Human Capabilities in the Age of AI



SkillsFuture Singapore Workforce Development Agency

Skills demand, career pathways, and human capabilities as AI reshapes Singapore's labour market.

Foreword

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The workplace plays an important role in skills development and mastery, offering individuals opportunities to learn, deepen existing skills, and acquire new ones throughout their careers. As Artificial Intelligence (AI) adoption gathers pace in the workplace, concerns about cognitive offloading, deskilling, and "AI slop" have raised important questions around how we develop and sustain the human capabilities needed to work effectively alongside AI.

This report explores the changing relationship between AI, work and skills, and brings new perspectives and data to how skills are developed and used at work, how this may change as AI augments work tasks, and which human capabilities we may need to exercise more deliberately.

Chapter 1 examines the demand for AI Skills across sectors, job functions, and seniority levels. While AI offers immense capabilities, our ability to harness its potential depends on whether we have the skills to use it effectively.

Using AI well also requires strong domain skills. Without sufficient domain expertise, individuals may struggle to direct, evaluate, and exercise judgement over AI-generated outputs. **Chapter 2** presents a novel way of examining how domain skills are built as one progresses along a career pathway, and where the learning curve is steepest. This can help guide efforts to ensure domain skills are being developed even as AI is deployed to perform specific work tasks.

Chapter 3 turns to the core human capabilities that are particularly important as AI becomes integral to work. Our existing 16 Critical Core Skills were identified as a set of core skills critical for individuals to thrive in the economy. AI presents a new paradigm. Working with the Institute for Adult Learning, we propose a new Critical Core Skill — "Human-AI Agency" — that directly addresses how individuals can direct AI, reflect on its outputs, and actively shape how AI is used in the workplace.

Together, AI Skills, domain skills, and Critical Core Skills can help anchor the human in the age of AI. As work continues to evolve, we will continue to monitor how jobs are changing and skills are evolving, and what this means for individuals and employers to develop and sustain the capabilities needed to thrive in the future economy.

Contents

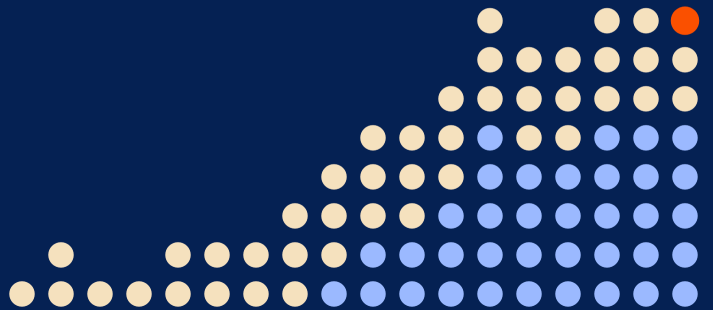
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CHAPTER 1

Demand for **AI Skills**

This chapter examines how demand for AI Skills, and AI-related applications and tools (Apps & Tools), is evolving across Singapore's job market, drawing on job posting data from January 2022 to March 2026. It explores the extent of AI Skills demand across the economy, sectors, and job functions. These trends give an indication of how employers may be using AI at workplaces.

Overall, the findings suggest that AI Skills demand is increasing across the economy. The demand is higher in the hiring of middle and senior roles, and also extends beyond tech roles. These trends underscore the growing importance of equipping the workforce with the AI capabilities needed to work effectively in an increasingly AI-enabled workplace.



Demand for AI Skills is increasing and broadening across the economy. While the overall share of job postings mentioning AI Skills remains modest, demand spreads across a broad range of job roles.

The analysis examines more than 300,000 job postings per year, representing the hiring of more than 1,600 job roles in Singapore.

- The share of job postings mentioning AI Skills has increased from 3.6% in 2022 to 4.0% in 2025, with Q1 2026 showing signs of further increase (Chart 1.1).
- Across the 1,600+ job roles in Singapore's economy, about three in five job roles mention AI Skills in their job postings (Figure 1.1).
- Similarly, more than 90% of job roles mention the required use of AI-related Apps & Tools (Figure 1.1).

Chart 1.1: Hiring demand for AI Skills, 2022 – Q1 2026

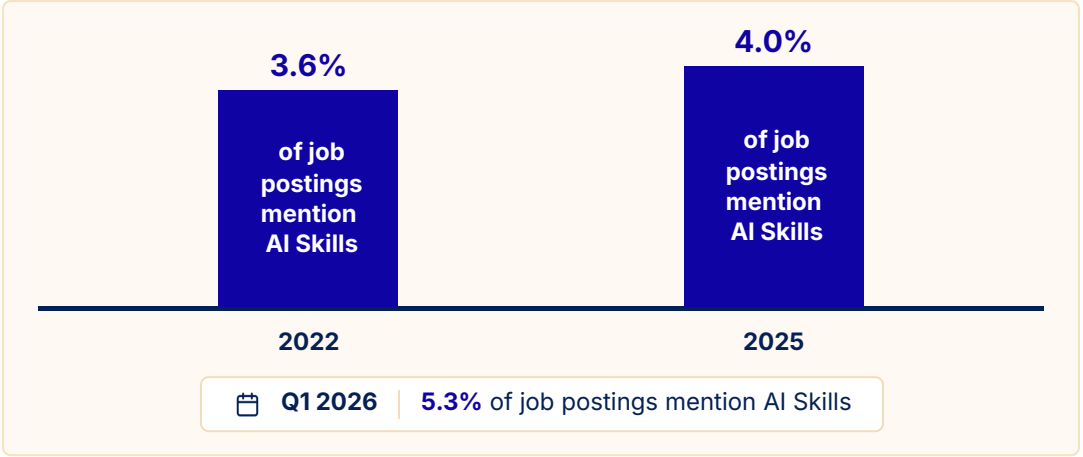


Figure 1.1: Proportion of job roles in job postings mentioning AI Skills and AI-related Apps & Tools, 2025

About 3 in 5 job roles show demand for **AI Skills**.



Job roles require **AI-related Apps & Tools** to perform their work.

AI Skills required for AI appplication and development work are in high demand. Meanwhile, demand for skills in AI ethics and security is growing most rapidly, reflecting increasing employer attention to the responsible, safe and secure deployment of AI.

Chart 1.2: Top 5 in-demand AI Skills, 2025

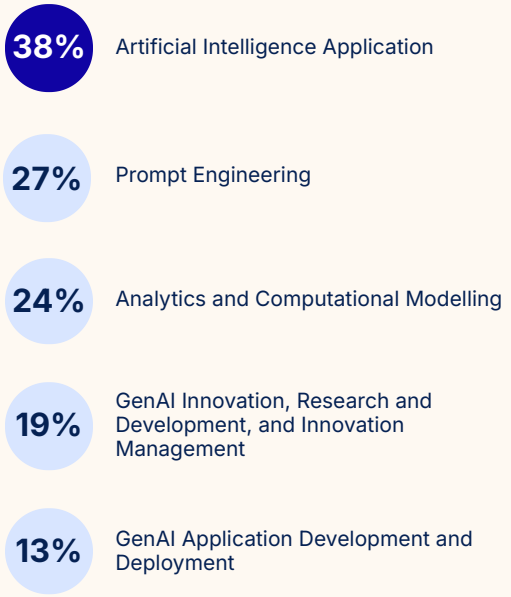
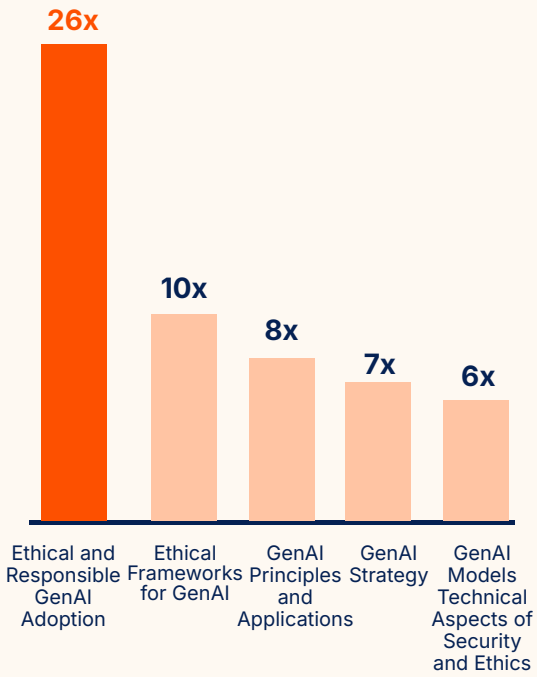


Chart 1.3: Top 5 growing AI Skills, 2022-2025

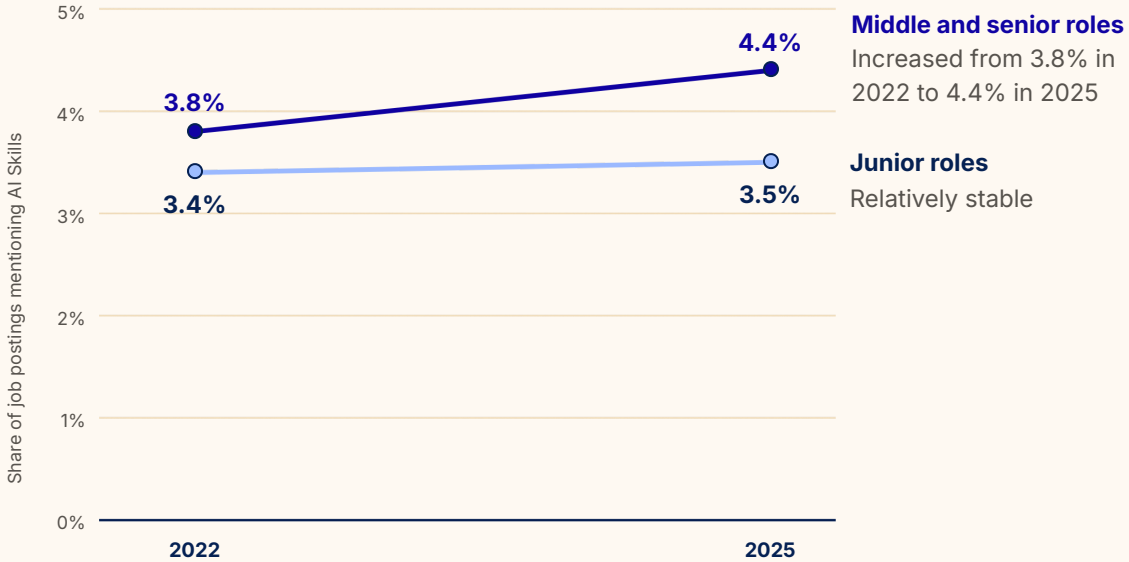


Demand for AI Skills is higher in the hiring of middle and senior roles.

The share of job postings for middle and senior roles mentioning AI Skills has increased from 3.8% in 2022 to 4.4% in 2025, while demand for junior roles remained relatively stable.

This may reflect the growing use of AI to augment higher-level work, where more experienced employees are expected to apply AI, alongside domain skills, to support decision-making, complex problem-solving, and process improvement.

Chart 1.4: Share of job postings mentioning AI Skills for middle and senior vs. junior roles, 2022 vs. 2025



At the sector level, demand for AI Skills is highest in Education, followed by the Infocomm Technology and Electronics sectors.

All three sectors also saw relatively high growth in AI Skills demand between 2022 and 2025, while the Media sector recorded the strongest growth over the same period (Chart 1.6).

