

# ICT in Motion: The Next Wave of AI Integration (2025)

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# Table of Contents

Executive Summary	4
1. Introduction	12
2. Job Roles: Adapting to AI	21
3. Decoding the Skill Transition	29
4. Preparing for an AI-Driven Workforce	38
5. Conclusion	60

6. Appendix	66
6.1 Appendix A: G7 Country Infographics	67
6.2 Appendix B: Key Definitions	81
6.3 Appendix C: Job Canvas for each Job role	86
6.4 Appendix D: The 2025 AI Skills Glossary	106
6.5 Appendix E: Reference Material Citations	107
6.6 Appendix F: Other Data	109

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# Executive Summary

Welcome to the **“ICT in Motion: The Next Wave of AI Integration”** report. This 2025 report delivers a comprehensive labor market analysis across G7 countries, examining 50 job roles in both Information and Communication Technology (ICT) and what we term ‘Specialized Support Roles’<sup>1</sup> under the lens of AI. **Our findings indicate a profound and accelerating integration of AI into the labor market. An analysis of job requirements shows a significant rise in the adoption of technical AI skills. Consequently, for professionals to thrive in the age of AI, they must cultivate technical proficiency alongside core human-centric competencies such as collaboration and critical thinking.**

This year’s report explores a new set of questions, including:

- **Role Evolution Across G7 Economies**—How are the most in-demand job roles evolving? What strategic AI roles are emerging? What strategic non-ICT roles are essential to driving AI integration? What are the regional hubs that are leading the way in AI-driven job creation?
- **Skills Shift**—What are the most in-demand skills, and which new skills are emerging? What new AI skills are emerging? What human skills are increasing in relevance? What skills gaps exist across the current labor market?
- **Developing an AI-Integrated Workforce**—What new career pathways exist? What are the AI skill requirements across different career stages? How can we strategically prepare our workforce through targeted upskilling?

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<sup>1</sup> Specialized Support Roles are professional positions that operate outside the core ICT job families but are essential enablers within the AI ecosystem and technology-driven transformations. These roles span diverse domains including finance, marketing, legal, compliance, human resources, and environmental functions, providing critical cross-functional expertise that supports AI and technology implementations across organizations. More details can be referred in Section 6.2. Appendix B: Key Definitions.

We answered these questions by conducting a distinct set of analyses:

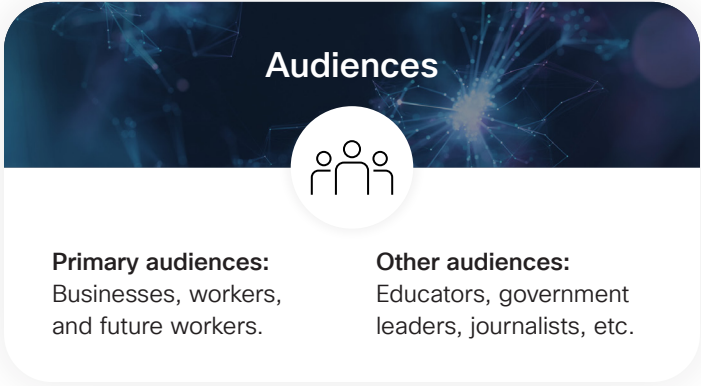
- **Job Selection:** We analyzed 50 job roles (40 ICT roles and 10 Specialized roles). These roles were identified by the Consortium members as the most impactful based on two criteria: Their critical importance to each member’s AI workforce strategy and their high priority for upskilling and reskilling initiatives.
- **Job Demand and Technical Skills Analysis:** For our analysis, we analyzed total job posting volume over a 12-month period (July 2024 – June 2025) compared to the previous 12-month period (July 2023 – June 2024).
- **“AI Skills Integration” Analysis:** It reflects the proportion of job postings that include AI-related skills or tools, providing insight into the spread of AI across occupations.

