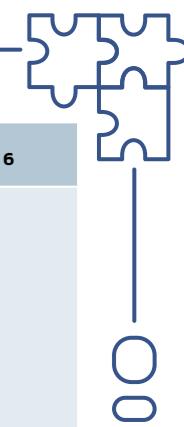
Computer Vision Technology

Develop and deploy vision analytics algorithm and spatial sensing and/or reasoning systems

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|---------|
| FSC Code | | | | AAI-DIM1-4006-1.1 | AAI-DIM1-5006-1.1 | |
| FSC Proficiency Description | | | | Set-up and deploy video analytics algorithms and perform system performance evaluations | Build spatial sensing and spatial reasoning systems | |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Vision system concepts • Business applications of vision systems • Methods to represent image and video data • Image and video processing, filtering and transformation methods • Feature extraction and representation techniques • Local feature descriptions, edge, color, texture and motion • Global feature descriptions, statistical and geometrical methods • Deep learning concepts • Object segmentation, detection and recognition • Activity tracking, generative models, scene understanding and event discovery • Vision system architecture • Vision communication protocols • Real-world design constraints and solution options | <ul style="list-style-type: none"> • Spatial sensing technology and modeling from sensor data • Applications of spatial sensing and reasoning technology • 3D sensor data representation and modeling • Sensor data representation and modeling • 3D scene scanning and mapping • Stereo vision for scene reconstruction, camera pose estimation, structure from motion • Feature extraction, description and registration from sensor data for spatial localization • Machine learning methods for spatial localization, 3D object recognition and 3D scene recognition • Applications of spatial sensing and reasoning in robotics, gaming and augmented reality | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|--|---------|
| Skills Application | | | | <ul style="list-style-type: none"> • Identify the needs of vision systems technology in industrial applications • Apply the principles of processing, filtering and analysis methods for video data • Analyze global feature descriptions • Design and implement feature extraction and representation methods • Design and apply machine-learning based methods for object detection, object tracking and activity recognition • Design and apply video analytics algorithms for high-level video analytics tasks • Design the architecture of applied vision systems • Design, develop and evaluate edge-based and cloud-based systems | <ul style="list-style-type: none"> • Evaluate and implement sensor data models and representation methods • Analyze local and global feature extraction and descriptions for 3D scenes • Design and implement scene scanning and mapping methods • Design and apply machine learning-based methods for 3D object and scene recognition • Analyze the representation of video data in spatial and temporal domain • Process, filter and analyze video data in real time using modeling and processing models • Analyze the object trajectory using classification and clustering methods • Perform object tracking and action recognition in video sequences in real time • Analyze audio signal representation in spatial and frequency domain • Design and apply audio classification methods using machine learning techniques • Design real-time audio-visual sense making systems | |



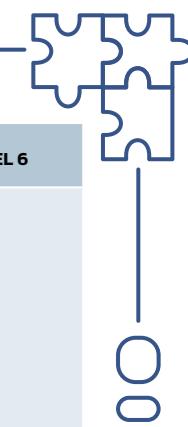
Configuration Tracking

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|--|---|--|---|---------|---------|
| FSC Code | AAI-DIM1-1007-1.1 | AAI-DIM1-2007-1.1 | AAI-DIM1-3007-1.1 | AAI-DIM1-4007-1.1 | | |
| FSC Proficiency Description | Label, track and document all configuration items and changes to software projects using standard tools and templates | Verify accuracy, completeness and currency of information in configuration logs and review unauthorized changes, diversions or inappropriate use of software assets | Develop and update a configuration management plan, determining systems and techniques to track changes and revisions | Develop policies, processes and guidelines for the organization's configuration management and tracking | | |
| Underpinning Knowledge | <ul style="list-style-type: none"> Key information required to label configuration items Indicators of unauthorized changes, diversions or inappropriate use Configuration tracking processes and tools | <ul style="list-style-type: none"> Importance of baselines in configuration items Process of handling unauthorized changes, diversions or inappropriate use | <ul style="list-style-type: none"> Key components of a configuration management plan Various configuration management / tracking systems, tools and techniques | <ul style="list-style-type: none"> Best practices in management of configuration items Industry requirements and standards in the protection of software assets | | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---|--|---|---|---------|---------|
| Skills Application | <ul style="list-style-type: none"> Label all configuration items according to set instructions and templates Track configuration items, components and changes Document changes to software projects using standard tools and templates Perform regular checks on configuration and report unauthorized changes, diversions or inappropriate use of software products | <ul style="list-style-type: none"> Review key information on configuration items Track baselines for configuration items Generate reports on configuration status for tracking software project progress Verify for accuracy, and completeness of information in configuration logs and records Review software assets where unauthorized changes, diversions or inappropriate use has occurred | <ul style="list-style-type: none"> Develop a configuration management plan to oversee the systematic tracking, control and management of changes in software projects Develop identification standards for naming and version control of software documentation Select appropriate systems, tools and techniques to track changes and revisions Update configuration management plan to account for key enhancements or updates to software assets Investigate and report areas of non-compliance with configuration management standards or unaccounted changes | <ul style="list-style-type: none"> Develop guidelines for the consistent classification and management of configuration items Develop policies for the retention of baseline copies Facilitate to oversee the organization's configuration management and tracking system Establish processes for the verification and audit of configuration records Establish compliance standards to account for all changes to software products | | |
| Range of Application | | | | | | |



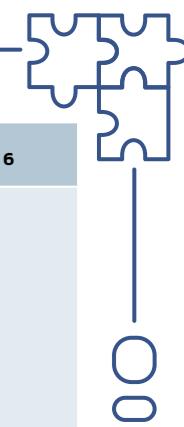
Continuous Integration and Continuous Deployment

Manage the planning, building, testing and integration of codes, and deployment of software changes and updates into a live environment

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|---|---|---------|
| FSC Code | | | AAI-DIM1-3008-1.1 | AAI-DIM1-4008-1.1 | AAI-DIM1-5008-1.1 | |
| FSC Proficiency Description | | | Perform continuous integration and continuous deployment (CI/CD) activities based on developed plans to build, test and deploy release packages into live environment | Develop plans for continuous integration and continuous deployment (CI/CD) based on design specifications, build, test and deploy release packages into live environment | Establish and advise on the organization's continuous integration and continuous deployment (CI/CD) policies and plans, manage the build, test and deployment of packages into live environment | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Information Technology Infrastructure Library (ITIL) framework and practices • Current software development frameworks, methodologies, practices and tools • CI/CD practices • Release and deployment processes and activities • Build management procedures, tools and checklists for release packaging • Programming languages and its applicability in different contexts • Types of software testing methods and approaches • Internal and external quality, safety and security standards and/or benchmarks in software development | <ul style="list-style-type: none"> • Emerging software development frameworks, methodologies, practices and tools • CI/CD practice development and implementation • Release and deployment management practices and standards • Build management practices and standards • Advanced programming languages and tools • Programming languages and its effectiveness in different contexts • Types of software testing methods and approaches | <ul style="list-style-type: none"> • Long-term vision and objectives of software products and services • Characteristics of different software development frameworks, methodologies, practices and tools • Emerging trends in CI/CD implementation and management • Applicability and reusability of externally developed codes and components • Criticality or importance of different software components based on business and/or user needs | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | |
|-----------------------|---------|---------|---------|--|---|--|--|
| Skills Application | | | | <ul style="list-style-type: none"> • Implement changes to transition from current service to new and/or changed service design • Perform activities according to release and deployment plans • Contribute to the development of build plans based on design specifications and environment configuration requirements • Perform benefits and risk analyses of proposed changes based on business and/or user requirements • Draft test codes and test cases prior to feature coding • Conduct pilots to test service before full deployment • Merge code change or branch back to the master code repository • Identify issues in the CI/CD pipeline to improve workflow and processes • Identify repetitive and routine tasks in the CI/CD processes that can be automated • Document release processes and procedures throughout the build process • Review deployment to ensure performance targets are met and quality issues addressed • Prepare handover of support for deployment to service operations • Administer post-release and deployment reviews • Suggest new releases, deployment tools, techniques and processes including automation to improve efficiency and performance | <ul style="list-style-type: none"> • Develop approaches to transition from current service to new and/or changed service design • Develop release and deployment plans which include schedule of activities • Develop build plans based on design specifications and environment configuration requirements • Manage software change requests in the CI/CD pipeline • Analyze benefits and risk of proposed changes and determine changes to be made • Determine suitable scopes of pilots to test service before full deployment • Develop and test release packages for deployment • Deploy release packages in a live environment • Integrate code changes or branches back to the master code repository • Troubleshoot issues in the CI/CD pipeline • Automate repetitive and routine tasks in the CI/CD process • Review deployment to ensure performance targets are met and quality issues addressed • Conduct handover of support for the deployment to service operations • Plan post-release and deployment reviews • Evaluate new releases, deployment tools, techniques and processes including automation for adoption | <ul style="list-style-type: none"> • Establish the organization's CI/CD policies for software development and operations • Determine release unit level for each service asset or component • Review release and deployment plans against resource availability • Establish guidelines to build and manage a CI/CD pipeline • Lead the planning and design of release packages • Drive the adoption of established CI/CD practices • Resolve complex issues in the CI/CD pipeline • Guide pilot rollouts and ensure compliance with established standards • Liaise with business and IT stakeholders on release scheduling and communication of progress • Oversee the conduct of post-release and deployment reviews • Develop metrics and targets to measure the performance of release and deployment • Evaluate new releases, deployment tools, techniques and processes including automation for adoption | |
| Range of Application | | | | <p>Types of software applications / various platforms on which the skill can be applied may include, but are not limited to:</p> <ul style="list-style-type: none"> • Mobile/Native • Augmented Reality/Virtual Reality • Web • Hybrid • Cloud | <p>Types of methodologies may include but not limited to:</p> <ul style="list-style-type: none"> • Agile Software Development • Continuous Integration • Continuous Deployment • Design Pattern • Extreme Programming • Object-Oriented Programming | | |



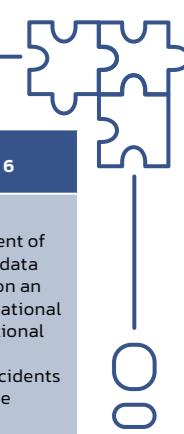
Crisis Management

Develop and implement crisis management plans for organizational preparedness of disruptive events within the broader context of business continuity management

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|---|--|---------|
| FSC Code | | | AAI-BPM1-3008-I.1 | AAI-BPM1-4008-I.1 | AAI-BPM1-5008-I.1 | |
| FSC Proficiency Description | | | Execute crisis management plans | Manage crisis situations | Direct the management of crisis situations | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Crisis management plans, including crisis response and recovery activities • Critical business functions • Business continuity plans • Emergency control exercises | <ul style="list-style-type: none"> • Operational roles and responsibilities of a manager handling a crisis • Crisis response and recovery activities • Documentation components for crisis response and recovery activities • Relevant stakeholders in a disruptive event • Business impact and implications of disruptive events on the organization • Resources required for crisis situations • Communication plans for managing crises | <ul style="list-style-type: none"> • Damage assessment of disruptive events • Own role in management of crisis response and recovery activities • Communication processes with internal and external stakeholders during crises | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|---|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Assist in coordinating and integrating crisis response and recovery activities in accordance with recovery and business continuity plans • Execute individual roles within the crisis management plans in response to disruptive events • Participate in the organization's emergency control exercises to validate crisis management plans and ensure organizational readiness | <ul style="list-style-type: none"> • Allocate resources for response-handling in accordance with crisis management plans • Identify crisis response and recovery activities to be implemented in accordance with business continuity and recovery strategies • Document data from crisis response and recovery activities in accordance with information format requirements • Implement 'return-to-normal' procedures in accordance with crisis management plans • Communicate organizational crisis management key messages to relevant stakeholders | <ul style="list-style-type: none"> • Design organization-wide crisis management plans for recovery from disruptive events • Lead damage assessment in consultation with relevant stakeholders • Direct crisis response and recovery activities to be implemented in accordance with business continuity and recovery strategies • Facilitate involvement of cross-functional teams in crisis management • Activate 'return-to-normal' procedures in accordance with crisis management plans • Activate crisis response and recovery activities and stand-down procedures in accordance with business continuity strategies and crisis management plans • Facilitate communication processes to internal and external stakeholders during disruptive events • Refine organizational crisis management plans to ensure relevance to the current threat environment | |
| Range of Application | | | | | | |



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.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---|--|--|---|--|
| FSC Code | | AAI-OUSI-2001-I.I | AAI-OUSI-3001-I.I | AAI-OUSI-4001-I.I | AAI-OUSI-5001-I.I | AAI-OUSI-6001-I.I |
| FSC Proficiency Description | | Provide real-time incident and status reporting, and identify affected systems and user groups | Troubleshoot incidents, escalate alerts to relevant stakeholder, and analyze root causes and implications of incidents | Develop incident management procedures and synthesize incident-related analyses to distill 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 |
| Underpinning Knowledge | | <ul style="list-style-type: none"> Incident detection and reporting protocols Types of security incidents Types of data breaches Categorization guidelines for incidents Impact of incidents on systems and users Personal Data Protection Act 2012 | <ul style="list-style-type: none"> Prioritization criteria for incidents Tools and processes used to remedy incidents Root cause analysis procedures Security implications of incidents Personal Data Protection Act 2012 | <ul style="list-style-type: none"> Mechanics of incident alert triggers Incident remediation solutions and strategies Incident mitigation strategies Personal Data Protection Act 2012 | <ul style="list-style-type: none"> Industry standards and best practices in incident management Key components of an incident management playbook Criteria and requirements of an incident response team Cyber incident mitigation strategies Data breach mitigation strategies Key stakeholder groups Post-mortem processes related to cyber incidents Personal Data Protection Act 2012 | <ul style="list-style-type: none"> Political, national and international sensitivities regarding cyber crimes, incidents and breaches Potential impact of incidents to the organization and stakeholders Types of cyber and data incident management strategies Best practices in cyber incident management Risk mitigation strategies for cyber and data breach incidents Communication strategies and protocols for cyber and data incidents Procedures to manage cyber and data incidents on an industry, national or international scale Personal Data Protection Act 2012 |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|--|---|---|--|---|
| Skills Application | | <ul style="list-style-type: none"> Maintain a tracker or log of incidents to provide real-time status reporting on affected systems Report incidents, in line with incident management protocols Gather relevant information about incidents Categorize the importance of incidents based on established guidelines Identify the systems and user groups affected by the incident based on information gathered Analyze incident reports, log files and affected systems to identify threats and root causes of incidents Assist in mitigation of repeat incidents as directed Perform incident triage to assess severity of incidents and security implications Document the modifications made to troubleshoot and resolve problems or incidents in the system Implement approved processes or technologies to mitigate future incidents | <ul style="list-style-type: none"> Review categorization of an incident, and determine its priority and need for escalation Escalate alerts to relevant stakeholder groups upon the occurrence of incidents Perform first responder troubleshooting on cyber-related, data-related or security incidents Distill key insights and impact from analyses of incidents Manage the containment of cyber and data incidents within the organization Lead recovery of contained security incidents Establish mitigation and prevention processes and policies Drive implementation of mitigation processes and policies | <ul style="list-style-type: none"> Develop mechanisms or threat signatures that trigger incident alerts to relevant parties and systems Integrate cyber- and data-related information, alerts and analysis from detection system logs to develop a holistic view of incidents Lead an incident response team Lead the remediation and resolution of cyber and data incidents at the organizational level Resolve large-scale, unpredictable incidents Make key decisions on when and how to communicate incidents to different critical stakeholders Direct post-mortem activities following critical incidents Develop organization-wide cyber and data incident mitigation strategies | <ul style="list-style-type: none"> Establish incident management procedures for the detection, reporting and handling of incidents Develop a playbook for cyber and data incident management Lead collaboration across industries to manage large-scale cyber and data security incidents Co-develop cyber and data incident management strategies on a national level with external experts and stakeholders Lead critical communications to the public, authorities, internal and external stakeholders | <ul style="list-style-type: none"> Direct the management of cyber and data incidents on an industry, national or international scale Manage incidents to minimize significant reputational risk to the organization Lead collaboration across industries to manage large-scale cyber and data security incidents Co-develop cyber and data incident management strategies on a national level with external experts and stakeholders Lead critical communications to the public, authorities, internal and external stakeholders |

Range of Application



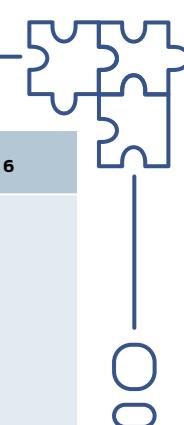
Cyber Risk Management

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 prioritization 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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|--|--|
| FSC Code | | | | AAI-GCOI-4002-I.I | AAI-GCOI-5002-I.I | AAI-GCOI-6002-I.I |
| FSC Proficiency Description | | | | Develop cyber risk assessment techniques and roll-out endorsed measures to address identified cyber security risks, threats and vulnerabilities | Assess and direct enhancements to cyber risk assessment techniques, and develop strategies to address cyber security loopholes | Evaluate the readiness and robustness of the organization's cyber security defenses, and authorize cyber risk assessment activities |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Cyber risk assessment techniques • Security risks, threats and vulnerabilities • Possible treatments of security risks, threats and vulnerabilities • Required levels of confidentiality, integrity, privacy and personal data protection as well as privacy technologies | <ul style="list-style-type: none"> • Design of cyber risk assessment techniques • Projection of cyber security risks, threats and vulnerabilities • Key requirements and objectives of various cyber risk assessments • Pros and cons of various treatment approaches • Business risks and implications from cyber security loopholes | <ul style="list-style-type: none"> • Key business implications of cyber risk assessment and testing policies • Evolving security landscape and emerging cyber security threats • Measures of organizational readiness against threats • Assessment of potential business risks from security loopholes |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|--|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Develop cyber risk assessment techniques to identify security loopholes and weaknesses in the business • Design cyber risk assessments by consolidating insights from the business and various functions • Identify cyber security risks, threats and vulnerabilities, and their impact on the organization • Identify possible treatments for cyber risks, threats and vulnerabilities identified • Implement endorsed treatment and measures to address security gaps | <ul style="list-style-type: none"> • Guide the development of cyber risk assessment techniques • Pre-empt risks, vulnerabilities and threats across organization policies, processes and defenses • Evaluate effectiveness of current cyber risk assessment techniques • Direct improvements or modifications to vulnerability assessment techniques in view of emerging security risks and threats • Lead the implementation of cyber risk assessment activities throughout organization, ensuring alignment with organization's policies and principles • Analyze cybersecurity loopholes identified and project business risk and impact to the organization • Evaluate options and decide on suitable treatment of cyber risks, threats and vulnerabilities • Develop strategies to address loopholes and ensure appropriate levels of protection, confidentiality, integrity and personal data protection | <ul style="list-style-type: none"> • Establish organization's position and strategy for assessing and managing cyber risk • Determine security testing policies and authorize the management of all testing activities within the organization • Articulate implications of potential cyber threats on requirements of organizational readiness and assessment techniques • Weigh potential business risks associated with cyber security risks, threats and vulnerabilities surfaced • Assess overall strength of the organization's existing defenses in light of evolving internal and external security landscape • Endorse strategies to effectively address the security risks, threats and vulnerabilities identified and evaluate potential costs to the organization to implement the strategies |
| Range of Application | | | | | | |



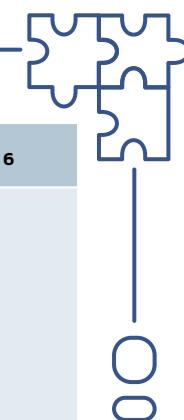
Data Analytics

Implementing data analytics within the organization to generate business insights and intelligence through the use of statistical and computational techniques and tools, algorithms, predictive data modeling and data visualization.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|--|--|--|---|---------|
| FSC Code | | AAI-BDE1-2002-1.1 | AAI-BDE1-3002-1.1 | AAI-BDE1-4002-1.1 | AAI-BDE1-5002-1.1 | |
| FSC Proficiency Description | | Identify underlying trends and patterns in business data using statistical and computational techniques and tools. | Develop, apply and evaluate algorithms, predictive data modeling and data visualization to identify underlying trends and patterns in data. | Design and conduct data studies to drive organizational decisions and insights | Manage and enhance organizational data science capability by refining financial and other business performance criteria and design data studies. | |
| Underpinning Knowledge | | <ul style="list-style-type: none"> • Principles of data modeling and data visualization • Techniques used in data science and how to apply them • Range of data protection and legal issues • Range of functional languages that can be applied for business insights • Methods to apply statistical techniques and machine learning • Importance of the domain context for data science • Underlying data structures involved for data science | <ul style="list-style-type: none"> • Organizational domain(s) and key business processes • Methods to use analytics to tell the story of the data • Methods to use exploratory visual analysis and predictive modeling • Methods to identify and prioritize the problems to be solved • Methods to develop prototype algorithms • Methods to build a data model • Methods to use data mining to discover new business insights • Methods to interpret patterns in data and their relevance to business issues • Range of established and novel tools and techniques used in developing new business insights • Methods to apply complex software tools to analyze data • Use of statistical techniques, experimental techniques, and hypothesis testing | <ul style="list-style-type: none"> • Organizational benefits of business insights • Methods to evaluate data science solutions in contributing to efficiency, growth and return on investment • Methods to identify and interpret the implications of data patterns • Methods to prioritize proposed data science projects • Methods to approach a business problem and come up with a solution that leverages the available data • Methods to run complex data mining models • Methods to visually and analytically explore a data set • Methods to manage the capacity to perform data science projects • Application of statistics, data mining and data modeling and the application of relevant tools and techniques • Methods to measure the capability of the data science team | <ul style="list-style-type: none"> • Organizational context for data and the opportunities that data analytics can provide • Business processes that use and manipulate data • Methods to develop and maintain controls for data quality • Methods to define and manage policies and programs for data stewardship • Impact that data analysis has on business service offerings • Horizon scanning methods | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---|--|--|---|---------|
| Skills Application | | <ul style="list-style-type: none"> • Use data mining, time series forecasting and modeling techniques to identify and predict trends and patterns in data • Assist with data transformation, quality checking and cleansing into digestible data sets • Perform database queries across multiple tables/unions to extract relevant data • Perform appropriate data analysis on distinct data sets • Produce performance dashboards and insight reports • Assist in the production of a range of business insight reports • Summarize and present business insights developed from data studies | <ul style="list-style-type: none"> • Apply predictive data modeling techniques to identify underlying trends and patterns in data using statistical computing tools, methods and procedures • Identify patterns across multiple data sets to derive insights • Develop prototype algorithms and proof of concept demonstrations • Make decisions about which patterns are meaningful, and which to further analyze • Run complex data mining models to provide business insights • Assemble data aggregations to build data models to help test problem hypotheses • Use machine learning techniques to gain new insights from data • Mine data to find relevant insights to develop ongoing improvements • Assess the business insights presented to determine impact of insights on organization • Manage the creation of interactive visualizations of data and data study outcomes • Use industry standard tools and techniques for data visualization in line with organizational procedures | <ul style="list-style-type: none"> • Interpret implications of data patterns on business problem scenarios • Exploit business data to extract insights • Manage data science projects • Configure and customize data models to investigate organizational business hypotheses • Manage organizational capacity for performing data science projects • Make recommendations to guide organizational decision making | <ul style="list-style-type: none"> • Formulate the organization's data science capability to inform business decision making • Lead the implementation of the data science strategy, policies, procedures and metrics to support organizational requirements • Oversee the design, collection, retrieval and analysis of forecasting and performance data • Produce ad hoc analyses and management reports for senior management • Develop and maintain controls on data quality, inter-operability and sources to effectively manage risk • Define and manage policies and programs for data stewardship and custodianship in line with legal, information security, and corporate risk and compliance requirements • Conduct horizon scan to identify, evaluate and implement new technologies and techniques which may contribute to the success of the organization's data analysis capability | |



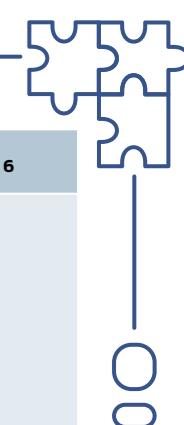
Data Design

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|--|---------|
| FSC Code | | | AAI-DAR1-3001-1.1 | AAI-DAR1-4001-1.1 | AAI-DAR1-5001-1.1 | |
| FSC Proficiency Description | | | Identify data requirements and support the design of database models, incorporating parameters, fields and mechanisms for the maintenance, storage and retrieval of data | Design data models and data flow diagrams and mechanisms to optimize the flow, maintenance, storage and retrieval of data | Establish a strategy for the creation of large-scale data models and structures and spearhead the implementation of database technology, architectures, software and facilities | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Different kinds of data and their requirements • Elements of database schemas • Various fields and components of database models • Mechanisms and processes for data maintenance, storage and retrieval • Data warehousing processes | <ul style="list-style-type: none"> • Data design principles and strategies • Database modeling techniques • Functions and implications of data parameters and fields • Processes for development of database schemas • Data warehousing concepts and methodologies | <ul style="list-style-type: none"> • Database technology and their applications • Principles of data flow within and beyond the enterprise • Critical components in data warehouse blueprints • Application of various database architectures, software and facilities | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | |
|-----------------------|---------|---------|--|--|---|---------|--|
| Skills Application | | | <ul style="list-style-type: none"> • Identify requirements of various structured and unstructured data • Draft database schemas within design constraints, to meet business / information needs • Incorporate parameters and fields for database models • Implement mechanisms for the maintenance, storage and retrieval of data from database models • Perform data warehousing, aggregating data from multiple specified sources • Translate project specifications, objects and data models into database structures | <ul style="list-style-type: none"> • Design data models based on analysis of data requirements and project objectives • Determine the parameters and fields to be set for data models • Review developed database schemas • Formulate data flow diagrams to model processes in information systems • Develop mechanisms and processes to optimize flow, maintenance, storage and retrieval of data to meet organization objectives • Direct the construction of data warehouses, identifying multiple sources of data to be integrated | <ul style="list-style-type: none"> • Establish strategy for the creation of large-scale / enterprise-wide data models and structures • Spearhead the use of database technology where appropriate, considering the complex interconnections between different hardware and software • Commission the use and implementation of database architectures, software and facilities • Direct data flow and processes within and beyond the enterprise • Endorse design specifications of database models, ensuring alignment with business objectives • Conceptualize data warehouse blueprints, taking into account any specialist requirements | | |
| Range of Application | | | <p>Types of database models may include, but are not limited to:</p> <ul style="list-style-type: none"> • Hierarchical database model • Network model • Relational model • Entity–attribute–value model • NoSQL database model | | | | |



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 analyzed according to business requirements

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|--|---|--|--|---------|
| FSC Code | | AAI-DIM1-2009-1.1 | AAI-DIM1-3009-1.1 | AAI-DIM1-4009-1.1 | AAI-DIM1-5009-1.1 | |
| FSC Proficiency Description | | Utilize appropriate tools, systems and techniques to collect, store, extract, transform and load data according to set guidelines | Implement data management processes and systems to map data sources, processes and relationships, and transform and process multiple streams of data | Translate business requirements into data structures and processes to standardize data, verify data reliability and validity, store, extract, transform, load and integrate data | Lead the creation of data management procedures and oversee the integration of data, ensuring optimization of the organization's data pipeline | |
| Underpinning Knowledge | | <ul style="list-style-type: none"> • Data collection process and methodologies • Usage of data collection tools • Data handling, cleaning and processing techniques • Merging of datasets and key considerations • Data validation methods and criteria • Quality indicators of data • Usage of database management system software | <ul style="list-style-type: none"> • Data specifications and requirements • Variety of data sources • Relationship identification and mapping among different data sources and systems • Range of tools to gather, process and optimize accuracy and functionality of data • Methods and considerations to process multiple streams of data • Data transformation techniques • Trade offs between data access optimization and loading or resource utilization factors | <ul style="list-style-type: none"> • Relationship between business requirements and data needs • End-to-end management of organization-wide data pipeline and processes • Best practice methodologies in data validation • Key design elements of data storage mechanisms • Key design elements and considerations of data Extract, Transform and Load (ETL) processes • Direct and indirect impact of changing or integrating data processes and systems • Best practices in optimizing data pipeline elements | | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|--|--|---------|---------|---------|---------|---------|
| Skills Application | | | | | | |
| <ul style="list-style-type: none"> • Apply appropriate data collection tools and techniques to collect data from various sources • Merge varying datasets from disparate sources into a common structure • Catalog data according to set guidelines • Clean the data, checking for outliers or errors • Validate data from different data sets to verify accuracy and minimize errors • Check the structure and quality of warehouse data against standard guidelines and data purpose and usage • Utilize database management system software to perform simple data processing • Create databases to store electronic data • Maintain documentation as per the organization's methodology for Extract, Transform and Load (ETL) processes • Design extraction process for consolidating data from multiple data source systems • Transform data to meet specific business requirements • Operate data warehouse systems to balance optimization of data access with loading and resource utilization factors • Create supporting documentation with metadata and diagrams of entity relationships, business processes and process flow • Develop load process to upload transformed and integrated data to live target system • Translate complex functional and technical business requirements into detailed data structures and designs • Map data between source systems, data warehouses and data marts • Develop data integration procedures, managing the alignment of data availability and integration processes | | | | | | |
| Range of Application | Illustrative examples of database systems: Hadoop, Oracle Database, Microsoft SQL System, NoSQL etc. | | | | | |



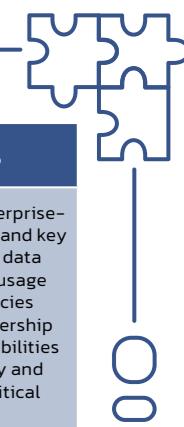
Data Ethics

Apply legal and ethical principles in the collection, use, storage and disposal of data

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|--|---|--|
| FSC Code | | | AAI-GCO1-3003-1.1 | AAI-GCO1-4003-1.1 | AAI-GCO1-5003-1.1 | AAI-GCO1-6003-1.1 |
| FSC Proficiency Description | | | Apply and uphold principles of professional, legal and ethical conduct, policies and procedures in the handling of data | Analyze unethical practices and apply ethical decision-making models and strategies to address ethical dilemmas and issues | Formulate the organization's code of ethics, systems and processes to ensure adherence to professional, legal and ethical requirements for data usage | Drive professional, legal and ethical accountability and responsibility within and across organizations |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Organization's code of conduct, policies and procedures for handling data • Concept of accountability in the data lifecycle • Ethical decision-making framework • Types of data-related ethical issues and dilemmas and their impact • Legal, ethical and regulatory requirements • Personal Data Protection Act (PDPA) • Model AI Governance Framework • Industry-related code of ethics relating to data | <ul style="list-style-type: none"> • Types and indicators of breaches in data ethics • Principles and reasons underlying legislation and ethical decision-making, and ethical decision-making models for addressing ethical dilemmas • Personal and professional boundaries for ethical decision-making • Organization's code of conduct, policies and procedures for handling data • Concept of accountability in the data lifecycle • Legal, ethical and regulatory requirements • Personal Data Protection Act (PDPA) • Model AI Governance Framework • Industry-related code of ethics relating to data | <ul style="list-style-type: none"> • Implications of ethics in handling of data • Organizational policies and procedures for reviewing and reporting on governance and compliance • Underlying principles governing legislation and ethical decision-making • Hierarchy of guiding principles in resolution of ethical dilemmas • Legal, ethical and regulatory requirements • Personal Data Protection Act (PDPA) • Model AI Governance Framework • Industry-related code of ethics relating to data | <ul style="list-style-type: none"> • Procedures and guidelines for benchmarking ethical practices and conducting audits and evaluations within and across organizations • Government policies, practice guidelines and requirements relating to data ethics • Global trends and developments in data ethics • Legal, ethical and regulatory requirements • Personal Data Protection Act (PDPA) • Model AI Governance Framework • Industry-related code of ethics relating to data |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|---|---|--|
| Skills Application | | | <ul style="list-style-type: none"> • Adhere to the organization's code of conduct and the PDPA in the collection, use, retrieval and disposal of personal data • Accept responsibility for own behavior • Recognize and report potential breaches in code of ethics • Apply decision-making process to resolve ethical dilemmas | <ul style="list-style-type: none"> • Review internal code of ethics to identify gaps and improve accountability in the use of data • Monitor compliance to professional, ethical practices, legal and regulatory requirements • Maintain relevancy and currency of organization legal and ethical operational procedures | <ul style="list-style-type: none"> • Establish procedures to identify and address ethical problems • Develop and implement procedures to maintain confidentiality in accordance with data protection and ethics guidelines • Evaluate compliance requirements • Disseminate changes and updates in ethical-legal requirements, professional code of conduct and standards of practice • Maintain an environment conducive to upholding ethical data usage • Facilitate resolution of ethical conflicts in situations of breach of data ethics | <ul style="list-style-type: none"> • Evaluate organizational governance, compliance and risk management policies and procedures in relation to code of conduct relating to data • Assess changes in legislation and regulations, and benchmark ethical practices in the local and international contexts • Design new data ethics frameworks, formulating change structures and procedures • Determine ethical and legal implications on professional practices in policy review initiatives • Establish and monitor quality assurance procedures to ensure governance and ethical accountability • Identify and incorporate changes in ethical practices, professional guidelines, legislation, regulations and reporting requirements with reference to data-related government initiatives • Foster interdisciplinary team collaborations to address ethical concerns, risks or considerations, benefits and outcomes of data-related projects |



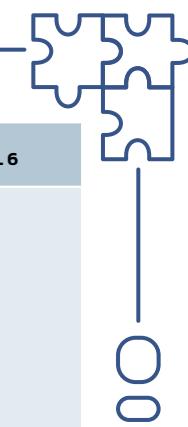
Data Governance

Develop and implement guidelines, laws, and regulations across the organization 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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
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| FSC Code | | | | AAI-GCO1-4004-1.1 | AAI-GCO1-5004-1.1 | AAI-GCO1-6004-1.1 |
| FSC Proficiency Description | | | | Implement guidelines, laws, statutes and regulations on appropriate handling of data at various stages in their lifecycle, and monitor compliance with data policies | Develop organization practices and standards for handling data throughout their lifecycle, resolve breaches, and oversee transfer of data between organizations | Establish policies for data security and usage, facilitate industry consensus around data ethics, and provide expert advice on data transfer across geographies |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Data and privacy policies, laws and regulations • Different stages in the data lifecycle • Standard practices for proper data handling • Required approvals for data handling at different stages • Relevant ethical guidelines in the Infocomm Technology (ICT) industry • Indicators of a data breach | <ul style="list-style-type: none"> • Organization's perspective on fundamental IT and data principles • Impact of poor data quality and practices on the business • Strategies to mitigate poor data practices • Legal parameters or business implications of data handling • Underlying ethical principles governing data handling practices • Privacy laws in a range of organizations, and similarities or differences from own organization • Possible treatment of data breaches | <ul style="list-style-type: none"> • Industry developments and emerging issues in IT and data ethics • Internal data policy development process and consideration • Categories of critical data and corresponding levels of accountability and security required • Relationship between data handling and business value • Different data privacy laws and policies in different countries or regions • Wider implications of ethical laws, policies and regulations in the ICT industry |

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|---|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Roll out data guidelines, laws, statutes and regulations within the organization • Develop detailed guides on how to appropriately handle data throughout its lifecycle • Communicate internal standards for information lifecycle management to employees • Obtain necessary approvals when gathering, handling, processing, storing and using data • Oversee transfer of data within the organization • Monitor compliance with data policies, workflows and rules • Investigate data breaches | <ul style="list-style-type: none"> • Develop organization practices for handling the lifecycle of data • Develop internal standards to guide data capture and validation, access, usage, masking, storage, archival and retention • Initiate process and programs to mitigate business risk of poor data quality and practices • Clarify ethically questionable situations at various stages of the data or information life cycle • Oversee transfer of data between organizations governed by the same privacy laws • Anticipate legal implications of data handling processes • Resolve data breaches | <ul style="list-style-type: none"> • Establish enterprise-wide policies and key principles for data security and usage • Establish policies to define ownership and accountabilities for the quality and security of critical data • Identify impact of various stages of the data lifecycle on business value • Provide expert advice on data handling and management strategies in ambiguous or complex situations • Oversee transfer of data across different countries or regions governed by different data privacy laws • Facilitate industry consensus around technology and data ethics and regulations • Chart direction and strategy on ethical issues relating to information technology and data usage |