Chart 1.5: Top 10 sectors by AI Skills demand, 2025

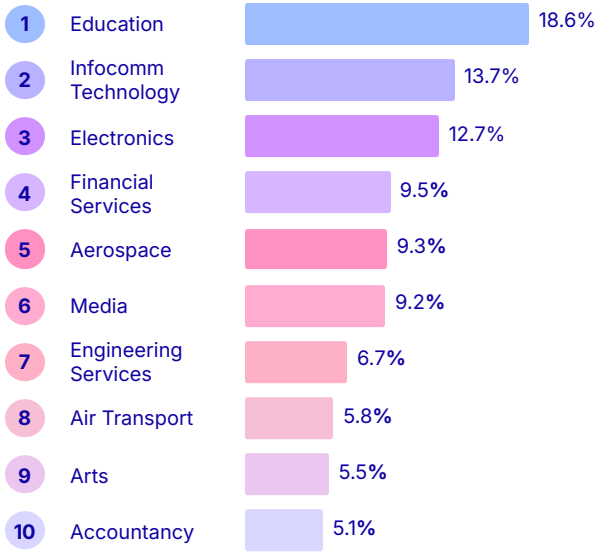


Chart 1.6: Top 10 sectors by growth in AI Skills demand, 2022–2025



How AI Skills are being required across the three sectors with the highest demand, and how they augment work.

Education

AI is increasingly augmenting research and teaching, enabling researchers to derive insights more efficiently, and learning facilitators to create more effective and engaging learning experiences.

Examples of job roles

Researcher	Accelerates research and analysis
Learning Facilitator	Enhances lesson delivery and engagement

Infocomm Technology

AI is embedded across the technology stack, enabling AI / machine learning engineers to build and deploy intelligent systems, and data analysts to turn large volumes of data into actionable insights.

Examples of job roles

AI / Machine Learning Engineer	Builds and deploys AI models at scale
Data Analyst	Speeds up analysis and insight generation

Electronics

AI is applied across engineering activities, enabling process engineers to improve manufacturing efficiency and product engineers to develop and validate products more effectively.

Examples of job roles

Process Engineer	Optimises processes and detects anomalies
Product Engineer	Enhances product design and testing

Demand for AI Skills extends beyond tech roles to non-tech roles.

Besides analysing the AI Skills demand of sectors, this chapter also examines demand by job function. While sector analysis covers different job roles within the same sector, job function analysis groups roles by similar areas of work, such as Sales and Business Development, regardless of the sector in which they are found.

Of all the job postings that mention AI Skills, 60% are from non-tech roles, spanning across diverse functions such as Finance and Accounting, Architecture and Construction, and Maintenance and Facilities. This demonstrates that AI Skills are increasingly relevant beyond tech roles, highlighting the need for individuals across job functions to develop the capabilities to work effectively with AI.

Top non-tech functions hiring for AI Skills

1. Finance & Accounting
2. Architecture & Construction
3. Maintenance & Facilities
4. Research, Science, Policy & Analysis
5. Legal, Compliance, Risk & Governance
6. Marketing, Communications & Content
7. Sales & Business Development
8. Operations & Service Delivery
9. Product Management
10. Manufacturing & Production

Other job functions: Procurement, Supply Chain, Logistics & Transportation | Quality Assurance & Management | Project & Programme Management | Human Resources & Workforce Development | Customer Service & Client Support | Safety, Security & Protective Services | Creative, Design & Performing Arts | Education & Training | Healthcare | Community & Social Services | Leadership, Strategy & General Management | Administration & Office Support

From the top three non-tech functions, here are examples of the job roles and the AI-related Apps & Tools in demand.

Finance & Accounting

AI supports financial forecasting, investment analysis, and treasury decision-making for finance and accounting professionals.

- Management Accountant
- Investment Analyst
- Treasury Operations Analyst

Architecture & Construction

AI improves design, engineering analysis, and cost planning for architecture and construction professionals.

- Civil and Structural Engineer
- Architect
- Quantity Surveyor

Maintenance & Facilities

AI enables facilities monitoring, maintenance planning, and operational efficiency for maintenance and facilities professionals.

- Director (Operations and Maintenance)
- Facilities Manager
- Building Supervisor

Spotlight: AI-related Apps & Tools in demand within the top three non-tech functions

Finance & Accounting	Architecture & Construction	Maintenance & Facilities
ERP.AI AI-powered enterprise resource planning	**Adobe Photoshop** Generative AI design & imaging	**Novita** Generative AI model platform
Kasisto KAI Conversational AI for banking & finance	**Lumion** AI-assisted 3D rendering	**HelpDesk** AI-assisted ticketing & support
Elicit AI research & analysis assistant	**Revoldiv** AI transcription & speech-to-text	**Motion** AI-powered scheduling & task management



YAP JIAN BENG
AI Platform Lead
Singtel Singapore

As demand for AI Skills grows, so do the opportunities for anyone ready to learn and develop

> I went from helping to build Singtel's nationwide 5G network to now leading the team behind our Central AI Kitchen, the platform powering AI across Singtel. My journey shows that workforce transformation isn't always about starting again—**it's about building on the skills you already have, learning new ones like AI Skills and being willing to take on opportunities that didn't exist before.** For me, that meant moving from network engineering into AI and helping to shape the next chapter of Singtel's technology journey.



KOH SAN JOO
Founder, CEO
iHub Solutions

AI Skills are becoming a requirement beyond tech roles

> The image of a warehouse assistant with a clipboard picking inventory is quickly becoming a thing of the past. Today, our warehouse teams use AI-powered solutions for tasks such as product recognition, packaging selection, and route optimisation, enabling them to work more accurately and efficiently. Our warehouse assistants are the human in the loop, using their judgement to validate AI outputs. **They need AI Skills to help them identify and report any issues with AI-powered solutions**. They also work closely with our AI engineers, software developers and robotics engineers, providing domain expertise that shapes the development of in-house solutions. This shift reflects how AI is creating immense opportunities for workers to upskill beyond traditional roles.

CHAPTER 2

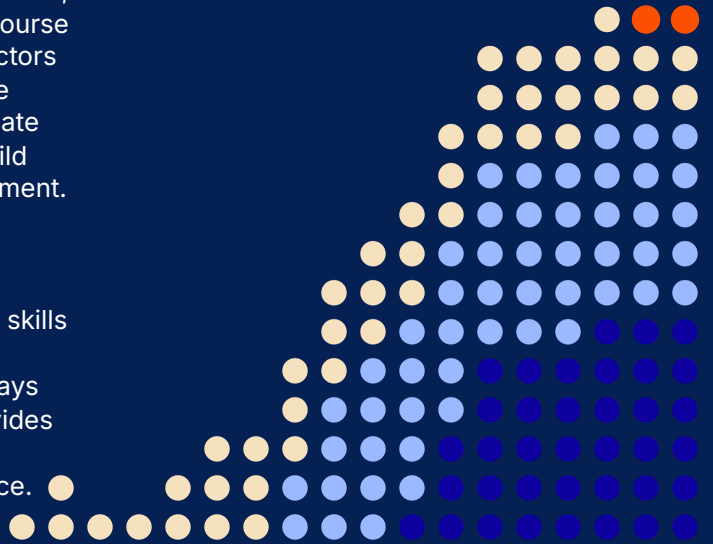
Skills Development in **Career Pathways**

Chapter 1 shows that the demand for AI Skills has grown across Singapore's job market and is likely to extend across a wider range of roles and sectors. Individuals can expect employers to increasingly require AI Skills and the ability to use AI-related Apps & Tools effectively to complement and enhance their work.

On the other hand, as AI adoption occurs at the workplace and certain work tasks are augmented by AI, will opportunities for skills acquisition and human capability development that used to take place on the job be compromised? What skills are being developed at different stages of the career pathway?

To understand how AI interacts with skills development, there is a need to understand how individuals move up career ladders, the skill types of the roles they will transition into, and how learning takes place over the course of one's career. Understanding these factors will allow individuals, employers, and the training and education system to anticipate where AI can be used at work and to build capabilities that support career development.

Drawing on the Skills Frameworks, this chapter dives deeper into how the AI potential of tasks in job roles may affect skills development across career stages, skill types, and learning development pathways (i.e., learning curves). The analysis provides key insights into how AI can provide opportunities for the Singapore workforce.



Why does AI's effect on skills development matter?

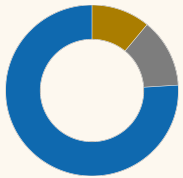
As seen in Chapter 1, AI at the workplace is no longer a distant prospect.

AI is reshaping how individuals work, the skills needed for their roles, and how careers develop over time. For many individuals, this can improve workplace productivity and career opportunities, as AI tools can help to reduce time spent on routine tasks, free up capacity for higher-value work, and open new pathways for skills development.

AI potential of tasks in job roles

The AI Potential on Tasks Dashboard, released in Jan 2026, showed that around a quarter of work tasks have moderate to high AI potential and can be aided by AI. To provide insight into how AI can support individuals in their jobs and across career pathways, this chapter examines the AI potential of tasks in job roles, since tasks provide the context for how skills are applied in jobs.

Chart 2.1: Distribution of tasks across AI potential



Tasks with:

- **11%** High AI potential
- **13%** Moderate AI potential
- **76%** Low AI potential

- **High AI Potential Task**: Has high potential for immediate automation by commercial off-the-shelf AI products
- **Moderate AI Potential Task**: Can be automated using AI-powered software or advanced AI with multimodal capabilities
- **Low AI Potential Task**: Unlikely to be automated by AI and will continue to require human involvement due to its nature

Source: AI Potential on Tasks Dashboard.

Note: The AI potential of tasks used in this report does not account for the readiness of workplaces in incorporating AI into their processes, which could depend on other factors such as business capabilities and organisational intent to adopt AI.

Other factors investigated

The chapter also examines other factors alongside the AI potential of tasks. Section 1 focuses on job roles and examines their skill type and career stages. Section 2 features career pathways and learning development pathways, termed 'learning curves'.

SECTION 1

Skill types
Three capability-based skill types: analytical, interpersonal, or technical

Career stages
Three stages of a career: junior, middle, or senior

SECTION 2

Career pathways
Which jobs are linked from junior to middle to senior roles

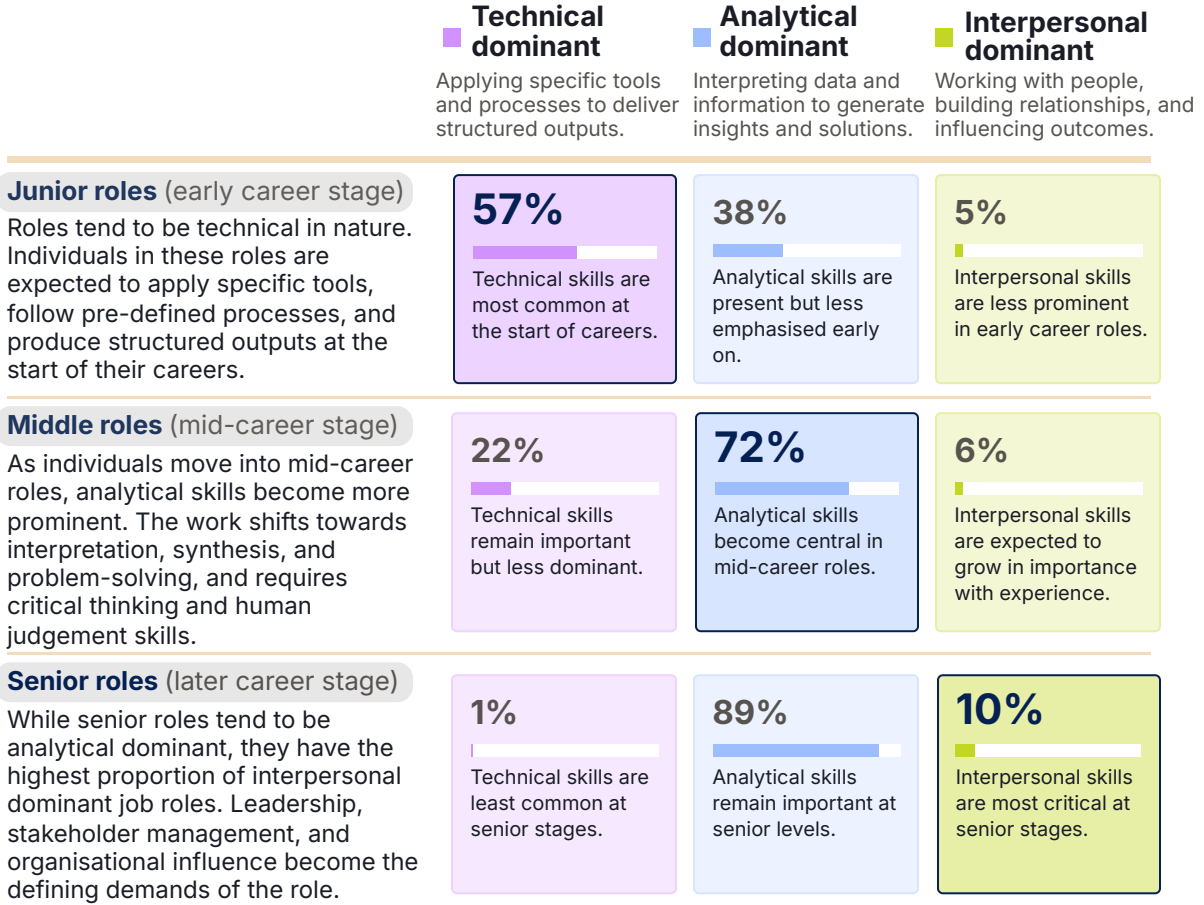
Learning curves
How skills are acquired across a career pathway through learning and development

Dominant skill types differ across career stages: junior, middle, and senior roles have different skill type profiles.