For the 2025 report, we are also introducing three valuable resources designed to empower workers and organizations as they navigate the rapidly evolving AI landscape:

1. **The AI Workforce Playbook:** This resource provides a comprehensive guide for organizations to strategically align their workforce development with evolving business and Artificial Intelligence (AI) objectives. It underscores the critical importance of building an AI-ready workforce to ensure relevance, optimize resource allocation, and facilitate effective AI implementation. The Playbook introduces a multi-faceted approach for acquiring necessary AI skills, including the “Build, Buy, Borrow, Bot” framework, and offers methodologies for assessing current workforce capabilities and identifying AI-related skill gaps.
2. **Updated Learning Recommendations:** Our curated database has been thoughtfully expanded to include a diverse range of learning recommendations that are aligned with the emerging technical and AI skills presented in this report. This enriched repository equips individuals and organizations with the tools needed to adapt, grow, and thrive in the face of ongoing technological change.
3. **The 2025 AI Skills Glossary:** This glossary establishes a common vocabulary for today’s most in-demand AI skills, creating a shared language for workers, educators, and employers. This clarity helps align job requirements with training programs and empowers individuals to build the right skills for 2025.

Our mission is to prepare today’s and tomorrow’s workforce with actionable insights and scalable frameworks to leverage the transformational opportunity of AI on ICT jobs across all Industries. In a world where AI is discussed everywhere, this mission has never been more critical.

The AI Workforce Consortium is dedicated to equipping workers, policymakers, academia, learning and development professionals, journalists, executives, researchers, and the public with accurate, rigorously validated, and globally sourced data from G7 economies. This initiative aims to help stakeholders effectively harness the transformative potential of AI in the ICT sector.





# Foreword



## Francine Katsoudas

### EVP and Chief People, Policy & Purpose Officer, Cisco

When we launched the AI Workforce Consortium in 2024, the impact was greater than we anticipated – a reminder that in times of disruption, people and communities need clarity most. That experience set the stage for what comes next.

As our new report, *ICT in Motion: The Next Wave of AI Integration*, makes clear, ICT roles are changing quickly. Technical AI skills are becoming foundational, while human strengths like communication and leadership are essential as we move toward dynamic human-AI teams. The evolution of roles through technology isn't new, but the speed and scale of innovation today are unprecedented. The real test is how we respond and join forces so that workers gain the skills they need, instead of being left behind.

Living up to this mission requires tools that make change real. We are releasing the Consortium's 2025 report alongside our **AI Workforce Playbook**, a **2025 AI Skills Glossary**, and more than **200 curated learning recommendations**. We've also added "skill stories" – short, relatable narratives that show how individuals are embracing new ways of working with AI. Our hope is that global leaders will use these resources to shine a light on their own organizations and the growth of their people.

The breadth of this year's work is exciting, but what encourages me most is the collective spirit behind it. I want to thank our AI Workforce Consortium members for such invaluable collaboration and commitment. Together, we are not only preparing people to meet the demands of this era – we are opening doors to new possibilities and opportunity.



## Himanshu Palsule

### Chief Executive Officer, Cornerstone

The pace of change brought on by artificial intelligence's (AI) advancement is unlike anything we have seen. In boardrooms, research labs, and workplaces across the G7, AI is reshaping tasks and as a result reimagining modern job architecture. Where this transformation is most pronounced and the focus of this report is the Information and Communication Technology (ICT) sector.

As a Consortium our objective is to give policymakers, researchers, employers, and employees the evidence they need to make informed, forward-looking decisions. At Cornerstone, we are committed to helping organizations grapple with the complexity of change AI is bringing into their workforce today and to upskill and reskill accordingly as they design their workforces for the future.

This report offers more than just commentary on that change. It delivers rigorously validated, globally sourced data from across G7 nations, providing a clear review of how AI is affecting job roles, skill demands, and workforce dynamics in the ICT sector. The findings, which Cornerstone provided labor market data for, confirm that AI roles are dominating job market growth and technical skills are increasingly integrated into the job roles reviewed for this report. But, as we dig deeper into the data, we see that as a result of this shift, high-severity gaps are emerging, along with continued growth in the need for human skills. These shifts bring both opportunity and challenge. The opportunity lies in the creation of new kinds of work, in productivity gains, and in freeing employees to focus on higher-value activities. The challenge lies in ensuring that workers have the skills and pathways they need to thrive in this new environment.