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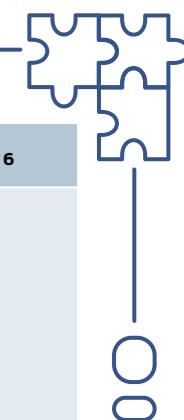
Data Migration

Plan and perform activities to migrate data between computer storage types or file formats

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|---|---------|---------|
| FSC Code | | | AAI-OUS1-3002-1.1 | AAI-OUS1-4002-1.1 | | |
| FSC Proficiency Description | | | Prepare data and perform manual or automated data migration, troubleshoot database errors faced, and validate migrated data post-migration to ensure accuracy | Determine the business need for data migration and plan data migration activities, establishing guidelines and strategies to minimize impact on daily business operations | | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Manual data migration procedures • Types, categories and usage of data movers including host-based software, array-based software and network appliances • Usage of database migration tools • Duration of different data migration processes and downtime required • Potential risks to the business from data migration activities • Data corruption, application performance issues, missed or lost data, and other potential technical compatibility issues related to data migration • Methods of cleaning and validating data | <ul style="list-style-type: none"> • Key drivers and objectives of data migration • Industry best practices and methodologies for data migration • Emerging trends in data migration and management • Data migration and database management system software and tools • Applications, pros and cons of data migration and database management system software and tools • Impact of data migration on daily business operations • Applications of different data movers for different contexts and purpose • Scheduling, replication, hardware, data volume and data value requirements for data migration | | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|--|--|---------|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Perform extraction, transformation and de-duplication of data before migration • Install migration software and configure required hardware according to the communicated data migration plan • Apply tools to automate and accelerate the data migration process, according to a data migration plan • Perform standard manual transfer of data to new storage types, formats or systems according to data migration instructions • Apply data migration policies to move data in an orderly manner • Troubleshoot database errors or problems faced in database migration activities • Validate the migrated data to ensure accuracy • Document the data migration process. | <ul style="list-style-type: none"> • Determine the business need for data migration • Gather impact of data migration activities on business operations and other potential risks or costs • Formulate a data migration plan to facilitate the transfer of data to new storage types, formats or computer systems • Communicate methodologies for data migration • Determine appropriate database management and migration tools and system software to be used, in ensuring they are fit for organizational purposes • Manage the installation of migration software and the configuration of required hardware • Develop strategies to minimize impact of data migration on daily business operations • Set guidelines for migration documentation to facilitate tracking • Validate post-migration statistics to determine data accuracy | | |



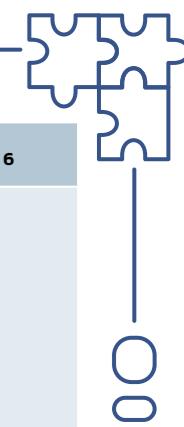
Data Protection Management

Develop and implement a Data Protection Management Program to comply with the Personal Data Protection Act 2012

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|------------------------------------|---------|---------|---|---|--|---------|
| FSC Code | | | AAI-GCO1-3005-1.1 | AAI-GCO1-4005-1.1 | AAI-GCO1-5005-1.1 | |
| FSC Proficiency Description | | | Collect, use or disclose personal data in accordance with the organization's Data Protection Management Program (DPMP) | Develop the organization's Data Protection Management Program (DPMP) in accordance with legal requirements | Formulate the organization's data protection strategy and ensure effectiveness of Data Protection Management Program (DPMP) | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Definition of personal data • Organization's processes, procedures and guidelines of DPMP • Personal Data Protection Act 2012 (PDPA) • PDPA and the data lifecycle • Obligations under the PDPA • Accountability under the PDPA • Best practices in operationalizing PDPA | <ul style="list-style-type: none"> • Components of a DPMP • Data lifecycle • Personal Data Protection Act 2012 (PDPA) • DPMP and its relationship to the data lifecycle • Dynamic and iterative consent approaches to comply with the consent requirement under PDPA • Circumstances that may allow for exemptions from all or any of the PDPA provisions • Methods to document personal data flows • PDPA Assessment Tool for Organizations (PATO) | <ul style="list-style-type: none"> • Data Protection by Design (DPbD) approach • Data Protection Impact Assessment (DPIA) • Best practices in data protection • Principles in data protection policy • Personal Data Protection Act 2012 (PDPA) | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|---------------------------|---------|---------|--|--|---|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Obtain consent to collect, use or disclose individuals' personal data • Allow individuals to withdraw consent • Collect, use or disclose personal data only for the purpose for which consent was obtained • Notify individuals of the purposes for the collection, use or disclosure of their personal data • Correct errors or omissions in individuals' personal data upon request • Ensure accuracy and completeness in the collection of personal data • Cease retention or anonymize personal data when it is no longer necessary for business or legal purposes • Designate data protection roles and responsibilities within the organization • Adopt innovative processes and methods to comply with PDPA requirements • Submit reports of data protection measures to senior management | <ul style="list-style-type: none"> • Document the flows of personal data within the organization • Create content registry to record consent provided by individuals to the organization • Identify key gaps and areas for improvement in data protection • Develop processes to handle data breach incidents • Publish information on the organization's data protection policies, practices and compliant-handling process • Determine the circumstances under which organizations must seek fresh consent for the use of personal data • Designate regional data protection roles and responsibilities within the organization | <ul style="list-style-type: none"> • Review the organization's DPMP to determine gaps and areas for improvement • Formulate the organization's regional DPMP • Conduct a DPIA to identify, assess and address personal data protection risks based on the organization's functions, needs and processes • Assess if the handling of personal data complies with the PDPA or data protection best practices • Introduce technical or organizational measures to safeguard against data protection risks to individuals • Designate regional data protection roles and responsibilities within the organization | |



Data Sharing

Assess the value of data to achieve a competitive advantage and business objectives

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|---|---------|
| FSC Code | | | AAI-GCO1-3006-1.1 | AAI-GCO1-4006-1.1 | AAI-GCO1-5006-1.1 | |
| FSC Proficiency Description | | | Conduct stock-take of the organization's data assets | Assess the value of data assets to achieve organizational and business goals | Evaluate the net worth of the organization's data to achieve organizational and business goals | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Types of data taxonomies • Data valuation methodologies • Types of transactions related to data assets • Personal Data Protection Act (PDPA) • Intellectual Property (IP) rights associated with data assets | <ul style="list-style-type: none"> • Data value drivers and its importance in determining the value of the data • Characteristics of data and categorization of data • Types of and methods to generate use cases for the organization's data assets • Motivations for data monetization • Organization's stakeholders in its value chain or ecosystem • Principles of and approaches to data valuation • Factors determining the final value of the data assets | <ul style="list-style-type: none"> • Factors to consider in data valuation • Trust principles to forming a trusted data sharing partnership • Legal and regulatory obligations in data monetization • Potential risks associated with data monetization • Types of and methods to conduct due diligence checks on data service providers | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|---|---------|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Identify data assets within the organization • Determine what constitutes the organization's data asset • Define the organization's data taxonomy to categorize the data • Record the taxonomy of organization's data assets • Determine the valuation approaches for the organization's data assets • Derive the value of the organization's data assets • Assess the potential for data valuation • Determine the right sharing channels and protocols | <ul style="list-style-type: none"> • Map out the stakeholders in the organization's value chain of ecosystem • Identify potential use cases for organization's data assets based on value chain mapping • Check that parties involved in data sharing have data management, data protection and data use standards • Conduct due diligence checks on data service providers • Ensure that each partner in the data partnership is identifiable and its representatives duly authorized by the organization | | |



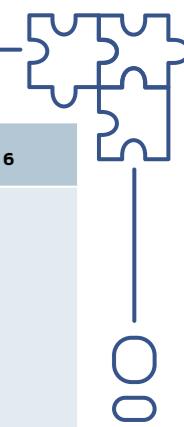
Data Strategy

Develop a robust and coherent data strategy and support architectures, policies, practices and procedures that enable the organization to manage and utilize data in an effective manner. This includes introduction of innovative ways of organizing, managing and integrating the data of the organization 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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|--|
| FSC Code | | | | AAI-SPII-4001-1.1 | AAI-SPII-5001-1.1 | AAI-SPII-6001-1.1 |
| FSC Proficiency Description | | | | Develop data management structures and recommend policies, processes and tools for effective data storage, handling and utilization | Establish data management strategies to extract maximum value from information assets and support decision-making and business processes | Define a coherent data strategy and spearhead new approaches to enrich, synthesize and apply data, to maximize the value of data as a critical business asset and driver |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Data management structures • Information handling approaches • Data management standards and tools • Typical protocols in information asset management • Internal and external information management guidelines and rules | <ul style="list-style-type: none"> • Data architecture design and formulation • Information or data flows of a business • Data structure design • Types of information assets and their business value • Data management approaches and frameworks, and their pros and cons • Existing, new and revised internal and external information regulation policies and requirements • Knowledge of a specific industry domain | <ul style="list-style-type: none"> • Key considerations and components of a data strategy • Principles of data architecture design • Industry standards and best practices in enterprise-level data governance, control and policies • Internal and external data regulations in relation to customers, ownership and usage • Principles and techniques of data exploitation and utilization • Relevance and application of Internet of Things concept • In-depth knowledge of a specific industry domain, and related industries |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|---|--|
| Skills Application | | | | <ul style="list-style-type: none"> • Define data management structures to align and streamline processes of data ownership, retrieval, combination and usage • Plan processes for effective data storage, sharing and utilization within the organization • Update policy, standards and procedures on data management for compliance with relevant legislation • Introduce relevant standards and tools that can be applied to the management and treatment of critical data • Identify gaps, inefficiencies and potential risks in existing data management processes • Propose enhancements or modifications to data handling procedures • Establish internal processes to monitor compliance of information or data handling and access requests with approved procedures • Provide ongoing advice to ensure proper adoption of and adherence to data policies and information architectures | <ul style="list-style-type: none"> • Establish data standards, internal processes and structures to enable the organization to maximize value from data and information assets • Direct the capturing, retention and utilization of critical data • Oversee the organization's data architecture, including the monitoring and management of data flows • Manage usage of various forms of data to support decision-making and business processes • Anticipate the current and future information lifecycle needs of an organization • Establish the organization's data management strategy • Develop corporate Standard Operating Procedures (SOP), protocols and standards for data management, sourcing, handling and treatment • Establish guidelines for effective data storage, sharing and publishing within the organization | <ul style="list-style-type: none"> • Establish a coherent data and analytics strategy, determining the use of new, existing and legacy information assets • Define the kinds of data the organization should capture, retain and utilize • Create the processes and systems required to capture, retain and utilize critical data • Articulate the strategic value of data in the organization and its role as a critical business asset and driver • Design the overarching data architecture for the organization, including the definition of data flows and principles of data governance • Lead strategic utilization and exploitation of data assets to generate business value for the organization • Spearhead new strategies and approaches to enrich, fuse or synthesize data • Establish bird's eye view of data connections across and beyond the organization • Chart direction on the integration and synthesis of different data pieces to draw trends and representations • Ensure alignment of information management strategy with business direction, considering evolving business risks and potential liabilities |
| Range of Application | | | | | | |



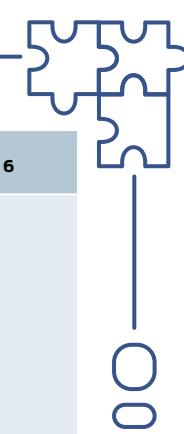
Data Visualization and Storytelling

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|--|---|---------|
| FSC Code | | | AAI-DIM1-3010-1.1 | AAI-DIM1-4010-1.1 | AAI-DIM1-5010-1.1 | |
| FSC Proficiency Description | | | Select appropriate visualization techniques and develop dashboards to reflect data trends and findings | Design data displays to present trends and findings, incorporating new and advanced visualization techniques and analytics capabilities | Establish an effective data visualization architecture and design intelligent and adaptable displays employing optimal delivery modes, mechanisms and timings | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Interpretation of data analysis and findings • Types of visual and data display approaches • Suitability of different data representations and visual displays for different contexts • Data visualization principles, tools and techniques • Elements of data dashboards • Questioning techniques • Infographic creation and application capabilities • Methods to identify audience context and needs | <ul style="list-style-type: none"> • New data visualization tools and techniques • Range of methods to portray data patterns, trends and correlations • Dashboard development process and techniques • Features of data displays • Strategic visualization and mapping techniques • Business vision, strategic goals and branding • Storyboarding and framework development • Exploratory and diagnostic analysis of data • Storyboarding and framework development • Data dashboard creation and application capabilities | <ul style="list-style-type: none"> • Emerging trends and developments in data visualization • Strategic elements and considerations in a data presentation • Intelligent data dashboard design methodologies and techniques • Modes and mechanisms for data delivery • Business vision, branding strategy and goals • Storyboarding and framework development | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|--|---|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Understand business problem, audience needs and objectives for story telling • Select appropriate visualization techniques and information displays to convey data and findings • Organize the presentation of data to reflect trends and correlations • Incorporate appropriate elements to create informative and dynamic data displays • Incorporate interactive graphics, visuals and technical features into the data presentation • Communicate limitations of data and interpretations of findings • Describe context and commentary behind visualized data patterns • Describe data trends and patterns in narrative format suited to level of understanding of audience • Adjust language and presentation formats according to audience being communicated to • Present and describe key meaning and insights | <ul style="list-style-type: none"> • Draw key meanings and insights from data available • Develop general framework and storyboard for communicating data • Introduce new or emerging visualization tools and techniques that are fit for usage • Exercise judgement on the presentation of data to ensure that critical trends and findings are presented in the optimal way • Develop dashboards and scorecards incorporating advanced visualization techniques and embedding analytics capabilities • Review tables, graphs, and dynamic data displays, to ensure key questions from key stakeholders are addressed • Identify and define linkages between data, visuals and narratives being shared • Adjust language and presentation formats according to audience being communicated to • Present and describe key meaning and insights | <ul style="list-style-type: none"> • Design general framework and storyboard for communicating data • Lead efforts to align storyboard to business vision, strategic, goals and branding • Establish an effective data presentation architecture to address critical business questions • Integrate latest developments in data visualization tools, techniques and methodologies • Determine suitable data presentation delivery modes and mechanisms, tailored to key stakeholders' needs • Make decision on the optimal timing for presentation and updates of data and trends on dashboards and systems • Design intelligent data dashboards and customizable visual displays • Lead efforts to interpret and present explanations for counterintuitive patterns or findings | |
| Range of Application | | | <p>Data visualization tools may include, but are not limited to:</p> <ul style="list-style-type: none"> • Tableau • HTML/CSS • SAS Visual Analytics • R <p>Data visualization techniques may include, but are not limited to:</p> <ul style="list-style-type: none"> • Line charts • Network diagram • Map frequency chart | | | |



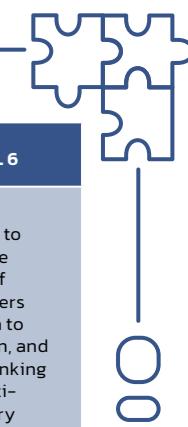
Database Administration

Perform Installation, coordination and upgrading of databases and database servers, performance monitoring and troubleshooting. This includes monitoring user access to database and optimization of database performance, planning for backup and recovery, archived data maintenance and reporting

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|--|--|---|--|--|---------|
| FSC Code | | AAI-OUS1-2003-11 | AAI-OUS1-3003-11 | AAI-OUS1-4003-11 | AAI-OUS1-5003-11 | |
| FSC Proficiency Description | | Conduct basic installation, configuration and upgrade of databases and servers, and perform routine data backup and recovery activities | Monitor and maintain databases, and troubleshoot database errors faced, and ensure appropriate levels of user access to databases | Plan for installation, configuration and upgrading of databases and oversee database maintenance, troubleshooting, backup and recovery activities | Establish strategy and guidelines for database management and administration, directing processes, resources and IT investments to optimize database performance | |
| Underpinning Knowledge | <ul style="list-style-type: none"> Basic steps in installation, configuration and upgrading of databases and servers Usage of basic database management system software and tools Performance indicators of databases Basic processes in data backup, recovery and reporting | <ul style="list-style-type: none"> Principles and processes in installation, configuration and upgrading of databases Processes involved in data storage, extraction and troubleshooting Computing languages for database systems Security and business considerations and implications on database user access Database performance analysis Processes in database backup and maintenance | <ul style="list-style-type: none"> Data migration and database management system software and tools - their applications, pros and cons Principles and processes for more complex data storage, extraction and troubleshooting Key components and considerations in database user access roadmap Performance metrics for database performance Business objectives and plan formulation for data back-up and recovery | <ul style="list-style-type: none"> Industry standards for database performance Industry best practices in database management and optimization Strategy development for database maintenance, backup and recovery | | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---|---|---|--|---------|
| Skills Application | | <ul style="list-style-type: none"> Conduct basic installation, configuration and upgrade of databases and servers according to standard guidelines and methodologies Perform simple maintenance as well as data storage, updates and extraction, using appropriate database management system software and tools Grant user access to database based on the appropriate levels of access given to users Utilize basic system software and tools to track and consolidate performance statistics of databases Perform routine data backup and recovery activities Document upcoming and completed data back-ups and archiving activities | <ul style="list-style-type: none"> Perform installation, configuration and upgrading of large or complex databases and data servers as required Maintain databases, in ensuring that data is updated, stored and extracted accurately and according to set protocols Troubleshoot database errors or problems faced in database administration activities Monitor user access to databases to ensure that users have the appropriate levels of access based on security clearance, organizational guidelines and business needs Analyze performance statistics and highlight potential areas of improvements to the database Conduct data backup and recovery activities for internal or external customers, based on the business requirement Implement regular data maintenance or archiving to inform relevant stakeholders | <ul style="list-style-type: none"> Assess the business need and plan for installation, configuration and upgrading of databases Determine appropriate database management tools and system software to be used, in ensuring they are fit for organizational purposes Manage database maintenance, monitoring and troubleshooting to resolve complex or unforeseen problems Develop a user access roadmap in collaboration with other key stakeholders, assigning appropriate levels of database access based on the role of users, data security and privacy policies Evaluate database performance statistics and user feedback, and recommend ways to optimize database performance in line with business requirements and cost considerations Develop an action plan for data backup and recovery procedures, archived data maintenance and reporting for a range of databases, in ensuring appropriate levels of frequency, storage capacity and system availability. | <ul style="list-style-type: none"> Develop organizational standards and guidelines for the installation, configuration and upgrading of databases, in line with business requirements Establish strategy and plan processes for maintenance, monitoring and troubleshooting of databases Review database user access roadmap in line with the privacy and security policies of the organization Review recommendations and direct data-related processes, resources and IT investments to optimize database performance, based on business needs and industry best practices Establish an organization-wide strategy for data backup and recovery, archived data maintenance and reporting procedures for databases, balancing business demands with financial and operational costs. | |
| Range of Application | | Illustrative examples of database systems: Hadoop, Oracle Database, Microsoft SQL System, NoSQL, etc. | | | | |



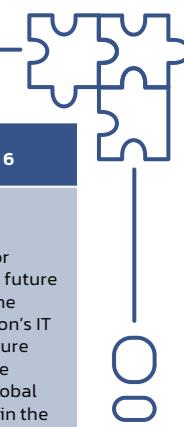
Design Thinking Practice

Manage design thinking methodologies and processes to solve specific challenges for the organization, and guide stakeholders through the phases of inspiration, empathy, ideation and implementation

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|--|--|--|
| FSC Code | | | AAI-DAR1-3002-1.1 | AAI-DAR1-4002-1.1 | AAI-DAR1-5002-1.1 | AAI-DAR1-6002-1.1 |
| FSC Proficiency Description | | | Apply design thinking methodologies and execute design thinking processes to challenge norms and conventions in the organization | Facilitate and guide stakeholders to apply design thinking methodologies and processes for the organization | Establish effective design thinking processes, methodologies and frameworks to proliferate design thinking across the organization | Transform organizational operations, processes and systems by contextualizing and incorporating design thinking processes and methodologies for the organization |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Concept of design thinking • Importance of design thinking • Traits of a design thinker • Stages in the design thinking process • How design thinking is used in other organizations • Methods of applying design thinking for the organization • Prototyping methodologies • Design thinking frameworks and tools | <ul style="list-style-type: none"> • Concept of design thinking • Importance of design thinking • Stages in the design thinking process • How design thinking is used in other organizations • Methods of applying design thinking for the organization • Concept of innovation management | <ul style="list-style-type: none"> • Latest trends in design thinking • Concept of innovation management • Drivers of organizational growth and success • Concept and principles of resource management • Project management tools and techniques | <ul style="list-style-type: none"> • Latest trends in design thinking • Concept of innovation management • Drivers of organizational growth and success • Concept and principles of resource management • Project management tools and techniques |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|--|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Apply design thinking methodologies to define design problems and generate new ideas for the organization • Uncover opportunities for applying design thinking across the organization • Utilize metrics to benchmark and measure outcomes of design ideas and solutions • Implement plans to embed design thinking across the organization • Facilitate the appropriate use of design thinking processes and methodologies by participants • Establish metrics to measure outcomes of design ideas and prototypes • Present and communicate the design outcomes and process for design ideas • Apply design thinking frameworks and tools to work processes | <ul style="list-style-type: none"> • Articulate to team members the principles and concepts of innovation, creativity and design thinking processes • Equip stakeholders with the mind set to develop design thinking approaches • Synthesize information from different sources and stakeholders in order to fully understand the needs of end users • Drive the development of new strategies to enhance products and/or services for the organization • Engage stakeholders during the design thinking process to uncover the motivations behind their actions and behaviors • Promote design thinking as a tool for solving problems and challenges for the organization • Remove obstacles and hindrances to implementing design thinking for the organization • Cultivate design thinking as a viable tool and methodology to foster new innovations for the organization • Lead design thinking projects across the organization | <ul style="list-style-type: none"> • Integrate design thinking methodologies into processes to drive innovation across the organization • Develop strategies to proliferate design thinking across the organization • Influence and facilitate design teams on their path towards design and innovation • Form multi-disciplinary teams to generate new ideas and solutions • Develop strategies to change the mindset of stakeholders in relation to innovation, and design thinking • Build a working culture that encourages user-centric approach, empathy, ideation, prototyping, and playful testing | |



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 organization's disaster recovery plan and processes.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | |
|-----------------------------|---------|---------|---------|--|---|--|--|
| FSC Code | | | | AAI-BPM1-4009-1.1 | AAI-BPM1-5009-1.1 | AAI-BPM1-6009-1.1 | |
| FSC Proficiency Description | | | | Identify and implement recovery solutions to support disaster recovery strategies Design a disaster recovery plan and review recommendations for alternate solutions and recovery or back up procedures | Anticipate future needs of the organization's IT infrastructure, and apply relevant global standards to the organization's disaster recovery strategy, policies and guidelines | | |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Potential disasters or crises impacting IT processes or services • Considerations for setting Recovery Time Objective (RTO) and Recovery Point Objective (RPO) • Disaster recovery processes, action steps and options | <ul style="list-style-type: none"> • Trends in disasters, crises or emergencies that may impact business IT processes • Optimization of RTO and RPO • Requirements for development of a disaster recovery plan • Pros, cons and considerations to evaluate recommended disaster recovery processes or options • Quality assurance standards for disaster recovery management | <ul style="list-style-type: none"> • Projected trends or potential future disasters • Future IT infrastructure needs • Global and industry standards for disaster recovery policies, regulations and best practices • Performance benchmarking standards for disaster recovery plans | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Demonstrate awareness of commonly encountered disasters, crises or exigencies • Analyze key business functions and operational requirements to recommend RTO and RPO of critical systems and processes • Develop safeguards and solutions alternate facilities, manual procedures, data center recovery and back up processes to support disaster recovery strategies • Test out disaster recovery plans, and resolve operational issues that surface • Implement appropriate processes, systems and tools to ensure efficient recovery of critical IT infrastructure and systems following a disaster • Monitor outcomes of disaster recovery plan against key performance benchmarks • Implement follow-up actions to enhance effectiveness of disaster recovery processes | <ul style="list-style-type: none"> • Identify current trends in disasters, crises or exigencies that can impact business IT processes • Translate disaster recovery strategy into recovery plans for facilities, supply, user records, technical software and hardware, and data • Design a disaster recovery plan with clear objectives, scope, elements and optimal RTO and RPO parameters, as well as defined roles and responsibilities • Oversee the testing of disaster recovery plans and identify areas for enhancement • Review recommendations for mitigating safeguards and alternate solutions according to internal disaster recovery guidelines • Establish quality assurance method for disaster plan, using regulatory guidelines and key performance benchmarks • Review disaster recovery plans and processes to recommend process enhancements or system changes to improve overall effectiveness | <ul style="list-style-type: none"> • Anticipate potential disasters or crises, and future needs of the organization's IT infrastructure • Incorporate suitable global standards in the development of disaster recovery strategy, policies and guidelines • Determine cost-effective recovery strategies, emphasizing recovery priorities for the business • Approve the disaster recovery plan, ensuring alignment of RTO, RPO, and supply, user, technical and data recovery processes with the organization's disaster recovery policies and benchmarks • Develop key performance benchmarks to measure the effectiveness and efficiency of disaster recovery plan • Establish post-disaster assessment protocols to review disaster recovery effectiveness, and maintain oversight of results |
| Range of Application | | | | | | |



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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|--|--|
| FSC Code | | | AAI-BPMI-3010-1.1 | AAI-BPMI-4010-1.1 | AAI-BPMI-5010-1.1 | AAI-BPMI-6010-1.1 |
| FSC Proficiency Description | | | Conduct research and identify opportunities for new and emerging technology to support the business | Evaluate new and emerging technology and trends against the organizational needs and processes | Establish internal structures and processes to guide the exploration, integration and evaluation of new technologies | Establish an emerging technology strategy and spearhead organizational norms to synthesize and leverage new technologies and trends to propel business growth |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Market scanning and research techniques for emerging technology • Similar or relevant industries • New technologies and IT products and services in the market • Typical business process flows | <ul style="list-style-type: none"> • Current industry and technology information sources • Industry-accepted hardware and software products • Emerging trends in technological products and services in the IT industry • Cost-benefit analysis and evaluation methods for assessing new technologies • Business process flows and interdependencies | <ul style="list-style-type: none"> • Key sources of information on new technologies in adjacent, competing or relevant industries • Risk analysis of the new technologies, and implications on legal, ethical or security dimensions of the business • Change management and implementation considerations relating to introduction of new technologies • Business priorities, planning, value chain and key processes • Current and future impact analysis | <ul style="list-style-type: none"> • Critical elements of an emerging technology blueprint • Short and long-term impact of new and emerging technologies • Trends and developments in adjacent industries • Potential impact and disruptions to process norms in the Infocomm Technology (ICT) industry or field • Strategic partnership and alliance development |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | |
|-----------------------|---|---------|---------|---|---|---|--|
| Skills Application | | | | <ul style="list-style-type: none"> • Explore relevance of technologies or IT processes in use and under development in other industry sectors • Conduct research on new technologies • Assess potential of emerging technologies to address challenges or enhance processes within the organization • Identify processes that will be improved by the application of new and emerging technologies and approaches • Put forth recommendations or options of technology models that offer process improvement | <ul style="list-style-type: none"> • Determine the suitable sources and relevant sectors or industries to explore new technologies in detail • Monitor the market to keep abreast of new technologies that will impact the ICT market • Evaluate emerging technology against the existing business needs and infrastructure in a nimble and iterative manner • Review market research and validate the new technologies against the organizational needs • Provide recommendations with strong rationale for the outcome of the evaluation • Communicate with external partners to obtain and explore emerging technologies | <ul style="list-style-type: none"> • Lead the identification and evaluation of new and emerging technologies, techniques and models • Decipher impact of new and emerging technologies on business operations • Experiment with the integration of new and emerging technology into the existing business context • Establish internal processes and guidelines to facilitate the research on and evaluation of new technologies • Establish organizational need and selection criteria for new technologies • Articulate the business considerations and parameters relating to the adoption of new technologies • Manage collaborations with external partners to gain access to and explore emerging technologies | <ul style="list-style-type: none"> • Develop an emerging technology strategy and blueprint • Harness new technologies and trends in molding business strategy • Decipher the impact of emerging technology on the ICT industry or field • Establish organizational norms of evaluating emerging technologies in a rapid, nimble and iterative manner • Synthesize different emerging technologies and trends into initiatives or products that propel business growth • Establish alliances to facilitate emerging technology exploration across organizations • Build strategic partnerships with organizations and suppliers to optimize access to new and emerging technology • Create thought leadership around emerging technologies and their impact |
| Range of Application | Contexts in which this skill may be applied includes, but is not limited to: | | | | | | |
| | <ul style="list-style-type: none"> • Overall business operations • New IT products or services • IT operations • Marketing function • Sales function | | | | | | |



Enterprise Architecture

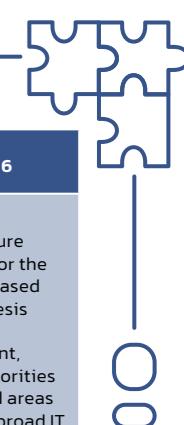
Operationalize a business strategy on the planning and development of business structures and models to facilitate the evolution of a business to its desired future state. This involves the review and prioritization of market trends, evaluation of alternative strategies, as well as the strategic evaluation and utilization of enterprise capability and technology to support business requirements

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|--|--|
| FSC Code | | | | AAI-DAR1-4003-1.1 | AAI-DAR1-5003-1.1 | AAI-DAR1-6003-1.1 |
| FSC Proficiency Description | | | | Articulate impact of trends and alternative strategies on enterprise architecture, and develop action plans to support the transition to the desired future state | Design business architecture blueprint and frameworks to achieve the desired future state, and attain enterprise resources to facilitate the transition | Envision and lead the development of a future-ready enterprise architecture, and strategically manage resources and capabilities to sustain the evolution of the business |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Fundamental concepts of an enterprise architecture • Industry trends and alternative business strategies • Principles and techniques in project planning and management • Best practices of implementing business unit action plans | <ul style="list-style-type: none"> • Elements of an enterprise structure including capabilities, governance structure and business processes • Gap analysis • Business case creation • Components of an enterprise architecture blueprint • Techniques for blueprint design and development • Business architecture modeling techniques • Return on Investment (ROI) analysis | <ul style="list-style-type: none"> • Business strategy formulation and planning • Best practices and methodologies in enterprise architecture development • SWOT analysis for business transformation initiatives • Enterprise architecture metrics • Sustainability assessment of enterprise architecture • Strategic resource management |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|--|--|
| Skills Application | | | | <ul style="list-style-type: none"> • Identify market trends, alternative strategies and their potential implications on the business architecture • Identify gaps between the current and target business architectures • Translate the business architecture blueprint into focused action plans • Determine objectives, dependencies, resources, timelines, metrics costs and risks associated with the proposed plans and initiatives • Assess adequacy of resources, technology and capabilities available to support business requirements | <ul style="list-style-type: none"> • Evaluate market trends in the industry or adjacent industries, including evolving customer needs and competitor offerings • Analyze gaps between current and target business architectures • Develop a business case for a new or enhanced enterprise strategy • Recommend a best-fit framework, processes and structures to support the transition toward target architecture • Project and weigh current or future costs and value added by new business initiatives • Determine the enterprise architecture and structures required to drive the business strategy • Define architecture metrics to guide monitoring of the enterprise life cycle • Utilize current and projected resources to support future business architecture and strategy | <ul style="list-style-type: none"> • Anticipate industry developments and project future trends and needs of key customers or stakeholders • Establish an effective and sustainable strategy for the business • Evaluate the viability of the organization's architecture against current and projected market trends and alternative strategies • Formulate vision for how new business strategy can fulfill stakeholder needs and priorities |

Range of Application



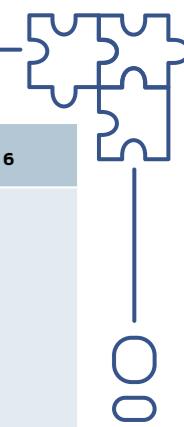
Infrastructure Strategy

Develop a robust strategy and plan for defining and managing a future-ready IT infrastructure, optimizing its capacity, availability and synchronization to enable an organization'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.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|---|--|
| FSC Code | | | | AAI-SPII-4002-I.I | AAI-SPII-5002-I.I | AAI-SPII-6002-I.I |
| FSC Proficiency Description | | | | Support the development of and implement a strategic IT infrastructure plan, overseeing and synchronizing the performance of infrastructure elements | Develop a robust infrastructure plan and model that is aligned and adaptable to internal business priorities and external trends | Establish a future-ready infrastructure strategy, spearheading infrastructure change and transformation to the desired future state. |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Key elements and components of IT infrastructure • Current infrastructure, system functionality, industry standards and expected performance of IT infrastructure • Infrastructure component performance management and measurement • Infrastructure plan design and requirements • Service Level Agreements (SLA) and impact of infrastructure capability • Types of technological disruptors | <ul style="list-style-type: none"> • Market trends in infrastructure, technology development and various options for managing a business' infrastructure through outsourcing, cloud or virtualization • Principles of technological disruption • Impact of automation on infrastructure requirements and parameters • Features and capabilities of infrastructure components and elements • Infrastructure capacity planning and maximization techniques • Interactions and interdependencies among infrastructure components | <ul style="list-style-type: none"> • Infrastructure strategy development • Impact of technological disruptors on infrastructure strategy and performance • Business impact of infrastructure options, models or changes • Evolution of critical technology trends, and potential impact on business infrastructure decisions • New and emerging capabilities of various infrastructure components and elements • Pros and cons of various infrastructure models • Strategy road-mapping techniques • Techniques to project future costs and benefits of infrastructure investments |

Continue to next page

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|---|--|
| Skills Application | | | | <ul style="list-style-type: none"> • Articulate the impact of current state of operations and challenges on the desired IT infrastructure • Establish processes or mechanisms to ensure proper set up of infrastructure components • Benchmark current quality and capacity of IT infrastructure against industry standards, IT blueprint for performance and expected organization requirements • Monitor capacity and performance indicators on an ongoing basis, and put forth recommendations to refine plan if needed • Identify technical requirements required to support IT infrastructure • Draft infrastructure plan including hardware, software, general infrastructure aspects and their specifications • Maintain oversight of changes and updates to IT infrastructure capabilities and highlight impact on SLAs | <ul style="list-style-type: none"> • Evaluate infrastructure gaps and the required transformation to address them • Develop a business case for various infrastructure models and deployment options • Anticipate how an organization's infrastructure will evolve over time with technological trends and developments • Drive processes to enable adaptation of infrastructure to changing market priorities, strategies and technology • Develop plans for infrastructure capacity enhancement to support the infrastructure strategy • Propose resourcing models to support the infrastructure for critical and non-critical business areas • Define the coverage, interface and topology of infrastructure elements and their components • Synchronize infrastructure components to ensure stability, reliability and efficiency | <ul style="list-style-type: none"> • Make key infrastructure decisions for the business, based on a synthesis of external environment, internal priorities and related areas within the broad IT architecture • Determine a fit-for-purpose infrastructure strategy for the business • Develop a long-term roadmap to future-proof the organization's infrastructure • Evaluate the viability of new and emerging infrastructure models for the business • Determine the most suitable infrastructure model/s for the organization • Evaluate impact of evolving needs, operating environment and emerging market trends on infrastructure requirements • Align IT infrastructure investments with the relative importance of business lines, products and services they support • Endorse resourcing models to drive the infrastructure strategy, in ensuring business viability and sustainability • Establish sustainable and repeatable processes to facilitate ease of infrastructure transformation and adaptation to changing internal and external environments |



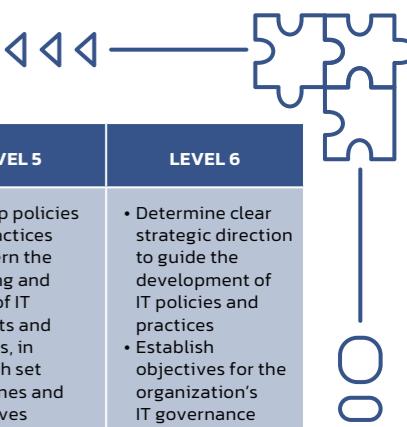
Intelligent Reasoning

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|---------|
| FSC Code | | | | AAI-DIM1-4011-1.1 | AAI-DIM1-5011-1.1 | |
| FSC Proficiency Description | | | | Build knowledge-based intelligent software applications using machine reasoning techniques and computer programming | Evaluate, design and build intelligent software systems | |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Machine reasoning applications and technology • Core machine reasoning techniques • Components and techniques in knowledge-based systems • Reasoning system architectures • Requirements and explainability for machine learning systems • Types and sources of uncertainty and certainty factor technique • Contemporary machine reasoning systems • AI Ethics | <ul style="list-style-type: none"> • Cognitive systems • Cognitive knowledge representation and techniques • Speech comprehension and processing • Vision comprehension and processing • Natural language comprehension and processing • Reasoning systems • Search techniques for search-based reasoning applications • Optimization techniques for optimization reasoning applications • Knowledge discovery techniques for reasoning applications • Hybrid reasoning systems • Data mining framework • AI Ethics | |