The analysis classifies each job by its dominant skill type (i.e., technical, analytical, or interpersonal) based on the type that makes up the largest share of its skills. For example, a job where technical skills form the largest share of skills is classified as technical dominant.

Knowing the skill type profile at each career stage can guide individuals on which skills to build and use as they progress along their careers.

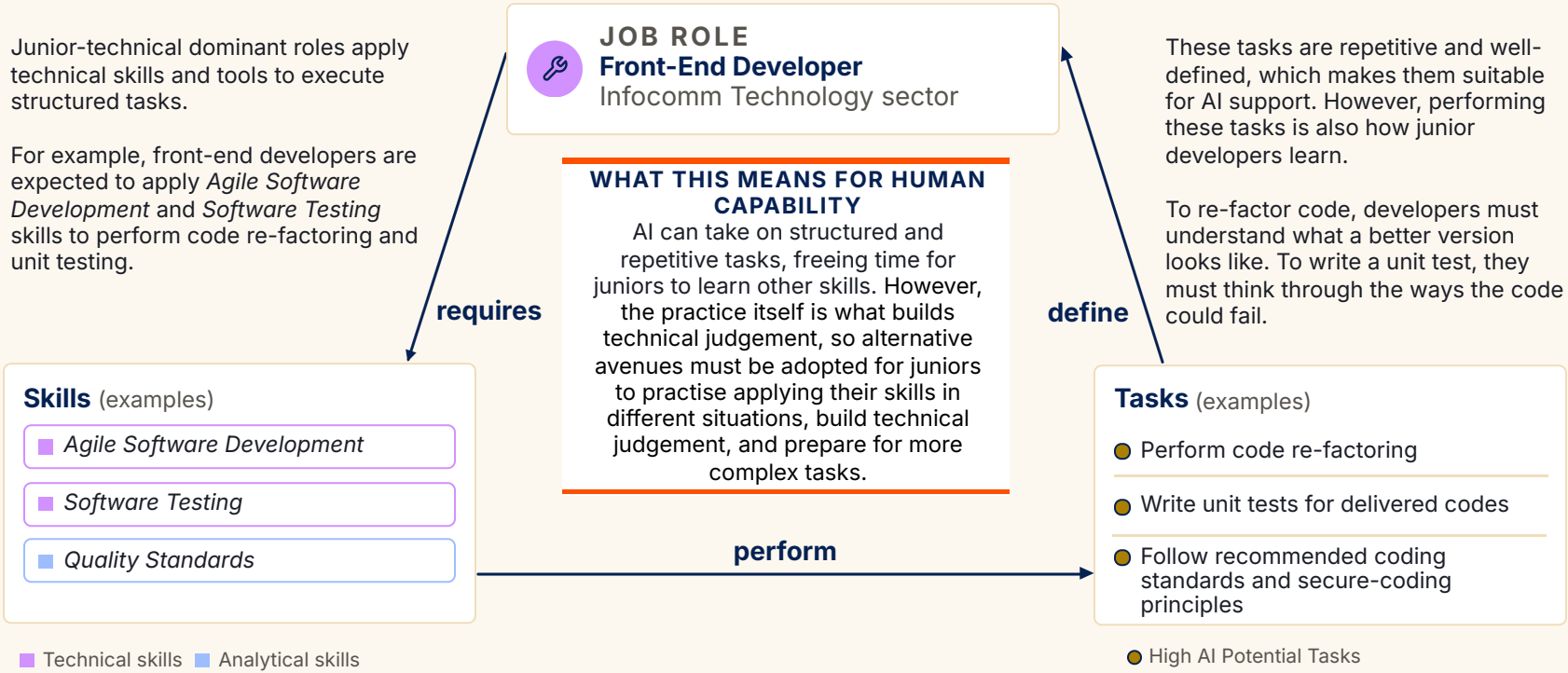
Chart 2.2: Proportion of job roles by career stage and dominant skill type



SECTION 1: JOBS AND SKILL TYPES

In junior-technical dominant roles, AI can take on much of the structured work, but technical judgement is built by doing tasks.

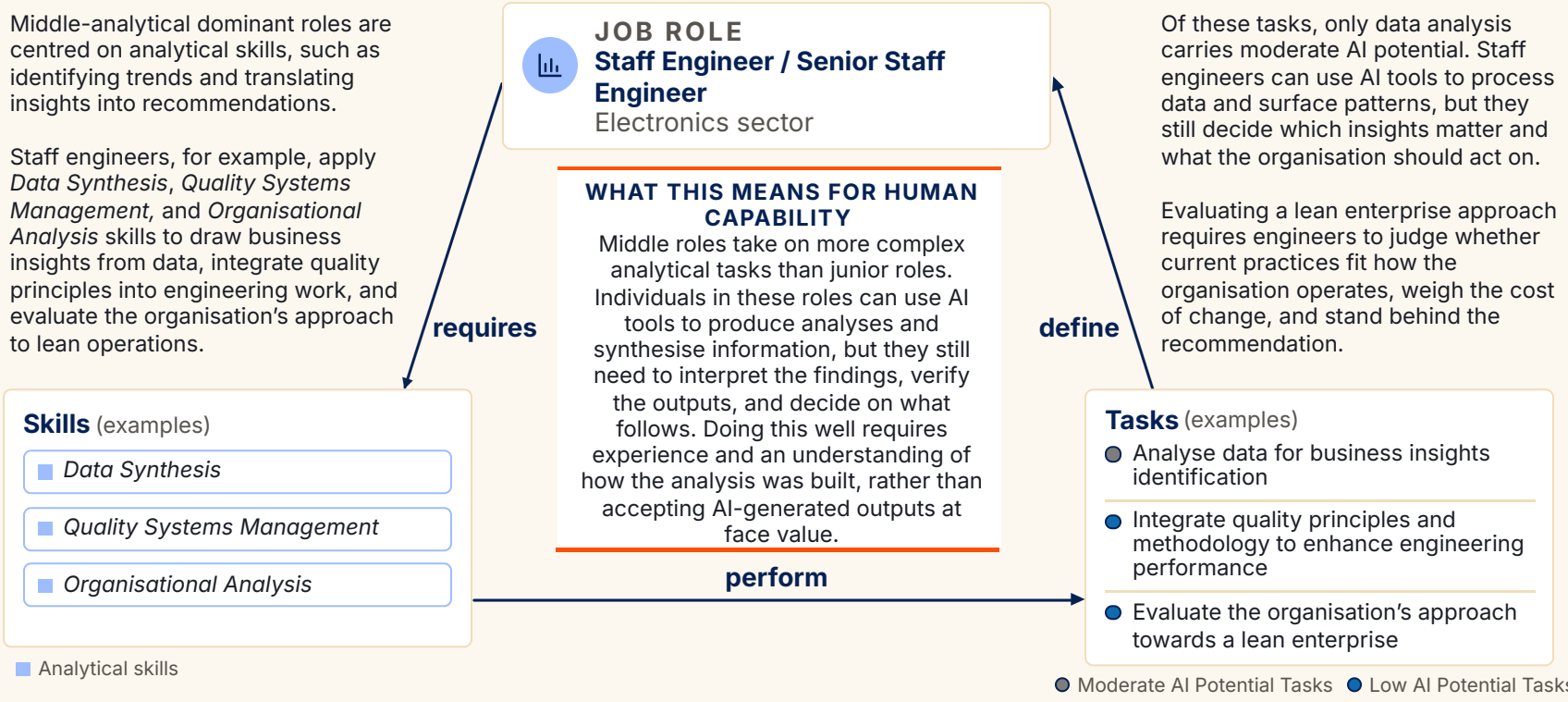
Figure 2.1: Example of a junior-technical dominant role - Front-End Developer in Infocomm Technology sector



SECTION 1: JOBS AND SKILL TYPES

In middle-analytical dominant roles, the work shifts from producing outputs to validating and being accountable for them. Correspondingly, AI potential in these roles is lower.

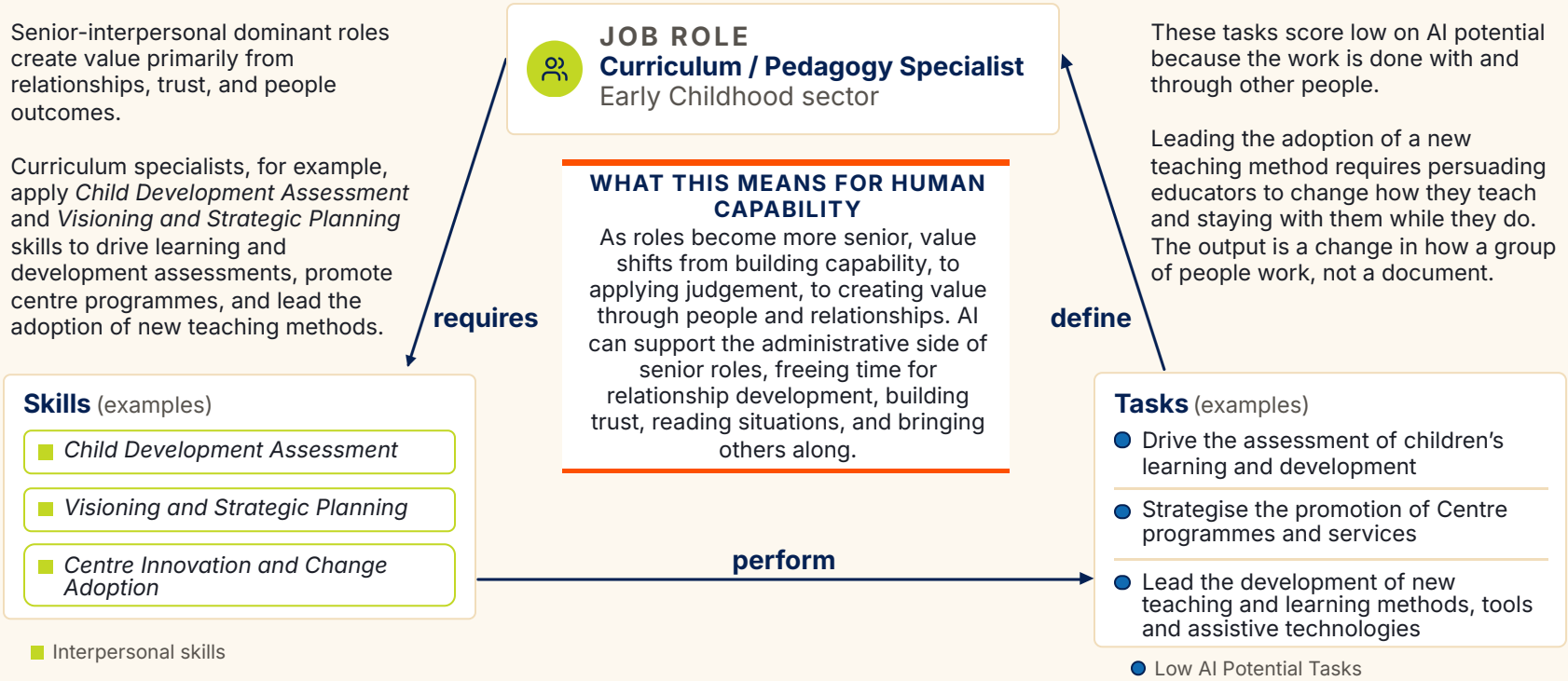
Figure 2.2: Example of a middle-analytical dominant role - Staff Engineer / Senior Staff Engineer in Electronics sector



SECTION 1: JOBS AND SKILL TYPES

In senior-interpersonal dominant roles, AI potential is lowest among the three archetypes, as work is done through interaction, communication, and collaboration with other people.