This is an important step in the direction of transparency and providing resources to support workers and organizations navigating the evolving landscape. I thank our partners for their support and invite readers to engage and leverage the resources as a toolkit for the changes afoot. Choices made today will help to redefine the role of human workers in the future ahead.

# Foreword



**Ryan Oakes**

**Global Health & Public Service Industry Practices Chair, Accenture**

Artificial intelligence is reshaping the ICT workforce, and my Accenture colleagues and I are proud to contribute to this consortium's leading-edge work. This year's report highlights how AI is becoming a core competency across job roles, with ethics and governance now essential skills for every worker. The consortium's work shows how public-private partnerships can accelerate upskilling and reskilling through flexible, scalable methods that go beyond formal education. Thank you to CISCO for their continued consortium leadership. I look forward to expanding our global collaboration in the year ahead.



**Lydia Logan**

**VP, Global Education and Workforce Development, IBM**

Artificial Intelligence is not just transforming jobs—it is augmenting them, reshaping how work is done across industries and unlocking new opportunities for innovation. This year's report, *ICT in Motion: The Next Wave of AI Integration*, offers a data-rich view into how AI is being embedded across 50 job roles in the G7 economies. It reveals that AI is now a foundational capability, not a niche specialization. But it also shows that human skills—like critical thinking, ethical reasoning, and collaboration—are more essential than ever. The future of work is not AI versus humans—it is AI with humans. And that future demands a workforce that is both technically fluent and ethically grounded.

This year's report also shines a light on a critical inflection point: the transformation of entry-level jobs. With over 90% of these roles exposed to AI-driven change, the traditional pathways into ICT careers are shifting. Employers are raising experience requirements and embedding AI skills into even the earliest roles. This makes inclusive, accessible skilling programs more important than ever. The Consortium's focus on real-world use cases and innovative learning experiences is not just about transformation—it's about ensuring that no one is left behind in the AI era.

What makes this report especially powerful is its emphasis on action. The AI Workforce Playbook featured in this edition is not just a framework—it is a practical guide, brought to life through real-world use cases from Consortium member companies. These examples demonstrate how organizations are implementing inclusive, scalable skilling programs that prepare workers for AI-augmented roles. Together, we are not only preparing the workforce for the future—we are shaping a future where everyone can thrive.

# Key Highlights

## 1. AI Roles Dominate Job Market Growth, Led by AI/ML Engineer, AI Risk & Governance Specialist, and NLP Engineer

Our research indicates AI-specific roles have become key drivers of growth within the ICT job market across G7 countries. Analysis reveals that seven of the ten fastest-growing ICT positions are directly associated with AI, highlighting the accelerating industry demand for specialized AI capabilities and robust governance practices. Artificial Intelligence / Machine Learning (AI/ML) Engineer (+145% demand growth), AI Risk & Governance Specialist (+234% demand growth), and Natural Language Processing (NLP) Engineer (+186% demand growth) are experiencing the fastest growth rates among job roles across the G7 economies.

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## 2. AI Skills Now a Pervasive Requirement for ICT jobs in G7 Economies

Artificial Intelligence (AI) capabilities have rapidly transitioned from niche specializations to foundational skills across ICT and related support roles. The analysis reveals that 78%<sup>2</sup> of the job roles analyzed included AI skills, highlighting early shifts in role requirements across the G7.

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## 3. Specialized AI Emerging Skills in Security and Multi-Agent Systems Drive Workforce Transformation

Emerging technical skills experiencing the most significant growth are predominantly AI-related, with a strong emphasis on security, ethics, and the practical implementation. Demand for specialized AI Security technical skills – particularly **LLM Security & Jailbreak Defense and Responsible AI Implementation** – has surged, achieving average growth rates of +298% and +256%, respectively, across G7 countries. Additionally, proficiency in **Foundation Model Adaptation** (+267%) and **Multi-Agent Systems** (+245%) are among the fastest-growing areas of AI skills demand. This trend highlights the rapid evolution of AI research, with an emphasis on developing more advanced models and expanding the practical and commercial applications of AI.