Continue to next page

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|---|--|---------|
| Skills Application | | | | <ul style="list-style-type: none"> • Analyze the business drivers and main application areas of machine reasoning • Analyze reasoning systems for problem solving • Analyze the forms to organize and represent knowledge, business rules and natural language • Analyze techniques to draw new conclusions based on existing knowledge rules and new facts • Analyze characteristics and results evaluation of advanced computational deductive reasoning techniques • Examine uncertainty issues in machine learning • Analyze characteristics and results evaluation of uncertainty handling techniques • Apply logical inference to deduce new conclusions • Evaluate performance of advanced mathematical models, inductive and deductive reasoning techniques • Design and create reasoning systems | <ul style="list-style-type: none"> • Identify required cognitive functions based on business needs • Design cognitive applications based on business requirements • Analyze business drivers and application areas of intelligent reasoning systems • Design and apply search techniques to realize expected business outcomes • De-compose complex application scenarios into subproblems • Resolve subproblems by assembling cooperative intelligent subsystems • Design cooperative reasoning modules based on decomposed business outcomes • Create hybrid reasoning systems by applying suitable techniques and computer programming • Build reasoning systems using hybrid reasoning techniques and sub-modules | |



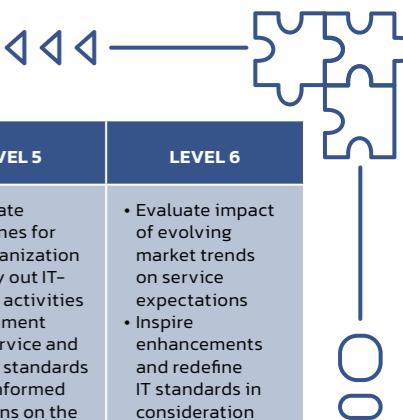
IT Governance

Set and monitor IT infrastructure, information, digital services and associated technology. This involves developing policies and practices to govern the organization'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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|---|---|
| FSC Code | | | | AAI-GCOI-4007-I.I | AAI-GCOI-5007-I.I | AAI-GCOI-6007-I.I |
| FSC Proficiency Description | | | | Develop and implement standard operating procedures based on IT policies and practices, ensuring compliance with standards and regulations | Develop policies and practices to govern the handling and usage of IT products and services and facilitate communications with governing authorities | Establish the IT governance strategy and structure to guide policies and practices, and facilitate industry-wide conversations around technology governance and standards |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Appropriate methodologies in using or handling IT infrastructure • Implementation steps for IT governance structures • Data and privacy laws and regulations • Relevant ethical guidelines in the ICT industry | <ul style="list-style-type: none"> • Procedures in IT policy setting • Evolving IT needs and expectations • Implementation considerations for IT governance structures • Organization's perspective on fundamental IT or data ethical principles • Legal or business implications of ethical ambiguities | <ul style="list-style-type: none"> • Emerging trends in IT governance • Strategic planning for governance structures • Best practices and principles in managing IT governance • Industry wide developments and emerging issues in IT and data ethics • Wider implications of ethical laws, policies and regulations in the Infocomm Technology industry |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Translate IT policies and practices into practical action steps and operating procedures for respective business units • Monitor existing IT infrastructure and processes • Analyze feedback and requirements of internal and external stakeholders with respect to IT policies and processes • Roll out policies and practices on IT governance • Implement ethical guidelines, laws, statutes and regulations within the organization • Communicate updates, revisions, additions or changes to relevant teams or employees • Implement checks and periodically monitor the utilization and handling of IT products and services | <ul style="list-style-type: none"> • Develop policies and practices to govern the handling and usage of IT products and services, in line with set guidelines and objectives • Project evolving IT needs and expectations of stakeholders • Anticipate impact of changing needs and demands on internal policies and practices • Review effectiveness of existing governance structure, policies and processes • Drive implementation of IT governance structures • Oversee roll out of new or revised policies and practices, clarifying complex queries • Facilitate communication between governing authorities, internal or external stakeholders, and the IT organization • Educate internal staff on ethical guidelines, laws, statutes and regulations that govern use of information technology and data • Clarify ethically questionable situations at various stages of the data or information life cycle | <ul style="list-style-type: none"> • Determine clear strategic direction to guide the development of IT policies and practices • Establish objectives for the organization's IT governance structure, considering evolving IT needs of the business and stakeholders • Align the IT governance structures against emerging trends, governance models and service standards in the industry • Endorse proposed or revised IT policies, practices, ensuring alignment with business priorities • Facilitate industry consensus around technology and data ethics and regulations • Spearhead thought leadership on ethical issues relating to information technology and data usage |
| Range of Application | | | | | | |



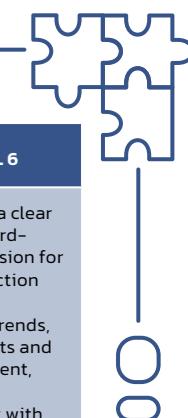
IT Standards

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 organization 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 organization

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|--|---|
| FSC Code | | | | AAI-GCO1-4008-1.1 | AAI-GCO1-5008-1.1 | AAI-GCO1-6008-1.1 |
| FSC Proficiency Description | | | | Review current practices of performing IT-related activities, and propose revisions to service standards and protocols | Set guidelines for IT-related activities in alignment with relevant service, quality and global industry standards | Inspire enhancements and redefine IT standards, in line with the evolving landscape and their impact on service expectations |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Analysis of internal operating procedures • Impact of changes to IT protocols • Typical documentation and sources for IT standards | <ul style="list-style-type: none"> • Steps in the creation of service protocols • Impact of revised IT standards on stakeholders or internal processes • Process of stakeholder engagement to ensure understanding and compliance | <ul style="list-style-type: none"> • Impact of consumer demands and trends on service expectations • Global industry standards and best practices in similar business areas • Pros and cons of changes or updates to IT policies and processes |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|--|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Review current practices of performing IT-related activities against the organization's desired standards and guidelines • Evaluate relevance of global industry standards to the organization's internal standards • Analyze gaps between current practices and user and business IT requirements • Propose revisions to IT service standards and protocols based on new directions, so as to enhance efficiency and effectiveness of IT service delivery • Determine impact of new protocols and procedures on IT protocols • Maintain policy updates and revisions to operating procedures • Conduct periodic checks to ensure that day to day IT activities and processes are conducted in line with internal best practices | <ul style="list-style-type: none"> • Articulate guidelines for the organization to carry out IT-related activities in alignment with service and quality standards • Make informed decisions on the applicability of global industry standards to the company's context • Determine new IT practices based on refinements to organization's service standards • Review revisions to practices and service protocols for IT activities • Define content for materials, handbooks and manuals as well as key messages for stakeholders, in capturing updates to IT standards • Recommend new policies to regulate updates of operating procedures to users | <ul style="list-style-type: none"> • Evaluate impact of evolving market trends on service expectations • Inspire enhancements and redefine IT standards in consideration of emerging industry trends and requirements • Approve new policies and policy updates to align IT processes with the organization's desired standards and priorities |
| Range of Application | | | | | | |



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 programs with the strategy to optimize the business value from IT

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|--|
| FSC Code | | | | AAI-SPII-4003-I.1 | AAI-SPII-5003-I.1 | AAI-SPII-6003-I.1 |
| FSC Proficiency Description | | | | Generate insights to support strategic plans, systems and guidelines for IT, and evaluate the potential costs and value of new IT programs | Create an IT strategy, and develop transformation initiatives to meet business requirements and support the modernization of the IT landscape | Establish future vision and key priorities for the IT organization based on a projection of industry trends and developments |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Objectives of an IT strategic plan • Concept of sustainable competitive advantage for IT functions or organizations • IT business models or internal IT management process models, and the process of evaluating their suitability to a given context • Return on Investment (ROI) and cost-benefit analysis techniques • Statistical projection techniques to measure potential business value and impact | <ul style="list-style-type: none"> • Components of an IT strategic plan and parts of the business planning process relevant to the IT function or business • Evaluation of current system functionality vis-a-vis the strategic environment • Feasibility and cost-benefit analysis • Financial and non-financial factors and considerations when evaluating an IT program • Predictive modeling and statistical projection techniques | <ul style="list-style-type: none"> • Strategic planning methodologies, processes and best practices, and supporting sources of information • Analysis and planning approaches to IT organization requirements • Future needs, trends and operating environments • Business process analysis techniques to identify and evaluate strengths, weaknesses, opportunities and threats • Strategic and competitive factors for the IT organization • Application of business models, statistical projections and predictive modeling in different contexts |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|--|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Identify issues that the strategy planning process should address • Evaluate the current internal and external environment of the organization to determine possible gaps and improvement opportunities • Analyze relevant information or data to plan for IT business strategies and internal process strategies • Conduct an initial assessment of various IT business process models or internal process management systems • Document the mission, vision, objectives and strategies of the IT organization • Propose small-scale IT initiatives or programs that can enhance business value and yield benefits • Conduct ROI and cost-benefit analysis on current or potential IT programs • Establish a business case for IT investments, based on potential impact on the business • Drive new IT programs and processes that yield sustainable benefits and generate value for the organization • Evaluate impact of changes by reviewing IT business process models and their outcomes | <ul style="list-style-type: none"> • Align the IT organization's strategic plan with the industry environment and current organizational goals • Support the creation and upgrade of the IT organization's mission, vision, objectives and strategies • Define IT transformation initiatives that support the modernization of the IT landscape by the consolidation of platforms, virtualization or other state of the art technologies • Set strategic direction and objectives that aligns IT organization strategy with business goals • Modernize the IT landscape and chart future-focused key transformation initiatives • Align business decisions on technology investments to the organization's strategic priorities • Prioritize current and potential IT programs in relation to current and future resources and benefits | <ul style="list-style-type: none"> • Establish a clear and forward-looking vision for the IT function • Evaluate industry trends, movements and development, and their alignment with IT organization's strategic direction • Project the current and future internal and external environment of the IT organization so as to assess opportunities and threats • Set strategic direction and objectives that aligns IT organization strategy with business goals • Modernize the IT landscape and chart future-focused key transformation initiatives • Align business decisions on technology investments to the organization's strategic priorities • Prioritize current and potential IT programs in relation to current and future resources and benefits |



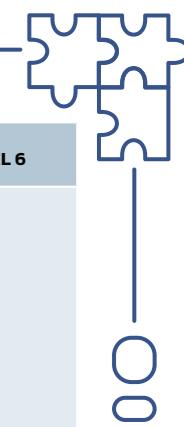
Learning and Development

Manage employees' learning and development activities to maximize employee' potential and capabilities to contribute to the organization

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | | | |
|-----------------------------|---------|---------|---------|--|--|---|---|---|---|
| FSC Code | | | | AAI-PDEI-4001-I.I | AAI-PDEI-5001-I.I | AAI-PDEI-6001-I.I | | | |
| FSC Proficiency Description | | | | Support employees to develop their skills and facilitate learning opportunities and coaching junior management employees | Drive employee developmental programs in alignment to business needs | Mentor successors, support organizational learning and develop and engage employees to develop a strong organizational base | | | |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Legal and ethical considerations relating to identification of individual training requirements • Market trends and developments in relation to business functions which may aid in identifying new and emerging skill requirements • Roles and accountability for identifying appropriate employee skill requirements • Methods of facilitation of individual learning opportunities • Instructional techniques and methods for working with team members to increase performance • Relevant professional or industry codes of practice and standards • Communication techniques and channels relevant for disseminating information regarding team activities, services and products • Models and methods of training needs analysis • Negotiation techniques for encouraging employees to participate in processes to improve skills • Implications and impact of coaching and mentoring activities on the individuals • participating in the process | <ul style="list-style-type: none"> • Legal and ethical considerations relating to the broader development and provision of human resource information and services • Links between human resource and organizational strategies • Communication techniques and channels relevant for disseminating • Facilitation and communication skills for working with stakeholders in the development of human resource activities, services and programs • Models and methods for evaluating the effectiveness of human resource activities, services and programs • Legal and ethical considerations relating to consultation and communication with organizational stakeholders • Relationship between strategies developed at more senior levels and the operational or functional requirements of other areas within an organization | <ul style="list-style-type: none"> • Legal and ethical considerations relating to succession planning, and organizational learning and development • Organizational policies and procedures relating to succession planning, and organizational learning and development • Relevant professional or industry codes of practice and standards relating to learning and development • Implications and impact on employees and the organization arising from succession management processes, learning and development processes, and engagement activities • Relationship between engagement and performance • Concepts and theories of succession planning and employee engagement • Market trends and developments in relation to succession management, employee engagement and learning and development | <ul style="list-style-type: none"> • Review organizational strategies and business plans that impact on the team's competency requirements • Select and use tools to review current skills of employees • Establish employees' learning priorities • Support employees in drafting learning and development plans • Facilitate learning and development opportunities to address skills needs • Provide resources and support for learning and development • Establish clear learning outcomes and timeframes • Review learning outcomes against learning goals | <ul style="list-style-type: none"> • Identify human resource trends that may impact on organizational performance • Implement identified changes to human resource activities, services and programs to support the organization's strategic and business goals • Establish performance indicators and measures for the effectiveness of human resource activities, services and programs designed to support the organization's strategic and business goals • Review organization's strategic and business plans to identify areas impacting on human resource activities, services and programs • Facilitate involvement of stakeholders to review human resource service effectiveness and clarify future expectations and requirements • Communicate with stakeholders to clarify their needs relating to human resource activities, services and programs | <ul style="list-style-type: none"> • Develop a succession management strategy in consultation with the human resources function and other relevant personnel to facilitate succession planning • Identify critical roles and feeder positions to provide opportunities to groom successors • Work with managers and identified successors to create and implement development and retention plans • Prioritize learning and development programs to support employees in the development of their professional, technical and managerial competencies • Guide senior managers to demonstrate independence and responsibility for their personal development • Provide engagement strategies to improve organizational performance |

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|---|---|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Review organizational strategies and business plans that impact on the team's competency requirements • Select and use tools to review current skills of employees • Establish employees' learning priorities • Support employees in drafting learning and development plans • Facilitate learning and development opportunities to address skills needs • Provide resources and support for learning and development • Establish clear learning outcomes and timeframes • Review learning outcomes against learning goals | <ul style="list-style-type: none"> • Identify human resource trends that may impact on organizational performance • Implement identified changes to human resource activities, services and programs to support the organization's strategic and business goals • Establish performance indicators and measures for the effectiveness of human resource activities, services and programs designed to support the organization's strategic and business goals • Review organization's strategic and business plans to identify areas impacting on human resource activities, services and programs • Facilitate involvement of stakeholders to review human resource service effectiveness and clarify future expectations and requirements • Communicate with stakeholders to clarify their needs relating to human resource activities, services and programs | <ul style="list-style-type: none"> • Develop a succession management strategy in consultation with the human resources function and other relevant personnel to facilitate succession planning • Identify critical roles and feeder positions to provide opportunities to groom successors • Work with managers and identified successors to create and implement development and retention plans • Prioritize learning and development programs to support employees in the development of their professional, technical and managerial competencies • Guide senior managers to demonstrate independence and responsibility for their personal development • Provide engagement strategies to improve organizational performance |

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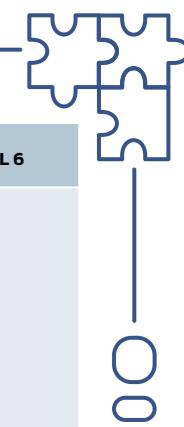
Manpower Planning

Estimate and fulfill manpower requirements to achieve business goals and targets

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|---|---------|
| FSC Code | | | AAI-BPMI-3011-1.1 | AAI-BPMI-4011-1.1 | AAI-BPMI-5011-1.1 | |
| FSC Proficiency Description | | | Facilitate recruitment of manpower to meet forecast requirements | Conduct project level manpower forecasts to bridge gaps between manpower demand and supply, and facilitate development of recruitment strategies | Formulate organizational manpower plans to bridge gaps between manpower demand and supply based on current and projected needs of the organization | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Elements of organization-approved job description templates • Organizational and project workflows • Talent needs of the organization • Job architecture elements • | <ul style="list-style-type: none"> • Factors influencing future manpower demand • Techniques of manpower modeling • Parameters for accurate forecasting • Statistical analysis techniques for reviewing capacity and capability of existing workforce • Methods to identify elasticities of substitution in headcounts and skills • Organization's human resources capabilities and people strategies | <ul style="list-style-type: none"> • Organization's products, policies and processes • Types of links between manpower plans and organizational strategies • Types of workforce trends that impact organizational performance • Legal and ethical considerations affecting manpower policies • Types of Human Resource policies and procedures • Models and methods for evaluating the effectiveness of manpower forecasting and planning | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|--|--|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Determine job roles and positions required • Identify skills needs related to job positions • Develop job descriptions to articulate role and skill requirements • Assist in developing recruitment strategies with Human Resource department • Negotiate with residential contractors (RCs) and common contractors (CCs) • Develop manpower forecast based on job roles and positions required | <ul style="list-style-type: none"> • Review workforce execution plans needed to meet project and/or functional objectives • Adapt mathematical models to conduct statistical analyses of manpower demand • Review productivity metrics of existing residential contractors (RCs) and common contractors (CCs) | <ul style="list-style-type: none"> • Gather data to forecast demand of headcount and skills at organizational level • Review internal education and training programs to verify manpower supply against future demand • Prepare contingency plans to meet the turn of economic and technological change circumstances • Initiate changes to Human Resource activities, services and programs • Guide key stakeholders with information on how manpower decisions assist in achieving strategic organizational goals | |
| Range of Application | | | | | | |



Networking

Identifying, evaluating and strategizing to seize new business opportunities to grow the organization's business operations.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|--|---------|
| FSC Code | | | AAI-BDE1-3003-11 | AAI-BDE1-4003-11 | AAI-BDE1-5003-11 | |
| FSC Proficiency Description | | | Identify and analyze business opportunities | Develop business plans for new opportunities | Implementing strategies to capitalize on new business opportunities | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Types of information for market potential analysis • Sources to gather information for market potential analysis • Methods for analyzing market potential Customer needs analysis • Methods of conducting environmental scans | <ul style="list-style-type: none"> • Value of business opportunities to the organization • Linkage between business planning and the organization's strategic needs • Implications of changes in business environments • Criteria for evaluating business opportunities | <ul style="list-style-type: none"> • Business environment • Considerations for business opportunities • Legal, regulatory, ethical and socio-cultural constraints • Organizational business skills related to business opportunities • Organizational business viability of business opportunities • Stakeholders to consider when developing business opportunities | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|--|--|---|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Identify reliable sources of essential business information • Extract information from sources to analyze market potential for viable areas for investment • Conduct customer needs analysis to determine market demand • Conduct environmental scans to identify internal and external factors with impact on the achievement of organizational objectives • Identify and evaluate viable options, in consultation with management, to capitalize on business opportunities | <ul style="list-style-type: none"> • Identify, and assess viability of, business opportunities in accordance with the organization's strategic needs • Analyze business environments for impact on business opportunities • Analyze potential profitability and sustainability of business opportunities, in consultation with relevant stakeholders • Outline business plans based on analysis findings | <ul style="list-style-type: none"> • Evaluate local and international business opportunities for viability • Align new business opportunities to long-term commercial business operations strategy • Scan the environment for new business opportunities and partnerships • Assess the impact of environment shifts on business opportunities • Review and refine business plans to prevent or mitigate business risks | |



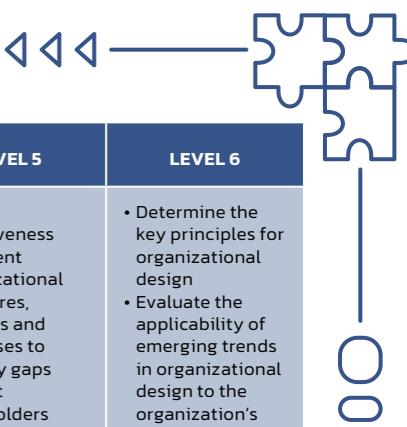
Organizational Analysis

Evaluate factors that can affect the organization's performance as well as strategically assessing the organization's own resources and potential for improvement

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|--|--|
| FSC Code | | | | AAI-SPII-4004-11 | AAI-SPII-5004-11 | AAI-SPII-6004-11 |
| FSC Proficiency Description | | | | 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. | Lead the conduct of functional analysis and recommending areas for enhancement in functional operations | Synergize organizational analysis, reviewing and evaluating findings and communicating findings to relevant stakeholders as well as advising on improvements for the organization |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Different tiers of systems and processes within the organization • Tools and methodologies to review systems and processes | <ul style="list-style-type: none"> • Objectives of functional strategies • Own role in conduct of a functional analysis • Types of organizational systems and processes • Organizational resource requirements | <ul style="list-style-type: none"> • Types of organizational analysis • Objectives of organizational analysis • Implications of organizational analysis on organization |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|--|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Manage systems and processes to meet organizational guidelines and policies • Review and evaluate systems and processes in accordance with organizational policies to identify areas for improvement • Develop and establish solutions to gaps and areas of improvement to further enhance organizational systems and processes • Adhere to organizational code of conduct, values and ethics when managing and reviewing systems and processes to ensure continued efficiency of organizational business processes • Keep abreast of best practices in managing systems and processes by subscribing to diverse learning channels and participating in peer discussion platforms to enhance own knowledge for workplace application | <ul style="list-style-type: none"> • Determine need for functional analysis • Determine components of and evaluate critical business functions of the organization based on existing information • Report findings and possible recommendations to relevant stakeholders for review and decision making | <ul style="list-style-type: none"> • Determine need for organizational analysis • Review and evaluate findings to determine implications on the organization • Communicate findings and potential implications to relevant stakeholders • Advise organizational leaders on improvements to organizational structure, culture and systems for follow-up action |
| Range of Application | | | | | | |



Organizational Design

Develop and facilitate the implementation of organizational design to ensure its effectiveness and alignment with stakeholders' priorities

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|--|
| FSC Code | | | | AAI-DARI-4004-I.I | AAI-DARI-5004-I.I | AAI-DARI-6004-I.I |
| FSC Proficiency Description | | | | Drive the implementation of organizational design | Design organizational structures, systems and processes | Align organizational design with business needs and priorities |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Organization structures and processes • Ethical and legal considerations relating to organizational design • Components of organizational design • Procedures to implement organizational design • Organizational policies and procedures impacting evaluation of organizational design processes • Best practices and trends in organizational design implementation • Impact of organizational design on stakeholders and labor policies | <ul style="list-style-type: none"> • Professional or industry codes of practice and standards relating to organizational design • Principles of organizational design • Models of organizational design • Dimensions of organizational design • Implications of organizational design • Methods of evaluating organizational design | <ul style="list-style-type: none"> • Emerging trends relating to organizational design • Relation between organization design and other aspects of organization strategy |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|---|---|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Analyze current structures, systems and processes • Identify issues in the current structures, systems and processes • Formulate plans to implement organizational design • Explain changes to work processes and structures to employees • Lead implementation of organizational design • Develop mechanisms to gather measurement data and feedback • Implement refinements and enhancements to organizational design | <ul style="list-style-type: none"> • Review effectiveness of current organizational structures, systems and processes to identify gaps • Consult stakeholders to identify requirements of organizational design • Drive changes to organizational structures, systems and processes • Determine resources required to support organizational design • Recommend enhancements to organizational design to meet business requirements • Secure buy-in from senior stakeholders to finalize organizational design models | <ul style="list-style-type: none"> • Determine the key principles for organizational design • Evaluate the applicability of emerging trends in organizational design to the organization's context • Synthesize stakeholder feedback to derive features of the target organizational design • Evaluate the implications of organizational design • Construct models for organizational design to meet business requirements • Secure buy-in from senior stakeholders to finalize organizational design models • Develop narratives to communicate organizational design changes to employees • Drive refinements to organizational design to increase effectiveness |



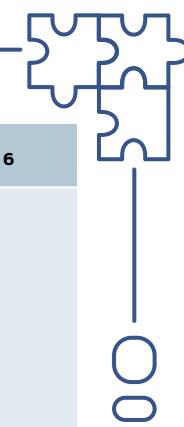
Partnership Management

Build cooperative partnerships with inter-organizational and external stakeholders and leveraging relations to meet organizational objectives. This includes coordination and strategizing with internal and external stakeholders through close cooperation and exchange of information to solve problems

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|---|--|---|
| FSC Code | | | AAI-SCMI-3001-1.1 | AAI-SCMI-4001-1.1 | AAI-SCMI-5001-1.1 | AAI-SCMI-6001-1.1 |
| FSC Proficiency Description | | | Support the development and coordination of partnerships with external stakeholders and organizations | Propose strategic initiatives with other organizations based on identification of mutual benefits, and analyze their impact | Evaluate and drive inter-organizational initiatives, and negotiate strategic information exchange with key partners | Inspire direction and define key imperatives for interorganizational partnerships, leading negotiations with senior leaders and on an international scale |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Types of external partnerships • Objectives of external partnerships • Stakeholders involved in external partnerships | <ul style="list-style-type: none"> • Cost-benefit analysis of external partnerships • Return on Investment (ROI) calculation and assessment for external partnerships and engagements | <ul style="list-style-type: none"> • Strategic partnership management • Negotiation techniques | <ul style="list-style-type: none"> • Strategic networking techniques • Inter-organizational strategy and relationship management |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|---------------------------|---------|---------|--|---|---|---|
| Skills Application | | | <ul style="list-style-type: none"> • Support the identification of potential initiatives, programs and projects with other organizations • Coordinate partnerships with external stakeholders • Maintain communication channels with inter-organizational stakeholders and partners | <ul style="list-style-type: none"> • Propose potential strategic initiatives, programs and projects with other organizations • Identify common issues as well as mutual benefits and potential gains of collaborating with other organizations • Establish communication channels with inter-organizational stakeholders, to coordinate, address needs, queries or concerns, and facilitate consensus-building • Analyze strategic impact or outcomes of external partnerships to determine effectiveness of partnerships | <ul style="list-style-type: none"> • Recommend potential organizations with shared or complementary objectives, or which allow for mutual benefits of a shared partnership • Negotiate the strategic exchange of information with key partners or stakeholders • Co-create a robust inter-organizational strategy to effectively address common issues faced • Evaluate effectiveness of partnerships and identify room for enhancement | <ul style="list-style-type: none"> • Manage inter-organizational initiatives, programs and projects • Evaluate potential organizations and assess the costs and benefits of a shared partnership • Inspire direction for interorganizational partnerships and culture of collaboration • Define key imperatives of partnerships with external organizations and stakeholders for mutual benefits • Leverage broad and deep networks and relations to establish cooperative and strategic partnerships and meet organizational objectives • Lead negotiations for key partnership agreements • Lead communications with top management or senior leaders from other organizations on an international scale • Define a robust inter-organizational strategy in consultation with partners and organization representatives |



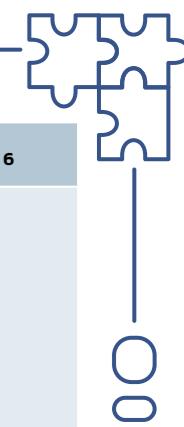
Pattern Recognition Systems

Develop and apply intelligent pattern recognition systems and techniques to analyze data and derive useful hidden patterns to solve problems

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|---|---------|
| FSC Code | | | | AAI-DIMI-4012-I.1 | AAI-DIMI-5012-I.1 | |
| FSC Proficiency Description | | | | Analyze 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 | Develop intelligent systems using machine learning techniques | |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Pattern recognition and machine learning techniques • Types of and steps in solving pattern recognition problems • Supervised learning and unsupervised learning • Data pre-processing with labeled and unlabeled data • Methods of pattern recognition using component analysis and dimension reduction • Deep neural networks for vision recognition problems • AI Ethics | <ul style="list-style-type: none"> • Pattern recognition and machine learning techniques • Neural networks, modeling and design • Deep neural networks and deep learning • Convolutional neural networks, architecture and applications • Recurrent neural networks, architecture and applications • Hybrid and ensemble approaches to problem solving • AI Ethics | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|---|---|---------|
| Skills Application | | | | <ul style="list-style-type: none"> • Model applied problems as pattern recognition tasks • Identify suitable pattern recognition techniques to solve the given problems • Solve classification and prediction problems with labeled data • Solve clustering and anomaly detection problems using unsupervised learning techniques • Assess and compare alternative pattern recognition methods for given tasks • Design and train deep neural network models for machine learning systems • Analyze the results and suggest the possible improvement | <ul style="list-style-type: none"> • Assess and compare the suitability of advanced pattern recognition and machine learning techniques across a range of problem domains • Apply deep learning and other advanced machine learning techniques to solve problems • Solve temporal sequential problems using recurrent neural networks • Build intelligent systems using deep learning and other advanced pattern recognition techniques • Design and implement signal processing methods using machine learning • Design and implement signal processing methods for signal processing tasks • Evaluate the performance of signal processing | |



People and Performance Management

Establish organization-wide performance management strategies to facilitate performance management, including identification of key performance indicators and employee performance assessment

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|---|--|---------|
| FSC Code | | | AAI-PDE1-3002-1.1 | AAI-PDE1-4002-1.1 | AAI-PDE1-5002-1.1 | |
| FSC Proficiency Description | | | Implement performance management programs | Develop performance management programs | Establish organization-wide performance management strategies | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Organizational performance management programs • Statistical analysis techniques for evaluating current performance management programs • Key performance indicators (KPIs) used in performance management programs • Types on competency frameworks in organization | <ul style="list-style-type: none"> • Industry codes of practice related to performance management • Best practices in performance management • Market trends pertaining to performance management • Roles and responsibilities of key stakeholders in performance management • Behaviors that influence employees' performance • Statistical analysis techniques for evaluating performance management data | <ul style="list-style-type: none"> • Organizational strategy and the impact on human resource (HR) strategies • Emerging trends and developments related to performance management • Relationship between performance management programs and development of business objectives • Stakeholder engagement techniques • Links between performance management and organizational strategy | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|--|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Facilitate the identification of KPIs for teams and individuals with managers • Conduct research on the best practices in KPI development • Communicate KPI guidelines to line managers • Implement performance management programs according to overall performance management strategies • Communicate performance management programs to employees using appropriate communication channels • Analyze relationship between performance management and business performance • Evaluate effectiveness of performance management programs • Refine performance management programs based on feedback | <ul style="list-style-type: none"> • Review the key performance indicators (KPIs) as identified by line managers • Cascade departmental level KPIs to teams and individuals • Provide guidance on the use of performance management tools and resources available • Engage employees in understanding their roles and responsibilities in performance management • Monitor adherence to performance management requirements • Train line managers on the appropriate mindset and behaviors in conducting performance reviews • Develop review systems for obtaining feedback related to performance management systems • Manage grievances related to performance management for junior employees • Review trends on the impact of performance management programs on businesses • Recommend refinements to performance management programs based on industry best practices | <ul style="list-style-type: none"> • Cascade organizational level key performance indicators (KPIs) to departments • Engage stakeholders in identifying performance management requirements • Develop performance management strategies aligned to organizational strategies • Oversee the implementation of the performance management strategies • Facilitate the development of organizational policies that supports the performance management strategies • Manage performance issues for senior leaders • Evaluate the impact of performance management programs on business performance • Monitor emerging trends that may impact performance management programs • Endorse refinements to performance management programs | |
| Range of Application | | | | | | |



Performance Management

Evaluate and optimize network, system and/or software performance against user and business requirements. This involves the introduction and utilization of new tools and mechanisms to gather, analyze and fully optimize 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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|---|--|
| FSC Code | | | | AAI-OUS1-4004-11 | AAI-OUS1-5004-11 | AAI-OUS1-6004-11 |
| FSC Proficiency Description | | | | Establish metrics and mechanisms to assess network, software or system performance, and determine Infocomm Technology (ICT) infrastructure components and parameters to be enhanced | Evaluate and integrate new mechanisms and technology, and leverage analytics to optimize performance data, and determine implications of performance levels reported | Chart direction on key performance indicators of ICT infrastructure and develop a strategy to enable achievement to achieve long term business requirements |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Methods to capture and measure network, software and system performance • Interpretation of statistics and data on ICT infrastructure performance • Usage of data analytics tools and technology • Techniques to analyze infrastructure performance results • Analysis and identification of triggers • Possible updates and upgrades to infrastructure elements, and their impact on overall performance • Contribution of various network, software or system components to performance | <ul style="list-style-type: none"> • Process of end-to-end performance management of ICT networks, software or systems • Reliable and valid metrics to measure network, software and system performance, and their usage • New and emerging data analytics tools and technology, and their applications • In-depth analysis and implications of infrastructure performance results on the components • Best practices and key considerations in updating, upgrading and replacing elements of network, software and systems • Cost-benefit analysis for introduction of new ICT infrastructure components | <ul style="list-style-type: none"> • Projection of long-term business requirements • Process and factors to consider when setting Key Performance Indicators (KPI) of ICT networks, software and systems • Process of end-to-end performance management of an ICT function • Concepts and applications of business intelligence and data analytics • Calculation of potential and actual Return On Investment (ROI) • Long-term cost-benefit analysis for ICT infrastructure updates, upgrades or enhancements |

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|---|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Establish metrics to monitor network, software or system performance • Utilize new tools and technology to gather and interpret data • Apply new data analytics mechanisms to fully optimize performance data • Assess current performance data or statistics against the operational requirements in the short term • Analyze network, software and system health check results, performance reports and end users' feedback • Identify triggers impacting performance through application of new data tools, techniques and analyses • Determine the existing components and parameters in a network, software or system, that need to be updated, upgraded or replaced • Identify the costs, benefits and process impact of updating, upgrading or adding new components • Propose any new components to be added to optimize overall performance | <ul style="list-style-type: none"> • Oversee the end to end performance management of ICT networks, software or systems • Establish organization-wide processes, combining several tools and metrics to measure overall network, system and/or software performance • Introduce new tools and technology to gather robust performance data, analyze data and identify triggers • Design internal processes and mechanisms to optimize and enhance the usage and applications of performance data gathered • Assess performance of networks, software or systems against the medium term business and user requirements • Evaluate performance reports and feedback, to determine implications on the network, software and system components • Manage the updating, upgrading and replacement of components, ensuring their viability for the operation of the organization • Review recommendations for new components, considering costs and benefits to the overall business | <ul style="list-style-type: none"> • Project long term business requirements and assess ability of existing networks, software and systems to meet them • Define priorities and key performance indicators of infrastructure components based on the established business and ICT strategies • Oversee the end-to-end performance of the ICT function • Sustain desired performance levels during integration of ICT components, systems and services among different infrastructure layers • Develop a strategy for how performance data can be fully optimized to drive business value • Create a vision for integrating performance data with analytics • Initiate strategic investments to sustain or enhance performance of networks, software and systems in the long run • Evaluate the potential value added by updates, upgrades or significant changes to ICT infrastructure components vis-a-vis the financial and non-financial costs to the business |

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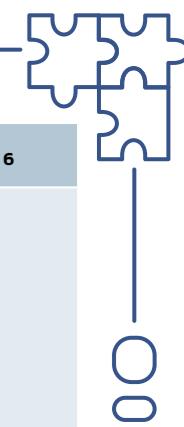
Portfolio Management

Manage systematically the IT investments, projects, services and activities within a company, in line with business objectives and priorities. This involves the development of a framework to evaluate potential costs and benefits and make key decisions about IT investments, internal allocation and utilization of IT resources and/or assets and any changes to IT processes or services offered