Figure 2.3: Example of a senior-interpersonal dominant role - Curriculum / Pedagogy Specialist in Early Childhood sector



SECTION 2: CAREER PATHWAYS AND LEARNING CURVES

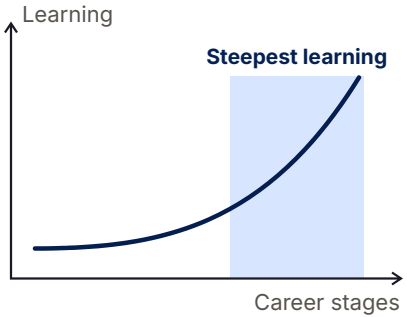
Next, the analysis examines how learning takes place throughout a career and identifies two typical types of learning curves.

While career pathways show which roles connect from junior to senior stages, learning curves show when the learning demands of a pathway rise, and how steeply.

1. Learning can include both skill deepening, i.e. becoming more proficient at a skill, and skill acquisition, i.e. gaining new skills.
2. The learning curves for all career pathways plot skill distance (learning) on the y-axis and career stages on the x-axis.
3. Most pathways in the Skills Frameworks follow one of the two types shown in Figure 2.4.

Figure 2.4: Two learning curve shapes for career pathways in the Singapore Skills Frameworks

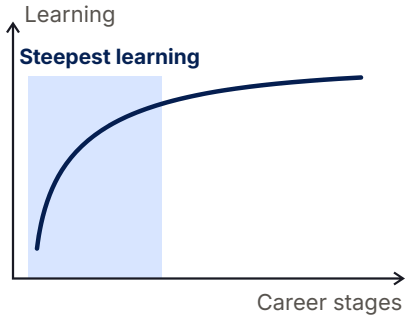
Progressive mastery



Learning starts off gradually, and the steepest learning occurs during middle to senior stages.

Progressive mastery pathways tend to deepen existing skills before new skills are developed.

Front-loaded



The steepest learning occurs early, and learning becomes more gradual in later stages.

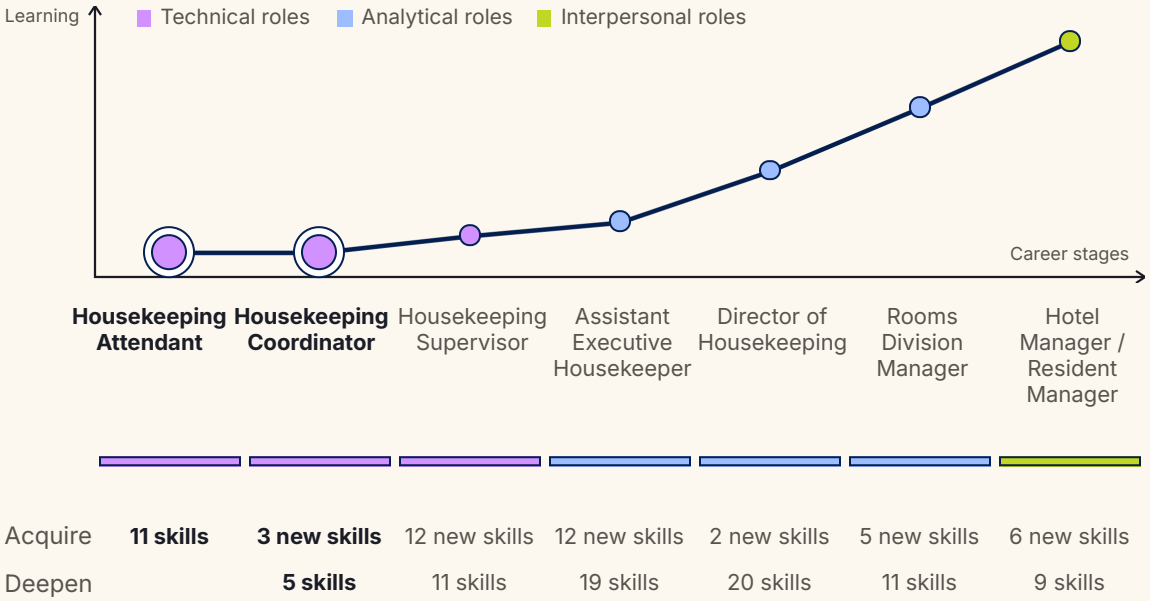
Front-loaded pathways tend to introduce more new skills in junior roles.

Note: The two types of learning curves cover about 92% of the career pathways found in the Skills Framework data.

SECTION 2: CAREER PATHWAYS AND LEARNING CURVES

Progressive mastery pathways: Learning is gradual at first, giving junior roles time to build depth before learning demands rise.

Figure 2.5: Housekeeping Pathway in Hotel and Accommodation Services sector, with junior, technical roles highlighted



Junior roles such as housekeeping attendants can use AI to support structured tasks such as consolidating department meetings and housekeeping records, which frees up time for learning and acquiring new skills. This gives them more time to develop their domain skills of *Service Planning and Implementation* and *Crisis Management*, as they learn how to handle different safety issues and emergency situations in their day-to-day work.

Domain skills (throughout this pathway):

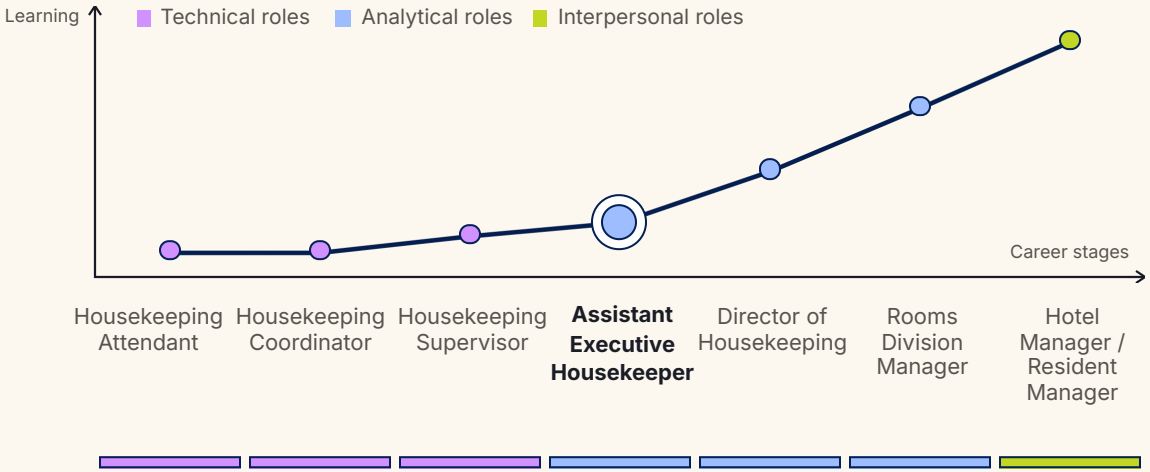
- *Service Planning and Implementation*
- *Productivity Improvement*
- *Crisis Management*

Note: When individuals progress from one job role to the next, they can either acquire (i.e. gain) new skills or deepen existing skills (i.e. where skills are required at a higher proficiency level).

SECTION 2: CAREER PATHWAYS AND LEARNING CURVES

Progressive mastery pathways: The steepest learning comes at mid-career, where new skills are added on top of deepening ones.

Figure 2.6: Housekeeping Pathway in Hotel and Accommodation Services sector, with middle, analytical role highlighted



For mid-career roles like assistant executive housekeepers, skills development becomes more critical as the learning curve steepens. They must deepen *Crisis Management* skills while building new *Budgeting* skills. When using AI for budget forecasting, they should understand how the analysis was built, not just rely on its outputs. Critical engagement builds the analytical foundation needed for sound decision-making at senior levels.

Domain skills (throughout this pathway):

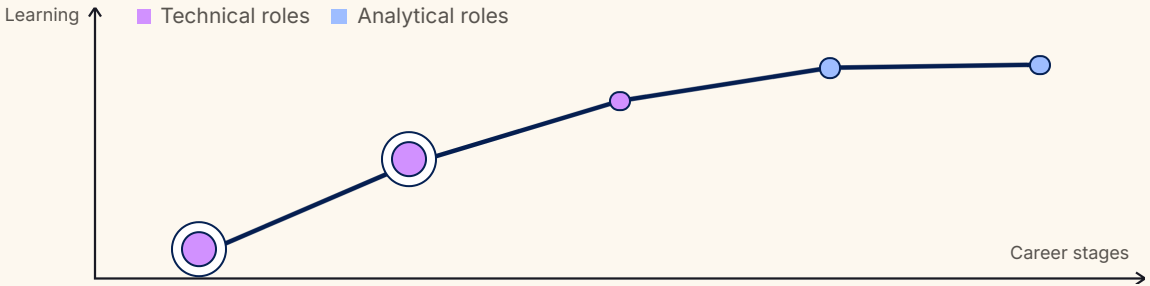
- *Service Planning and Implementation*
- *Productivity Improvement*
- *Crisis Management*

Note: When individuals progress from one job role to the next, they can either acquire (i.e. gain) new skills or deepen existing skills (i.e. where skills are required at a higher proficiency level).

SECTION 2: CAREER PATHWAYS AND LEARNING CURVES

Front-loaded pathways: The steepest learning comes early, when junior roles take on several new skills at once.

Figure 2.7: Aircraft Maintenance Pathway in Aerospace sector, with junior, technical roles highlighted



	Aircraft Maintenance Engineer Apprentice	Licensed Aircraft Engineer - Cat B1 (Mechanical)	Assistant Foreman / Lead Maintenance Engineer	Foreman / Operations Manager / Programme Manager	Programme Director / Senior Operations Manager
Acquire	**12 skills**	**19 new skills**	14 new skills	5 new skills	7 new skills
Deepen		**11 skills**	17 skills	24 skills	29 skills

As learning is concentrated in the early stages, it is vital that junior roles are given opportunities to effectively develop key domain skills, even when AI can handle the structured work. Aircraft maintenance engineer apprentices can use AI to keep records of data for operational analytics, but the practice of reviewing such records helps build technical expertise in *Aviation Legislation Compliance* and *Quality System Management*. This expertise lays strong foundations for progression into more senior roles.