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## 4. AI Ethics and Governance Skills Remain Critical

The rapid and widespread adoption of powerful **Agentic AI** (AI systems capable of independent decision making and action) have generated unprecedented demand for a new class of specialized skills at the intersection of technology, law, and ethics. As AI implementation accelerates, it is critical that organizations develop the right governance frameworks that support AI adoption while also promoting trust. Professionals that are equipped to navigate this complex new landscape are especially valuable.

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<sup>2</sup> Percentage of the Job Role analyzed that have a significant (>10%) prevalence of AI skills in their job post. More details can be referred in Section 6.2. Appendix B: Key Definitions. Data Source: Cornerstone



Demand for skills in **AI Governance (+150%)** and **AI Ethics (+125%)** is growing exponentially across the 50 job roles analyzed. Additionally, senior-level job postings increasingly require key strategic AI skills, such as **AI Strategy and Ethics**, with an emphasis on oversight, direction, and the responsible deployment of AI within the organization.

Most notably, the job role of **AI Risk & Governance Specialist** has experienced an exceptional **234% growth rate**, underscoring the increasing organizational emphasis on managing AI-related risks, compliance, and ethical standards.

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## 5. The Technical Skills Deficit Has Reached Critical Levels, While Human Skills Continue to Increase in Importance

Our research reveals that AI technical skills are increasingly integrated into 50 job roles across all career levels, driving the skills deficit to critical levels throughout G7 economies. High-severity gaps have emerged notably in **Large Language Models (LLMs)**, **Prompt Engineering**, **Generative AI**, **AI Ethics**, and **AI Security**. These critical shortages jeopardize organizations' ability to scale AI responsibly, securely, and effectively, highlighting the urgent need for targeted learning and security upskilling.

Across G7 countries, human skills continue to increase in importance. Human skills such as **communication**, **collaboration**, **leadership**, **critical thinking**, and **problem solving** have emerged as top priorities, highlighting their growing importance for the responsible and secure adoption of new technologies.

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## 6. AI Job Growth Accelerates in the Leading Tech Hubs of Silicon Valley, London, and Toronto

Leading technology hubs across G7 countries are driving substantial growth in AI employment and fostering rapid AI adoption. Our research highlights major ecosystems – including **Silicon Valley** and **New York city** in the U.S., **London** and **Manchester** in the UK, and **Toronto** and **Vancouver** in Canada – as pivotal clusters where startups, large enterprises, research institutions, and skilled professionals converge to advance AI innovation and growth.

Additionally, emerging tech centers such as **Paris**, **Berlin**, **Milan**, **Tokyo**, and **Osaka** are steadily gaining prominence as critical drivers of AI-related growth. These hubs increasingly shape workforce demand, influence AI skills development, and attract strategic investments. Current trends underscore a pronounced acceleration in AI job creation, highlighting the growing importance of tech ecosystems as vital engines powering AI adoption across G7 countries.

# Key Recommendations

The insights of the research indicate significant integration of AI technical Skills in ICT job roles across career levels and job family groups. It is crucial for everyone – businesses, academia, government, current workers, and future workers – to collaborate and actively participate in this skill development journey.