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|---|--|
| FSC Code | | | | AAI-BPM1-4012-1.1 | AAI-BPM1-5012-1.1 | AAI-BPM1-6012-1.1 |
| FSC Proficiency Description | | | | Develop IT project plans and analyze their costs and benefits, based on the portfolio objectives and framework | Plan a portfolio management framework based on business strategy, and manage IT investments | Establish a strategy and future roadmap for managing IT portfolio and investments and make critical IT investment decisions for the business |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • IT project planning • Cost-benefit analysis • IT project implementation strategies and best practices • Resource management • Analysis and assessment techniques for IT process effectiveness | <ul style="list-style-type: none"> • IT organization objectives • Key process and considerations in portfolio management • Assessment techniques and metrics for portfolio performance • Cost and benefit projection and analysis • Investment projection and analysis • Best practices in portfolio Key Performance Indicator (KPI) development • Resource capacity assessment and management | <ul style="list-style-type: none"> • Business strategy, direction and priorities • Strategic portfolio management theory and design principles • Strategic optimization of portfolio performance • Best practices in portfolio KPI development • Industry best practices in portfolio management • Investment projection and analysis • Strategic resource management |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|---|--|--|
| Skills Application | | | | <ul style="list-style-type: none"> • Propose IT projects in line with the overall portfolio direction and objectives • Develop IT project plans and determine the amount of resource investment required • Analyze the costs and benefits of proposed small to mid-sized IT investments and projects • Oversee rollout of IT activities and projects, to ensure that the portfolio and individual project objectives are met • Allocate resources within projects and identify gaps or misalignment with the project's business impact • Propose changes to IT processes or services to improve the organization effectiveness and efficiency | <ul style="list-style-type: none"> • Plan and develop a portfolio management framework in line with the IT organization objectives • Monitor performance of IT investments and activities against portfolio KPIs • Analyze and project the current and future costs and benefits of potential small to mid-sized IT investments and projects • Direct internal allocation of resources to optimize performance and value-add of IT projects to the organization • Develop a business case to address resource allocation • Evaluate and drive recommendations for continuous improvement of current IT projects, activities and services | <ul style="list-style-type: none"> • Establish strategy for managing IT investments • Set business direction and objectives for IT investments, projects, services and activities • Review and endorse portfolio management framework in line with business strategy • Determine portfolio's Key Performance Indicators (KPI) based on business objectives • Evaluate current and future costs and potential benefits of major IT investments • Make critical business decisions for significant IT investments • Develop a future roadmap capturing potential IT projects, activities, services and enhancements in the pipeline |



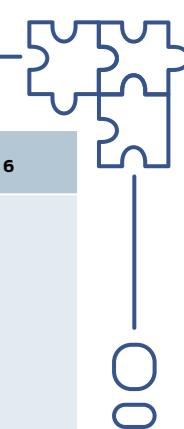
Problem Management

Manage the lifecycle of problems to prevent problems and incidents from occurring, eliminate recurring incidents and minimize impact of unavoidable incidents

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|--|---|---------|
| FSC Code | | | AAI-OUS1-3005-1.I | AAI-OUS1-4005-1.I | AAI-OUS1-5005-1.I | |
| FSC Proficiency Description | | | Handle specific problems from diagnosis and prioritization to the identification and implementation of solutions | Introduce processes, guidelines and technologies to facilitate the management of problems throughout their lifecycle | Establish problem management strategies, protocols, and mechanisms to guide the prevention, resolution and minimization of problems and their effects | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Problem management process • Incident management process • Tools used in problem and incident management • Usage of categorization, impact and priority coding systems in problem management • Principles of reactive and proactive problem management • Documentation requirements and protocols in problem management • Usage of documentation tools, systems and records to log relevant information throughout the problem's lifecycle | <ul style="list-style-type: none"> • Principles of problem management throughout its lifecycle • Relevant tools, processes and technologies to facilitate problem identification, investigation, analysis and resolution • Problem investigation and diagnosis techniques and methodologies • Problem prioritization and sizing techniques, methodologies and parameters • Best practices and industry standards in documentation related to problem management | <ul style="list-style-type: none"> • Industry best practices in problem management • Critical processes and key touch points throughout the lifecycle of problems • Indicators of potential problems • Best practices and key components in problem management review • Impact of problem management reviews on service reviews and stakeholder satisfaction | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|--|--|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Monitor the lifecycle of specific problems • Diagnose the causes of incidents and problems • Categorize incidents and problems according to established guidelines • Identify appropriate solutions to resolve problems • Implement solutions to address the problem through appropriate control procedures • Propose solutions to prevent future occurrences of similar problems • Document information about problems and the appropriate workarounds and resolutions • Monitor documentation and tracking of problems encountered and resolved | <ul style="list-style-type: none"> • Manage the lifecycle of a wide range of problems • Introduce technologies and processes to enable automated detection of incidents or problems • Perform investigations and deep analysis of a problem to fully understand its root causes • Develop guidelines and methods for prioritization and categorization of problems according to their severity, frequency or potential implications • Recommend solutions to address the root cause of problems and minimize the recurrences of similar problems • Lead the review of all significant problems and the solutions being implemented | <ul style="list-style-type: none"> • Oversee the management of all significant problems throughout their lifecycle • Establish organization-wide problem management protocol and standards • Introduce organization structures, processes and infrastructure to guide the efficient and effective prevention, resolution and minimization of problems and their effects • Develop strategies to preempt potential problems from occurring • Endorse solutions to address the root cause of problems to minimize the recurrences of similar problems | |



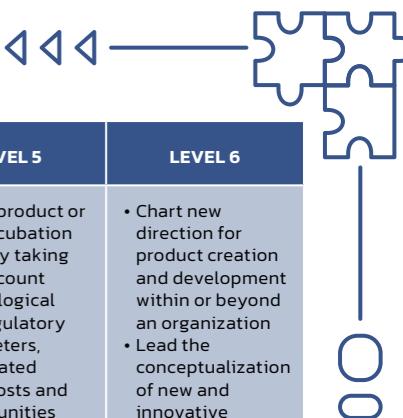
Process Improvement and Optimization

Establish systems to discover critical processes and maximize these processes to achieve maximum efficiency in accordance with organization procedures

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|--|---------|
| FSC Code | | | AAI-BPM1-3013-1.1 | AAI-BPM1-4013-1.1 | AAI-BPM1-5013-1.1 | |
| FSC Proficiency Description | | | Identify and implement the adoption of process improvement and optimization methods | Analyze and develop, review of plans for process improvement and optimization | Deve strategies for the adoption of improvements and optimization of processes | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Regulatory requirements relating to environmental protection • Effects of environmentally sustainable work practices on work requirements • Tools and techniques used for process improvement • Organizational procedures relating to providing recommendations to improve implementation plans • Methods in collaboration with relevant stakeholders • Principles of implementing service improvement timelines • Mechanisms for monitoring and reporting outcomes when implementing improvements to work practices | <ul style="list-style-type: none"> • Regulatory requirements relating to environmental protection • Tools and techniques used for process improvement • Resource assessment and deployment methods • Business environment issues and impacts to be considered in developing process improvement concepts • Considerations in generating and translating process improvement ideas into workable concepts | <ul style="list-style-type: none"> • Regulatory requirements relating to environmental protection • Tools and techniques used for process improvement • Strategies used for process improvement • Techniques to project future areas for automation • Projection of skills and training required for the adoption of changes • Methods to evaluate existing information and identify process improvement opportunities • Barriers to process improvement that can occur within the organization | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|---|---|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Identify and propose opportunities for process improvement • Gather information on current workplace practices relating to environmentally sustainable work practices in consultation with relevant stakeholders • Determine root cause of performance gaps from the implementation of process improvement plans • Collaborate with stakeholders to validate findings • Identify improvements to implemented plans in consultation with relevant stakeholders. • Present ideas to relevant stakeholders for feedback to improve ideas and develop possible variations • Assist in pilot testing/prototyping to determine effectiveness of process improvement concepts within a business unit | <ul style="list-style-type: none"> • Evaluate business function performance to identify and develop opportunities for process improvement • Develop plans for the implementation of improvements and optimization of processes • Determine and deploy resources as required for enhancement of processes to be optimized • Conduct pilot testing/prototyping to determine effectiveness of process improvement initiatives within a business unit • Review shortcomings and further refine processes | <ul style="list-style-type: none"> • Research and evaluate existing information to review and evaluate needs and opportunities for process improvement within organization • Devise transformational initiatives to streamline business operations • Establish systems to support process improvement within the organization to achieve business optimization goals • Initiate company-wide reformation of processes to improve productivity • Review pilot testing/prototyping results to determine feasibility of process improvement concepts across the organization. • Filter and select suitable process improvement concepts and translate to organizational levels | |



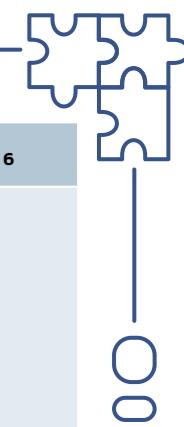
Product Management

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 conceptualization 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.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|--|--|
| FSC Code | | | AAI-BPM1-3014-1.1 | AAI-BPM1-4014-1.1 | AAI-BPM1-5014-1.1 | AAI-BPM1-6014-1.1 |
| FSC Proficiency Description | | | Identify competitor, consumer and technology trends impacting the product, and manage the product lifecycle and performance | Conceptualize 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 conceptualization of new and innovative products that create significant industry impact |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Competitor, consumer and technology trends • End-to-end processes in product management • Product lifecycle • Product performance analysis • Components of a product roadmap | <ul style="list-style-type: none"> • Emerging trends, market gaps and opportunities • Market conditions and needs • Types of digital disruptors • Customer segments and potential needs • Business model prototyping and evaluation • Key elements of product or idea incubation plan • Principles of product positioning and road mapping • Go-to-market product roadmap | <ul style="list-style-type: none"> • Key elements of a product or idea incubation strategy • Full process from product conceptualization to roll-out • Policy and regulatory parameters related to the product • Technological constraints and risks • Competitive advantage identification and definition • Future industry trends and developments • Impact of digital disruptors on product strategy | <ul style="list-style-type: none"> • Macro trends and demographic shifts that impact market and user demands • Societal evolution and changes in user needs and psyche • Long term evolution of products and industry trends • Potential technological and policy shifts • Principles of core asset management • Principles of digital investment management |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|--|---|---|
| Skills Application | | | <ul style="list-style-type: none"> • Develop a product requirements document, according to a set direction and guidelines • Manage the lifecycle of a product, alongside the tracking of consumer response • Identify competitor, consumer and technology trends in relation to the product • Facilitate phase-in and phase-out of products to ensure smooth transition • Support sales and marketing activities for the product, in line with product strategy • Develop incubation plan for a new product or idea • Translate product strategy into a roadmap of actionable steps to bring the product to market • Propose improvements to the product or branding to enhance product performance | <ul style="list-style-type: none"> • Explore emerging market trends to identify new opportunities to capitalize on • Collaborate with other experts and innovators to conceptualize ideas • Specify a product to address market conditions, in providing direction on the content of a product requirements document • Develop business model prototypes for a new product and assess suitability of different models • Build new product ideas and concepts to address market conditions • Identify competitive advantage and target consumers for ideated product • Analyze trends in product performance • Propose improvements to the product or branding to enhance product performance | <ul style="list-style-type: none"> • Define product or idea incubation strategy taking into account technological and regulatory parameters, anticipated risks, costs and opportunities • Plan a seamless process from conceptualization to roll-out of new products, considering legal viability and policy and regulatory constraints • Lead the conceptualization of new and innovative products to generate consumer interest and demand • Re-define the mission or vision of the organization to align with key, defining products • Make critical investment decisions on the product • Envision how a product will evolve over time • Inspire new product trends and redefine thinking around ICT products in the industry • Anticipate technological and policy shifts, and their potential impact on the product | <ul style="list-style-type: none"> • Chart new direction for product creation and development within or beyond an organization • Lead the conceptualization of new and innovative products to generate consumer interest and demand • Re-define the mission or vision of the organization to align with key, defining products • Make critical investment decisions on the product • Envision how a product will evolve over time • Inspire new product trends and redefine thinking around ICT products in the industry • Anticipate technological and policy shifts, and their potential impact on the product |



Project Feasibility Assessment

Assess the business environment and organizational capabilities to evaluate and determine the feasibility of a project

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|---|---------|
| FSC Code | | | | AAI-BPMI-4015-1.1 | AAI-BPMI-5015-1.1 | |
| FSC Proficiency Description | | | | <p>Assess the business environment and organizational capabilities and prepare financial projections, as well as report findings to relevant stakeholders</p> | <p>Evaluate and determine feasibility of projects for the organization, recommend the authorization of projects and evaluate business environment, cost and organization capabilities to determine project feasibility</p> | |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Industry, business and competitor trends • Tools to evaluate business environment • Impacts of project feasibility studies on assessment process • Methods to use and prepare assessment models • Key cost-benefit indicators • Assumptions of financial models • Components of feasibility study reports | <ul style="list-style-type: none"> • Industry, business and competitor trends • Tools to evaluate business environment • Key cost-benefit indicators • Assumptions of financial models • Measures of project benefits and outcomes • Project objectives and scope | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|---------------------------|---------|---------|---------|--|---|---------|
| Skills Application | | | | <ul style="list-style-type: none"> • Assess the business environment to determine potential challenges faced • Assess organizational capabilities to assist in project feasibility determination • Prepare financial projections to facilitate project feasibility assessment • Report findings to relevant stakeholders in accordance with organizational procedures to ensure stakeholders are updated and consulted • Seek feedback from direct report to review project feasibility assessment and identify areas for improvement | <ul style="list-style-type: none"> • Evaluate the business environment to determine potential challenges faced • Evaluate organizational capabilities for project feasibility determination • Report findings to relevant stakeholders • Propose project initiation decisions with supporting rationale • Evaluate alignment of project with organizational objectives to determine project feasibility • Assess feasibility of carrying out project based on organizational capabilities to determine project feasibility • Recommend authorization of projects in accordance with feasibility assessment results to support organizational objectives • Seek inputs from direct reporting officer to add value to the project feasibility assessment findings and recommendations | |



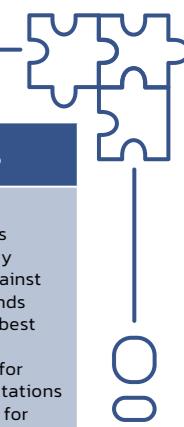
Project Management

Perform planning, organization, monitoring and control of all aspects of an IT program and the strategic utilization 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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|---|--|
| FSC Code | | | AAI-BPM1-3016-1.1 | AAI-BPM1-4016-1.1 | AAI-BPM1-5016-1.1 | AAI-BPM1-6016-1.1 |
| FSC Proficiency Description | | | Oversee small projects or programs, managing timelines, resources, risks and stakeholders | Plan and drive medium scale projects or programs, including allocating resources to different parts, and engaging stakeholders on the project's progress and outcomes | Lead end-to-end management of large programs or multiple projects concurrently, coordinating project interdependencies | Direct the management and authorize ownership of multiple large, complex programs and projects, ensuring alignment with strategic business priorities |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Elements of a small project • Requirements of a project plan • Application of appropriate methodologies and tools • Project risks • Project stakeholder identification | <ul style="list-style-type: none"> • Scoping and requirements of medium sized projects or programs • Steps to align project and business goals • Potential program risks • Project stakeholder engagement techniques • Effective resource allocation | <ul style="list-style-type: none"> • Best practices in end-to-end program management • Current methodologies and tools in industry • Strategies for alignment of different programs • Program risk anticipation, mitigation and planning • Resource-management techniques • Project budget planning • Performance review processes for programs • Strategic stakeholder engagement • Project assessment, evaluation and prioritization • Budget planning, key considerations and implications • Resource-management strategies | <ul style="list-style-type: none"> • Business priorities and impact on programs • New and emerging methodologies and tools in industry • Program risk management plan development, including methods, techniques and tools • Resource-management techniques • Project budget planning • Performance review processes for programs • Strategic stakeholder engagement • Project assessment, evaluation and prioritization • Budget planning, key considerations and implications • Resource-management strategies |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|--|--|--|---|
| Skills Application | | | <ul style="list-style-type: none"> • Facilitate execution of small projects that are typically less than six months, with limited budget, limited interdependency with other projects, and no significant strategic impact • Implement realistic project plans based on the understanding of project objectives and project scope • Utilize appropriate methods and tools to track and drive progress of project against set plans and timelines • Identify risks to the success of projects and take appropriate actions to manage them • Investigate project exigencies, identify and address their root causes • Collaborate effectively with relevant internal and external stakeholders directly impacting the project • Deploy manpower, financial budgets and relevant resources to different parts of the project to impact or are impacted by the project process and outcomes • Allocate resources to different parts of the program, based on an assessment of program priorities • Track project deliverables against project schedules, monitor costs, timescales and resources used and take basic corrective actions in case of misalignment | <ul style="list-style-type: none"> • Scope medium scale projects or programs and drive its completion • Develop realistic plans based on an assessment of program and project objectives, scope and potential interdependences with other projects • Implement appropriate methodologies and tools to achieve desired outcomes effectively • Pre-empt risks to success of programs and develop plans to mitigate them • Set up timely touchpoints to engage internal and external stakeholders that impact or are impacted by the project process and outcomes • Allocate resources to different parts of the program, based on an assessment of program priorities • Coordinate the completion of project deliverables within agreed cost, timescale and resources and implement corrective actions where required | <ul style="list-style-type: none"> • Manage large programs or multiple projects concurrently through the phases from definition, scoping, delivery and successful completion that are typically with significant business impact, and high-risk dependencies • Plan programs in accordance to organization requirements • Identify program implications, and manage and coordinate project interdependences with other projects • Determine appropriate methodologies and tools, ensuring that they are fit-for-purpose • Set up timely touchpoints to engage internal and external stakeholders that impact or are impacted by the project process and outcomes • Allocate resources to different parts of the program, based on an assessment of program priorities • Coordinate the completion of project deliverables within agreed cost, timescale and resources and implement corrective actions where required | <ul style="list-style-type: none"> • Chart direction in the management and authorize ownership of multiple large, complex programs • Align program objectives and scope with strategic business priorities and direction • Spearhead introduction of new and emerging methodologies and tools that can be utilized to optimize program success • Chart an organization-wide risk management plan and strategy • Lead a robust stakeholder engagement strategy and effort to secure the commitment of the critical senior stakeholders to the program's success • Determine program and project budgets, considering their relative priority, urgency, importance and contribution to the business strategy • Set guidelines for the strategic utilization of resources, to ensure that resources are optimized to meet key objectives • Maintain a strategic view over the synergy of programs and their interdependences • Regularly review performance on programs against its objectives and wider business objectives, and provide redirection where necessary |
| Range of Application | | | | | | <p>Program and project management methodologies may include but are not limited to:</p> <ul style="list-style-type: none"> • Agile • Six sigma • Scrum • Waterfall |



Quality Standards

Develop, review and communicate clear, quality expectations and standards within an organization 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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|---|--|
| FSC Code | | | | AAI-SAR1-4002-1.1 | AAI-SAR1-5002-1.1 | AAI-SAR1-6002-1.1 |
| FSC Proficiency Description | | | | Assess existing quality standards and align processes and activities with IT product and service quality expectations | Establish and control quality expectations in line with organization directions and selected benchmarks | Review organization's quality guidelines against emerging trends and industry best practices, ensuring alignment with company values and objectives |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Key considerations in implementation of quality standards • Elements of organizational quality processes • Impact of customer feedback on internal quality processes • Processes to monitor compliance with quality expectations and protocols | <ul style="list-style-type: none"> • Processes in the development of organization quality standards • Potential lapses or gaps in quality practices • Quality expectations of IT products and services | <ul style="list-style-type: none"> • Strategic alignment of organizational values and quality standards • Industry best practices and emerging trends for quality expectations and benchmarks • Impact of changes in quality practices to business operations and IT product and service delivery |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|---|--|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Communicate expectations for IT product and service quality • Monitor organization's IT processes and activities, ensuring that relevant business units abide by the quality standards set • Assess existing quality practices and highlight any discrepancies or misalignments based on user or customer feedback and input • Facilitate the translation of quality requirements for different business functions to specific action plans or changes in business processes | <ul style="list-style-type: none"> • Control quality standards in line with organization's directions • Analyze lapses or misalignment in organization's quality practices and propose possible ideas for improvements • Develop updated or revised quality expectations, based on management's strategic direction as well as requirements of different functions • Specify quality requirements for IT products and services based on selected benchmarks and best practices • Drive implementation of quality practices and procedures throughout the organization | <ul style="list-style-type: none"> • Review organization's current quality guidelines against emerging trends and industry best practices • Set direction for quality expectations and practices for the organization, in line with company's values and business objectives • Establish benchmarks for IT products and services delivered to internal and external clients • Endorse recommendations for changes to organization's quality standards, considering its impact to the business operations and IT product or service delivery |



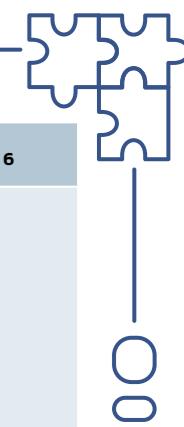
Research

Research on a concept or idea to provide inputs for content development

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|--|--|---------|
| FSC Code | | | AAI-DIM1-3013-1.1 | AAI-DIM1-4013-1.1 | AAI-DIM1-5013-1.1 | |
| FSC Proficiency Description | | | Lead comprehensive research and analyze research findings to generate insights and recommendations | Design a research strategy and propose projects to meet identified research needs | Oversee and review the effective implementation of the research project within known resource constraints | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Principles of research • Best practices of qualitative and quantitative research • Data processing methods • Data analysis techniques • Techniques to detect gaps in information • Legal risks, factual errors and breaches of codes of conduct involving use of research material • Applicable copyright norms and intellectual property rights | <ul style="list-style-type: none"> • Project design approaches for research projects • Techniques for budgets and resource management for research projects • Purpose of the research and how it will be used • Value, limitations and risks of using each source and social networks for research purposes • Emerging methods for obtaining relevant information | <ul style="list-style-type: none"> • Organization's research requirements • Success metrics for research projects • Purpose of the research and how it will be used • Value, limitations and risks of using each source and social networks for research purposes • Emerging methods for obtaining relevant information | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|---|---|---|
| Skills Application | | | | <ul style="list-style-type: none"> • Analyze the key problems to be addressed • Propose hypotheses for the research relevant to the key problems • Provide inputs to modify the research approach and execution plans • Organize material of relevance to the content for market research • Guide research process with inputs regarding type, quality and quantity of data and information to be collected • Verify the reliability and accuracy of the information through detailed checks • Detect any gaps in information uncovered and remove unreliable information • Highlight areas requiring further research • Clarify and resolve inconsistencies in the data of the research project • Analyze and interpret relevant data for results and important insights | <ul style="list-style-type: none"> • Define the key problems to be addressed in the research project • Design a research strategy to meet identified research needs • Review the relevance and usefulness of findings against research objectives outlined in research project plan • Lead the production of the final research findings and its associated outcomes • Develop reports to showcase business recommendations based on research findings • Develop reports on future improvements to research processes • Identify legal and ethical issues likely to arise from using any research material | <ul style="list-style-type: none"> • Commission and oversee the research project plans until project reaches the finalization stage • Drive the main research objectives and resource constraints of the project • Determine the research procedure and research methods best suited to collect and analyze the information • Oversee the interpretation of research findings to ensure the relevancy of the findings • Present recommendations which address all of the research objectives and how the results will support the decision making • Drive improvements to research processes and practices to improve research outcomes |



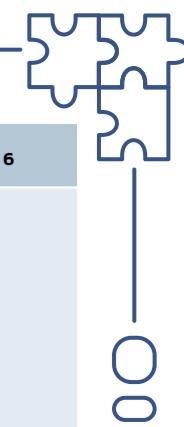
Security Architecture

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|--|---|---------|
| FSC Code | | | AAI-DARI-3005-1.1 | AAI-DARI-4005-1.1 | AAI-DARI-5005-1.1 | |
| FSC Proficiency Description | | | Design secure systems and define security specifications of components, integrating appropriate security controls | 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 | Establish organizational guidelines and principles for the design of security architecture and controls, and drive the enhancement of organization-wide security systems | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Security threats and vulnerabilities facing IT systems • Security assurance and functional requirements • Security system components • Elements and workings of security controls • Goals and purpose of security controls • Common specifications and designs for secure | <ul style="list-style-type: none"> • Emerging security threats and impact on IT systems • Key components of security system blueprint • Principles of security system integration • Range of system security tests and interpretation of results • Evaluation guidelines for system architecture security | <ul style="list-style-type: none"> • Industry best practices in security architectures and systems design • Emerging trends in the industry and potential impact on enterprise architecture and security • Key criteria for determining required level of security controls • New and emerging security system design methodologies, tools and techniques | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|---------------------------|---------|---------|--|---|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Identify key security risks and problems posed by new technologies and business practices • Design secure systems and controls based on IT architectural guidelines and requirements • Define security specifications of system components, that address security objectives and functional requirements • Incorporate controls into security system components to minimize security breaches or lapses • Check for an adequate level of security robustness in system designs • Develop a control plan for the security system architecture based on organizational guidelines and security principles • Lead review of system architecture against security requirements • Recommend modifications to security control designs to boost the protection of organization assets | <ul style="list-style-type: none"> • Investigate potential security threats and articulate implications on IT systems • Define overarching security system blueprint including protection profile and security targets • Integrate security solutions and design principles to develop a robust and coherent security architecture • Direct the design of new or enhanced security systems and architectures • Endorse new, modified or strengthened security controls that are in line with the organization's security strategy • Introduce new security system design methodologies, tools and techniques to the organization • Review systems' security plans in view of potential evolution of the enterprise strategy and architecture | <ul style="list-style-type: none"> • Establish organizational guidelines and principles for the design of security system architecture and controls • Review security system architecture against industry best practices and business security needs • Define the level of security controls needed for the organization's IT systems, information and assets • Plan design of organization-wide security systems | |



Self-Learning Systems

Design and develop self-learning systems using reinforcement learning and evolutionary learning techniques

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|---|---------|
| FSC Code | | | AAI-DIMI-3014-I.1 | AAI-DIMI-4014-I.1 | AAI-DIMI-5014-I.1 | |
| FSC Proficiency Description | | | Analyze, articulate and apply key artificial intelligence (AI) technologies in their work and that of the teams and organization, in the area of business process automation and optimization | Plan the end-to-end process to design, build and deploy adaptive software robots in hardware and devices, validating and optimizing software robots in different application areas | Design and develop self-learning systems using reinforcement learning and evolutionary learning techniques | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Overview of robotic process automation (RPA), cognitive RPA, and artificial intelligence (AI) • Tooling tutorials • Data analysis and manipulation using virtual worker • Processing supplier invoice using virtual workers • Remote enterprise applications • Data processing and management • Enterprise deployment methodology and tools • Quality assurance and system debugging • Intelligent Process Automation (IPA) project management • Open source IPA tools, installation and use cases • Automation using AI functionalities • Open-source conversational software robots fundamentals and installation | <ul style="list-style-type: none"> • Autonomy and agency • Automating repetitive tasks • Differences between Single agents and multiple agents • Sequences, flowchart, State Machine Workflow • User interface automation • System activities and user events • Recording and scraping websites • Testing and debugging • Multi-agent robots • Industry best practices in software robots • Application integration • Embedding and deploying robots • Validation and verification | <ul style="list-style-type: none"> • Types and applications of self-learning systems • Reinforcement learning process and approaches • Concepts and algorithms of Deep Reinforcement Learning (DRL) • Fundamentals of reinforcement learning and evolutionary learning techniques • Evolutionary learning • Evolutionary intelligent systems and its architecture and applications • Evolutionary computation techniques | |

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|--|---|--|---------|
| Skills Application | | | <ul style="list-style-type: none"> • Analyze business drivers and main application areas of IPA • Create automation applications using RPA as an integration tool between different enterprise applications • Create virtual workers for productivity without increasing actual workforce and/or hiring • Create automation applications with remote enterprise applications • Automate data processing and extraction from image documents • Deploy enterprise-scale automation applications • Manage IPA project lifecycle • Create business automation applications using cost-saving robotic automation tools and AI tools • Create digital 'virtual assistants' • Evaluate industrial IPA use cases | <ul style="list-style-type: none"> • Determine the best practices for building autonomous software robots • Plan the processes to design and build software robots • Define the technical requirements needed for the software robots • Construct fully functional software robots • Validate the design of the software robots • Introduce new and/or best practices in the design and planning of the software robots • Gather feedback on the performance of the software robots • Review the coding, testing and design criteria • Optimize the performance of the software robots during and after deployment | <ul style="list-style-type: none"> • Apply the concepts and algorithms of reinforcement learning • Identify the requirements for self-learning systems • Build deep reinforcement learning systems • Build model-based reinforcement learning systems • Build evolutionary learning systems using evolutionary computation techniques to solve optimization problems • Assess the system performance and suggest possible improvements | |

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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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|--|--|---|---------|---------|
| FSC Code | | AAI-DIMI-2015-1.1 | AAI-DIMI-3015-1.1 | AAI-DIMI-4015-1.1 | | |
| FSC Proficiency Description | | Apply standard scripts and tools to deploy software products, and document release and deployment activities as well as modifications to software configurations | Identify appropriate scripts and tools, and configure software products to run effectively on various platforms | Establish and revise an effective release and configuration plan, and evaluate configuration test results to recommend modifications to the product or deployment process | | |
| Underpinning Knowledge | | <ul style="list-style-type: none"> • Standard scripts and tools for software configuration • Basic tests and checks for deployment of software to a platform • Signs of errors or issues in software deployment | <ul style="list-style-type: none"> • Types and usage of scripts and tools for integrating and deploying software products • Software configuration procedures • Configuration tests and their purposes • Interpretation of configuration test results • Elements of the software configuration and deployment process | <ul style="list-style-type: none"> • Critical elements and considerations in a software configuration plan • New and emerging software configuration tools and methodologies • Script development for software configuration • Pros, cons and applicability of various systems or configuration tests • Implications of configuration testing results on software deployment process | | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---|---|---|--|---------|---------|
| Skills Application | | <ul style="list-style-type: none"> • Apply standard scripts and tools to deploy software products to a specific platform • Perform simple tests or checks on platform specific versions of software products • Identify compatibility and functionality issues arising from checks • Execute modifications to software configuration, based on clear directions and guidelines • Document updates to software products and deployment instructions • Record release activities for future reference | <ul style="list-style-type: none"> • Analyze release components • Coordinate with relevant stakeholders on release scheduling to align release processes and procedures • Select appropriate scripts and tools for integrating and deploying software products • Configure software products to integrate and deploy software releases to various platforms • Execute configuration tests on platform specific versions of software products in line with testing procedures • Diagnose issues surfaced from configuration testing • Identify potential improvements and modifications to the software configuration and deployment process or the software code • Implement modifications to platform-specific software products and processes | <ul style="list-style-type: none"> • Develop a release policy for the organization • Lead the planning and design of release packages • Establish plan for configuration of software products to run across various suitable platforms • Introduce new and emerging software configuration tools and methodologies • Develop new scripts to enable complex software configurations • Select appropriate systems and configuration tests • Revise the software configuration plan based on testing results • Manage modifications to software product or configuration code, to enable software products to run as intended | | |
| Range of Application | <p>Approaches and practices for software configuration may include:</p> <ul style="list-style-type: none"> • Continuous Integration • Continuous Deployment • Software Version Control • DevOps | | | | | |



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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|--|--|---|
| FSC Code | | | AAI-DARI-3006-I.I | AAI-DARI-4006-I.I | AAI-DARI-5006-I.I | AAI-DARI-6006-I.I |
| FSC Proficiency Description | | | Design simple software components, assessing functionality of different elements, and produce design documentation | Create a software design blueprint based on a broad design concept, and business and user requirements | Translate complex software ideas and concepts into a design blueprint and establish key design principles and methodologies | Inspire new and innovative software design ideas, and align design principles and parameters with current and future needs |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Design requirements for simple, basic software components • Basic software design tools and techniques • Types of controls, elements and features in software • Indicators of software functionality and interoperability • Documentation of design details | <ul style="list-style-type: none"> • Components and requirements of a software design blueprint • Software design standards, methods and tools - and their pros, cons and applications • Requirements of functional specifications of software • Impact of different software design elements on overall software operations and usability | <ul style="list-style-type: none"> • Software design principles • New and emerging methodologies and tools for software design • Pros, cons and trade-offs of different software design options | <ul style="list-style-type: none"> • New and emerging trends in software design ideas • Best practices and external regulations in software design standards and practices • Process to determine software design principles |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | |
|-----------------------|---------|---------|---|---|--|---|--|
| Skills Application | | | <ul style="list-style-type: none"> • Design a simple software component or interface according to functional specifications and business requirements • Utilize appropriate software design methods and tools, in line with the organization's software design practice and principles • Identify relevant controls, elements and features to be included in the software to meet its design objectives • Assess functionality and interoperability of different elements or components in the software design • Produce detailed design documentation mapped to user specifications | <ul style="list-style-type: none"> • Create a software design blueprint based on a broad design concept, and business and user requirements • Recommend appropriate standards, methods and tools for the design of software, in line with the organization's software design practice and design principles • Design functional specifications of software systems to address business and user needs • Evaluate trade offs from the incorporation of different elements into the design, and their impact on overall functionality, interoperability, efficiency and costs of the software • Produce design documentation for complex software • Review design documentations produced | <ul style="list-style-type: none"> • Translate complex software ideas and concepts into a design blueprint and plan • Establish key design principles to guide the further definition and detailing of a software blueprint • Introduce new methods and tools for the design of software • Lead the design of highly complex software and systems • Evaluate multiple software design options, so as to select the one which best meets business, user and functional requirements • Justify design elements to the end user | <ul style="list-style-type: none"> • Inspire new and innovative software design ideas • Establish organization-wide software design standards, guidelines and methodologies, in line with emerging trends, industry best practices and external regulations • Anticipate future business and user requirements, and their implications on software design, features and capabilities • Guide the setting of design principles, ensuring alignment with current and future needs • Chart a future-focused direction for the design of multiple software systems | |
| Range of Application | | | <p>Types of Software Applications may include but are not limited to:</p> <ul style="list-style-type: none"> • Mobile/Native Applications • Augmented Reality / Virtual Reality Applications • Web Applications • Hybrid Applications • Cloud Applications <p>Types of methodologies may include but not limited to:</p> <ul style="list-style-type: none"> • Agile Software Development • Design Pattern • Extreme Programming • Object-Oriented | | | | |



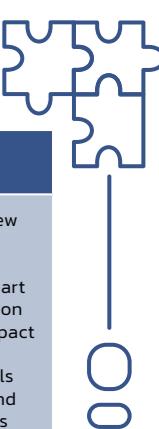
Software Testing

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|--|--|---|---------|---------|
| FSC Code | | AAI-DIMI-2016-I.1 | AAI-DIMI-3016-I.1 | AAI-DIMI-4016-I.1 | | |
| FSC Proficiency Description | | Draft simple test scenarios, and perform software testing procedures, highlighting bugs or glitches affecting performance | Design test scenarios and implement new or complex tests, investigating issues or gaps between actual and expected results | Define the testing objectives and criteria for success and oversee the testing and follow up processes for software products | | |
| Underpinning Knowledge | | <ul style="list-style-type: none"> • Purpose and elements of a test case • Feature requirements of the testing environment • Procedures and process of software testing • Automation testing tools and practices • Indicators of software success and failure • Commonly encountered glitches, bugs, faults and failures | <ul style="list-style-type: none"> • Software and components which require testing • Process and methodology to create test scenarios • Implementation of more complicated software tests • Analysis of test results through automation • Various testing outcomes and their implications • Indicators of software malfunctioning or incompatibility | <ul style="list-style-type: none"> • Key objectives, pros, cons and applicability of various software tests • Impact of business requirements and regulatory standards on acceptable baselines • Success indicators for software testing | | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|--|--|---|---------|---------|
| Skills Application | | <ul style="list-style-type: none"> • Draft standard test cases or scenarios • Prepare testing environment for testing based on technical criteria and specifications • Execute testing procedures • Execute software testing using automation • Assess test results for unexpected outcome • Document details of failures or glitches that surface from the test results in testing documents • Compare the test results against the functional requirements or desired outcomes to highlight gaps and areas for improvement • Diagnose commonly encountered faults and failures in applications | <ul style="list-style-type: none"> • Design test scenarios or cases to cover a broad range of scenarios for the application • Determine appropriate tests, execution conditions and expected results • Define technical criteria and specifications for tests • Implement new, complex or advanced tests • Analyze gaps between expected and actual test results • Diagnose any indicators of application malfunctioning or under-performance • Propose modifications to the product and/or system to address requirements more effectively | <ul style="list-style-type: none"> • Define the testing objectives • Establish guidelines and criteria for success for various software tests • Review test cases, technical criteria and specifications of tests • Oversee testing process for software products • Evaluate outcomes and patterns in test results in-depth • Recommend changes to address issues and optimize software performance and effectiveness | | |
| Range of Application | | <p>Types of testing may include but are not limited to:</p> <ul style="list-style-type: none"> • Unit Testing • Integration Testing • System Testing • Acceptance Testing | | | | |