Domain skills (throughout this pathway):

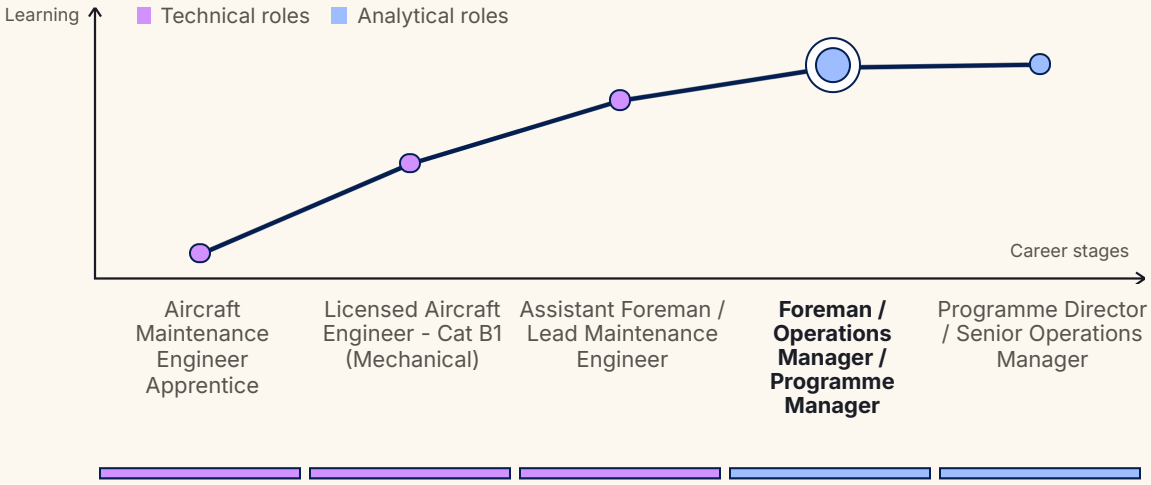
- *Aviation Legislation Compliance*
- *Quality System Management*
- *Workplace Safety and Health Framework Development and Implementation*

Note: When individuals progress from one job role to the next, they can either acquire (i.e. gain) new skills or deepen existing skills (i.e. where skills are required at a higher proficiency level).

SECTION 2: CAREER PATHWAYS AND LEARNING CURVES

Front-loaded pathways: By mid-career, learning levels off, so further progression depends on the foundation built in junior roles.

Figure 2.8: Aircraft Maintenance Pathway in Aerospace sector, with middle, analytical role highlighted



Middle roles such as foreman, operations manager, and programme managers can use AI to improve productivity while deepening skills such as *Asset Management*, *Business Continuity Planning*, and *Innovation Management*. As interpersonal skills become more important at senior levels, AI can also take on more administrative tasks, to create more space to strengthen trust building and people skills.

Domain skills (throughout this pathway):

- *Aviation Legislation Compliance*
- *Quality System Management*
- *Workplace Safety and Health Framework Development and Implementation*

Note: When individuals progress from one job role to the next, they can either acquire (i.e. gain) new skills or deepen existing skills (i.e. where skills are required at a higher proficiency level).

From insights to exploration: Career Pathways Dashboard

The analysis in this chapter aims to help individuals gain a deeper understanding of the skills makeup of their career pathways. This can lead to better decisions on skills development and training at different stages of their careers, even as AI is leveraged to enhance work.

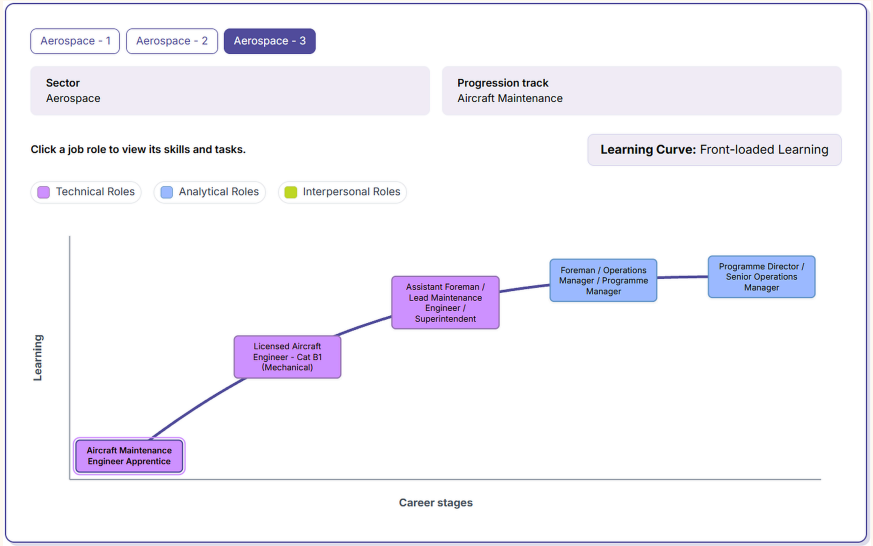
Every career pathway is unique, consisting of job roles with different skill type profiles, career stage transitions, and AI potential of tasks.

The Career Pathways Dashboard covers 469 learning curves across 35 sectors, including 1,379 job roles across junior, middle, and senior levels and the 1,867 skills and 20,672 tasks found in these job roles.

By exploring potential career pathways and understanding how learning takes place as the skills and tasks change along their career pathways, individuals and employers can better anticipate what learning should take place even as AI affects work tasks, so that human capability and career resilience are developed in the workforce.

Career Pathways Dashboard

Figure 2.9: Learning curve view of the dashboard



Use the dashboard to explore the skill types and tasks of job roles, and how skills development takes place within career pathways.

Source: Career Pathways Dashboard.

INDUSTRY VOICE



YAP AYE WEE
Head, Learning and Transformation
OCBC

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This study and its findings validate the reality that we are observing in our organisations and, more importantly, provide a practical way forward for enterprise leaders looking to balance the use of AI to generate value while maintaining core workforce capabilities required to sustain our competitive edge.

The learning curve derivatives provide excellent bases for further contextualisation by industry and company profiles.

It also sets the stage for meaningful explorations into how learning design must evolve to support employees in this new landscape, encouraging organisations to augment conventional learning modalities with formats such as reverse skill-mentoring and communities of practice.

CHAPTER 3

Human-AI Agency: The Critical Core Skill for Working Effectively with AI

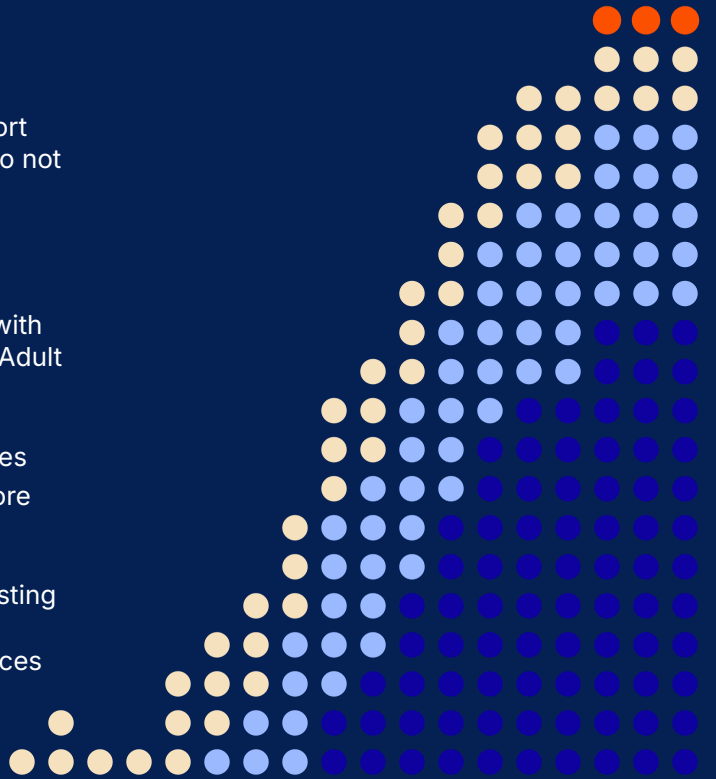
Chapter 2 mapped how domain skills develop across career stages and pathways. It showed which skills matter at each stage, where the steepest learning occurs along different pathways, and where human capabilities remain valuable across job roles.

As individuals increasingly use AI in their work, domain skills, AI Skills, and Critical Core Skills (CCS) together form the foundation for effective work performance. AI Skills provide the know-how to use AI tools, but using AI effectively requires more than technical proficiency. Individuals need to decide what to ask of AI, critically assess and question its outputs, and shape how AI is used within their work, teams and organisations.

The existing 16 Critical Core Skills support aspects of these capabilities, but they do not fully address the distinct demands of working with AI.

Drawing on research into the human capabilities needed to work effectively with AI, in collaboration with the Institute for Adult Learning (IAL) and with inputs from the Ministry of Digital Development and Information (MDDI), this chapter proposes Human-AI Agency, as the 17th Critical Core Skill.

Human-AI Agency complements the existing 16 by equipping individuals to direct AI, reflect on AI output, and shape AI practices with others.



What are Critical Core Skills?

Critical Core Skills (CCS) are essential, transferable skills that can be applied across sectors and job roles, supporting employability and career mobility. Sometimes described as 'skills to build skills', they provide the foundation for individuals to acquire and apply other skills effectively. The existing 16 CCS are grouped into three clusters: **Thinking Critically**, **Interacting with Others**, and **Staying Relevant**.

Thinking Critically

Thinking broadly and creatively to see connections and opportunities

- Creative Thinking
- Decision Making
- Problem Solving
- Sense Making
- Transdisciplinary Thinking

Interacting with Others

Learning from others to acquire new skills and build shared understanding

- Building Inclusivity
- Collaboration
- Communication
- Customer Orientation
- Developing People
- Influence

Staying Relevant

Managing oneself and keeping up with trends that impact work and life

- Adaptability
- Digital Fluency
- Global Perspective
- Learning Agility
- Self Management

Find out more about Critical Core Skills.

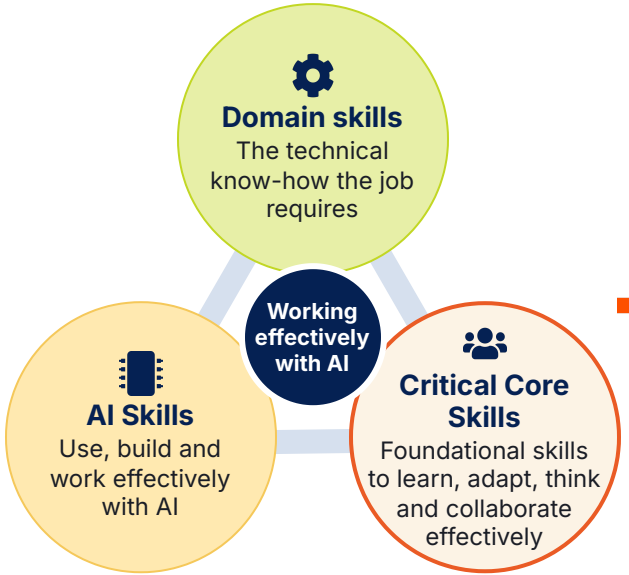
Working effectively with AI requires a combination of AI Skills, domain skills and Critical Core Skills.

AI Skills equip individuals with the know-how to use AI tools. Domain skills are the technical know-how in the field of work necessary to direct and check the outputs of AI. Critical Core Skills are fundamental skills individuals exercise in solving problems, communicating and working with others. A combination of these skills forms the foundation for working effectively with AI.

However, AI's seemingly human capabilities may lead individuals to rely on it blindly and relinquish control.

What does it take for individuals to stay in charge of their work while working effectively with AI?

Figure 3.1: Working effectively with AI



WORKING WITH AI, THERE IS A NEED TO BE MORE INTENTIONAL ABOUT...

BEFORE USING AI

What should I ask AI?

Which parts of the work should I delegate to AI, and which should I keep?

WHEN AI RETURNS OUTPUT

How do I make sense of AI's output?

Is it current, correct, and relevant to my context?

WITH THE TEAM

How do we build AI into the way we work?

What common practices should we adopt and what lessons should we share?

The above points to a critical core capability beyond the existing skills.

CASE STUDY 1: SENIOR BUSINESS ANALYST – THE ROLE TODAY WITHOUT AI

A Business Analyst draws on domain skills and Critical Core Skills to build a market report.

Before AI adoption: One market report turns an open question into a decision

1. **Frame**
   Define the market question and what management needs to know
2. **Research**
   Size the market, map competitors, and gather evidence
3. **Assess**
   Build the cost, feasibility and risk case
4. **Recommend**
   Turn the research into a report management can act on

DOMAIN SKILLS

Domain skills let the analyst size a market, build the cost and risk case, and see where the opportunity lies.