## 1.1. For Business Leaders

- Businesses should strengthen workforce competitiveness and foster innovation by investing in AI learning and development. A “skills-first” approach – focused on identifying, assessing, and continuously developing real-world capabilities – will help build an adaptable, future-ready workforce. Creating a culture of learning agility, supported by personalized AI-driven training, enables employees to develop skills at their own pace while applying them in day-to-day work.
  - In parallel, leaders should cultivate strategic AI expertise, including ethics, governance, and the ability to measure return on investment (ROI). These capabilities are essential for ensuring AI is deployed responsibly, aligned with business objectives, and positioned as a source of long-term competitive advantage.
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## 1.2. For Educational and Learning Institutions

- Educational institutions should consider updating their curricula to integrate AI technologies and offer targeted certificate programs, ensuring graduates gain practical, industry-relevant skills for a seamless transition into the workforce. Equally important is to upskill their educators to ensure they are equipped with the necessary pedagogy in AI skills to teach and support students in their learning journey. Educational institutions should also embrace AI-teaching practice while develop comprehensive AI strategies and clear policies on the use of AI in the classroom and across academic activities.
  - Partnerships with corporate industry must move beyond occasional guest lectures toward co-developing curricula, aligning on emerging technical and human skills, and creating agile micro-credentialing programs that respond quickly to shifting workforce demands.
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## 1.3. For G7 Policymakers

- To prepare the workforce for the AI era, governments should prioritize funding for short-term, industry-recognized credentials and accessible upskilling programs. They should establish partnerships with industry and academia to create AI skilling hubs in rural areas, providing accessible learning programs while fostering local innovation. Adopting skills-based hiring in both public and private sectors is crucial to broadening employment opportunities. The investment in workforce development programs should cover the full spectrum of AI-related skills, from technical AI knowledge to human skills such as critical thinking and ethical reasoning, with policymakers and industry leaders collaborating to monitor the impact of AI on the labor market and adapt to emerging needs on a timely and targeted manner.

## 1.4. For Current Workers

- Lifelong learning is essential to remain relevant in the age of AI. Actively engaging in reskilling and upskilling, whether it is through employer programs, Vocational Education and Training (VET) upskilling and reskilling providers, labor union programs, online courses, or certifications - enables adaptation to evolving roles and responsibilities impacted by AI.
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## 1.5. For Future Workers

- Thriving in an AI-driven job market requires a balanced development of human skills—such as communication, critical thinking, and collaboration—alongside strong AI technical capabilities. Embedding these skills through real-world, scenario-based learning fosters problem-solving, innovation, and adaptability in fast-changing environments. Vocational Education and Training (VET) systems, including technical colleges, apprenticeships, and dual-training models, provide scalable opportunities for such experiential learning. Partnering VET providers with universities and industry can broaden access to AI-focused training and create inclusive, market-relevant career pathways. Early engagement through internships, applied projects, and mentorship further accelerates skill and work experience development to enhance employability.



# 1. Introduction

## Overview

The opening section introduces the scope, objectives and structure of the report, setting the foundation for the analysis that follows.

1.1 Artificial Intelligence: The Transformative Catalyst	13
1.2 About the AI Workforce Consortium	14
1.3 Report Aims and Scope	15
1.4 Methodology	19
1.5 Report Structure	19

# 1.1 Artificial Intelligence: The Transformative Catalyst

Artificial intelligence is universally recognized as the central engine of the current technological revolution. Its potential to reshape industries, enhance productivity, and create new economic value is the primary justification for the massive investments being made by G7 governments and corporations. The World Bank (World Bank, 2023) <sup>[1]</sup> identifies the “transformative emergence of artificial intelligence” as one of the two most powerful trends shaping the global digital future.

The influence of AI is proving to be transformative across a multitude of sectors, where it is widely regarded as a “game changer” for its capacity to accelerate innovation and create value (McKinsey, 2023) <sup>[2]</sup>. By processing vast datasets at unprecedented speeds, AI significantly shortens research and development cycles, leading to major scientific breakthroughs in fields like drug discovery and materials science (OECD, 2023) <sup>[3]</sup>. In the commercial realm, this technology enables the creation of highly personalized services, fundamentally enhancing consumer experiences in retail, finance, and entertainment (PwC, 2023) <sup>[4]</sup>. Beyond its economic impact, AI demonstrates a growing capacity to help address critical global challenges, offering innovative solutions to expand access to quality healthcare and personalized education (WHO, 2021) <sup>[5]</sup>; (UNESCO, 2021) <sup>[6]</sup>.