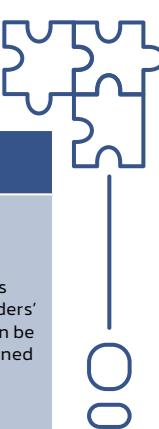
Solution Architecture

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|--|
| FSC Code | | | | AAI-DAR1-4007-1.1 | AAI-DAR1-5007-1.1 | AAI-DAR1-6007-1.1 |
| FSC Proficiency Description | | | | Develop a solution architecture and prepare a technical blueprint for a given area, demonstrating how the solution addresses requirements | Establish frameworks and determine relevant tools and techniques to guide the development of IT solutions | Synthesize 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 |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Process for developing proof of concepts • Components of solution architecture • Objectives of solution architecture • Steps for developing solution architecture • Tools and techniques for solution architecture modeling • Technical blueprint design and construction process • Interactions among various IT components | <ul style="list-style-type: none"> • Process for refining solution architecture • Applications of tools and modeling techniques for creation of solution architecture • Technical, functional and service considerations • Considerations for multiple aspects of the overall solution including performance, security, latency and other relevant aspect for the solution • Standards for coding, scalability, integration and reusability • Compatibility among multiple solution architecture components and design activities • Techniques to measure a solution's value-add | <ul style="list-style-type: none"> • New technology, models and concepts • Emerging trends and schools of thought in the ICT and other industries |

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | |
|-----------------------|---------|---------|---------|---|--|--|--|
| Skills Application | | | | <ul style="list-style-type: none"> • Develop an architectural proof of concept • Develop a solution architecture utilizing appropriate tools, techniques and models of system components and interfaces • Identify technical and practical requirements as well as stakeholders' demands • Prepare a technical blueprint for a solution in a given area • Demonstrate how the recommended IT solutions and components collectively address an existing business problem or need • Implement regular system reviews to monitor solution status and make modifications, according to an architecture management framework | <ul style="list-style-type: none"> • Establish high level structures and frameworks to guide the development of IT solutions incorporating various processes, hardware and software components • Determine relevant design tools or modeling techniques required to develop a solution architecture and blueprint • Align requirements of various internal and external stakeholders, as well as technical, functional and service requirements within a solution architecture • Coordinate multiple solution architecture components and design activities, ensuring consistency and compatibility within a target framework • Articulate value added by the solution to the business needs • Establish processes to regularly monitor, test and review solution architecture against business requirements | <ul style="list-style-type: none"> • Synthesize new technology, models and concepts as part of an IT solution • Articulate impact of emerging trends, schools of thought, and developments in and beyond the ICT industry on the solutions developed • Endorse architectural proof of concepts • Spearhead innovative and ground-breaking solutions that significantly impact the industry | |
| Range of Application | | | | <p>Types of Software Applications may include but are not limited to:</p> <ul style="list-style-type: none"> • Mobile/Native Applications • Augmented Reality/Virtual Reality Applications • Web Applications • Hybrid Applications • Cloud Applications <p>Types of methodologies may include but not limited to:</p> <ul style="list-style-type: none"> • DevOps • Agile Software Development • Rational Unified Process • Systems Development Life Cycle (SDLC) | | | |

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Stakeholder Management

Manage stakeholder expectations and needs by aligning those with requirements and objectives of the organization. This involves planning of actions to effectively communicate with, negotiate with and influence stakeholders

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---|--|---|--|--|
| FSC Code | | AAI-SCM1-2002-1.1 | AAI-SCM1-3002-1.1 | AAI-SCM1-4002-1.1 | AAI-SCM1-5002-1.1 | AAI-SCM1-6002-1.1 |
| FSC Proficiency Description | | Identify key stakeholder relationships, needs and interests, and coordinate with stakeholders on a day-to-day basis | Serve as the organization'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 organization's and stakeholders' objectives, co-creating shared goals and strategic initiatives with senior stakeholders. |
| Underpinning Knowledge | | <ul style="list-style-type: none"> • Key stakeholder relationships • Basic stakeholder communication techniques | <ul style="list-style-type: none"> • Stakeholder mapping techniques • Stakeholders' roles and relationships, and their impact on the organization • Range of communication channels, approaches and techniques • Stakeholder engagement strategies | <ul style="list-style-type: none"> • Analysis of stakeholder relationships and levels of interest, power and impact • Process of setting and aligning expectations • Negotiation techniques and approaches • Conflict resolution techniques and approaches • Escalation procedures for handling disputes | <ul style="list-style-type: none"> • Analysis and planning approaches in stakeholder management • Evaluation techniques to prioritize stakeholder relationships • Negotiation styles and skills to gain consensus • Value added from stakeholder relationships | <ul style="list-style-type: none"> • Key processes and considerations in formulating stakeholder management strategy • Changes and trends in stakeholders' demands and priorities • Senior stakeholder engagement strategies and techniques |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 | |
|-----------------------|---------|---------|---|---|--|--|---|
| Skills Application | | | <ul style="list-style-type: none"> • Identify key stakeholders and the organization's relationship with them • Identify stakeholder needs, positions and interests • Coordinate basic activities /and processes with stakeholders on a day-to-day basis • Apply knowledge of the organization's position to respond to simple queries from stakeholders | <ul style="list-style-type: none"> • Conduct stakeholder mapping to identify facets and nature of relationships with and between stakeholders • Manage stakeholders' expectations and needs, based on the organization's position and resources • Articulate each stakeholder's role and responsibilities • Serve as the organization's main contact point or representative for communicating with stakeholders, addressing queries and providing clarifications • Represent the company's interests when interacting with stakeholders • Engage stakeholders regularly to set and align expectations and activities as well as to exchange feedback | <ul style="list-style-type: none"> • Analyze the complexities of stakeholder relationships and determine their level of interest, power and impact on the organization • Examine stakeholder positions, agendas and priorities which may be explicitly articulated or unspoken • Develop a stakeholder engagement plan to guide communications with different groups of stakeholders • Set clear parameters and expectations of stakeholders' roles and responsibilities • Negotiate with stakeholders to align interests or goals and arrive at mutually-beneficial arrangements • Investigate problems or issues encountered in stakeholder relationships • Review feedback from stakeholders and affected parties, and recommend improvements to stakeholder management strategy | <ul style="list-style-type: none"> • Prioritize stakeholder relationships based on in-depth analysis and the organization's strategic objectives and direction • Develop a strategic stakeholder management roadmap, aligned to the organization's vision • Lead discussions and negotiations to influence key stakeholder decisions • Address escalated issues raised by or encountered with stakeholders | <ul style="list-style-type: none"> • Establish the overall vision for how the organization's and stakeholders' objectives can be shared or aligned • Anticipate changes in stakeholders' needs, demands, priorities and expectations • Optimize alignment of stakeholder management strategy with organizational goals • Lead strategic negotiations, discussions and engagement initiatives with key leaders and senior stakeholders • Represent the organization to resolve major escalated issues involving critical stakeholders • Deepen relationships with critical senior stakeholders on an ongoing basis • Co-create shared goals, objectives and vision with senior leaders and stakeholders |
| Range of Application | | | | | | | |



Strategy Implementation

Execute and implement operational and tactical-level action plans in alignment with the organization's business strategies

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|---|---------|---------|
| FSC Code | | | AAI-SPII-3005-I.I | AAI-SPII-4005-I.I | | |
| FSC Proficiency Description | | | Analyze strategies for critical business functions to ensure plans are within risk mitigation factors | Evaluate strategies for critical business functions to ensure plans are realistic and reflect health of business | | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> • Business analysis • Financial analysis • Principles of risk assessment • Resource assessment • Project management tools | <ul style="list-style-type: none"> • Situational analysis • Market analysis • Risk management • Resource management • Strategy implementation framework • Measures, targets and identifying initiatives | | |
| Skills Application | | | <ul style="list-style-type: none"> • Analyze external market factors and health of critical business functions • Analyze organizational capabilities to support strategy implementation • Propose refinements to business strategies • Analyze status update reports to determine risk areas • Maintain risk profiles of critical business functions | <ul style="list-style-type: none"> • Review critical business function strategies and market impact • Review critical business function operations • Develop critical business function strategies • Evaluate risk impact based on internal factors and external conditions • Develop goals and metrics based on organization strategies • Facilitate rewards strategies linked to performance targets and metrics • Facilitate communication of key components of business plans to relevant stakeholders | | |
| Range of Application | | | | | | |

Strategy Planning

Develop organizational strategies and policies by analyzing the impact of internal and external influencing factors and seeking consultation from relevant stakeholders

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|--|---|
| FSC Code | | | | AAI-BPMI-4017-I.I | AAI-BPMI-5017-I.I | AAI-BPMI-6017-I.I |
| FSC Proficiency Description | | | | Develop resource allocation plans and implement strategies and policies | Formulate the strategies and policies that are forward-looking and focuses on bottom line results | Build actionable organization strategy plans and policies that are forward-looking, anticipate strategic risks and focus on bottom line results |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> • Types of resources • Outcomes of effective resource allocation • Relevant stakeholders • Relevant organizational strategies, objectives, processes • Various organizational systems and processes • Tools and methodologies to review systems and processes | <ul style="list-style-type: none"> • Processes to develop organizational strategies and policies • Impact of internal and external influencing factors • Various organizational systems and processes • Types of critical business functions • Types of key performance indicators • Outcomes of functional analysis | <ul style="list-style-type: none"> • Competitor analysis • Customer analysis • Strategic objectives of the organization • Performance drivers of the organization • Objectives of strategic plans • Methods of setting organizational goals and targets • Types of strategic risks • Types of organizational analysis • Objectives of organizational analysis • Implications of organizational analysis on organization |
| Range of Application | | | | | | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|---|--|
| Skills Application | | | | <ul style="list-style-type: none"> Determine resource needs to ensure successful implementation of business function strategy Develop resource management allocation plans to determine sufficiency and optimal utilization of the organization Monitor and review resource usage to determine sufficiency and optimal utilization of resources Review the organization's strategic plans to consider various life-cycles and ongoing trends Propose organizational strategies and policies and present to management for endorsement Propose solutions to gaps and areas of improvement to further enhance organizational systems and processes | <ul style="list-style-type: none"> Evaluate effective resource allocation to the best investment of the organization Evaluate the organization's strategic plans to consider various life-cycles and trends Devise corporate strategy and policy to anticipate risk, ensuring that the organization remains resilient and adaptable in times of instability Set key performance indicators to assess operational plans Analyze impact of internal and external influencing factors on organizational strategies and policies Review proposed strategies and policies to update management for endorsement Report operational plans to relevant stakeholders for endorsement purposes Determine need for functional analysis Evaluate critical business functions of the organization based on existing information | <ul style="list-style-type: none"> Ensure the organization's competitive position and financial position Link resource allocation to the best investment opportunities to drive performance Transform the organization's strategy plans to consider long cycles and macro-trends Transform the corporate strategy and policy to appropriately anticipate risk and uncertainty, ensuring that the organization remains resilient and adaptable in times of instability Identify strategic needs of the organization to enhance organizational performance Set organizational directions, organizational goals and targets to contribute to organizational strategies Review operational plans to relevant stakeholders for endorsement |
| Range of Application | | | | | | |

Sustainability Management

Plan, develop and roll out of an organization-wide sustainability strategy. This includes the assessment of the organization's utilization 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 organization's internal and external environment as well as potential improvements in energy- or resource-efficiency.

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|--|---|--|
| FSC Code | | | | AAI-BPM1-4018-1.I | AAI-BPM1-5018-1.I | AAI-BPM1-6018-1.I |
| FSC Proficiency Description | | | | Assess the organization's utilization of energy against supply considerations, and propose and implement solutions to optimize utilization | Define action plans, solutions and technologies to address energy efficiency gaps, and implement sustainability practices that encourage organizational commitment | Establish an organization-wide sustainability strategy and introduce new, innovative practices and technologies to optimize energy and resource efficiency |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> Metrics of energy and resource utilization Assessment and identification of gaps/ lapses in energy efficiency Implementation steps for a sustainability action plan Utilization of appropriate tools and techniques | <ul style="list-style-type: none"> Impacts of Infocomm Technology (ICT) energy trends Methods to optimize energy and resource efficiency, and their pros and cons Tools, techniques and technologies to address sustainability gaps Key considerations for effective implementation of sustainability standards | <ul style="list-style-type: none"> Global trends and best practices in sustainability management and green ICT Projection of energy utilization patterns on the business Innovative sustainability measures, practices and methodologies for ICT Sustainability standards and benchmarks in the industry |

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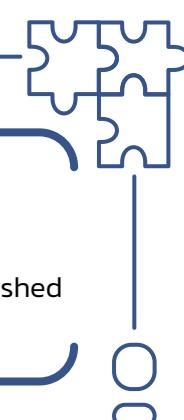
| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|---|---|---|
| Skills Application | | | | <ul style="list-style-type: none"> Identify ICT energy trends that could impact the organization Monitor the organization's utilization of energy and other resources against availability of supply sources and external standards Identify gaps, issues, or critical areas for improvement in energy and resource efficiency Propose possible solutions, tools or technologies that can enhance effectiveness of the organization's utilization of energy and resources Implement action plan and solutions in line with the organization's sustainability strategy Oversee proper utilization of approved tools, technologies and methodologies to optimize energy and resource utilization Monitor compliance with sustainability practices, processes and standards in the organization | <ul style="list-style-type: none"> Analyze ICT energy trends and findings, and potential impact on organization practices Evaluate organization's energy utilization in relation to broader supply availability, stability and external trends and standards Identify significant impact of energy or resource-utilization patterns in the organization Assess suitability and recommend appropriate tools or technologies to incorporate into the organization's practices Define action plans to address sustainability gaps and detail solutions to improve energy and resource efficiency for the organization Endorse action plans, tools and technologies to enhance energy and resource efficiency, based on an assessment of their feasibility, validity and alignment with business priorities Set organizational standards for usage of energy and resources, for conformance by products, services, and operational processes | <ul style="list-style-type: none"> Review global sustainability trends, and their potential impact on the organization Integrate industry best practices in green ICT with internal business requirements to develop an organization-wide sustainability strategy Review analysis of the organization's energy utilization in relation to supply costs or considerations, and project long-term business implications Introduce new, innovative practices and methodologies to optimize energy and resource efficiency for the organization |
| Range of Application | | | | | | |

System Integration

Develop and implement a roadmap and specific integration solutions to facilitate integration of various ICT components and optimize interoperability of systems and their interfaces. This includes the integration of various architectural components such as networks, servers, system platforms and their interfaces

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---|---|--|---|
| FSC Code | | | AAI-DIM1-3017-1.1 | AAI-DIM1-4017-1.1 | AAI-DIM1-5017-1.1 | AAI-DIM1-6017-1.1 |
| FSC Proficiency Description | | | Perform basic compatibility assessments and integrate selected system components according to a plan | Determine interoperability of system components and develop a system integration plan | Design a feasible integration roadmap, monitor system integration outcomes and drive enhancements to integration plans | Establish an integration strategy and a clear vision for an integrated ICT architectural design. |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> Various types of ICT systems and how they work System components and interfaces Factors to consider when assessing compatibility among system interfaces Utilization of basic integration tools and techniques Protocols for system component integration Signs of incompatibility and integration errors Methodologies for troubleshooting in an integration process | <ul style="list-style-type: none"> Modes of interaction among system or components and their interfaces Technical requirements for integration of systems or system components Factors to consider when integrating multiple systems System integration diagnosis and solution development Features of system components and their interoperability Processes and techniques in network integration for a wide range of network types and components Utilization of advanced integration tools | <ul style="list-style-type: none"> Factors to consider when evaluating feasibility of integration Downstream implications of system integration Potential roadblocks or challenges that may hinder integration success Process of designing an integration roadmap and approach Range of available integration tools and techniques | <ul style="list-style-type: none"> Technical and business impact of system integration in the short and long term Financial and non-financial costs and potential gains of integration Factors to consider in developing an integration strategy New and advanced integration tools and techniques used in the market |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|--|--|---|
| Skills Application | | | <ul style="list-style-type: none"> Conduct basic compatibility assessment of specific components, sub-systems and their interfaces Utilize basic integration tools to integrate selected system components, using protocols that are accepted at each interface Test the selected system components or interfaces to identify any incompatibility issues Identify integration errors and conduct basic troubleshooting Propose potential changes or modifications to integration plan based on observed integration outcomes | <ul style="list-style-type: none"> Determine how system components can interoperate with one another to exchange data and information or trigger an event Synthesize technical architecture documents for the ICT systems and components to be integrated Identify technical requirements and dependencies of integrating multiple networks based on the integration roadmap Develop an integration solution or plan to address a specific organization requirement Utilize identified tools and techniques to carry out integration of multiple, complex network components and services across different platforms and carriers Make modifications to integration plans based on feedback provided | <ul style="list-style-type: none"> Develop a high-level view of the interoperability of various components, based on the envisioned architectural design Review technical architecture documents for the Infocomm Technology systems and components to be integrated Evaluate technical considerations, feasibility and implications of integrating multiple systems and components according to the integration strategy Design an integration roadmap comprising a suite of system integration solutions Identify suitable tools and techniques to facilitate system integration and interoperability of components Manage outcomes of system integration Provide expert advice on and direct high-level modifications to the integration plan, so as to optimize success and performance | <ul style="list-style-type: none"> Establish a clear vision for an integrated Infocomm Technology architectural design to achieve desired outcomes Evaluate business requirements to identify system integration objectives Pre-empt risks and impact of integration to other networks and processes Drive integration strategy to achieve integration objectives and desired impact Introduce new or advanced tools that effectively address the integration requirements Evaluate proposed integration approaches, taking into consideration business needs, and the associated costs, time and resources |
| Range of Application | | | <p>Types of networks for integration may include but are not limited to:</p> <ul style="list-style-type: none"> LAN network (e.g., SOHO network, WLAN) Radio network Telecommunications network Next generation network (NGN) Wide area network (WAN) Cloud based network | <p>Types of platforms for integration may include but are not limited to:</p> <ul style="list-style-type: none"> Mobile Platforms (e.g., Android, IOS) Operating system platform (e.g., Mac, Microsoft Windows, Linux) Enterprise Resource Platforms (e.g., SAP, Oracle) Software platforms (e.g., Java, .NET Framework) | | |

Systems Design

Design systems to meet specified business and user requirements that are compatible with established system architectures, as well as organizational and performance standards

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|---|---|
| FSC Code | | | | AAI-DAR1-4008-1.I | AAI-DAR1-5008-1.I | AAI-DAR1-6008-1.I |
| FSC Proficiency Description | | | | Design systems and components based on determined specifications | Evaluate and review systems designs | Formulate the organization's policies, standards, guidelines, and methods for systems design |
| Underpinning Knowledge | | | | <ul style="list-style-type: none"> Elements that make up a system in the design process System design approaches and processes Business and user requirements of the system Current and required system functions System security control features and tools Process, thread and memory management Types of fault tolerance technologies Data management structures, processes, standards, and tools Protocols in information asset management Software design blueprint requirements Technical requirements for integrating current and new systems or system components Software and hardware products, features, and capabilities Networked server administration and configuration methods, techniques, and processes Quality assurance practices for installing, testing and evaluating systems Types of system security technologies, functions and features | <ul style="list-style-type: none"> System architecture development, implementation and evaluation methods System design principles and specification standards Systems design lifecycle models Organization data architecture and data structure design Information and data flows of a business Software design principles Consideration factors for system integration feasibility Predictive plan-driven and adaptive iterative and agile approaches Concepts and operating principles of software and hardware components Enterprise wired and wireless networking technologies, concepts and applications Quality audit frameworks, methodologies and processes Criteria for determining system security controls Factors affecting technology trade-off during system design | <ul style="list-style-type: none"> New and emerging trends in systems design Best practices and external regulations in systems design standards and practices Organization IT architecture models Data architecture, data structure design and data management strategies Industry standards and best practices in enterprise-level data governance, control and policies Process to determine software design principles Technical and business impacts of system integration in the short and long term Industry best practices in designing secure systems and emerging system security threats |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|--|--|--|
| Skills Application | | | | <ul style="list-style-type: none"> Determine systems design specification for the development of system components and modules Develop blueprints of data flows within the organization and requirements for data input, output, processing and storage Design system components aligned to established architectures, and design standards Define system interface requirements based on design characteristics Identify functional specifications of software programs to address business and user needs of the system Formulate system security technical specifications Analyze the strengths and weaknesses of alternative design options Analyze impact of major design options and trade-offs to identify potential risks Create multiple design options to address functional and non-functional requirements Identify technical requirements for integration of system and system components Develop prototypes of proposed system components Provide suggestions to improve system design | <ul style="list-style-type: none"> Develop system architectures and system design characteristics Evaluate advantages and disadvantages of architecture characteristics Assess the design of system components, modules and interfaces Evaluate the logic design to ensure alignment with data management framework, structures, processes and standards Develop design principles to guide the definition and detailing of software blueprints Determine system security requirements and respective secure technologies, functions or features Review impact analyses on business-critical design options and trade-offs to determine risks Assess and mitigate identified risks in design options Review system designs to assess suitability of selected technology and integration of multiple systems and technology Analyze system designs to ensure a balance between functional and non-functional requirements Develop system design policies and standards | <ul style="list-style-type: none"> Advise on system architecting, design principles and the selection of system design lifecycle models Establish system design strategies Ensure the system design is in alignment with data architecture, structure and management strategy Anticipate future business and user requirements, and the implications on software design, features and capabilities Evaluate system design blueprints to ensure data, software, and security requirements are accounted for in the design Adopt predictive or adaptive approaches in system design Ensure adherence to organizational policies, standards and strategies in system design Oversee systems design activities for strategic systems development programs Articulate strategic value and needs for integration of systems and/or system components Advise on the adoption of new technologies, frameworks and processes in designing systems |
| Range of Application | | | | | | |

Systems Thinking

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|--|---|---|---------|
| FSC Code | | | AAI-ATH1-3001-1.1 | AAI-ATH1-4001-1.1 | AAI-ATH1-5001-1.1 | |
| FSC Proficiency Description | | | Understand the interrelationship of various processes affecting work activities, assess processes and systems holistically and examine aggregates rather than individual activities | Monitor the interrelationship of systems and processes across the organization and evaluate these systems based on value creation and contribution to specific issues | Understand complexity of cause-and-effect relationships of systems and processes across the organization and provide direction to improve organizational systems based on gaps identified | |
| Underpinning Knowledge | | | <ul style="list-style-type: none"> Organization's mission, vision and values Definitions of systems thinking Features of systems thinking Limitations of appropriate evaluation processes to assess effectiveness of system thinking application Sources of information for assessing the effectiveness of system thinking application Possible success indicators of chosen solutions | <ul style="list-style-type: none"> Benefits of systems thinking Organization from a systems perspective Types of tools in terms of system thinking application Applications of system thinking Considerations in designing suitable criteria to assess effectiveness of chosen solutions Considerations in selecting the appropriate methods to document the process of applying systems thinking | <ul style="list-style-type: none"> Concepts of systems thinking application Approaches and problem-solve solutions related to system thinking application Limitations of appropriate evaluation processes to assess effectiveness of system thinking application | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---|--|---|---------|
| Skills Application | | | <ul style="list-style-type: none"> Understand how various processes are related Assess processes and systems in a holistic manner Apply systems thinking approaches and processes to identify the root causes of non-achievement of desired goals and outcomes of the organization Document process of applying systems thinking in problem-solving and decision-making | <ul style="list-style-type: none"> Monitor interrelationships of systems and processes Evaluate the performance of system applications Assess the effectiveness of the chosen solutions using an appropriate evaluation process Analyze issues that affect the achievement of desired goals and outcomes Implement systems thinking approaches and processes to propose solutions | <ul style="list-style-type: none"> Understand cause-and-effect relationships Provide direction to improve organizational systems Evaluate the effectiveness of system thinking application Develop an implementation plan for the chosen solutions to resolve issues that affect the achievement of desired goals and outcomes in an organization Use systems thinking tools to formulate possible solutions to resolve issues that affect the achievement of desired goals and outcomes Select suitable solutions using established criteria to resolve issues that affect the achievement of desired goals and outcomes Recommend corrective actions to improve chosen solutions | |
| Range of Application | | | | | | |

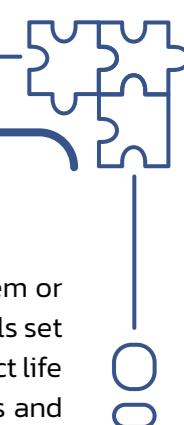
Technical Sales Support

Develop preliminary technical solutions, proposals 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 customization samples as part of broader end-to-end solution to customers

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|--|--|--|--|---------|
| FSC Code | | AAI-SMA1-2001-1.1 | AAI-SMA1-3001-1.1 | AAI-SMA1-4001-1.1 | AAI-SMA1-5001-1.1 | |
| FSC Proficiency Description | | Perform technical product demonstrations and shortlist potential solutions, resolving technical issues to meet customers' requirements | Analyze technical requirements and draft proof-of-concept for technical solutions to customers | Lead the design of customized technical solutions, demonstrating their value in relation to the broader end-to-end solutions delivered | Synthesize high-level trends in customer's technical requirements, and lead enterprise-wide proposals for technical products and solutions | |

| Underpinning Knowledge | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|------------------------|--|--|---|--|---------|---------|
| | <ul style="list-style-type: none"> Commonly received technical requests and requirements Range of the organization's technical product and service solutions Various parts of technical products Usage and functioning of technical products | <ul style="list-style-type: none"> Broad range of technical requests and requirements Pros, cons and features of the organization's product and service solutions Prototype development Product testing and modeling Elements of a proof-of-concept | <ul style="list-style-type: none"> Product specifications, functions, applications and interactions with other products Key components and considerations in value demonstrations Different elements in end-to-end technical solution Proof-of-concept modeling Process and parameters of technical solution customization | <ul style="list-style-type: none"> Trends and developments in customer's technical requirements Critical elements of technical sales proposals Interactions among different elements, products and aspects of a holistic end-to-end technical solution Process of developing product prototypes and models | | |

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|--|--|---|---|---------|---------|
| Skills Application | <ul style="list-style-type: none"> Record customer's technical requirements Assist customers in resolving basic technical issues, with reference to standard guidelines Shortlist potential product and service solutions that can meet customers' needs Deliver technical product demonstrations Communicate technical details and functions of products effectively to customers Support sale of technical solutions | <ul style="list-style-type: none"> Analyze technical requirements or non-standard customer requests Explain technical nuances, pros and cons of various solutions to the customer Support development of customized IT products, services and prototypes Model the proposed product and solution Guide internal and external stakeholders in understanding technical details and functions of products and services offered Draft proof-of-concept to support sales efforts Identify appropriate solutions to meet customer's needs | <ul style="list-style-type: none"> Diagnose customers' IT product and service needs Justify suitable technical solutions to address customers' needs Support the role of a specific technical product in the broader end-to-end solution delivered to customers Develop value demonstrations and proof-of-concept models Lead the design of customized technical solutions and programs to meet customers' unique set of requirements Lead the sale of technical products and services to key clients | <ul style="list-style-type: none"> Synthesize high-level trends and changes in customer's technical requirements Lead the design of enterprise-wide proposals for technical products and solutions to potential customers Direct the development of technical solutions, product prototypes and models Anticipate how technical aspects of a specific product can impact or be impacted by other elements in a broader, end-to-end solution | | |
| Range of Application | | | | | | |

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

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|--|--|---|--|---------|
| FSC Code | | AAI-DIMI-2018-I.1 | AAI-DIMI-3018-I.1 | AAI-DIMI-4018-I.1 | AAI-DIMI-5018-I.1 | |
| FSC Proficiency Description | | Identify and document the basic tools, testware, resources and processes to carry out required tests | Determine requirements and develop a phase test plan, identifying optimal schedules and means for executing test scripts | Define testing objectives, and design a master test plan including a series of systematic test procedures to achieve them | Develop a test strategy, and establish testing policies, guidelines and metrics according to internal and external standards | |

| | | | | |
|------------------------|---|---|--|---|
| Underpinning Knowledge | <ul style="list-style-type: none"> Basic testing tools and processes Documentation requirements of software testing Concept and usage of traceability matrix | <ul style="list-style-type: none"> Different types or levels of testing over product life stages Range of tests, testware and their pros, cons, applicability and compatibility Optimal scheduling times for different tests Critical components of a phase test plan Different means for executing test scripts | <ul style="list-style-type: none"> Testing objectives and scope Range of tests, testware and their pros, cons, applicability and compatibility Test plans and procedures regarding test automation Critical components of a master test plan Key resources, data and tools required to implement test plans Post mortem activities and root cause analysis | <ul style="list-style-type: none"> Principles of defining test strategy Industry regulations for product, software or system development Organization and industry standards and baselines Testing guidelines and metrics |
|------------------------|---|---|--|---|

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| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|--|---------|---------|---------|---------|---------|
| Skills Application | <ul style="list-style-type: none"> Identify basic tools and processes to carry out required tests Document testware, tools and resources used, in accordance to project test plan across the different product life stages Maintain link between requirements and test done using a traceability matrix Gather resources, data and tools required to implement a test plan Determine the requirements and specifications of applications or systems to be tested Propose relevant tests for applications or systems to achieve the testing objectives Identify points across the different product life stages for optimal scheduling of tests and verification of different requirements Develop a phase test plan Assess appropriate way for executing test scripts through manual, automated or mixed Define testing objectives, taking into account the unique requirements of the application or system to be tested Review a range of tests and select a suitable combination Design a series of systematic test procedures in alignment with the test strategy Design test plans and procedures that leverages test automation Develop a master test plan, indicating the scope, approach, resources and schedule of intended test activities Select means for executing test scripts Determine the resources, data and tools required to implement the test plan successfully Design plans for post-mortem activities and root cause analysis Define the overall test strategy Articulate implications of industry developments and regulatory changes on testing processes or elements that need to be tested Establish testing policies and guidelines according to internal requirements and industry regulations Define metrics and desired outcomes for testing activities, in accordance to established standards and baselines | | | | | |
| Range of Application | <p>Test planning may be applied but are not limited to:</p> <ul style="list-style-type: none"> Stress Tests Load Tests Volume Tests Baseline Tests | | | | | |

Text Analytics and Processing

Identify, extract and analyze text data using text analytics solutions to discover themes, patterns and trends

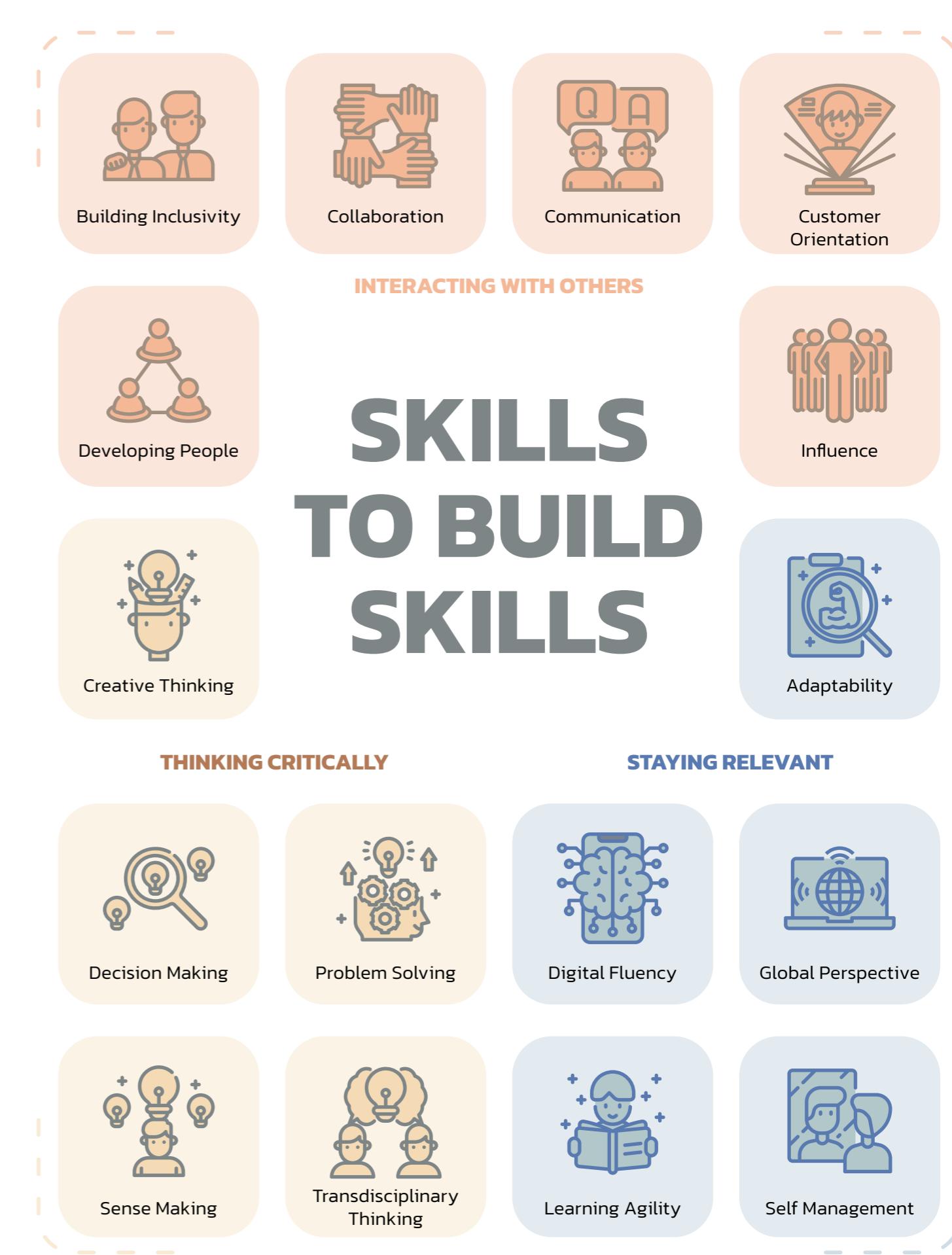
| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------------|---------|---------|---------|---|---|--|
| FSC Code | | | | AAI-DIMI-4019-I.I | AAI-DIMI-5019-I.I | AAI-DIMI-6019-I.I |
| FSC Proficiency Description | | | | Analyze text data to discover themes, patterns and trends to improve business processes and decision making | Implement advanced machine learning techniques in building natural language processing (NLP) models for performing common text processing tasks | Design and implement systems that can interact with users using spoken or written natural language |

| Underpinning Knowledge | | | | | | |
|------------------------|--|--|---|--|--|--|
| | <ul style="list-style-type: none"> Text analytics tasks, applications areas, tools and their features Cross-Industry Standard Process for Data Mining (CRISP-DM) in text analytics Text mining process and pre-processing Information extraction methods Concept clustering Text link analysis Categorization methods and rules Core concepts and tasks in sentiment mining Applications, difficulties and solutions for sentiment mining Sentiment detection and classification Topic and aspect extraction Sentiment summarization and visualization | <ul style="list-style-type: none"> Application areas of NLP NLP and deep learning Deep learning foundations Matrix calculus for deep learning Backpropagation Pros and cons of count and prediction-based Word Embedding Word embedding algorithms Similarity measures Text classification, regularization and loss function Language models and recurrent neural networks (RNN) Encoder-decoder models Memory networks NLP and Bayesian methods Parsing | <ul style="list-style-type: none"> Conversational user interfaces (UIs) Common roles and applications with conversational UIs Main concepts, architecture and components of conversational UIs Conversation design Natural language understanding techniques Response generation Conversational UI with speech Systems that can interact with users including chatbots and virtual assistants | | | |