- Market Research
- Project Feasibility Assessment
- Business Opportunities Development
- Business Planning
- Business Environment Analysis

CRITICAL CORE SKILLS

Critical Core Skills let the analyst turn management's question into research, draw on regional teams for what they know, and present a case management can act on.

Collaboration
To gather the research needs from the regional and finance teams, who hold the local and cost data

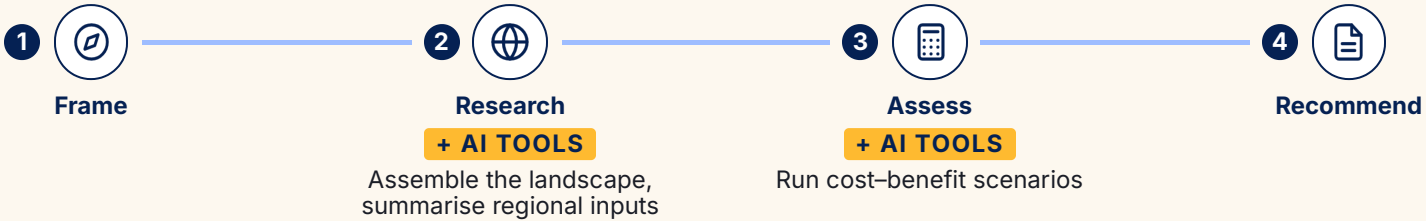
Communication
To turn the findings and the risk case into a recommendation that management can understand and act on

Problem Solving
To take management's query about the potential for a new venture and break it down into what needs to be known and in what order

Together, domain skills and Critical Core Skills take the report from question to recommendation.

CASE STUDY 1: SENIOR BUSINESS ANALYST – THE SAME RESEARCH, NOW WITH AI TOOLS

After AI adoption: With AI tools to support the research, the analyst now needs AI Skills, and something more.



STILL IN THE WORK

Domain skills: Market Research · Project Feasibility Assessment · Business Opportunities Development · Business Planning · Business Environment Analysis

Critical Core Skills: Collaboration · Communication · Problem Solving

Additional: AI Skills

Generative AI Strategy
Decide which parts of the research AI tools can support

Prompt Engineering
Set out the market, competitors, and cost lines before asking for a landscape analysis

Artificial Intelligence Application
Use AI tools to summarise regional notes, keeping confidential material out

With AI Skills, the analyst can use AI tools to produce a draft. The analyst and the team still have to frame the tasks, check the output, and agree on what goes into the report.

AI Skills enable the analyst to use AI tools. But using the tools raises questions the AI Skills alone do not answer.

- **Are the figures current and accurate?**
- **Does a pattern observed in another market apply here?**
- **How should the team decide how best to use AI tools next time?**

The human capability to enable effective AI-enabled work: Human-AI Agency

CASE STUDY 1: SENIOR BUSINESS ANALYST

Human-AI Agency in directing, reflecting and shaping the market report

Human-AI Agency shows up in three aspects of AI-enabled work.

Direct AI
BEFORE / WHILE ENGAGING AI

SET THE QUESTION

Frame the outcome

Decide on the scope and set the questions on which markets, which venture, and what decisions the report must support.

Identify where AI adds value

Assemble the landscape and run scenarios. Keep the interpretation and recommendation as own work.

Integrate AI output with own knowledge

Synthesise the tool's output with knowledge of the local market into one picture management can use.

Reflect on AI-enabled work
WHEN INTERPRETING OUTPUT

CHECK THE EVIDENCE

Question assumptions and limits

Check if the market size in the AI draft is current and accurate, and if a growth pattern observed in another market fits the local trend.

Verify or seek further input

Cross-check the figure from other data sources and ask the regional teams whether the pattern holds where they are.

Know what to trust the tool with

Learn which parts of the tool's output are reliable, such as source summaries, and which need a second source, such as growth forecasts.

Shape AI practices
WITH OTHERS AT WORK

SET A SHARED STANDARD

Share lessons from AI use

Record where the tool's sources were out of date or from the wrong market and share it with the team.

Support others

Walk junior analysts through how AI-assembled sources are verified before a report goes up.

Review and refine shared practices

After the report, revise the team's processes and standards for the next piece of research.

CASE STUDY 2: MARKETING EXECUTIVE – THE ROLE TODAY WITHOUT AI

A Marketing Executive runs a campaign with domain skills and Critical Core Skills.

Before AI adoption: One marketing campaign reaches the right customers and gets them to act

1. **Plan**
   Set the campaign and understand the market
2. **Produce**
   Create content for the campaign
3. **Report**
   Review performance and explain what happened
4. **Respond**
   Handle customer feedback and public relations

DOMAIN SKILLS

Domain skills let the executive understand the market, choose the channels, and develop content that works.

- Marketing Campaign Management
- Market Research
- Social Media Marketing
- Content Writing and Editing
- Public Relations Campaign Management

CRITICAL CORE SKILLS

Critical Core Skills let the executive make the case for the campaign, carry it through with the people involved, and speak to customers.

Communication
To make the case for the campaign to internal and external stakeholders

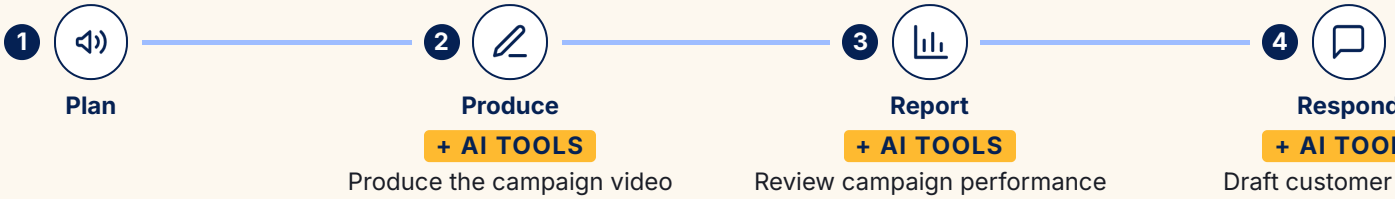
Collaboration
To work with different teams, e.g. brand managers and the sales team

Customer Orientation
To understand what the customers want and respond to them appropriately

Together, domain skills and Critical Core skills take the campaign from plan to action.

CASE STUDY 2: MARKETING EXECUTIVE – THE SAME CAMPAIGN, NOW WITH AI TOOLS

After AI adoption: With AI tools to support the campaign, the marketing executive needs AI Skills, and something more.



STILL IN THE WORK

Domain skills: Marketing Campaign Management · Market Research · Social Media Marketing · Content Writing and Editing · Public Relations Campaign Management

Critical Core Skills: Communication · Collaboration · Customer Orientation

Additional: AI Skills

AI Content Generation for Videos
Set out the key messages, audience, and brand look, and supply the materials for the video

Prompt Engineering
Point the tools to the sales data for a first read of performance, and set the guide for customer replies

Artificial Intelligence Application
Choose the tools for the video and the performance review, and decide what data goes into them

With AI Skills, the executive can get the tools working and the campaign moving. The executive and the team still have to shape the campaign, check the output, and agree what goes out.

AI Skills enable the executive to use AI tools. But using the tools raises questions the AI Skills alone do not answer.

- **What should the video say, and to whom?**
- **Should this reply go out as drafted?**
- **How should the team decide this next time?**

Applying the Human-AI Agency skill can enable more effective AI-enabled work

CASE STUDY 2: MARKETING EXECUTIVE

Human-AI Agency in directing, reflecting and shaping the campaign

Human-AI Agency shows up in three aspects of AI-enabled work.

Direct AI
BEFORE / WHILE ENGAGING AI

DECIDE WHAT TO ASK

Frame the outcome

Set out the key messages of the campaign, who it is for, and define the desired outcomes.

Generate ideas

Produce the video and test various versions and options.

Test and refine

Take the team's feedback on the versions and refine the one that lands.

Reflect on AI-enabled work
WHEN INTERPRETING OUTPUT

WEIGH WHAT AI RETURNS

Interpret in context

Review the AI performance summary with other sales events in mind, not just the campaign.

Spot when the output is off

Notice that a storewide sale ran the same week, so the campaign may not be the only reason sales went up.

Accept/revise/reject

Revise the attribution factually then share the report with management.

Shape AI practices
WITH OTHERS AT WORK

WORK OUT HOW AI SHOULD BE USED

Share interpretations

Check the AI-drafted customer replies with colleagues for factual accuracy.

Contribute to shared practices

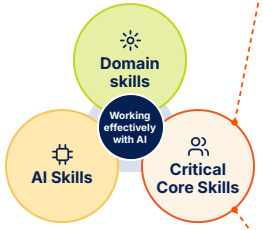
Turn that into a working rule: which replies go out after a quick check, which need a person to write.

Align use with goals and values

That agreement keeps AI-drafted replies consistent with the brand's image and within the rules the team is accountable for.

Human-AI Agency allows individuals to stay in charge when working with AI.

Human-AI Agency is the capability to exercise human judgement and responsibility when AI is part of the work. While AI Skills enable individuals to use AI tools, Human-AI Agency helps them stay in charge when working with AI.



HELP SHAPE THE NEW CCS

The proposed CCS (Human-AI Agency) is undergoing public consultation ahead of its planned release in early 2027.

Learn more about the proposed CCS and share your feedback.

Share your feedback →

NEW CCS **Human-AI Agency**

Apply **human judgement, autonomy and responsibility** when working with AI to **direct AI towards purposeful outcomes**, **critically reflect, assess AI-enabled work** and **shape effective AI-enabled practices with others**.

IT HAS THREE ASPECTS, EACH ADDRESSING A KEY QUESTION THAT ARISES WHEN WORKING WITH AI

Direct AI

BEFORE / WHILE ENGAGING WITH AI

What questions should I ask AI?

Frame purposeful outcomes and decide what AI should do.

Reflect on AI-enabled work

WHEN INTERPRETING OUTPUT

How do I make sense of AI's output?

Question and verify AI outputs before deciding what to trust and use.

Shape AI practices

WITH OTHERS AT WORK

How do we build AI into the way we work?

Work with others to determine how AI should be used, in line with shared goals and values.

INDUSTRY VOICE



PROF MAY LIM
Associate Vice President
(Lifelong Learning)
Singapore Institute of
Technology

AI can optimise the means, but humans must still determine the ends.

As AI becomes increasingly capable of generating content, analysing data and automating complex tasks, the more important question is not what skills people need, but what human qualities should guide the use of powerful technologies. For Singapore, these qualities include **honour, integrity and trustworthiness**. AI can improve productivity and make sophisticated recommendations, but it cannot determine what is right, fair or worth pursuing. As technology becomes more capable, human character becomes more important.

Building on this foundation, **intentionality, human agency and judgement** are critical. While AI can optimise how goals are achieved, people must still decide which goals matter and ensure actions align with societal and organisational values. Competencies such as learning agility, self-regulation and interpersonal connection help individuals use AI responsibly and effectively.

For organisations, productivity gains from AI should be reinvested into learning, innovation, mentoring and wellbeing. Those that combine advanced technology with integrity, wise judgement and meaningful purpose will thrive.

KEY IDEAS

Human character
Honour, integrity and trustworthiness guide the use of AI

Agency and judgement
People decide which goals matter; AI optimises how

Reinvest the gains
Into learning, innovation, mentoring and wellbeing

INDUSTRY VOICE



TING SIEW LEE
CEO
Capelle Consulting

Having a human in the loop is not enough if human judgement is passive. Human-AI Agency means knowing when to trust, question, verify, override or escalate an AI output, and taking responsibility for the final decision. These are critical thinking behaviours that training can deliberately build and strengthen.

WHAT THIS MEANS FOR EMPLOYERS

Employers need to invest in training and create the conditions for individuals to exercise Human-AI Agency at work, so they remain in charge when working with AI and using it to improve work outcomes.