Consequently, AI is a cornerstone of every G7 national strategy. France explicitly aims to establish itself as the “A.I. Powerhouse,” <sup>[4]</sup> in Europe, backing this ambition with substantial long-term funding. The UK is establishing dedicated “AI Growth Zones” and investing £1 billion in the public computing capacity required to train large models (Department of Science, Innovation and Technology, UK, 2025) <sup>[8]</sup>. As part of its new Sovereign AI Compute Strategy, Canada is investing \$2 billion CAD to boost its domestic compute capacity <sup>[9]</sup>. Germany is focused on integrating AI into its industrial base and building a skilled workforce through its national AI strategy <sup>[10]</sup>. Italy recently launched its national AI strategy for 2024–2026, aimed to position the nation as an AI leader by fostering development and adoption across research, business, and public sectors <sup>[11]</sup>. Japan continues to advance its “Society 5.0” vision with a focus on flexible AI governance guidelines <sup>[12]</sup>; meanwhile, the United States has launched a \$500 billion investment in the Stargate project and announced its comprehensive Executive Order, “AI America’s Action Plan,” to accelerate innovation <sup>[13]</sup>.

At the G7 level, countries are coordinating their positions and launching joint initiatives on artificial intelligence, as reflected in the G7 Leaders’ Statement on AI for Prosperity. This statement emphasizes a human-centric approach to harnessing AI for economic growth, societal benefit, and addressing global challenges <sup>[14]</sup>.

The AI Workforce Consortium calls for organizations to proactively lean into the transition to support workers who are at risk of being left behind due to automation and AI. As AI automates routine tasks and transforms job functions, there is a pressing need for a coordinated effort to reskill and upskill the workforce. The World Economic Forum’s 2025 report<sup>[15]</sup>, for instance, projects that by 2030, 92 million jobs will be displaced, but 170 million new ones will be created, resulting in a net increase of 78 million jobs globally. This signifies a significant labor market transformation, emphasizing that many roles will remain essential while others evolve to prioritize human creativity, empathy, and strategic thinking.

By acknowledging and planning for this transition, organizations can mitigate the risks associated with job displacement and create new opportunities for their workers. As the Consortium, we advocate for early and sustained intervention to ensure that all workers can participate in and benefit from the AI-integrated economy. According to Microsoft’s 2025 Work Trend Index<sup>[16]</sup>, 82 percent of leaders believe AI skills are essential, and 78 percent are actively looking to fill new AI-related roles. Further supporting this, PwC’s 2025 Global AI Jobs Barometer<sup>[17]</sup> indicates that jobs requiring AI skills continue to grow faster than all jobs, rising 7.5 percent from last year, and command a 56 percent wage premium.

With proactive efforts, the industry can do more to help workers seize AI work opportunities. The transition offers potential to elevate more people into the middle class through access to good-paying, family-sustaining jobs. When equipped with the right skills, workers can secure positions in the AI-transformed workforce, leading to enhanced job security, and economic stability. By investing in comprehensive learning programs and fostering a culture of continuous learning, organizations can unlock the full potential of their current and future workforce, drive inclusive growth, and lift communities at large. Equipping workers with Artificial intelligence and other in-demand skills not only enhances individual opportunity but also improves productivity, stimulates innovation, and strengthens business performance, ensuring organizations remain competitive in an evolving digital economy.



## 1.2 About the AI Workforce Consortium

The AI Workforce Consortium is a group of ten global corporations—Accenture, Cisco, Cornerstone, Eightfold, Google, IBM, Indeed, Intel, Microsoft, and SAP—working alongside global advisors. Together, we have embarked on a collaborative endeavor to share insights and advance an AI-enabled workforce.

We don't have all the answers due to the rapid evolution of AI and its use cases, but our mission is clear: Create frameworks and provide actionable insights to help workers and employers leverage the transformational opportunity of AI. In a world where AI is discussed everywhere, this mission has never been more essential.