Continue to next page

| FSC Proficiency Level | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 | LEVEL 6 |
|-----------------------|---------|---------|---------|---|---|--|
| Skills Application | | | | <ul style="list-style-type: none"> Identify text analytics solutions and platform requirements based on the business requirements and analytical objectives Define the metadata and corpus for the data to be imported into the text analytics repository Develop standardized sets of text analytics artifacts with the relevant stakeholders Develop term-document frequency matrices to enable look-up of text and documents within the corpus Modify the text analytics solutions to ensure that it produces the expected results Define the processes to perform text analytics based on the business requirements and text analytics artifacts Detect and classify sentiments in textual data from social media Find out what the sentiments are about by identifying the targets and their aspects Summarize, visualize and present sentiment monitoring for management support | <ul style="list-style-type: none"> Identify common tasks associated with text data Represent text data word as embeddings and reviews similarity measures for word semantics Model text as n-gram language models and RNN Determine the machine learning approach suitable for text data analytics Train the model by monitoring and tweaking its sub-components Determine the strategies to be used to augment memory networks | <ul style="list-style-type: none"> Determine the roles that systems with conversational UI can play in fielded applications Identify and analyze the main components and the architectures of conversational interfaces Design conversational UI following practical methodologies and strategies Develop applications with conversational UI using traditional and machine learning approaches Generate responses to the users through natural language generation Evaluate the performance of the conversational UI using appropriate metrics Handle speech input and output for conversational UI using prevalent techniques |

Range of Application





Adaptability

Exercise flexibility in behaviors or approaches to respond to changes and evolving contexts

| ESC Proficiency Description | BASIC | INTERMEDIATE | ADVANCED |
|-----------------------------|--|---|--|
| | ESC-SRE-B001-1 | ESC-SRE-I001-1 | ESC-SRE-A001-1 |
| Underpinning Knowledge | <ul style="list-style-type: none"> Ideation techniques Experimentation techniques Problem solving techniques Emotional regulation techniques Questioning techniques Information processing techniques Self-awareness concepts Impact measurement techniques | <ul style="list-style-type: none"> Stakeholder analysis techniques Group dynamic concepts Collaboration styles Coaching and mentoring techniques Risk analysis techniques Self-reflection techniques Strategies to evaluate impact of new ideas, improvements or solutions | <ul style="list-style-type: none"> Organization's vision, objectives and operating climate Strategies to build resilient teams Strategies to drive the continuous development of new approaches Risk mitigation strategies Strategies to identify emerging industry disruptors and trends Change management strategies Stakeholder dynamics Stakeholder management strategies Conflict management strategies |
| Skills Application | <ul style="list-style-type: none"> Demonstrate an openness to seek and interpret opinions and practices different from own Seek out information about changes or evolving contexts which may impact work activities or priorities Set short-term goals in order to perform work activities effectively during periods of change Adjust existing work activities in response to new instructions, guidelines or operating procedures Assess own reactions to changes and evolving contexts to improve future responses and behaviors Monitor own work performance to identify potential development areas to enhance responses to changes and evolving contexts Identify appropriate skills and training which could improve one's response and behaviour to changes and evolving contexts | <ul style="list-style-type: none"> Assess the impact of changes and evolving contexts to identify ways to adapt skills or processes Analyze the rationale for change or underlying factors driving evolving contexts Develop creative solutions to address challenges and leverage on opportunities arising from changes and evolving contexts Evaluate inputs from various stakeholders and different courses of actions to determine how to navigate through change and evolving contexts Prioritize work activities in order of criticality to navigate through change and evolving contexts Coach team members in responding to changes and evolving contexts Reflect on responses to change and evolving contexts to recommend future actions, behaviors and approaches | <ul style="list-style-type: none"> Articulate strategic goals to navigate through periods of change and evolving contexts Evaluate the impact on the operating climate, emerging trends and industry disruptors Determine potential opportunities and/or risks of change or evolving contexts Direct the development of new and alternative approaches to respond to changes and evolving contexts Guide stakeholders to successfully navigate through change and disruptions Lead the resolution of any issues which impact the organization's ability to adapt to changes and evolving contexts Review existing strategies and approaches to changes and evolving contexts. |
| Range of Application | | | |

Building Inclusivity

Collaborate with stakeholders from different backgrounds or with different abilities, including diversity dimensions such as race, ethnicity, religion, gender orientation, age, physical and learning ability, education, socio-economic status and political belief, to understand the interests of diverse groups and build an inclusive work environment

| ESC Proficiency Description | BASIC | INTERMEDIATE | ADVANCED |
|-----------------------------|---|---|--|
| | ESC-IWO-B001-1 | ESC-IWO-I001-1 | ESC-IWO-A001-1 |
| Underpinning Knowledge | Demonstrate sensitivity to the differences in diversity dimensions and perspectives | Manage relationships across diverse groups within the organization | Oversee the develop and implement processes and practices which build an inclusive work environment and enable diverse groups to work effectively together |
| Skills Application | <ul style="list-style-type: none"> Self-awareness concepts Diversity dimensions and preferences Types of unconscious bias Fair employment practices | <ul style="list-style-type: none"> Barriers to workplace diversity and inclusion Communication styles Interpersonal communication techniques Social psychology concepts Group dynamics concepts Strategies to manage unconscious bias | <ul style="list-style-type: none"> Inclusion strategies and best practices Dimensions and behaviors of non-inclusion Types of social, political, economic and cultural factors which impact stakeholder interactions Conflict management strategies Emerging trends impacting perspectives on diversity and inclusion Best practices for promoting inclusivity |
| Range of Application | | | |



Collaboration

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

| | BASIC | INTERMEDIATE | ADVANCED |
|------------------------------------|--|--|---|
| | ESC-IWO-B002-1 | ESC-IWO-I002-1 | ESC-IWO-A002-1 |
| ESC Proficiency Description | Contribute to a positive and cooperative working environment by fulfilling own responsibilities, managing interpersonal relationships and providing support to others to achieve goals | Build relationships and work effectively with internal and external stakeholders to create synergies in working towards shared goals | Establish team effectiveness and manage partnerships to create a cooperative working environment which enables the achievement of goals |
| Underpinning Knowledge | <ul style="list-style-type: none"> Types of collaboration tools and platforms Team roles and responsibilities Team communication techniques Diversity dimensions and preferences Behavioral styles Knowledge sharing methods and tools Listening techniques Emotional intelligence dimensions Techniques to develop empathy Workplace and social etiquette | <ul style="list-style-type: none"> Types of team structures Types of team development methods Team goal-setting concepts Group facilitation and problem-solving methods Stakeholder analysis techniques Persuasion methods Communication styles Interpersonal communication techniques Personality types and interpersonal needs Emerging virtual collaboration tools and platforms | <ul style="list-style-type: none"> Organization's vision, objectives and operating climate Team organization theories Motivation theories Measures of team effectiveness Behavioral science concepts Stakeholder dynamics Stakeholder management strategies Best practices in virtual collaboration Conflict management strategies Types of social, political, economic and cultural factors which impact stakeholder relationships |
| Skills Application | <ul style="list-style-type: none"> Perform work activities collaboratively with others to foster team spirit and contribute to identified goals Demonstrate a positive attitude in various situations and interactions with stakeholders Share information, knowledge and experiences with co-workers Implement collaboration tools and platforms to enable different types of collaboration and information sharing Seek to understand others' situations, perspectives and emotions Build rapport with co-workers to maintain relationships Escalate information pertaining to conflicts in teams to relevant stakeholders Seek feedback from co-workers on own role and performance in the team | <ul style="list-style-type: none"> Identify shared goals which require collaboration to facilitate the achievement of team and organizational objectives Organize teams in a manner that capitalizes on team members' strengths Adapt methods of interaction to cater to the needs and motivations of others Align values, beliefs and perceptions amongst team members to establish harmonious working relationships Guide team members to manage work challenges and tasks in a positive manner Develop partnerships with key internal and external stakeholders to achieve win-win outcomes Resolve issues arising from working in teams Provide feedback to team members on their roles, working styles and performance in the team Suggest tools and platforms which could be integrated to facilitate virtual collaboration and enhance productivity of teams | <ul style="list-style-type: none"> Champion the development of an open and collaborative organizational culture Establish organizational policies and procedures that promote a cooperative working environment Drive mutual understanding between teams across the organization to encourage the achievement of shared goals Navigate diverse views and opinions within and beyond the organization to achieve beneficial outcomes Build strategic alliances and partnerships to achieve desired organizational objectives Oversee the resolution of conflicts or removal of barriers to collaboration across the organization Devise feedback processes to ensure the organization strives to work cooperatively and continuously improve Evaluate the effectiveness of virtual collaboration across the organization to recommend improvements |
| Range of Application | | | |

Communication

Convey and exchange thoughts, ideas and information effectively through various mediums and approaches

| | BASIC | INTERMEDIATE | ADVANCED |
|------------------------------------|--|---|---|
| | ESC-IWO-B003-1 | ESC-IWO-I003-1 | ESC-IWO-A003-1 |
| ESC Proficiency Description | Communicate with others to share information, respond to general inquiries and obtain specific information | Tailor communication approaches to audience needs and determine suitable methods to convey and exchange information | Synthesize information and inputs to communicate an overarching storyline to multiple stakeholders |
| Underpinning Knowledge | <ul style="list-style-type: none"> Range of technical and non-technical vocabulary Verbal and non-verbal signals Communication styles Behavioral insights concepts Verbal and non-verbal communication techniques Writing techniques Listening techniques Emotional intelligence dimensions Types of communication channels and tools Information processing techniques Questioning techniques Information confidentiality and disclosure considerations | <ul style="list-style-type: none"> Verbal and non-verbal signals Communication styles Behavioral insights concepts Verbal and non-verbal communication techniques Writing techniques Listening techniques Emotional intelligence dimensions Types of communication channels and tools Information processing techniques Questioning techniques Information confidentiality and disclosure considerations | <ul style="list-style-type: none"> Storytelling techniques Negotiation strategies Stakeholder dynamics Stakeholder management strategies Strategies to drive behaviour change Strategies to overcome communication roadblocks Emerging communication channels and tools |
| Skills Application | <ul style="list-style-type: none"> Identify appropriate communication channels to convey or exchange information Deploy listening techniques to engage with and understand the audience Ask questions to seek clarity when receiving information Present ideas using concise and clear language Implement verbal and non-verbal communication techniques to convey and receive information across communication channels Define desired outcomes for the exchange of information | <ul style="list-style-type: none"> Analyze communication objectives, types of stakeholders and needs to determine communication priorities Evaluate communication objectives, styles, verbal and non-verbal signals to adapt communication approaches and channels Present information in a structured flow and format which is reflective of audience needs Determine relevant information and visualization techniques to share and convey a persuasive viewpoint Adapt communication approaches continuously to respond to audience reactions Analyze information exchanged to identify communication gaps Encourage two-way interactions and seek feedback on communication approaches | <ul style="list-style-type: none"> Evaluate stakeholder dynamics and context to establish communication objectives and principles Synthesize various information sources and communication objectives to create a persuasive storyline Anticipate responses from stakeholders to adapt approaches appropriately Manage sensitive communications with discretion and tact Evaluate different stakeholder viewpoints to determine appropriate negotiation strategies Establish alignment between diverse stakeholders with differing viewpoints to achieve constructive outcomes Evaluate emerging communication channels and tools to define adoption opportunities |
| Range of Application | | | |



Creative Thinking

Adopt diverse perspectives in combining ideas or information and making connections between different fields to create different ideas, improvements and solutions

| | BASIC | INTERMEDIATE | ADVANCED |
|------------------------------------|--|--|--|
| | ESC-TCR-B001-1 | ESC-TCR-I001-1 | ESC-TCR-A001-1 |
| ESC Proficiency Description | Connect ideas or information to propose and test ideas, improvements and solutions which challenge current assumptions or ways of working | Integrate multiple ideas and information from across various fields to develop solutions and new ways of working which address specific issues and deliver impact | Cultivate a culture of innovation and creativity across the organization to push boundaries and reshape goals and possibilities |
| Underpinning Knowledge | <ul style="list-style-type: none"> Process analysis techniques Types of information collection tools Ideation techniques Experimentation techniques Problem solving techniques Brainstorming techniques Lateral thinking techniques Impact measurement techniques | <ul style="list-style-type: none"> Research and information collection approaches and processes Strategies for managing creative processes Techniques for developing imagination Visualization techniques Types of innovation drivers Types of barriers to creativity Convergent and divergent thinking techniques Strategies to evaluate impact of new ideas, improvements or solutions | <ul style="list-style-type: none"> Strategies to create a safe space for creative exploration and experimentation Storytelling techniques Innovation management strategies Strategies to evaluate lateral, convergent and divergent thinking techniques Emerging applications of innovation or creative solutions across industries Strategies to drive the continuous improvement of the creative processes |
| Skills Application | <ul style="list-style-type: none"> Employ process analysis techniques to review current work processes and identify potential improvement areas Collect information related to potential new ideas, improvements or solutions using a variety of identified tools Apply lateral thinking techniques to improve current ways of performing work activities Share inputs during brainstorming sessions to support the generation of ideas Conduct experiments to test ideas, improvements or new solutions in own work areas Collect information to monitor implementation of ideas, improvements or new solutions against impact criteria | <ul style="list-style-type: none"> Identify the desired outcomes of creative thinking processes Analyze improvement areas to prioritize work areas for action Develop resource and information collection approaches and processes for identified improvement areas Facilitate exercises with different stakeholders to enable the generation of ideas and imaginative solutions Integrate convergent and divergent thinking techniques to develop new approaches, ideas or solutions Collaborate with internal and external stakeholders to consider how ideas, improvements or new solutions from other areas can be applied to different contexts Deploy visualization techniques to communicate proposed new ideas, improvements or solutions Design experiments to trial the implementation of ideas, improvements or solutions Design criteria to measure impact of new ideas, improvements or solutions Analyze outcomes of experiments using an iterative process to continuously improve the implementation of ideas, improvements or new solutions | <ul style="list-style-type: none"> Champion organization's creativity and innovation goals Foster an organizational culture that encourages creative imagination, experimentation and innovation Synthesize research and information from various sources within the organization to determine potential synergies or opportunities for organization-wide innovation initiatives Evaluate the implementation of lateral, convergent and divergent thinking techniques to design "out-of-the-box" ideas, improvements or solutions which push the boundaries and solve problems Engage with internal and external stakeholders to communicate compelling narratives and rationale for implementing new ideas, improvements or solutions Evaluate outcomes of design experiments to recommend new ideas, improvements or solutions to be implemented across the organization Evaluate emerging applications of innovations or solutions across industries to determine any relevant applications within own organization Establish strategies to analyze the effectiveness of creative processes across the organization |
| Range of Application | | | |

Customer Orientation

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

| | BASIC | INTERMEDIATE | ADVANCED |
|------------------------------------|--|---|---|
| | ESC-IWO-B004-1 | ESC-IWO-I004-1 | ESC-IWO-A004-1 |
| ESC Proficiency Description | Demonstrate an understanding of customer needs or objectives to respond in a way which delivers an effective customer experience | Build relationships with customers to anticipate needs and solicit feedback to improve the customer experience | Foster the creation of an effective customer experience |
| Underpinning Knowledge | <ul style="list-style-type: none"> Customer needs analysis Types of data collection tools and methods Customer listening methods and guidelines Customer feedback management systems Organization's service policies and procedures Organization's customer experience philosophy | <ul style="list-style-type: none"> Customer behavioral patterns Service evaluation models Customer experience metrics Customer experience management strategies Customer relationship management strategies | <ul style="list-style-type: none"> Strategies to design customer experience philosophies Strategies to develop service policies and procedures Types of business strategies and operations Organization's vision and objectives Emerging industry and market trends Stakeholder dynamics |
| Skills Application | <ul style="list-style-type: none"> Analyze customer needs or perspectives to identify appropriate responses or actions Demonstrate positive outlook and behaviour in customer interactions in line with organization's customer experience philosophy Respond to customer requests in accordance with the organization's service policies and procedures Identify potential customer experience issues to be escalated Collect data to measure defined customer experience parameters or metrics Suggest potential methods to improve customer experience Apply learnings from customer feedback to improve customer experience and service standards | <ul style="list-style-type: none"> Analyze multiple information sources on customer behaviour and trends to anticipate customers' needs and expectations Evaluate customer needs to prioritize responses or action based on urgency and criticality Analyze customer engagements and conduct follow-up actions to analyze customer experience Manage critical customer issues and identify appropriate service recovery interventions Analyze customer experience metrics to identify areas for improvement or gaps in customer experiences Recommend changes to the organization's service policies or procedures to improve customer experience Implement strategies to maintain relationships with customers to cultivate loyalty and trust | <ul style="list-style-type: none"> Establish the organization's customer experience philosophy and strategy for service delivery Guide the development of service policies and procedures to create a customer experience which prioritizes customer needs or objectives Balance strategic and operational requirements against the fulfilment of customer needs to design effective customer experience management strategies Evaluate the impact of emerging industry and market trends on the customer experience to pre-empt customer issues Champion customer-oriented behaviors across the organization Define metrics to measure customer experience Advocate for continuous improvement in customer experience across the organization to drive service excellence |
| Range of Application | | | |



Decision Making

Choose a course of action from several alternatives developed through a structured process in order to achieve intended goals

| ESC Proficiency Description | BASIC | INTERMEDIATE | ADVANCED |
|---|--|--|----------------|
| | ESC-TCR-BO02-1 | ESC-TCR-IO02-1 | ESC-TCR-A002-1 |
| Follow processes to make decisions which achieve intended goals using given information and guidelines | Implement structured decision making processes and analyze multiple sources of information to propose solutions | Define decision making criteria, processes and strategies and evaluate their effectiveness | |
| <ul style="list-style-type: none"> Decision making processes Decision making tools and techniques Decision making styles Decision making pitfalls and errors Impact measurement techniques Ethical guidelines, standards and procedures | <ul style="list-style-type: none"> Decision evaluation and prioritization frameworks Stakeholder analysis techniques Group decision making methods Risk analysis techniques | <ul style="list-style-type: none"> Decision making criteria and strategies Decision automation tools Organization's vision, objectives, and operating climate Organization communication techniques Risk mitigation strategies Regulatory frameworks and policies | |
| <ul style="list-style-type: none"> Follow decision making processes which align with organizational guidelines, standards and procedures Gather relevant information to support ideation and decision making processes Participate in brainstorming activities to develop solutions during decision making processes Collate information on impact of decisions made and suggest improvements | <ul style="list-style-type: none"> Implement structured decision making processes which align with timelines and refer to multiple sources of available information Analyze required information for decision making and direct the collection of relevant information Facilitate decision making processes within teams to design innovative solutions Assess impact and feasibility of solutions to provide recommendations Analyze risk factors for proposed solutions or outcomes of decision making processes and devise mitigation strategies Develop implementation plans for solutions or outcomes of decision making processes in adherence to organizational guidelines, standards and procedures Review outcomes of the decisions made to determine whether goals have been met Calibrate the results and consequences of the decisions made to propose improvements to decision making processes | <ul style="list-style-type: none"> Evaluate contexts to determine critical decision making points and requirements Define criteria to be analyzed through decision making processes Formulate decision making strategies and processes based on sources of information Communicate the importance of robust, evidence-based decision making processes Synthesize sources of information to prioritize solutions in alignment with organizational priorities, operational and strategic considerations Articulate decisions amongst internal and external platforms to guide key stakeholders and obtain buy-ins Leverage existing and emerging tools to automate decision making processes Evaluate potential causes of barriers to making effective decisions Endorse improvements to decision making strategies and processes | |
| Range of Application | | | |

Developing People

Empower others to learn and develop their capabilities to enhance their performance and achieve personal or professional goals

| ESC Proficiency Description | BASIC | INTERMEDIATE | ADVANCED |
|---|--|--|----------------|
| | ESC-IWO-BO05-1 | ESC-IWO-IO05-1 | ESC-IWO-A005-1 |
| Create individual career and development plans, and support co-workers in performing their work activities | Develop and coach team members to identify and leverage their strengths to enhance performance | Foster a conducive environment to enable employees' professional and personal development, in alignment with the organization's objectives and goals | |
| <ul style="list-style-type: none"> Personal strengths inventory Goal-setting techniques Learning styles Organizational performance goals Outcomes of career planning Techniques to provide constructive feedback | <ul style="list-style-type: none"> Coaching and mentoring techniques Motivation and reinforcement concepts Listening techniques Organization learning and development policies and procedures Questioning techniques Self-reflection techniques Performance review techniques | <ul style="list-style-type: none"> Career management reporting Career development strategies Engagement and empowerment techniques Performance management processes and frameworks Organization's vision, objectives, and operating climate | |
| <ul style="list-style-type: none"> Initiate career planning activities to identify learning and development goals Identify links among personal, professional and organizational performance goals Support co-workers in executing work activities to achieve intended goals and improve work performance Share career planning related experiences with co-workers Participate in activities that challenge self and contribute to capability development Provide constructive feedback to co-workers in accordance with organizational guidelines, standards and procedures | <ul style="list-style-type: none"> Guide team members in identifying personal and professional goals Coach and mentor team members on achieving personal, professional and organizational goals Evaluate individual strengths, capabilities and learning styles to create tailored coaching and development interventions in different contexts Facilitate discussions with team members to ensure accountability for setting goals and development plans Advise team members on the formulation of career development plans Recommend stretch goals and opportunities to harness the potential of team members Provide continuous feedback and reinforce behaviors that contribute positively to performance or growth | <ul style="list-style-type: none"> Build support for organization-wide capability development interventions to facilitate the attainment of personal and professional goals Guide employees to understand the principles for translating organizational objectives to personal and professional goals Provide expertise on coaching and mentoring techniques Create or recommend platforms and procedures to enable exposure to new opportunities and enriching experiences within the organization Champion the development of a supportive and positive climate which encourages continuous improvement and development within the organization | |
| Range of Application | | | |



Digital Fluency

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

| ESC Proficiency Description | BASIC | INTERMEDIATE | ADVANCED |
|-----------------------------|---|--|---|
| | ESC-SRE-B002-1 | ESC-SRE-I002-1 | ESC-SRE-A002-1 |
| Underpinning Knowledge | <ul style="list-style-type: none"> Digital terminologies Digital etiquettes Types of digital search and information collection tools Types of digital technology tools, systems and software Types of technology-enabled communication channels Organization's InfoComm Technology troubleshooting and Information Technology (IT) back-up processes Organization's IT, personal data and privacy policies Types of cyber security risks Organization's policies to monitor cyber security risks • | <ul style="list-style-type: none"> Emerging digital technology tools, systems and software Emerging digital communication channels Methods to evaluate suitability of digital technology tools, systems and software Types of visualization tools and techniques Technology implementation processes Problem solving techniques Decision evaluation and prioritization frameworks Risk assessment techniques Strategies to manage cyber security risks Types of metrics to measure effectiveness of digital tools, systems and software | <ul style="list-style-type: none"> Best practice applications of digital technology tools, systems and software Emerging trends in the digital environment Strategies to manage technology implementation Digital education strategies Types of digital training programs Strategies to manage InfoComm Technology troubleshooting and back-up processes Strategies to manage cyber security risk strategies and policies Strategies to manage personal data and privacy policies Legal and regulatory frameworks related to digital technology tools, systems and software |
| Skills Application | <ul style="list-style-type: none"> Interpret instructions and actions based on digital terminologies Operate identified digital technology tools, systems and software to perform own work processes and activities Present information using identified digital technology tools, systems and software Exchange information with other stakeholders using identified technology-mediated communication channels Perform searches to source information using digital search and information collection tools Assess the credibility of information sourced using digital search and information collection tools Organize digital content to be stored and retrieved in line with organizational requirements Adhere to organization's personal data and privacy policies Follow organization's cyber security policies to identify potential risks | <ul style="list-style-type: none"> Analyze work processes and activities across own team to identify potential applications of digital technology tools, systems or software which drive efficiency and solve problems Evaluate emerging digital technology tools, systems or software to propose applications which drive efficiency and solve problems in own team Identify applications of different visualization techniques and tools to analyze and present information Deploy processes to manage technology implementation Review usage of digital technology tools, systems and software to identify any breaches of organization's digital and IT policies Assess current applications of digital technology tools, systems or software to propose improvement areas | <ul style="list-style-type: none"> Champion the benefits of digital applications and advancements to build an organization-wide community which focuses on digital approaches and adopts a digital mindset Synthesis emerging trends in the digital environment to anticipate changes required to organization's current digital technology tools, systems and software Oversee the progress of digital intervention implementations across the organization Champion digital education strategies across the organization to address digital literacy skill gaps and drive continuous learning Influence stakeholders to communicate the narrative of digital transformation and manage any change barriers Direct the development and implementation of organizational digital and IT policies Guide the analysis of past breaches of organizational digital and IT policies to mitigate future impacts of cyber security issues, data breaches or system failures |
| Range of Application | Including prompt engineering | | |

Global Perspective

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

| ESC Proficiency Description | BASIC | INTERMEDIATE | ADVANCED |
|-----------------------------|---|---|---|
| | ESC-SRE-B003-1 | ESC-SRE-I003-1 | ESC-SRE-A003-1 |
| Underpinning Knowledge | Demonstrate an understanding of global challenges and opportunities to work effectively in a cross-cultural environment | Develop global networks and determine impact of global context and trends on the organisation's vision, objectives and operating climate | 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 |
| Skills Application | <ul style="list-style-type: none"> Research techniques Types of information collection tools Knowledge sharing methods and tools Verbal and non-verbal communication techniques Types of communication channels and tools Modes of collaboration Diversity dimensions and preferences Self-awareness concepts Workplace and social etiquette | <ul style="list-style-type: none"> Research and information collection methodologies Organisation structure Macro-economic, environmental, technology, political and social trends Methods to analyse impacts of global trends Types of networks Stakeholder analysis techniques Communication styles Barriers to workplace diversity and inclusion | <ul style="list-style-type: none"> Organisation's vision, objectives and operating climate Types of global business strategies Types of business performance metrics Emerging research on macro-economic, environmental, technology, political and social trends Stakeholder management strategies Inclusion strategies and best practices Types of social, political, economic and cultural factors which impact cross-cultural collaborations Conflict management strategies Best practices for businesses operating in global and cross-cultural environments |
| Range of Application | | | |



Influence

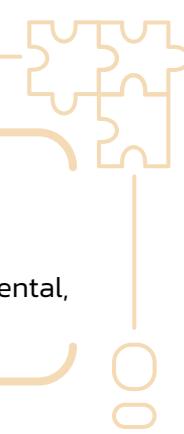
Influence behaviors, beliefs or attitudes in order to achieve desired outcomes and solutions

| | BASIC | INTERMEDIATE | ADVANCED |
|------------------------------------|---|--|---|
| | ESC-IWO-B006-1 | ESC-IWO-I006-1 | ESC-IWO-A006-1 |
| ESC Proficiency Description | Demonstrate empathy to understand the feelings and actions of others and communicate in ways that limit misunderstandings and influence others on operational issues | Develop relationships with stakeholders to build confidence, alignment and communicate desired purpose, goals or objectives | Build consensus with stakeholders to achieve desired outcomes on matters of strategic importance |
| Underpinning Knowledge | <ul style="list-style-type: none"> Diversity dimensions and preferences Emotional intelligence dimensions Listening techniques Problem solving techniques Types of communication channels and tools Verbal and non-verbal communication techniques Knowledge sharing methods and tools Questioning techniques | <ul style="list-style-type: none"> Types of networks Verbal and non-verbal signals Stakeholder analysis techniques Strategies to develop trust Interpersonal communication techniques Communication styles Persuasion methods Techniques for analyzing audience reactions Collaboration techniques | <ul style="list-style-type: none"> Goal or purpose setting strategies Strategies to drive behaviour change Negotiation strategies Motivation theories Types of social, political, economic and cultural factors which impact stakeholder relationships Stakeholder dynamics Stakeholder management strategies Storytelling techniques Conflict management strategies |
| Skills Application | <ul style="list-style-type: none"> Develop a clear understanding of purpose and desired goals or outcomes Analyze stakeholder responses and interactions to understand needs Encourage stakeholders to share views and opinions to enable an understanding of different perspectives Appreciate nuances and impact of diversity dimensions and cultural backgrounds when interacting with stakeholders Communicate to stakeholders in a manner which encourages open conversations and reduces potential misunderstandings Adapt personal style to demonstrate empathy and enable the communication of desired goals Ask questions to understand stakeholders' responses or potential issues | <ul style="list-style-type: none"> Identify stakeholders and networks that are critical in meeting desired goals and objectives Integrate different stakeholders into the decision-making process to garner their support Utilize combinations of logic, conviction and interpersonal skills when communicating desired goals and objectives Align ideas and plans with relevant stakeholders to build ownership and garner buy-in Ensure decisions made are supported with relevant experience, facts and knowledge Articulate pros and cons behind decisions taken and proposed to build confidence amongst stakeholders Present findings and thoughts in an open and flexible manner Escalate issues to senior stakeholders if own efforts to enlist support have not succeeded | <ul style="list-style-type: none"> Establish alignment among different stakeholders' needs and objectives to achieve intended outcomes Establish key stakeholder relationships to ensure goals and objectives are achieved Share strategic insights in a manner that addresses the issues and interests of relevant stakeholders Evaluate compromises to gain commitment from relevant stakeholders Endorse win-win solutions that benefit all parties involved Anticipate objections and challenges that potentially impact desired results Negotiate issues that impact long-term strategic objectives |
| Range of Application | | | |

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 | INTERMEDIATE | ADVANCED |
|------------------------------------|---|---|---|
| | ESC-SRE-B004-1 | ESC-SRE-I004-1 | ESC-SRE-A004-1 |
| ESC Proficiency Description | Identify opportunities and targets for learning to facilitate continuous career development | Deploy various learning approaches in different settings to maximize opportunities for learning and self-reflection and measure their impact on the achievement of career goals | Establish an organizational culture of continuous learning to encourage the adoption of new learning approaches and identification of new learning opportunities |
| Underpinning Knowledge | <ul style="list-style-type: none"> Goal-setting techniques Career planning techniques Methods to gather feedback about own performance from others Questioning techniques Types of feedback channels Strategies to measure impact of learning outcomes Types of learning preferences Types of learning modes Techniques to structure learning approaches | <ul style="list-style-type: none"> • Career management strategies Coaching and mentoring techniques Experimentation techniques Self-directed learning techniques Self-reflection techniques Types of learning preferences Types of learning modes Techniques to apply learning outcomes | <ul style="list-style-type: none"> Best practices in learning and development Career development strategies Emerging learning trends, approaches and theories Methods to tailor learning approaches Methods to overcome learning obstacles Purposes of learning goals Strategies to evaluate learning effectiveness |
| Skills Application | <ul style="list-style-type: none"> Collect feedback from internal and external sources on own career and learning development Identify areas of strengths and development needs by internalizing experiences, feedback and knowledge acquired Set learning goals in line with development needs, interest areas and career plans Evaluate previous learning experiences in order to identify own learning preferences Review different learning modes to identify suitable systematic learning approaches which meet own development needs Use appropriate questioning techniques in different settings to acquire new skills and knowledge Document own progress against learning goals | <ul style="list-style-type: none"> Communicate the importance of knowledge sharing and feedback to team members Design personal learning and development pathways which maximize learning opportunities across multiple contexts, modes and content areas Evaluate learning goals to determine potential opportunities for collaborative learning or exchange of knowledge and skills with other stakeholders Prioritize opportunities to apply new knowledge or skills across multiple different work areas or disciplines Integrate mentoring or reverse mentoring approaches to enable continuous self-reflection and feedback sharing Identify learning opportunities which can support the development of team members Implement different learning approaches to test strengths and weaknesses of different approaches for own learning goals Analyze effectiveness and impact of learning on work performance and development against defined criteria Measure progress against learning goals to identify potential stretch targets or adjustments to be made to learning approaches | <ul style="list-style-type: none"> Champion the importance of self-reflection and development to foster a culture of continuous learning across the organization Formulate long-term career development strategies to determine priority learning goals and opportunities Define criteria to evaluate learning approaches for diverse development needs Evaluate causes of learning obstacles to recommend alternative approaches Lead the development and implementation of organizational learning initiatives Leverage organization-wide networks to establish opportunities for cross-organizational learning exchanges and initiatives Spearhead the integration of mentoring approaches across the organization Devise criteria to measure learning effectiveness and impact on work performance and development Assess emerging learning trends, approaches and theories to recommend improvements to learning approaches and initiatives |
| Range of Application | | | |



Problem Solving

Generate effective and efficient solutions to solve problems and capitalize on new opportunities

| | BASIC | INTERMEDIATE | ADVANCED |
|------------------------------------|---|---|--|
| | ESC-TCR-BO03-1 | ESC-TCR-IO03-1 | ESC-TCR-A003-1 |
| ESC Proficiency Description | Identify problems and implement guidelines and procedures to solve problems and test solutions | Determine underlying causes of problems and collaborate with other stakeholders to implement and evaluate solutions | Anticipate potential problems to drive a culture of continuous improvement which seeks to turn problems into opportunities across the organization |
| Underpinning Knowledge | <ul style="list-style-type: none"> • Problem identification techniques • Questioning techniques • Types of corrective actions • Problem solving processes, tools and techniques • Experimentation techniques • Impact measurement techniques | <ul style="list-style-type: none"> • Root cause analysis techniques • Decision evaluation and prioritization frameworks • Exercises for developing big picture thinking approaches • Strategies to manage experimentation processes • Stakeholder analysis techniques • Risk analysis techniques • Types of metrics to measure solution effectiveness | <ul style="list-style-type: none"> • Organization's vision, objectives and operating climate • Emerging problem-solving processes, tools and strategies • Types of social, political, economic and cultural factors which impact stakeholder relationships • Conflict management strategies • Risk management strategies • Strategies to evaluate solution effectiveness |
| Skills Application | <ul style="list-style-type: none"> • Implement problem identification techniques to recognize issues within work area • Identify decisions to be made to solve problems • Suggest potential corrective actions to solve problems • Conduct work area experiments to test potential solutions • Report any issues which occur during solution testing to other stakeholders • Collect information to monitor implementation of potential solutions against impact criteria | <ul style="list-style-type: none"> • Diagnose underlying causes of issues by considering wider contexts • Encourage behaviors and practices for team members that promote effective problem-solving approaches and continuous improvement • Facilitate exercises with different stakeholders to develop big picture thinking approaches to inform solution development • Collaborate with other stakeholders to seek opinions on potential solutions • Develop experiments to test potential solutions • Determine the constraints and risks associated with potential solutions • Analyze outcomes of experiments to recommend the most suitable solution for a problem • Engage different stakeholders to secure buy-in for proposed solution • Review the effectiveness of the problem-solving process and solution against defined goals | <ul style="list-style-type: none"> • Define objectives of organizational problem-solving processes in line with organization vision, objectives and operating climate • Synthesis emerging trends to design organizational problem-solving processes, tools and techniques • Champion a culture of continuous improvement across the organization • Evaluate multiple variables and contexts to anticipate potential problems which may occur • Determine appropriate stakeholders to be involved in problem solving processes in the organization • Oversee collaboration between multiple stakeholders across the organization to design solutions • Direct the resolution of any conflicts during problem solving processes • Evaluate the business implications of implementing the proposed solutions across the organization • Endorse solutions to be implemented across the organization • Establish strategies to evaluate the effectiveness of problem-solving processes across the organization |
| Range of Application | | | |

Self Management

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

| | BASIC | INTERMEDIATE | ADVANCED |
|------------------------------------|--|--|--|
| | ESC-SRE-BO05-1 | ESC-SRE-IO05-1 | ESC-SRE-A005-1 |
| ESC Proficiency Description | Exercise self-awareness by monitoring own behaviors and ways of working in personal and professional capacities, and implement techniques for improvement | Analyze own well-being and personal effectiveness to develop strategies to regulate self and build personal brand | Evaluate strategies to manage own well-being, personal effectiveness and personal brand |
| Underpinning Knowledge | <ul style="list-style-type: none"> • Characteristics of personal branding • Emotional regulation techniques • Coaching and mentoring techniques • Emotional intelligence dimensions • Methods for developing personal branding • Productivity metrics • Self-care techniques • Stress management techniques • Time management and prioritization techniques • Types of feedback channels • Workplace and social etiquettes | <ul style="list-style-type: none"> • Self-reflection techniques • Emotional regulation techniques • Coaching and mentoring techniques • Emotional intelligence dimensions • Methods for gathering feedback • Productivity metrics • Self-care techniques • Stress management concepts • Types of stress triggers • Types of networking strategies | <ul style="list-style-type: none"> • Emerging self management trends, approaches and theories • Strategies to promote work-life balance • Strategies to evaluate well-being and work-life balance • Strategies to promote personal brand • Strategies to evaluate stress management techniques |
| Skills Application | <ul style="list-style-type: none"> • Identify goals and priorities across workload and plan work activities accordingly • Monitor progress against goals and priorities to identify time management issues • Escalate time management issues to stakeholders to mitigate its impact on intended goals and priorities • Implement stress management techniques to maintain own well-being • Monitor emotional well-being and regulate responses to situations • Implement self-care techniques to maintain physical and mental wellness • Maintain standards for personal and professional image in line with expectations of work environment • Follow workplace and social etiquette when interacting with stakeholders | <ul style="list-style-type: none"> • Review work goals and priorities to align with personal vision and purpose • Resolve barriers or issues encountered while managing goals and priorities • Integrate productivity enhancement tools to improve personal effectiveness • Analyze own personal effectiveness to review productivity and effectiveness of time management approaches • Analyze own well-being to reflect on potential issues or improvement areas • Apply appropriate stress management strategies to address triggers of stress identified • Evaluate strengths and weaknesses to define own personal brand • Identify stakeholders and networks to build own personal brand | <ul style="list-style-type: none"> • Anticipate potential workload or stress triggers to implement mitigating actions • Reflect on personal and professional life to improve prioritization, time and stress management • Integrate emerging trends, approaches and theories in self management to improve own personal effectiveness and well-being • Design a strategy to build own personal brand across organization, industry and networks • Evaluate own personal branding strategies to identify areas for improvement |
| Range of Application | | | |



Sense Making

Leverage sources of qualitative and quantitative information and data to recognize patterns, spot opportunities, infer insights and inform decisions

| ESC Proficiency Description | BASIC | INTERMEDIATE | ADVANCED |
|-----------------------------|--|--|---|
| | ESC-TCR-B004-1 | ESC-TCR-I004-1 | ESC-TCR-A004-1 |
| Underpinning Knowledge | <ul style="list-style-type: none"> Types of information collection tools Information organization techniques Information processing techniques Techniques for identifying missing or erroneous information | <ul style="list-style-type: none"> Data analysis techniques Data analysis tools Strengths and weaknesses of different analysis techniques Pattern recognition techniques Logical thinking techniques Insight generation process and techniques | <ul style="list-style-type: none"> Extrapolation techniques Systems thinking theories Features and limitations of different information and data sources Organization vision, objectives and operating climate |
| Skills Application | <ul style="list-style-type: none"> Filter information into classification structures Implement techniques to process different information sources Document missing or erroneous information within sources Review information sources to identify relationships and linkages Suggest inferences and impact based on the relationships and linkages between the information sources | <ul style="list-style-type: none"> Assess information and data sources to evaluate validity and reliability Detect gaps in information and data sources and develop logical assumptions to close the gaps Analyze relationships and linkages to identify patterns and trends Interpret analysis outcomes to determine potential impact and opportunities Review data analysis techniques to identify potential limitations which may impact conclusions Recommend improvements to data analysis techniques | <ul style="list-style-type: none"> Evaluate information and data sources to determine potential limitations which may impact insights and conclusions Identify external factors that influence the immediate situation or hypothesis Extrapolate information to facilitate projections and future-oriented analyses Synthesize disparate information, analyses or viewpoints to derive actionable insights and conclusions Formulate insights by applying various approaches to evaluate information Evaluate underlying factors affecting situations to consider potential impacts or mitigating actions Evaluate and implement improvements to data analysis processes |
| Range of Application | | | |

Transdisciplinary Thinking

Apply concepts from multiple disciplines, and synthesize different areas of knowledge and insights to guide decisions, foster cooperation and drive continuous improvement

| ESC Proficiency Description | BASIC | INTERMEDIATE | ADVANCED |
|-----------------------------|--|--|---|
| | ESC-TCR-B005-1 | ESC-TCR-I005-1 | ESC-TCR-A005-1 |
| Underpinning Knowledge | <ul style="list-style-type: none"> Explore concepts from outside one's field of expertise to supplement one's knowledge, proficiency and work practices | <ul style="list-style-type: none"> Identify opportunities for transdisciplinary collaboration and knowledge transfer to facilitate the integration of knowledge from different disciplines | <ul style="list-style-type: none"> Endorse collaboration and the integration of knowledge across disciplines to make decisions and solve problems within and outside the organization |
| Skills Application | <ul style="list-style-type: none"> Research techniques Types of information collection tools Verbal and non-verbal communication techniques Types of communication channels and tools Modes of collaboration Knowledge sharing methods and tools Decision-making processes Problem-solving techniques Self-assessment concepts Diversity dimensions and preferences Workplace and social etiquettes | <ul style="list-style-type: none"> Research and information collection methodologies Pattern recognition techniques Strategies for developing big picture thinking approaches Decision evaluation and prioritization frameworks Stakeholder analysis techniques Interpersonal communication techniques | <ul style="list-style-type: none"> Organization's vision, objectives and operating climate Types of organization structures Emerging research and information collection methodologies Knowledge transfer systems and mechanisms Information filtering methods Context framing techniques Strategies to influence diverse stakeholders Stakeholder management strategies Types of social, political, economic and cultural factors which impact collaboration across disciplines Conflict management strategies |
| Range of Application | | | |



Technical Guide on Using the Philippine Skills Framework

The Philippine Skills Framework (PSF) is a comprehensive and adaptive system that provides very robust industry-validated guides for industry human resource practitioners and educators to develop in-house or public competency development programs.