EMPLOYERS SHOULD ACTIVELY

DIRECT AI	Make human framing and judgement part of AI-enabled work, starting with a clear view of the work outcome AI is meant to improve.
REFLECT ON AI-ENABLED WORK	Build review and accountability into AI-enabled work, assessing both the AI output and whether using AI has improved the quality or efficiency of the work.
SHAPE AI PRACTICES	Enable teams to establish shared practices for AI use, and refine them based on what has improved work outcomes.

Resources for individuals and employers

Ready to take the next step? Explore resources and programmes to help you build AI capabilities in your career and your organisation.

Visit www.swda.gov.sg for more information on our available programmes and initiatives.

AI Resources

FOR INDIVIDUALS

National AI Impact Programme

A suite of initiatives to help you build practical AI capabilities. Take the AI Ready Quiz to assess your readiness, access curated courses suited to your level, and apply what you learn in practice. Eligible Singapore Citizens enrolled in selected SWDA-funded AI courses can also receive a complimentary six-month AI subscription.

FOR EMPLOYERS

AI for Your Workforce

Practical insights and resources to help your organisation adopt AI and build workforce capabilities.

Other Resources

FOR INDIVIDUALS

Career Health for Individuals

Take charge of your career development, wherever you are in your career journey! Discover your strengths, develop new skills and explore growth opportunities to make your next career move with purpose and confidence.

FOR EMPLOYERS

OurWorkforce

Explore this one-stop portal for you to discover SWDA's collective suite of workforce programmes, training courses, resources, tools and services that can support your business needs.

Analysis methodologies applied in Chapter 1: Demand for AI Skills

A. Data source, cleaning and treatment

A1. Job Posting Data

In this chapter, we analysed Singapore job posting data from January 2022 to March 2026 to examine the demand for AI Skills across the economy, job role seniority, sectors and job functions.

A2. Tagging job postings to sectors

We tagged job postings to sectors based on the hiring company's Singapore Standard Industrial Classification (SSIC) 2020 code, followed by mapping the SSIC code to Skills Framework sectors. Job postings without an SSIC tag, or whose SSIC code cannot be mapped to a Skills Framework sector, are excluded from all analyses.

A3. Tagging job postings to job roles

We matched the job titles and the job descriptions in job postings to corresponding job roles in the Skills Frameworks. For ease of reading, we may shorten or simplify selected double- or triple-barrelled job-role titles, without changing the underlying job-role tagging used in the analysis.

A4. AI Skills and AI-related Apps & Tools

We included 39 skills relating to AI in the Skills Frameworks in the analysis. The list of AI-related Apps & Tools were identified using a curated list from "There's An AI for That®" (TAAFT) and includes AI applications and tools or AI-enabled/embedded applications and tools.

A5. Classification of job roles by seniority

We classified job roles as junior, middle or senior based on their relative position within each Skills Framework career pathway. The resulting classifications are then validated through human review.

A6. Development of job functions

We classified job roles into job functions based on their similar areas of work. We developed the job functions through an iterative process combining desktop research, Large Language Model (LLM)-assisted classification and human review. Each Skills Framework job role is assigned to one job function. The glossary lists all 23 job functions and their definitions.

Analysis methodologies applied in Chapter 1: Demand for AI Skills

B. Measuring AI Skill(s) demand

B1. Job Posting with AI Skill(s)

A job posting is classified as a "Job Posting with AI Skill(s)" if it mentions at least one AI Skill.

B2. AI Skill demand of job postings with at least one AI Skill

We measured AI Skill demand as the share of job postings that mentioned a given AI Skill, out of the total job postings that mentioned at least one AI Skill in 2025.

where N_i *denotes the* count of job postings that mentioned a given AI Skill *i* in a given year and N_{AI} the total count of job postings that mentioned at least one AI Skill in a given year.

$$AI\ skill\ demand_i = \frac{N_i}{N_{AI}} \times 100$$

B3. Growth of AI Skill

We measured growth as the increase in job postings that mentioned a given AI Skill, between 2022 and 2025, expressed as a multiple.

$$Growth\ multiple_i = \frac{N_{i,2025}}{N_{i,2022}}$$

B4. AI Skills demand of job seniority group (G)

We measured AI Skills demand of each job seniority group as the share of job postings that mentioned at least one AI Skill, out of the total job postings for that group.

where *g* denotes a job seniority group (junior or middle-and-senior) and *t* the year (2022 or 2025)

$$AI\ skills\ demand_{g,t} = \frac{N^{AI}_{g,t}}{N_{g,t}} \times 100$$

Analysis methodologies applied in Chapter 1: Demand for AI Skills

B. Measuring AI Skill(s) demand

B5. AI Skills demand of sector

We measured AI Skills demand of a sector as the share of job postings with AI Skill(s) out of the total job postings within that sector in 2025.

where N^{Total} denotes the total number of job postings within a specific sector and s denotes a specific sector

$$AI\ Skills\ demand_s = \frac{N^{AI}_s}{N^{Total}_s} \times 100$$

B6. Growth of AI Skills demand of sector (S)

We measured growth as the change in AI Skill demand of a sector (i.e., C1) between 2022 and 2025 in percentage points (pp).

$$\Delta AI\ Skills\ demand_s = AI\ Skills\ demand_{s,2025} - AI\ Skills\ demand_{s,2022}$$

B7. AI Skills demand by job function (F)

We measured AI Skill demand in a job function as the share of job postings with AI Skill(s) out of the total job postings that mentioned at least one AI Skill in 2025.

where f denotes a job function

$$AI\ Skills\ demand_f = \frac{N^{AI}_f}{N^{AI}} \times 100$$

B8. Tech vs non-tech jobs

There are 23 job functions, of which “Information Technology, Software & Data” is considered tech-related and job roles tagged to this function are tech jobs. Correspondingly, the remaining 22 functions and their respective job roles are considered non-tech jobs.

Analysis methodologies applied in Chapter 2: Skills Development in Career Pathways

A. Data source, cleaning, and treatment

Skills Framework data

In Chapter 2, we analysed 469 career pathways that include 1,379 job roles across 35 sectors in the Singapore Skills Frameworks (SFw). The SFw codifies expert knowledge on job roles and the skills, proficiency levels, and tasks required for these job roles.

These job roles are also found in structured Career Maps, which illustrate how job roles can progress along typical career pathways. We used this dataset to analyse how AI interacts with jobs, tasks, and skills development in career pathways.

We analysed the data at two levels: within job roles and along career pathways. The next section details the methodology for analysing at the job role level based on dominant skill types, while section C describes the interaction between jobs, tasks, and skills. Sections D and E explain how we derived learning curves for the career pathways analysis.

Analysis methodologies applied in Chapter 2: Skills Development in Career Pathways

B. Dominant skill type of a job role

We defined the dominant skill type of a job role by the skill profile of the job - analytical skills, technical skills, and interpersonal skills. The process is as follows:

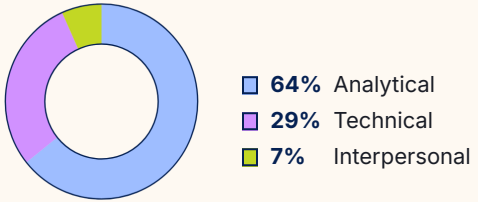
- We assessed each skill's description for its fit with one of the three capability-based skill types, using a combination of rule-based and LLM-based decisions.
- To correct for the ubiquity of analytical skills across roles, we applied a set of normalisation techniques and weightings designed to boost the visibility of less common skill types, resulting in a more balanced overall distribution.
- We then aggregated skill types to the job level by each job's most dominant skill type, giving three categories: analytical dominant, technical dominant, and interpersonal dominant roles.
- As roles for professionals, managers, and executives (PME) account for the bulk of SFw roles, the job roles investigated in Chapter 2 are largely analytical dominant roles.

Distribution of job roles across dominant skill types

Analytical dominant job: A job whose skill requirements are dominated by analytical skills, which largely require the capability to evaluate, interpret, or generate insights from information, data, or systems.

Technical dominant job: A job whose skill requirements are dominated by technical skills, which largely require the capability to apply structured rules, tools, or procedures to execute tasks or ensure compliance.

Interpersonal dominant job: A job whose skill requirements are dominated by interpersonal skills, which largely require the capability to engage, communicate, or collaborate effectively with others.



Note: We identified technical dominant job roles by the type of skills each job requires, which tend to be structured and procedural. The term is not based on the Institute of Technical Education (ITE) system.

Analysis methodologies applied in Chapter 2: Skills Development in Career Pathways

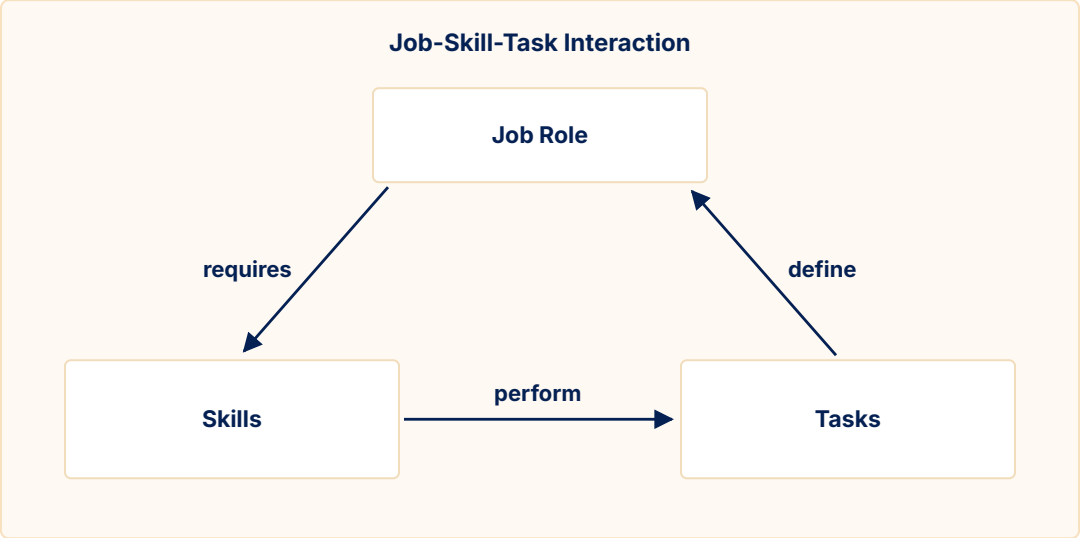
C. Job, skills, and tasks interaction

Every job is defined by a set of tasks and the skills required to perform these tasks. Tasks are the activities we do at work, while skills are the knowledge and abilities we use to carry them out.

As technology and business needs change, the tasks we do at work may also change. This can affect the skills we need to do our jobs. The diagram below shows how jobs, skills and tasks are connected, and in this report, we analysed the effects of AI on jobs using a skill- and task-centric lens:

- **Tasks:** How AI can help workers carry out certain tasks or change tasks.
- **Skills:** How these changes in work tasks may affect the skills workers need to build.

We illustrated this relationship through the job-skill-task interaction diagram, using examples of specific job roles to show the potential implications of AI on the job, skills and tasks.



Analysis methodologies applied in Chapter 2: Skills Development in Career Pathways

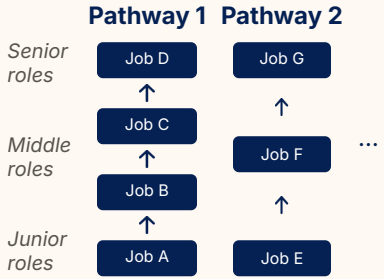
D. Career pathways

To understand how AI potential and skill type can change as individuals progress along their careers, we introduced the career pathways of job roles and the career stages within them.

As described in the methodologies for Chapter 1 (section A5), we used the SFw Career Maps to identify where each job sits along a career pathway. We classified jobs as junior, middle, or senior roles, based on the following definitions:

- Junior roles are for individuals who are starting out in the field, typically as executives, assistants, or associates.
- Middle roles have managerial duties over junior roles, while reporting to senior roles.
- Senior roles provide guidance and leadership direction for more junior roles, and tend to be senior managers, directors, or leads.