Our 2024 report marked the beginning of our exploration into AI's impact on job roles. Leveraging a predictive model and the collective intelligence of the consortium, we assessed the "Transformation Potential" of the most in-demand ICT roles, offering practical training resources and recommendations to help business leaders reskill and upskill their workforce for AI-driven environments. Building on this foundation, this year's report adopts a data-driven approach — analyzing real job market analytics from the G7 countries, further enriched by the consortium's expertise. This enables us to observe and measure ongoing progress in AI adoption and the evolving nature of job roles across the industry.

In 2025, we launched Phase 2 of our initiative, concentrating on the following key deliverables:

- The **"ICT in Motion: The Next Wave of AI Integration"** report is dedicated to equipping workers, policymakers, academia, learning and development professionals, journalists, executives, researchers, and the public with accurate, rigorously validated AI Skills data from G7 economies, provided by Consortium members. By making this insight accessible, the initiative enables stakeholders to better understand workforce trends and effectively harness the transformative potential of AI across the ICT sector.

- **The AI Workforce Playbook:** This source provides a comprehensive guide for organizations to strategically align their workforce development with evolving business and Artificial Intelligence (AI) objectives. It underscores the critical importance of building an AI-ready workforce to ensure relevance, optimize resource allocation, and facilitate effective AI implementation.
- **The 2025 AI Skills Glossary:** This glossary establishes a common vocabulary for today's most in-demand AI skills, creating a shared language for workers, educators, and employers. This clarity helps align job requirements with training programs and empowers individuals to build the right skills for 2025.

We are leveraging the collective insights of our members and advisors to recommend and amplify reskilling and upskilling learning programs that are inclusive and can benefit multiple stakeholders — students, career changers, current IT workers, employers, and educators — in order to skill workers at scale. To further strengthen this vision, we are committed to fostering collaboration with public sector partners and other key stakeholders, ensuring that diverse perspectives help shape inclusive and responsible AI workforce strategies. This cross-sector approach is deeply aligned with the G7's commitment to fostering workforce development amidst the rapid adoption of AI across their economies.

The consortium members are actively pursuing large-scale initiatives with the goal of upskilling 95 million individuals globally over the next 10 years as presented in the last year report. As of 2024, the consortium has already empowered over 30 million learners worldwide, demonstrating significant progress towards their collective objective<sup>3</sup>

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3 Consortium members' pledges include [Cisco](#), [IBM](#), [Intel](#), [Microsoft](#), [Google](#), [SAP](#)

# 1.3 Report Aims and Scope

To assess the far-reaching impact of AI on the ICT sector, we analyzed 50 job roles. These roles were identified by the AI Workforce Consortium members as the most impactful based on two criteria: Their critical importance to each member’s AI workforce strategy and their high priority for upskilling and reskilling initiatives. Next, we organized the job roles into two clusters: ICT job Family (organized in eight ICT job families) and Specialized Support Role, as shown in the

figure below. To further align with the AI Workforce Playbook, we also classified each job role according to the AI persona cluster levels defined in the Playbook. AI personas are archetypes that capture the different roles and approaches individuals take when engaging with and contributing to AI initiatives within an organization. The AI Workforce Playbook identifies four essential personas to guide this process: Users, Leaders, Enablers, and Builders.<sup>4</sup>



Figure 1: ICT job family roles and specialized support roles.

4 AI Persona.

- Users utilize AI technologies and tools to perform their jobs more effectively.
- Leaders inspire and guide the adoption and strategic integration of AI.
- Enablers provide the support and infrastructure necessary for AI development and deployment.
- Builders design, develop, and implement AI models and systems.