This technical guide provides a brief on how to use the PSF-AAI to establish performance requirements by industry human resource practitioners. It also gives educators a handle on how to use the PSF to develop curriculum outlines for subsequent development of training programs. More information will be provided through industry engagement sessions.

Part 1

Establish Performance Requirements for Job Roles

How can a human resource practitioner utilize the Philippine Skills Framework for hiring, training, and developing performance requirements and identifying skills gaps?

In an ever-changing and fast-paced economy, establishing performance requirements, abilities and skills for job roles are very essential. Utilizing the PSF will help an organization to have a systematic process that can be used to identify the candidates or applicants and match their abilities to the job requirements to demonstrate their right fit for the job. Moreover, by using the PSF, one can build a robust talent selection foundation where one's organization can reap benefits that will drive organizational success. On the other hand, organizing proper training and development sessions for employees must also be done for them to acquire new skills, sharpen existing ones, and become better leaders to ensure relevance of skills currently needed by the industry and for the future economy.

Determining Performance Requirement and Skills for Job Roles



Identify

Critical Work Functions and Key Tasks of Job Role of a given organization context

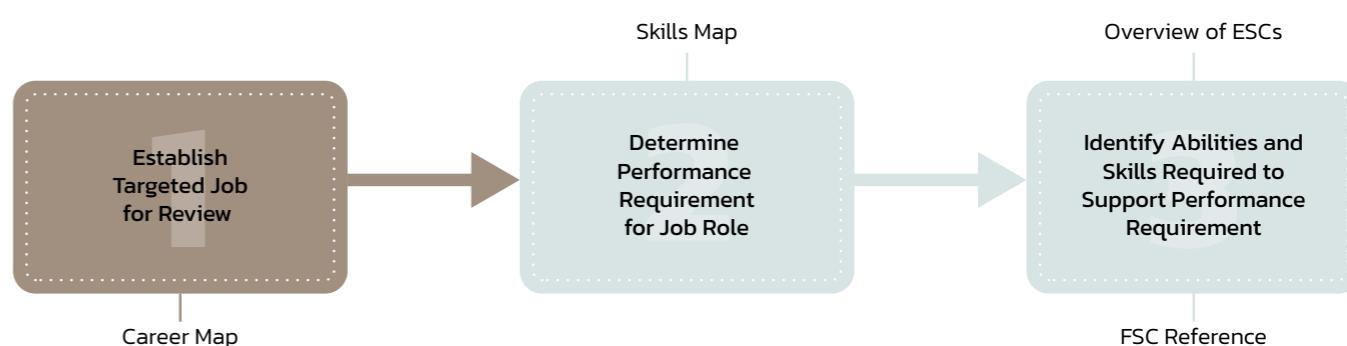


Identify

Functional and Enabling Skills and Competencies required to address given Critical Work Functions and related Key Tasks

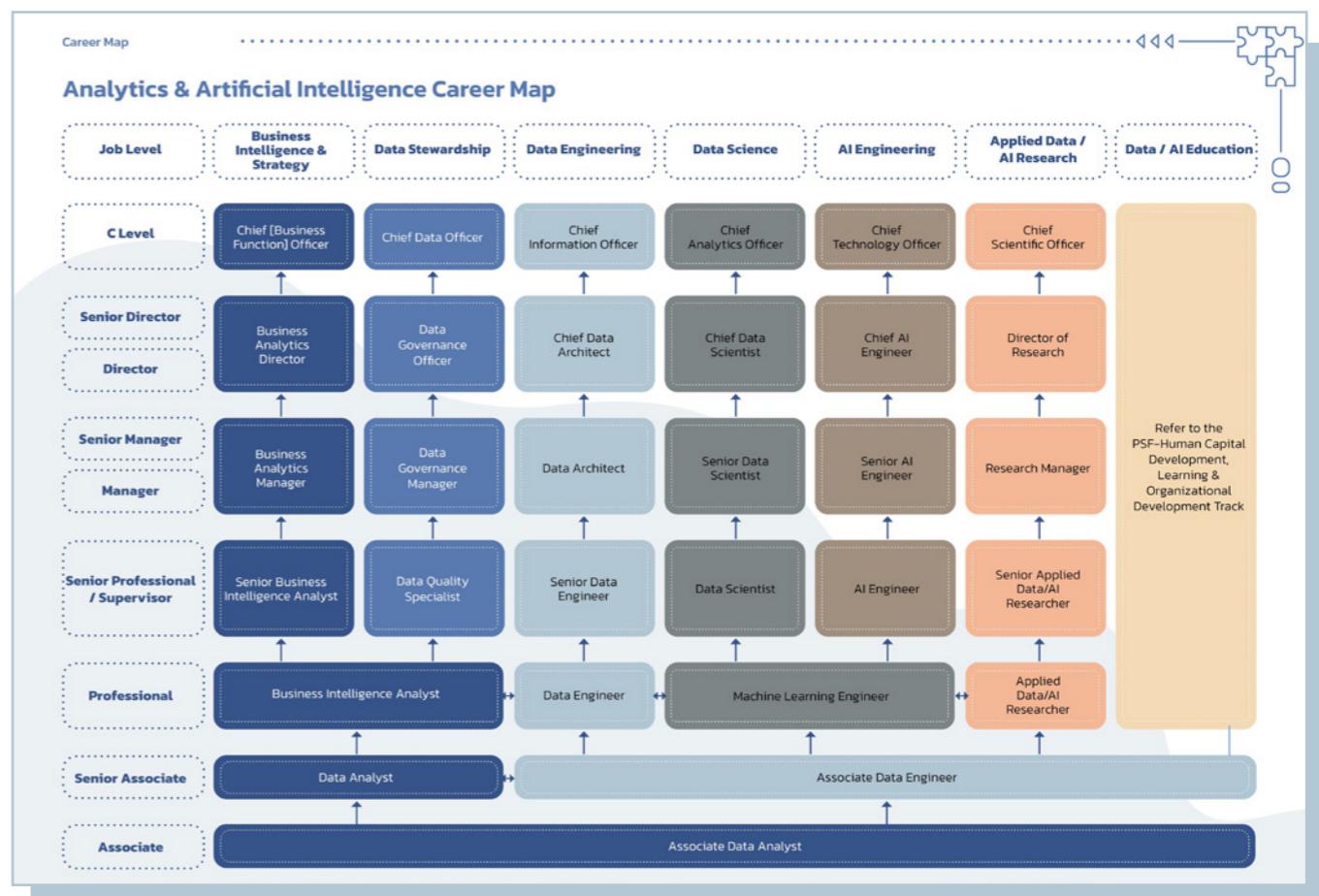
It is important to be able to identify Critical Work Functions and Key Tasks of a given Job Role of specific organizational context. Afterwards, it is then essential to identify the Functional Skills and Competencies (FSC) and Enabling Skills and Competencies (ESC) required to address the given Critical Work Functions and related Key Tasks.

Step 1: Gather Critical Job Information for Defining Job Roles



To be able to gather critical job information for defining job roles, you first need to review how to establish targeted jobs by means of identifying what job roles are needed in a certain organization. Thus, knowing the actual employment needs ensures the positive outcome which will help an employer find a suitable candidate, and reach short-term and long-term company goals.

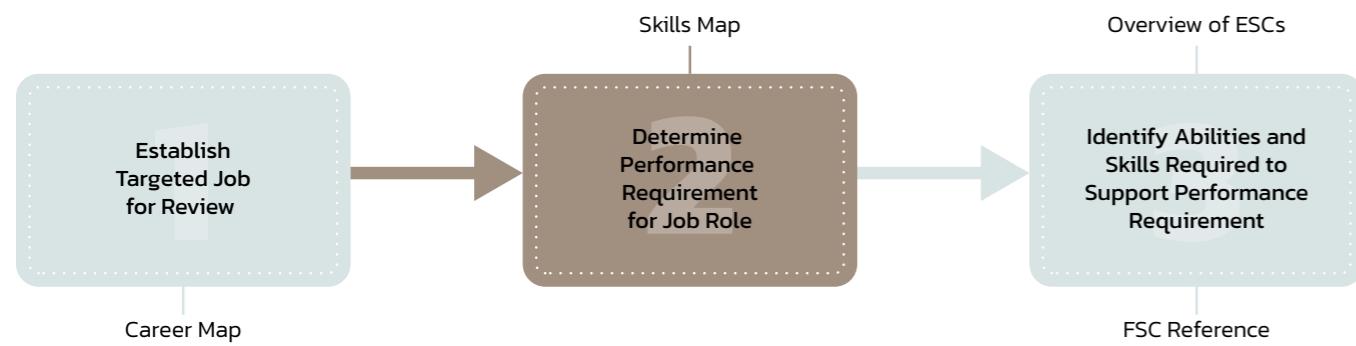
This analysis process can be supported with the use of the Career Map, which forms the first important document of the PSF.





The Career Map provides various information: industry sector; sub-sectors or tracks; job grades; and the job roles themselves. In this case, the industry is the Analytics & Artificial Intelligence Sector. The seven tracks that are depicted as seven verticals are Business Intelligence & Strategy, Data Stewardship, Data Engineering, Data Science, AI Engineering, Applied Data/AI Research, and Data/AI Education. The horizontal bands represent the job levels; from top to bottom, they represent C-Level, Senior Director/Director, Senior Manager/Manager, Senior Professional/Supervisor, Professional, Senior Associate, and Associate job levels. Within the Career Map are the different job roles and their equivalents within the various tracks. The arrows show how someone can move between the job roles (horizontal mobility) and vertical arrows show vertical progression.

Step 2: Gather Critical Job Information for Determining the Job Performance Requirement



As an employer, you need to evaluate profoundly the skills and performance abilities of the person whom you are trying to hire. Their skills and experiences must be aligned to the job role needed. Determining the performance requirements for a job role is helpful because it provides a clear understanding of what the duties and responsibilities for a particular position are. This is helpful not just for applicants interested in the role, but also for management to better determine the actions needed to achieve organizational goals.

Determining Performance Requirements

The Skills Map, which corresponds to each 'box' of the Career Map, provides the tool and guide to determine performance requirements. It consists of the job role, the job description, the critical work functions, and the key tasks required of that specific job role. The key tasks are specific actions that make up the critical work functions. Each key task will need specific Functional Skills and Competencies (FSCs) to perform the task well, as well as Enabling Skills and Competencies (ESCs) to address the more interpersonal and personal management situations. The skills and competencies have different proficiency levels, which also correspond with the job levels.

e.g. Data Scientist

Data Scientist

The Data Scientist plays a crucial role in the development of advanced data analytics techniques and solutions, encompassing the entire process from design and prototyping to testing. The role involves extracting and integrating data from various sources, exploring complex datasets to unearth incremental business value, and creating advanced statistical models tailored for specific business use cases. An integral part of the role is conducting thorough testing of these models, interpreting the findings, and evaluating model performance for scalability and deployment. The Data Scientist is also responsible for developing clear and compelling communication materials to facilitate stakeholder understanding and buy-in. This role demands strong analytical skills to identify and solve complex business problems, proficiency in statistics, scripting, and programming languages relevant to the organization, and familiarity with software platforms for deploying solutions. The Data Scientist is passionate about analyzing data, displays intellectual curiosity, possesses strong critical thinking skills, and has the ability to narrate and present data findings effectively to influence stakeholders and promote a data-driven approach to resolving business issues.

| Critical Work Functions, Key Tasks and Performance Expectations | Key Tasks | Performance Expectations |
|---|--|---|
| Present data driven business value of data science models | Contribute to the creation of leading-edge resources, including playbooks, guides, blog posts, videos, etc. | In accordance with: |
| Build and assess models | Develop compelling, logically structured presentations including storytelling of research and/or analytics findings to secure stakeholder commitment | • Relevant Philippine Analytics & AI Governance Framework |
| Manage data preparation and modelling | Create reports and deliverables based on insights derived from the model results | • Philippine National Standards on AI |
| | Document modelling techniques used and assumptions made against test outcomes | • Republic Act 10173: Data Privacy Act of 2012 |
| | Conduct testing on final model in real-time business conditions prior to deployment | |
| | Enable end user capability to use data science products effectively | |
| | Initiate autonomous monitoring to scale human oversight | |
| | Scale and deploy models in real-time business conditions for end user consumption | |
| | Interpret and evaluate model performance for scaling and deployment | |
| | Select the best model based on pre-defined evaluation criteria | |
| | Perform model comparison to draw inferences on variable importance | |
| | Develop multiple models and algorithms suitable for the use case | |
| | Analyze 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 | |
| | Account for data ethics and policies in model selection and evaluation process | |
| | Define objectives and hypothesis for research on data models | |

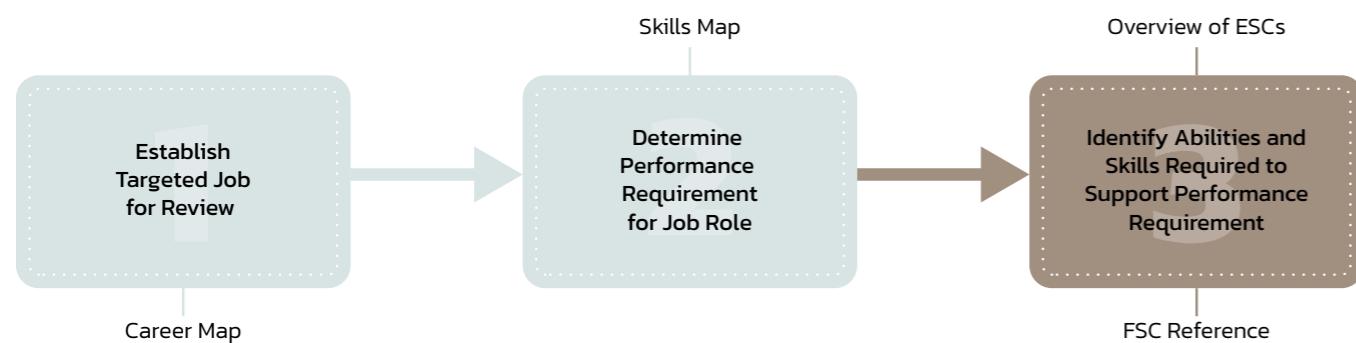
Review the description of the Critical Work Functions, Key Tasks and Performance Expectations to describe desired job performance

Using the skills map as a guide and by looking at the job role, one will be able to identify the position needed. By aligning with the job role description provided, these can become useful communication tools to tell employees exactly what tasks one expects them to perform. For hiring managers, one can use the job description and contextualize it for one's own organization's job requirements. The critical work functions and appropriate key tasks can be adapted for use in job advertisements as well.

Based on the relevant Critical Work Functions and Key Tasks, you can indicate the specific organizational performance requirements or expectations. Appropriate or relevant functional and enabling skills and competencies can then be selected from the list of FSCs and ESCs.



Step 3: Gather Critical Job Information for Specifying the Skills and Competency Requirement



You need to review the skills and competencies (FSCs and ESCs) to identify what is required to support the job performance where the level of technical skills and competencies are also specified. Functional Skills and Competencies (FSCs) are more technical in nature while Enabling Skills and Competencies (ESCs) are usually the core, critical, essential or soft skills, or what we term as Skills to Build Skills.

Identifying Skills and Competencies to Support Performance Requirement

Select relevant FSCs and ESCs from the Skills Map to support specific Key Task in the job requirement determination template below.

Data Scientist

| Functional Skills and Competencies | | Enabling Skills and Competencies | |
|--|---------|----------------------------------|--------------|
| Agile Software Development | Level 3 | Adaptability | Basic |
| Applications Development | Level 4 | Building Inclusivity | Basic |
| Applications Integration | Level 4 | Collaboration | Intermediate |
| Artificial Intelligence Ethics and Governance | Level 3 | Communication | Intermediate |
| Business Needs Analysis | Level 4 | Creative Thinking | Basic |
| Change Management | Level 3 | Decision Making | Intermediate |
| Cloud Computing | Level 4 | Developing People | Basic |
| Computational Modelling | Level 4 | Digital Fluency | Intermediate |
| Computer Vision Technology | Level 4 | Influence | Basic |
| Configuration Tracking | Level 3 | Learning Agility | Basic |
| Continuous Integration and Continuous Deployment | Level 4 | Problem Solving | Basic |
| Cyber and Data Breach Incident Management | Level 3 | Self-Management | Basic |
| Data Analytics | Level 3 | Transdisciplinary Thinking | Basic |
| Data Engineering | Level 3 | | |

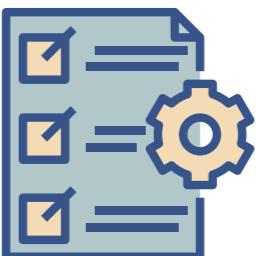
Upon completion of the three steps, one would have successfully developed a well-defined and well-scoped job requirement for a specific job role of the organization. This job requirement document can then be used for preparing the job advertisement and the selection process, and even for hiring purposes (e.g., preparing the employment agreement). It can also be used by internal trainers to develop industry- or company-specific training programs based on the PSF.

Part 2

Develop a Program or Curriculum Outline from Skills Framework

The Philippine Skills Framework (PSF) is also especially useful for the academe to develop curricula and/or realign existing curricula to industry requirements. The current best-practices of academe in developing industry-relevant curricula are tedious – they usually involve a faculty team having to first develop the curricula based on internal academic syllabus and teams, and then convening an industry panel to validate the curricula. The latter process is very cumbersome as many faculties do not have good industry connections. Even so, if every faculty and academic institution were able to reach out to the industries, there might be engagement-fatigue experienced by the industry stakeholders, and consequent hesitance, if not resistance. The PSF is designed to provide the industry skills language that any academic institution can use to develop industry-aligned curricula, since the PSF communicates directly what the industries are looking for. This significantly reduces the time needed to develop industry-relevant curricula.

Developing a Curriculum Outline Using the PSF



Create

a simple Curriculum Outline using the PSF reference documents

You can create a simple curriculum outline, and thereafter, develop an expanded curriculum, using the Philippine Skills Framework as reference

What is a curriculum?

It is necessary to first understand first what a curriculum is. These definitions are a collection of some of the more familiar definitions of what a curriculum is:

... is a structured series of intended learning outcomes.
Curriculum prescribes (or at least anticipates) the results of instruction.

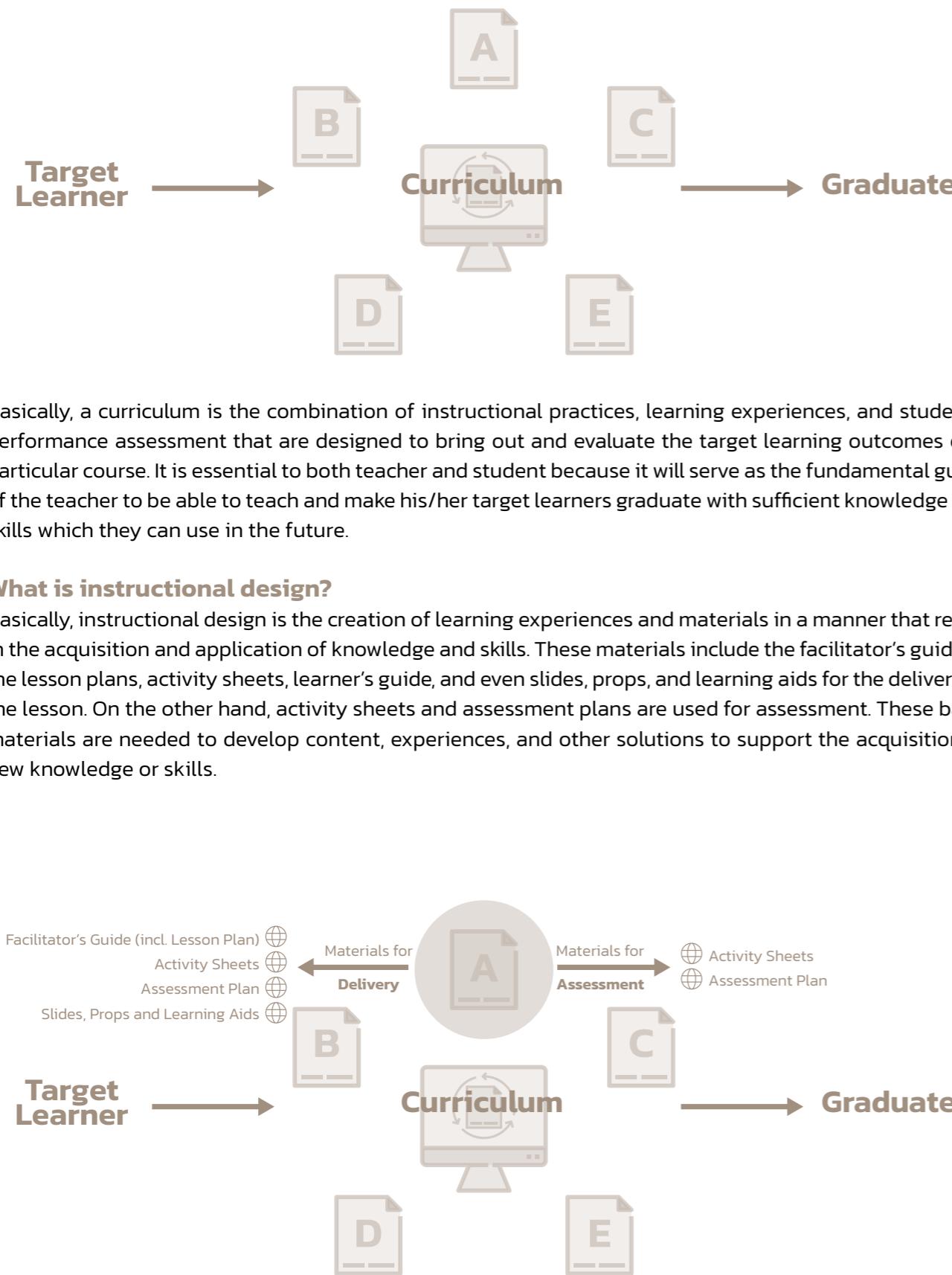
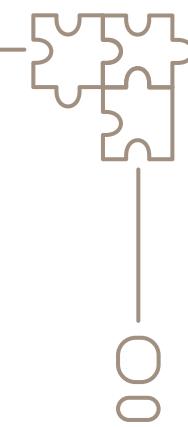
– Johnson, 1967

...refers to all the planned learning opportunities offered to learners
by the educational institution and the experiences learning encounter when the curriculum is implemented.

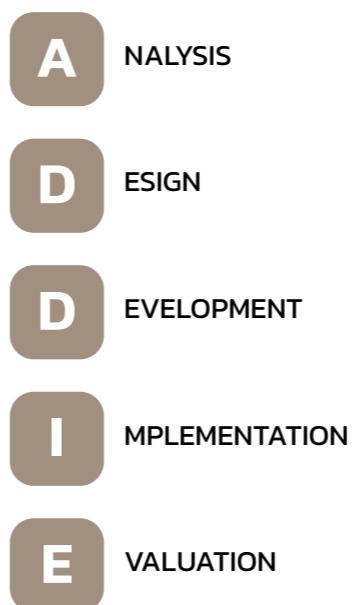
– Print, 1993

...is conceived of as a series of planned events
that are intended to have educational consequences for one or more students.

– Eisner, 2002



Using ADDIE with PSF On Curriculum Design



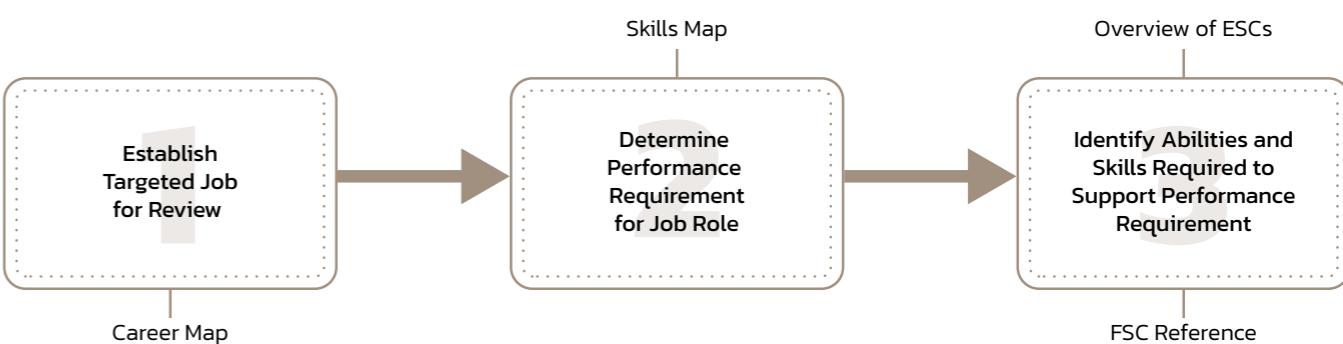
ADDIE is a holistic impact-oriented methodology which can be implemented with the PSF. In the ADDIE model, the analysis phase looks at analyzing the learning needs of the learners based on the knowledge and skills required for the task or function to be done, as well as the profile of the learner. This will be followed by design of the curriculum, which will focus on the pedagogy to transmit the contents. Development phase refers to organizing and developing the courseware which can then be implemented or delivered. Evaluation is a post-training phase which serves to gauge the output of the training. ADDIE is an acronym for Analysis, Design, Development, Implementation, and Evaluation.

What is instructional design?

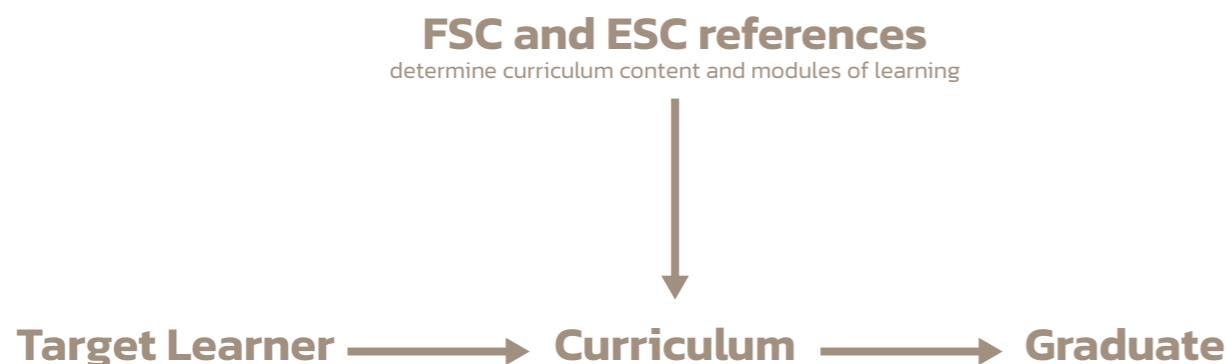
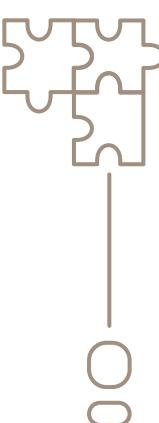
Basically, instructional design is the creation of learning experiences and materials in a manner that result in the acquisition and application of knowledge and skills. These materials include the facilitator's guide or the lesson plans, activity sheets, learner's guide, and even slides, props, and learning aids for the delivery of the lesson. On the other hand, activity sheets and assessment plans are used for assessment. These basic materials are needed to develop content, experiences, and other solutions to support the acquisition of new knowledge or skills.

PSF Documents can be Used During the Analysis Phase

Step 1: Gather Critical Job or Content Information for Curriculum Development



The PSF documents can be used during the Analysis Phase of ADDIE to gather critical job information for curriculum development. The documents will provide curriculum designers with industry relevant skills information. Similar to how a human resource practitioner were to use the Career Map and Skills Map to gather information of a specific job role, a curriculum developer can make use of these documents to gather macro-perspectives of the job requirements and decide how the entry and exit (graduate) requirements would look like. This is known as the Learner Profile and Graduate Profile, respectively. The curriculum is expected to improve or enhance the profile of the learner.



Skills Map and FSC references
Develop graduate profile + Determine level of learning to be attained (Qualification Level)

Having determined the Graduate Profile of the Learner, the FSC and ESC references can be used to provide the vital link between the industry and the academe. Curricula that meet the industry requirements will equip the graduates with skills that match the needs of industry. The Proficiency Levels indicated in the Skills Map show the Level that the learner is expected to possess after going through the curriculum for a specific FSC, such that he/she can perform the task to expectation.