Illustration of SFw Career Map



Example of job roles in a career pathway



Analysis methodologies applied in Chapter 2: Skills Development in Career Pathways

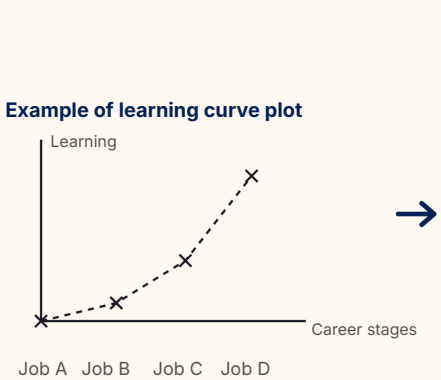
E. Learning curves

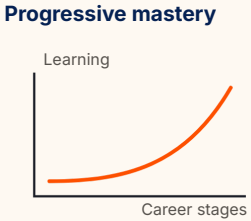
- We derived the learning curves from skill distance scores between roles in a career pathway.
- The scores are based on the combined differences in skills and proficiencies required between roles, as a measure of learning at work: a greater distance means more learning.

where X and Y denote the skills and proficiency levels of the two jobs being compared

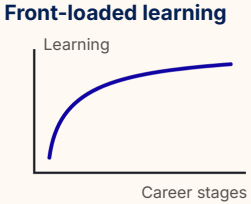
$$Cosine = \frac{X \cdot Y}{\|X\| \, \|Y\|} \; ; \; Euclid = \sqrt{\sum (x_i - y_i)^2}$$
$$Skill\ Distance = Cosine \times [1 - Euclid/100]$$

- To form a learning curve, we required a minimum of three jobs per pathway.
- For each career pathway, we plotted skill distance (learning) on the y-axis against career stages on the x-axis.
- We fitted each learning curve to different models and used the best-fit model to classify most curves as one of two learning curve shapes: progressive mastery or front-loaded learning.





229 progressive mastery pathways
Learning increases gradually at first and ramps up later, with individuals regularly acquiring and building on new capabilities as they advance.



203 front-loaded learning pathways
Learning is concentrated early in a career and then becomes more gradual.

Note: We chose the best model based on three metrics: mean absolute error (MAE), root mean squared error (RMSE), and Akaike information criterion (AIC), which was validated through human checks. 37 learning curves (8% of the SFw data) could not be fitted into the two shapes and were excluded from Chapter 2.

Glossary

Terms	Definition
Administration and Office Support	This job function provides routine clerical, secretarial, coordination, and office support that enables other functions to operate efficiently. Work is primarily process- and transaction-oriented rather than specialist advisory or operational leadership.
AI potential of tasks	The AI potential of tasks reflects the expected time savings from using AI assistance to complete the key tasks of job roles. This was evaluated using OpenAI's AI/LLM Exposure rubrics.
AI Skill demand of job postings with AI Skill(s)	The share of job postings that mentioned a given AI Skill, out of the total job postings that mentioned at least one AI Skill in a given time period.
AI Skills	A range of skills that are used to develop or work with AI.
AI Skills demand by job function (F)	The share of job postings that mentioned at least one AI Skill in job function (F), out of the total job postings that mentioned at least one AI Skill in a given time period.
AI Skills demand of job seniority group (G)	The share of job postings that mentioned at least one AI Skill, out of the total job postings for group (G) in a given time period.
AI Skills demand of sector (S)	The share of job postings that mentioned at least one AI Skill, out of the total job postings for sector (S) in a given time period.
Analytical dominant jobs	Jobs whose skill requirements are dominated by analytical skills, which largely require the capability to evaluate, interpret, or generate insights from information, data, or systems.
Apps & Tools	Digital and technology solutions, in software or app formats, used in the application of skills to perform job tasks.
Architecture and Construction	This job function applies engineering, architectural, and construction expertise to design, develop, specify, improve, or build new products, systems, structures, infrastructure, and technical processes. The defining output is a new or materially redesigned technical solution or asset.

Glossary

Terms	Definition
Career pathways	Career pathways represent potential career progression pathways across job roles, typically from junior, to middle, to senior roles. These pathways were based on structured Career Maps developed as part of the Singapore Skills Frameworks.
Community and Social Services	This job function supports individuals, families, and communities through social care, counselling, welfare, community development, rehabilitation, advocacy, and access to social or public support services.
Creative, Design and Performing Arts	This job function creates visual, spatial, audio-visual, or performance-based experiences and artefacts through artistic or design expertise. The primary output is creative expression, aesthetics, or user-facing design.
Critical Core Skills	A unique set of 16 core skills identified by Singapore employers as the most critical to thrive in the future economy.
Customer Service and Client Support	This job function supports customers, clients, or service users before, during, or after use of a product or service. The function focuses on resolving needs, maintaining service relationships, and enabling satisfactory use rather than closing new business.
Domain skills	The specialised knowledge and know-how needed to carry out the work of a particular job role or sector. These skills are specific to that field of work.
Education and Training	This job function develops curricula and facilitates learning for students, trainees, or the public. The function's central purpose is teaching, instruction, academic guidance, or the administration of learning delivery.

Glossary

Terms	Definition
Finance and Accounting	This job function manages financial records, reporting, controls, planning, capital and investment-related analysis. The function supports stewardship of money and assets, financial decision-making, and compliance with financial standards.
Front-loaded pathways	Career pathways where learning is concentrated early in a career and then becomes more gradual in later stages.
Growth of AI Skill	The increase in job postings that mentioned a given AI Skill between two given time periods, expressed as a multiple.
Growth of AI Skill demand of sector (S)	The change in AI Skill demand of sector (S) between two given time periods.
Healthcare	This job function promotes, maintains, or restores physical and mental health through clinical assessment, diagnosis, treatment, rehabilitation, therapy, pharmacy, diagnostic services, and direct patient care.
Human Resources and Workforce Development	This job function builds and manages the organisation's workforce, employment practices, capabilities, and employee experience. It covers the employment lifecycle and internal learning or organisational development.
Information Technology, Software and Data	This job function designs, builds, operates, and protects digital systems, software, data platforms, and production analytics infrastructure. The function converts technical requirements into scalable digital products, applications, models, pipelines, and technology services.
Interpersonal dominant jobs	Jobs whose skill requirements are dominated by interpersonal skills, which largely require the capability to engage, communicate, or collaborate effectively with others.

Glossary

Terms	Definition
Job function	The grouping of job roles based on their similar areas of work.
Leadership, Strategy and General Management	This job function sets organisational direction, makes enterprise-level decisions, and holds broad accountability for performance across multiple functions. The defining feature is general or strategic leadership rather than expertise in a single specialist discipline.
Learning curve	A learning curve illustrates the pace and intensity at which individuals must develop skills and proficiency as they progress along a career pathway.
Legal, Compliance, Risk and Governance	This job function interprets and applies laws, regulations, governance requirements, and organisational risk frameworks. The function provides legal advice, establishes compliance and control systems, and oversees enterprise, regulatory, and conduct risks rather than executing frontline physical safety or security work.
Maintenance and Facilities	This job function keeps existing equipment, buildings, utilities, and operational assets safe, reliable, and available through maintenance, repair, servicing, inspection, facilities operation, and asset-lifecycle support. Engineering design and technical development related to maintenance also belong here.
Manufacturing and Production	This job function produces physical goods through recurring manufacturing, processing, fabrication, assembly, or plant operations. The function converts materials and components into finished or intermediate products and manages production flow, output, yield, and shop-floor performance. Engineering design and technical development related to manufacturing and production also belong here.

Glossary

Terms	Definition
Marketing, Communications and Content	This job function creates demand, shapes brand perception, and communicates information to internal or external audiences. It combines audience insight, campaign execution, public relations, media and content production.
Operations and Service Delivery	This job function runs, coordinates, and improves the recurring processes through which an organisation delivers products or services. The function owns continuing business-as-usual performance, capacity, workflow, service levels, and operational outcomes.
Procurement, Supply Chain, Logistics and Transportation	This job function plans and manages the acquisition, movement, storage, and distribution of goods, materials, equipment, or people. The function links suppliers and transport networks with organisational demand and delivery requirements.
Product Management	This job function refines, prioritises, and guides the development and lifecycle of products or platforms based on user needs and business goals. It coordinates across technology, design, marketing, and operations but is accountable for product direction rather than delivery of a temporary project.
Progressive mastery pathways	Career pathways where learning starts off gradually at first and ramps up later, with individuals regularly acquiring and building on new capabilities as they advance.
Project and Programme Management	This job function plans, coordinates and governs temporary initiatives, programmes or portfolios established to deliver defined outcomes, changes or end states. Work is organised around objectives, milestones, budgets, dependencies, risks and closure or transition into business-as-usual operations.

Glossary

Terms	Definition
Quality Assurance and Management	This job function provides independent assurance that products, services, and processes meet defined standards, specifications, and regulatory or customer requirements. The function owns inspection, testing, validation, audit, quality systems, and corrective-action governance.
Research, Science, Policy and Analysis	This job function generates new knowledge, evidence, forecasts, or policy insight through systematic investigation, scientific inquiry, statistical analysis and interpretation. The primary output is a finding, explanation, recommendation, or body of evidence rather than a production technology system.
Safety, Security and Protective Services	This job function protects people, property, and communities through frontline prevention, monitoring, physical protection, emergency response, law enforcement, defence, and workplace-safety execution.
Sales and Business Development	Generates revenue and expands markets through selling, account growth, partnerships, and commercial opportunity development. The defining outcome is new or expanded business rather than promotion, customer support, or product delivery.
Singapore Skills Frameworks	Developed in partnership with employers, industry leaders, education institutions, unions, and government, these frameworks outline the key skills, job roles, and tasks across sectors.
Skill type	Reflects the main capability requirements of a job based on the most common skills required to perform that job.
Technical dominant jobs	Jobs whose skill requirements are dominated by technical skills, which largely require the capability to apply structured rules, tools, or procedures to execute tasks or ensure compliance.

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Skills mentioned

Readers can look up each skill's description, and the job roles that require it, in the Skills Frameworks.

About the Skills Frameworks

The Skills Frameworks outline the key skills, job roles, and tasks across sectors.

DOWNLOAD

Skills Frameworks

The full dataset of skills by job role, together with the key tasks each role performs.

AI Skills

Find out more about the AI Skills featured in this report.

EXPLORE ONLINE

Interactive Skills Frameworks dashboard

Explore skills and job roles online.

Apps & Tools mentioned

Apps & Tools Title	Apps & Tools Description
ERP.AI	Integrate artificial intelligence with existing enterprise resource planning systems to automate approval workflows and financial processes, analyse business operations data, and support data-driven decisions on inventory, manufacturing, and growth
Kasisto KAI	Deploy conversational artificial intelligence assistants purpose-built for banking across digital and voice channels to answer customer enquiries, service account requests and support employees with policy and product guidance
Elicit	Automate research workflows by locating relevant academic papers, extracting and summarising key information specific to research questions, and supporting brainstorming and text classification tasks
Adobe Photoshop	Edit photos and create visual designs using generative artificial intelligence features to execute complex edits, expand or fill image content, and translate creative concepts into visual outputs
Lumion	Create photo-realistic 3D visualisations of architectural and design concepts using libraries of materials, objects, and effects with real-time rendering to present designs to stakeholders
Revoldiv	Transcribe audio and video files into editable text, detect speakers, and remove filler words to streamline media editing, content navigation, and collaborative review
Novita	Generate and edit images through application programming interfaces that provide access to a wide range of artificial intelligence models, supporting content creation workflows without the need for dedicated computing infrastructure
HelpDesk	Manage customer support tickets across multiple channels using automation, knowledge bases, and analytics to facilitate team collaboration and improve the efficiency of customer service delivery
Motion	Plan and prioritise work schedules by automatically allocating tasks, meetings, and project deadlines into optimised time blocks, and monitor workloads to enhance individual and team productivity

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