To help the Developer decide what the learner should become or graduate with, the following curriculum structure can be used:

| Features | Questions to Ask | PSF Reference |
|---|---|---|
| Graduate Profile / Curriculum Outcome | As a result of completing the curriculum, what will the learner become/ be able to perform? | Skills Map ESC References ESC Description |
| Determine Content and Modules | What are the contents to be learnt? What are the modules (units) of learning? | FSC References |
| Determine level of proficiency to be attained | What is the overall proficiency level and which qualification level does it map to? | FSC Reference |

*The above features are only part of the entire curriculum structure

It is often helpful to use the A.B.C.D approach to scope the outcome/purpose of the curriculum:

What does ABCD stand for:

A

B

C

D

Audience

Behavior

Context

Degree

Audience

- Describe the intended learner or end user of the instruction
- Often the audience is identified only in the first level of objective because of redundancy
- Example: *The data scientist ...*

Behavior

- Describe learner capability
- Must be observable and measurable (you will define the measurement elsewhere in the goal)
- In the FSC document, it is the Skills Application statements
- The "behavior" can include demonstration of knowledge or skills in any of the domains of learning: cognitive, psychomotor, affective, or interpersonal
- Example: *... should be able to identify appropriate statistical algorithms ...*

Condition or Context

- Equipment or tools that may (or may not) be utilized in completion of the behavior
- Environmental conditions may also be included
- Example: *...using advanced computational methods...*

Degree

- States the standard for acceptable performance (time, accuracy, proportion, quality, etc.)
- Example: *... within an acceptable accuracy rate.*

Here is what a completed outcome/purpose statement for a Data Scientist in the AAI industry could look like:

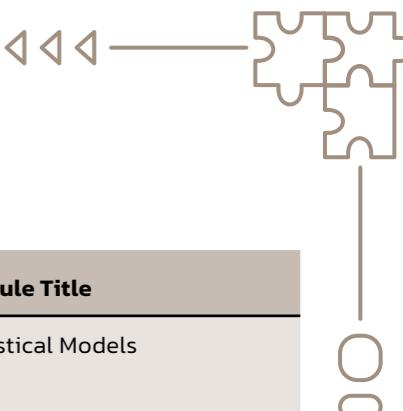
| | |
|---|---|
| By the end of [name of program], [designation of target participants] will be equipped with knowledge and skills to [describe the knowledge and skills required for the desired job performance from Skills Map, FSC and ESC references]. In the program, they will foster attributes to become more [choose desirable qualities and attributes from Job Role of Skills Map]. | By the end of this <i>Professional Certificate in Data Science</i> , aspiring [A] <i>Data Scientists</i> will be equipped with knowledge and skills to [B] <i>create</i> [C] <i>advanced statistical models</i> [D] <i>tailored for specific business use cases</i> . |
| | In the program, they will <i>foster attributes to become more apt in creative thinking, collaboration, and communication.</i> |

Step 3: Determine Module Titles and Contents for Curriculum Development

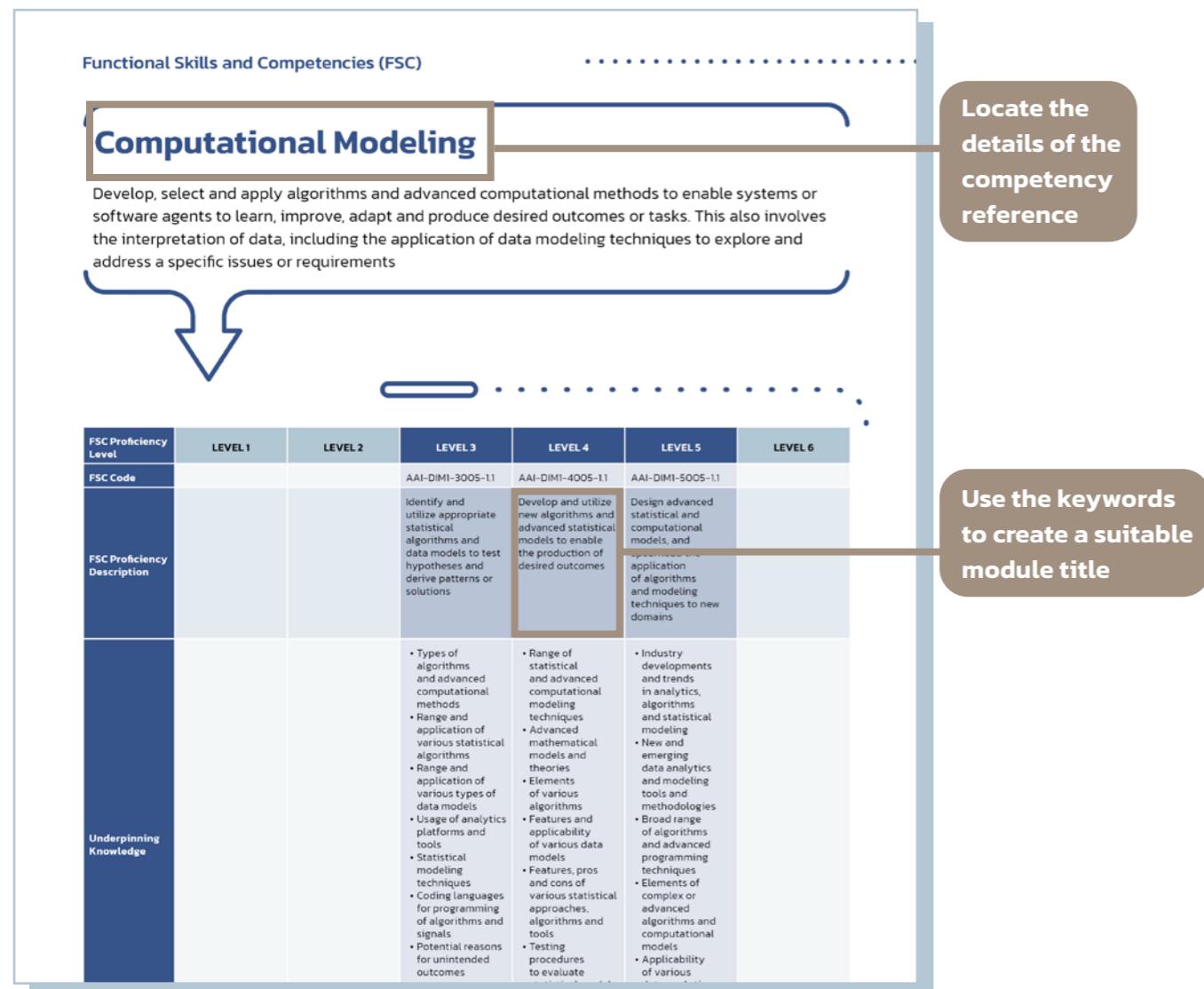
Here is how the Module Titles and Contents can be determined:

| Step A | Step B |
|---|--|
| Refer to the relevant FSC reference document and locate the details of the competency reference | Review the FSC Proficiency Description of the desired competency and use the key words to create a suitable module title |

By referring to the relevant FSC reference document, the curriculum developer can locate the details of the competency statements. The competencies are presented as six levels, from basic (1) to advanced (6). The Proficiency Level Descriptors are the same descriptors as that for the Philippine Qualification Framework. This is to allow for subsequent ease of articulation of PSF certifications to PQF qualifications.



The curriculum developer should reference the Underpinning Knowledge (UK) and Skills Application (SA) statements from the appropriate FSC and ESC proficiency levels. Note that since we are referring to competency-based programs, UKs should always be supported by SAs. The UKs and SAs can be clustered according to the developer's formulation of the learning outcomes.



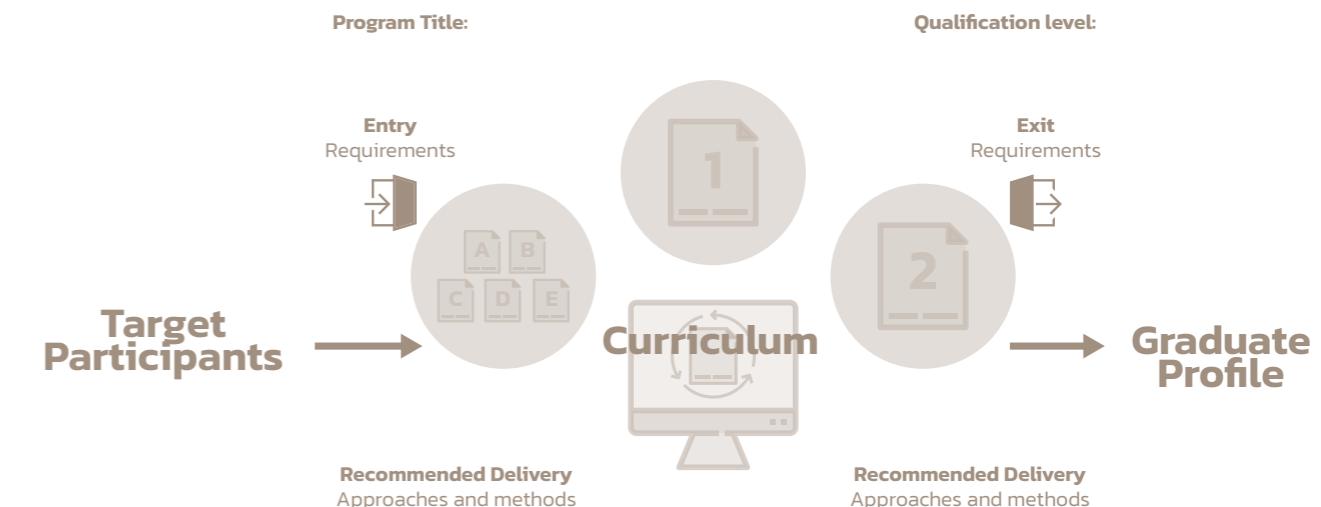
Use the keywords to create a suitable module title. For instance, the word "develop" has been used in the proficiency description under Level 4. The proficiency descriptor draws similar parallel to the Blooms Taxonomy descriptors, hence appropriate Verbs (Booms) can be selected to phrase the module title.

Here is an example using a module for a Data Scientist:

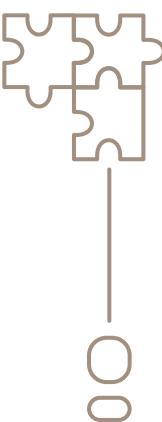
| FSC Proficiency Description | Proposed Module Title |
|---|--|
| Computational Modeling Level 4 Develop and utilize new algorithms and advanced statistical models to enable the production of desired outcomes | Developing Algorithms and Statistical Models |
| Intelligent Reasoning Level 4 Build knowledge-based intelligent software applications using machine reasoning techniques and computer programming | Building Intelligent Applications |

*The above features are only part of the entire curriculum structure.

More Considerations are Required for a Complete Curriculum Development



To develop a full set of curricula with the associated contents requires much more resources and effort. Subject matter expertise is required to cluster the UKs and SAs into meaningful outcomes with appropriate contents. These will then have to be constructively aligned with the assessment criteria to assess the knowledge and skills transfer. There could also be articulation of modules to other programs to facilitate learning progression and mobility. All these are beyond the scope of this Technical Guide. More training programs will be introduced to equip the various stakeholders with the skills and knowledge to utilize the PSF to develop full sets of curricula and associated contents.



PSF Utilization Snapshot Review

Quick Review – Analyze Performance Requirements

Data Scientist

The Data Scientist plays a crucial role in the development of advanced data analytics techniques and solutions, encompassing the entire process from design and prototyping to testing. The role involves extracting and integrating data from various sources, exploring complex datasets to unearth incremental business value, and creating advanced statistical models tailored for specific business use cases. An integral part of the role is conducting thorough testing of these models, interpreting the findings, and evaluating model performance for scalability and deployment. The Data Scientist is also responsible for developing clear and compelling communication materials to facilitate stakeholder understanding and buy-in. This role demands strong analytical skills to identify and solve complex business problems, proficiency in statistics, scripting, and programming languages relevant to the organization, and familiarity with software platforms for deploying solutions. The Data Scientist is passionate about analyzing data, displays intellectual curiosity, possesses strong critical thinking skills, and has the ability to narrate and present data findings effectively to influence stakeholders and promote a data-driven approach to resolving business issues.

Critical Work Functions, Key Tasks and Performance Expectations

| Critical Work Functions | Key Tasks | Performance Expectations |
|---|--|--|
| Present data driven business value of data science models | Contribute to the creation of leading-edge resources, including playbooks, guides, blog posts, videos, etc. | In accordance with: <ul style="list-style-type: none"> • Relevant Philippine Analytics & AI Governance Framework • Philippine National Standards on AI • Republic Act 10737, Data Privacy Act of 2012 |
| Build and assess models | Create reports and deliverables based on insights derived from the model results | |
| | Document modelling techniques used and assumptions made against test outcomes | |
| | Conduct testing on final model in real-time business conditions prior to deployment | |
| | Enable end user capability to use data science products effectively | |
| | Initiate autonomous monitoring to scale human oversight | |
| | Scale and deploy models in real-time business conditions for end user consumption | |
| Manage data preparation and modelling | Interpret and evaluate model performance for scaling and deployment | |
| | Select the best model based on pre-defined evaluation criteria | |
| | Perform model comparison to draw inferences on variable importance | |
| | Develop multiple models and algorithms suitable for the use case | |
| | Analyze 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 | |
| | Account for data ethics and policies in model selection and evaluation process | |
| | Define objectives and hypothesis for research on data models | |

Skills and Competencies

| Functional Skills and Competencies | Enabling Skills and Competencies |
|--|--|
| Agile Software Development | Level 3 Adaptability Basic |
| Applications Development | Level 4 Building Inclusivity Basic |
| Applications Integration | Level 4 Collaboration Intermediate |
| Artificial Intelligence Ethics and Governance | Level 3 Communication Intermediate |
| Business Needs Analysis | Level 4 Creative Thinking Basic |
| Change Management | Level 3 Decision Making Intermediate |
| Cloud Computing | Level 4 Developing People Basic |
| Computational Modelling | Level 4 Digital Fluency Intermediate |
| Computer Vision Technology | Level 4 Influence Basic |
| Configuration Tracking | Level 3 Learning Ability Basic |
| Continuous Integration and Continuous Deployment | Level 4 Problem Solving Basic |
| Cyber and Data Breach Incident Management | Level 3 Self-Management Basic |
| Data Analytics | Level 3 Transdisciplinary Thinking Basic |
| Data Engineering | Level 3 |
| Data Ethics | Level 4 |
| Data Visualization | Level 3 |
| Design Thinking Practice | Level 4 |
| Emerging Technology Synthesis | Level 3 |
| Intelligent Reasoning | Level 4 |
| Learning and Development | Level 4 |
| Manpower Planning | Level 3 |
| Pattern Recognition Systems | Level 4 |
| People and Performance Management | Level 3 |
| Problem Management | Level 3 |
| Project Management | Level 3 |
| Research | Level 2 |
| Security Architecture | Level 3 |
| Self-Learning Systems | Level 4 |
| Software Configuration | Level 3 |
| Software Design | Level 4 |
| Software Testing | Level 3 |
| Stakeholder Management | Level 3 |
| System Integration | Level 4 |
| Systems Thinking | Level 3 |

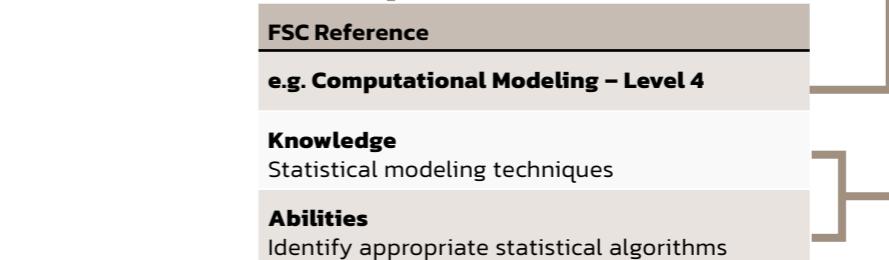
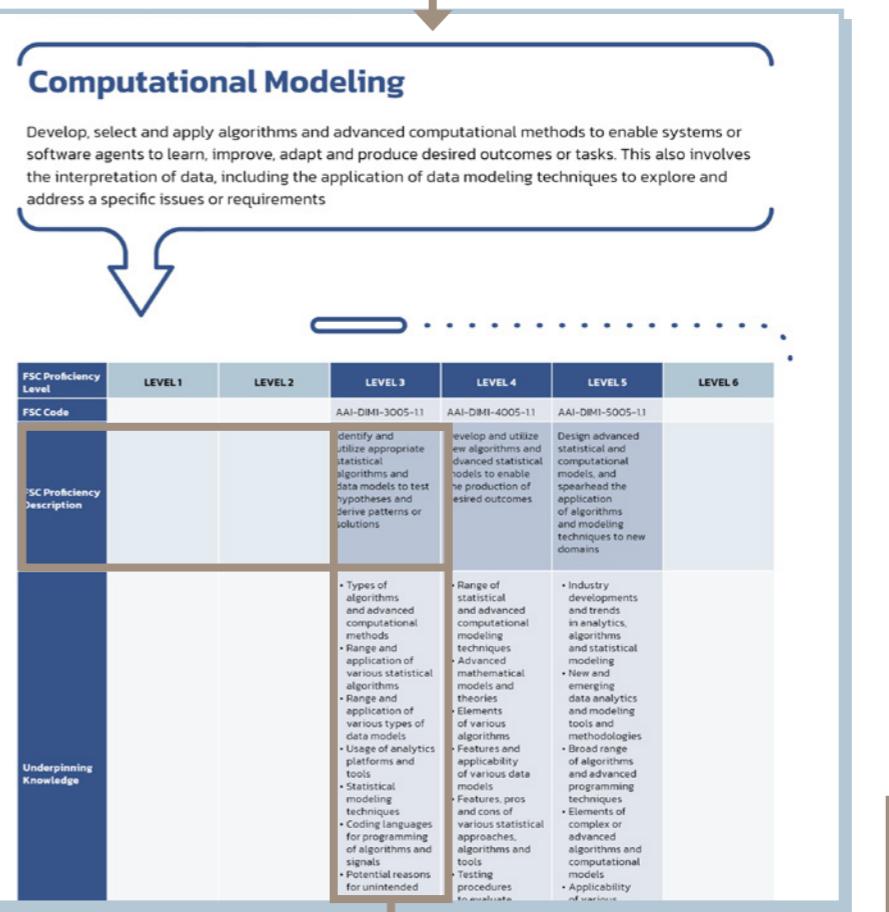
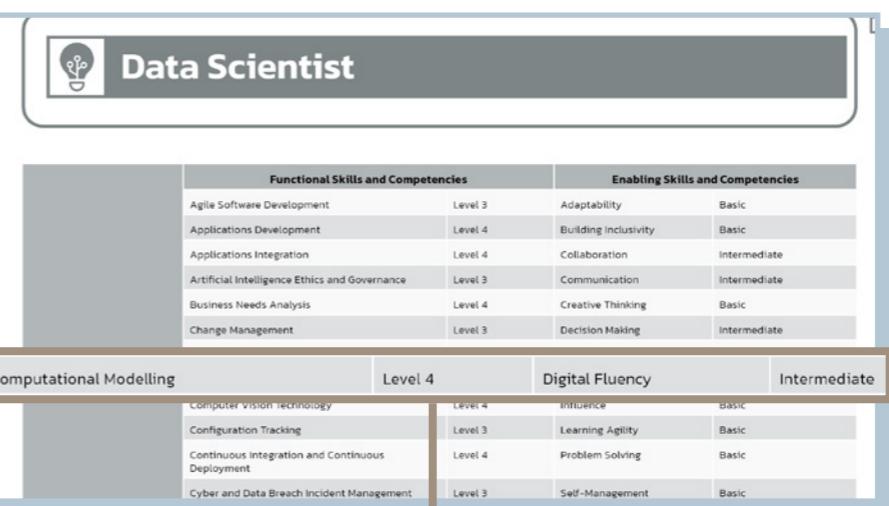
A

Review the description of the Critical Work Functions and Key Task to describe desired job performance

B

Review the skills and competencies to identify what is required to support job performance

Quick Review – Develop Curriculum Outline



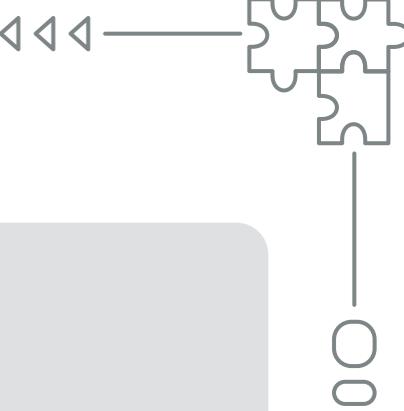
Purpose

Review the information from Skills Map and FSCs to determine the desired outcome i.e. graduate's being and doing

Qualification Level
Use proficiency level description to determine suitable PQF qualification level

Subject Matter
Use the knowledge and abilities statements to identify critical topics and subjects

Have additional questions about using the Philippine Skills Framework for Analytics & AI?
Email us at psf.aai@aap.ph.



Testimonials



University of Santo Tomas

The Philippine Skills Framework for Analytics and Artificial Intelligence is an invaluable resource for academic institutions looking to prepare their students for the future workforce. This framework guides the development of innovative programs and offers an opportunity to reskill, upskill, and cross-skill our current workforce. The University of Santo Tomas understands the significance of harnessing technology in equipping Thomasians with the skills required for Industry 4.0 and, subsequently, Industry 5.0. UST is committed to utilizing this framework to empower educators and students to ethically leverage technology in effectively responding to ever-evolving societal needs.

*Rev. Fr. Richard G. Ang, O.P., PhD
Rector*



Stratpoint Technologies

Stratpoint Technologies commends the timely creation and standardization of the Philippine Skills Framework for Analytics and AI. As our company standardizes our own skills framework, Stratpoint Technologies recognizes the pivotal role of this initiative in accelerating data and AI literacy nationwide. This vital framework not only fosters innovation but also aligns with our organizational goals, shaping a future where data-driven mindset & careers propel growth and prosperity in the Philippines.

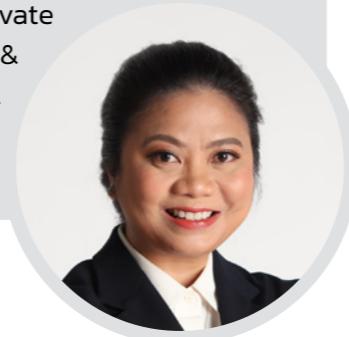
*Sonny Carlos
Head of Cloud and Data Business*



Rizal Commercial Banking Corporation

I am grateful to the AAP for allowing me to contribute to the PSF-AAI. When building analytics and AI teams, I often reference competency frameworks of other countries. With this, local organizations can now be guided when hiring and upskilling. It allows us to benchmark ourselves with peers. What I like about this is the clear path to being a leader. Even a non-technical business leader can charter their development towards being data- and AI-driven.

It was a pleasure meeting validators from the academe, too. The validation session was a good venue to envision how a healthy ecosystem of the academe, private companies, and the government can accelerate the adoption of analytics & AI in the country. This is a good starting point for the framework, which will surely continue to develop as analytics & AI are fast evolving.



*Pamela Morales-Cabuday
Data Science & Analytics Group Head / Chief Data Scientist*

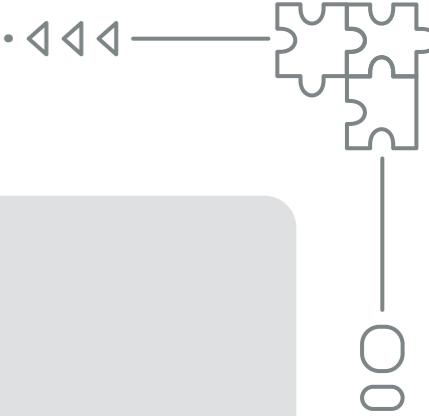


Eskwelabs

In Eskwelabs' collaboration with the PSF-AAI validation session, the comprehensive nature of the framework will be a great help for us as a training organization specializing in data science and analytics. Our organization can map and refine our course and bootcamp offerings based on the framework, ensuring they align with the evolving needs of the sector. Eskwelabs foresees the PSF-AAI playing a pivotal role in helping employers understand the roles they need to manage data in their organizations and evaluate talent, and helping current and future practitioners understand career trajectories and skill requirements in a more standardized way. These skills are foundations for the augmentation of the workforce and the transformation of the sector by emerging AI and data technologies.

*Aurélien Chu
Chief Operations Officer and Co-Founder*

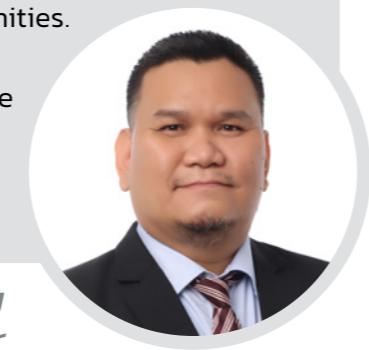




Mercer Philippines, Inc.

The potential benefits of the PSF are tremendous: for the academe – creation of industry-aligned curriculum for future-ready graduates; for organizations – talent leaders now have clarity on skills to assess and look-out for when recruiting talent and better career paths to offer to their employees; for the government – a strong basis for investments in industry training programs, assessment tools and certification standards; for individuals – a greater appreciation of what skills to focus on to boost their employability and career opportunities.

Lastly, huge congratulations to all the stakeholders of the PSF for the Analytics and AI industry – towards a globally competitive Filipino talent!



*Sean Darilay
Career Talent Solutions Business Leader*



Cebu Institute of Technology-University

Congratulations on the successful launch of the Philippine Skills Framework for Analytics and AI (PSF-AAI). This collaborative effort, spearheaded by DICT and AAP, signifies a significant leap forward in advancing skills and continuous learning within the AAI sector. The meticulously designed tracks demonstrate a tailored and comprehensive approach to address industry needs. The framework not only provides essential insights into sector opportunities but also serves as a testament to the dedication and vision of our industry's experts and consultants. I wholeheartedly extend my support and eagerly anticipate the positive impact on our industry and workforce, envisioning how it will assist decision-makers in navigating the evolving landscape.



*Larmie S. Feliscuzo, PhD
External Affairs and Management Information Systems Director*



Pru Life UK

Pru Life UK is honored to have contributed to the development of the Philippine Skills Framework for Analytics & AI. Last year, our company hosted a meet-up of AAP and Data Engineering Pilipinas that was part of the industry exercise to develop a professional maturity model for data engineers. AI & analytics are seen to radically change the data-driven insurance industry, making it smarter, faster and more responsive to the needs of a variety of customers. Pru Life UK is still in the early stage of adoption, but this is all the more reason for us to lay a strong foundation through the framework.



*Maricel Estavillo
VP for Government Relations & Sustainability*

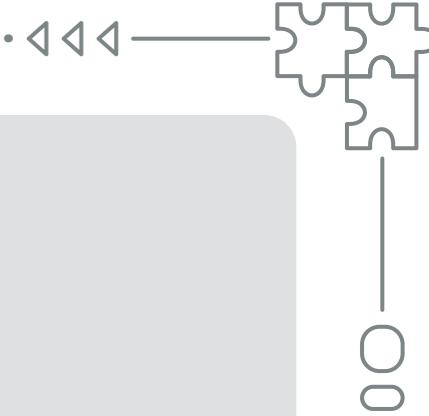


Microsoft Philippines

The PSF-AAI is the bedrock for boosting analytics and AI capacity in our country. As the nation gears up for an AI-driven economy, let's start building the skills today. This shift will expand new career opportunities for Filipinos. Kudos to AAP and the DICT-IIIB for leading this initiative. It's a milestone for our country and the industry. I'm grateful and honored to contribute to this multi-stakeholder collaborative effort. Microsoft is committed to foster a vibrant and inclusive AAI ecosystem.



*Dale Pascual Jose
National Technology and Security Officer*



Thames International School, Inc.

The Philippine Skills Framework for Analytics and Artificial Intelligence (PSF-AAI) is the nexus of the country's efforts at developing and preparing its workforce for the challenges of industries, with the reality of digitalization and the accelerated growth of AI. It also represents the agility, enhancement and refinement of the PSF methodology in developing skills frameworks in the Philippines. Thames International School has been with the PSF Initiative since its origins in 2019 and is glad and honored to be a partner with DICT and AAP in developing the PSF-AAI. Congratulations to the various team members and diverse stakeholders whose sustained efforts, keen interest, valuable expertise and diligent work contributed to this achievement.



Leah A. Macatangay
Lead Consultant, PH Skills Frameworks Project for IT-BPM
Learning Director



School of Management, University of Asia and the Pacific

The crafting of the PSF-AAI is a pivotal move from AAP and DICT for the different industries to be guided on what skills are needed and to be continuously developed toward a robust AAI sector in the Philippines. At the time of the UA&P Master in Applied Business Analytics (MABA) Program inception in 2018 and until today, the AAP continues to extend its guidance in making sure that our program is aligned with the skills demand on AI and data analytics. I commend the AAP and DICT for this noble initiative as I believe that this is a definitive guiding framework, especially for us in the academe, given our role of producing and honing the analytics and AI professionals through our degree and non-degree programs.



Ruel V. Maningas, PhD
MABA Program Director & Vice Dean for
Faculty Affairs and Research



NU-Asia Pacific College

The Philippine Skills Framework for Analytics and AI holds immense potential for academia and research institutions. By facilitating collaboration and resource sharing with unprecedented speed and accuracy, it promises to elevate the standards of research outputs and foster innovation.

As an academician, I am particularly interested in its impact on learning. The rapid growth of analytics and AI is both invasive and aggressive, opening up exciting possibilities for expanding knowledge and reengineering new skills. Our learners stand at the forefront of this transformation—they have the power to reinvent the world, envision novel solutions, and disrupt established norms.

The Skills Framework embodies a promise: one of learning agility and creativity. It empowers us to reinvent knowledge, enhance industry practices, and contribute to a trustworthy society as all of us Filipinos continue our journey of lifelong learning.



Ma. Teresita P. Medado, PhD
President

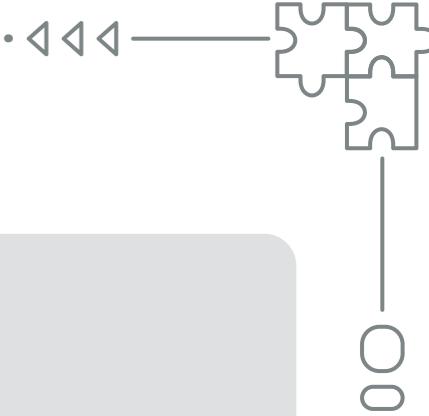


Batangas State University – The National Engineering University, Alangilan Campus

Adopting the Philippine Skills Framework for Analytics and AI is a pivotal leap for Batangas State University, The National Engineering University. This initiative acts as a crucial catalyst, boosting our workforce's expertise in the dynamic realms of analytics and artificial intelligence. The detailed roadmap guarantees that our graduates are aptly prepared for industry demands, solidifying its transformative impact on both our institution and the broader Philippine analytics and AI sector.



Princess Marie B. Melo, DIT
Dean, College of Informatics and Computing Sciences

**iCXeed**

The PSF-AAI is pivotal in talent development within the AI & Analytics sector in the Philippines. It holds the promise of providing our organization with a skilled workforce to nurture our future growth, while also maybe more importantly, positioning the Philippines as a dominant global player in the rapidly evolving AI, automation, and analytics sector. These capabilities offer the potential of a highly valuable economic activity becoming a significant part of the country's overall future GDP growth. Our organization, iCXeed, proudly supports this initiative with the DICT and the AAP.

*Arthur Nowak
Co-Founder & CEO*



SAN MIGUEL CORPORATION

San Miguel Corporation

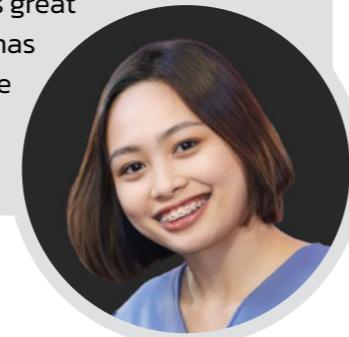
The Philippine Skills Framework for Analytics & Artificial Intelligence is a game-changer for the country's growing data industry. It's a long-awaited tool that aligns industry and educational outcomes, supports the development of a highly-skilled workforce, and ensures that the Philippines remains competitive in the global digital economy. By providing a reference and standardized skill set and clear career paths, it empowers companies to innovate and thrive in the rapidly evolving tech landscape. Just as well this gives practitioners a roadmap for their career and a better understanding of how to advance in this rapidly evolving industry. This framework is not just an investment in professional growth; it's a commitment to the future of the Philippines as a leader in analytics and AI.

*Michel Onasis S. Ogbinar
Head, Data & Analytics Group*

**Gen AI Philippines**

I was definitely thankful to AAP for developing this roadmap for AI 2024. It's great to also see the growing community of AI people in the Philippines that has been part of the review and feedback stage of these initiatives. I would see the future of the Philippines glowing and shimmering with people equipped with the right tools, skills, and talents.

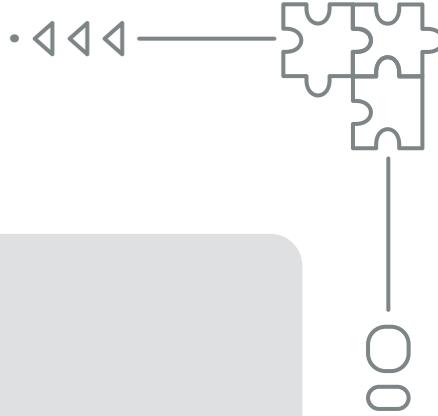
*Armelyn Obinguar
Founder & President*

**Rizal Commercial Banking Corporation**

What AAP has done in developing the analytics and AI skills framework is laying the blueprint of the analytics, AI and Data Science talent landscape, necessary for the fastest-growing field here in our country and globally. This will help resolve talent gaps because it bridges what employers expect data scientists to do, given their career level, and what analysts resolve their competency progression should be. This also formalizes what academic institutions should consider when coming up with education programs catering to analytics aspirants.

*Kathrina Carranza-Rodriguez
AI & Machine Learning Division Head
Data Science & Analytics Group*





Telstra Philippines

The experience of being part of this initiative truly embodies the spirit of Bayanihan in the Data and AI industry. The discussions were always guided on the core values of the group and focused on advancing the industry as a whole and the ideas presented were spot on.

The support of DICT and AAP for our group of volunteers was invaluable in completing this monumental task. Telstra is honored to be part of the Philippine Skills Framework for AAI and celebrates this milestone with everyone involved.

*Benjamin Romualdez
Country Managing Director*



Accelebator

The AAP released the AAP Professional Maturity Model in 2018. I was glad that when the PSF Model was shared with the AAP, the synergy between the Maturity Model and the PSF Model was readily apparent. Referencing from the Singapore Skills Framework in ICT, and aligning to the AAP Maturity Model, and contextualized to the Philippine Analytics and Artificial Intelligence ("AAI") industry landscape, the PSF-AAI was developed. This PSF-AAI serves as an upgrade to Version 1 of the AAP Professional Maturity Model and was well received by the AAI industry stakeholders. I believe that the PSF-AAI will serve as a very useful resource for the academe to enhance their curriculum, and for enterprises in the AAI sector to strengthen their human capital learning systems.

*Anderson Tan
Subject Matter Expert, Singapore Skills Framework*



Katapult Digital

In rapidly evolving fields like Analytics and AI, a robust skills framework is not just beneficial, it is essential. The Philippines Skills Framework for Analytics & AI provides a clear roadmap for both aspiring professionals and established organizations, ensuring alignment between individual skill development and industry needs. This fosters positive feedback loops, accelerating career growth, industry advancement, and ultimately, national development. This is not just about jobs; it is about empowering Filipinos to showcase their world-class talent and shape a thriving future for our nation. Filipinos have the potential, and the skills framework is our guide to becoming global leaders in this new age.

*David Jensen G. Rosario, Jr.
Innovation Lead*

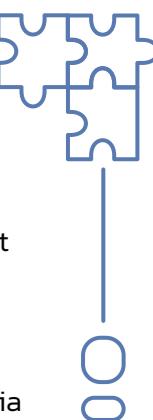


GCash

As a validator of the Philippine Skills Framework for Analytics and AI, my team and I at GCash were happy to see that there is a roadmap of skills and competencies across various areas that can enable Philippine organizations to identify skill gaps, develop targeted training programs, and drive workforce transformation. In GCash, this is a way to benchmark our efforts in enhancing our workforce capabilities as our company delivers on our vision to make the everyday lives of Filipinos better.

*Sara Ann Venturina
Chief Data Officer*





Acknowledgements

The Philippine Skills Framework for Analytics and Artificial Intelligence (PSF-AAI) represents a landmark collaborative endeavor, uniting a wide spectrum of stakeholders from the government, the private sector, academic institutions, and dedicated practitioners. This collective effort aims to sculpt clear and accessible career pathways for both the current and future generations of the Filipino workforce within the fast-growing sector of analytics and AI.

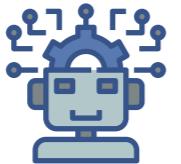
We extend our deepest gratitude to each stakeholder for their unwavering dedication and commitment throughout the crucial phases of contextualization and validation of the PSF-AAI. Their invaluable contributions have not only enriched the framework but also laid the groundwork for a robust and dynamic blueprint that will evolve alongside the rapid advancements in the analytics and AI sectors.

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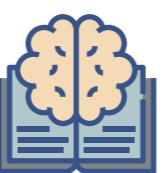
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Champions (AAP Trustees, 2023)

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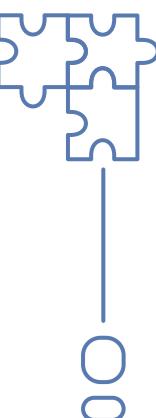
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Acknowledgements

As we celebrate the achievements of this collective effort, we also recognize that the journey towards excellence in analytics and AI is continuous. The PSF-AAI is conceived as a living document, designed to adapt and grow through ongoing contributions from a diverse range of perspectives and expertise. In this spirit, we warmly invite more stakeholders to join us in this pioneering journey. Whether you are from the industry, academe, government, or are a practitioner eager to share your insights, your involvement will be pivotal in navigating the complexities of the digital age and harnessing the full potential of analytics and AI for the Philippines!



The PSF-AAI References:
Singapore Skills Framework
APEC Recommended Data Science and Analytics Competencies
AAP Professional Maturity Model
2022 Labor Market Intelligence Report on the Philippine Analytics Sector
Skills Framework for the Information Age
Job and Skills Australia

Philippine Skills Framework for Analytics & Artificial Intelligence

Published by:

Department of Information and Communications Technology
DICT Building, Carlos P. Garcia Avenue, Diliman, Quezon City, Philippines
www.dict.gov.ph

The Philippine Skills Framework for Analytics & Artificial Intelligence was funded by the Department of Information and Communications Technology and developed in collaboration with other government agencies and in coordination with the Analytics & Artificial Intelligence Association of the Philippines and Thames International Business School, a Skills Framework Expert.

Design and Layout by New Leaf Multimedia Outsourcing, Inc
Microsite Developer: Kyle Anthony Fiel Nierras (Visayas State University)

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