## ICT Job Family and Roles

### 1. Architecture and Platform

Job Role	AI Persona Cluster
Platform Engineer	Enabler
Site Reliability Engineering	Enabler
Software Architect	Builder

### 2. Artificial Intelligence and Data Science

Job Role	AI Persona Cluster
AI/ML Engineer	Builder
AI/ML Researcher	Builder
Business Intelligence Analyst	User
Data Analyst	Enabler
Data Engineer	Enabler
Data Scientist	Builder
NLP Engineer	Builder

### 3. Business and Management

Job Role	AI Persona Cluster
AI Business Consultant	Leader
AI Risk and Governance Specialist	Enabler
IT Manager	Leader
Technical Product Manager	Leader

### 4. Customer and Support

Job Role	AI Persona Cluster
Consulting Engineer	Leader
Solutions Engineer	Enabler
Technical Solutions Specialist/Engineer	Enabler

## 5. Cybersecurity

Job Role	AI Persona Cluster
Cyber Threat Intelligence Consultant	Enabler
Cybersecurity Analyst	Enabler
Cybersecurity Engineer	Enabler
Ethical Hacker	Enabler
Incident Response Consultant	Enabler
Security Architect	Enabler

## 6. Design and User Experience

Job Role	AI Cluster Persona
UX Designer	Builder
UX Engineer	Builder

## 7. Infrastructure and Operations

Job Role	AI Cluster Persona
AI Infrastructure Engineer	Builder
Automation Engineer	Builder
Cloud Engineer	Enabler
DevOps Engineer	Enabler
IT Analyst	Enabler
IT Support Technician	User
Network Architect	Enabler
Network Engineer	Enabler
System Administrator	Enabler

## 8. Software Engineering

Job Role	AI Cluster Persona
Embedded Engineer	Enabler
Full-Stack Developer	Builder
Principal Software Engineer	Builder
Senior Software Engineer	Builder
Software Developer	Builder
Software Engineer	Builder

Table 1: List of ICT Job Roles Analyzed

# Specialized Support Roles

## 1. Specialized Support Roles

Job Role	AI Persona Cluster
Business Developer (for ICT)	User
Compliance Officer	User
Customer Support Representative	User
Digital Marketing Specialist	User
Environmental Engineer	User
Financial Analyst	User
Human Resource Generalist	User/Enabler
Learning and Development Specialist	User/Enabler
Legal Counsel	User
Technical Project Manager	Leader

Table 1: List of Specialized Support Roles Analyzed.



## 1.4 Methodology

The analysis draws on data<sup>5</sup> from Cornerstone and Indeed, covering the 12-month period from July 2024 to June 2025 and the previous 12 months for reference. The objective is to assess how artificial intelligence (AI) is reshaping workforce demand across 50 selected job roles in the G7 countries. These roles span diverse functions including ICT positions and specialized supporting roles.

### Top In-Demand Jobs and Skills:

This metric identifies the job roles that had the highest volume of job postings over the past 12 months (July 2024 – June 2025).

### Demand Growth for Roles and Skills (%)

This metric measures the year-over-year percentage change in total job posting volume and skills over the 12-month period (July 2024 – June 2025) compared to the previous 12-month period (July 2023 – June 2024).

### AI Skills Integration Level:

The **AI Skill Integration Level** is a key metric quantifying the prevalence of AI-related skills in job roles, classifying them into five levels based on the percentage (x) of job postings explicitly requiring AI skills: **Immaterial** ( $x \leq 10\%$ ), **Initial** Integration ( $10\% < x \leq 25\%$ ), **Significant** Integration ( $25\% < x \leq 50\%$ ), **Established** Integration ( $50\% < x \leq 70\%$ ), and **Core** ( $x > 70\%$ ).

## 1.5 Report Structure

This report will bring readers through the key findings on the impact of AI across 50 job roles determined by the Consortium members. These report sections comprise:

### Executive Summary

The executive summary presents the study findings and outlines Consortium recommendations along with actionable next steps.

### Section 1: Introduction

The opening section introduces the scope, objectives and structure of the report, setting the foundation for the analysis that follows.

### Section 2: ICT Job Roles: Adapting to AI

Focusing on the transformation of ICT roles across G7 economies, this part examines how the workforce is evolving to meet the demands of an AI-driven economy. It highlights the **Top In-Demand ICT Jobs**. Additionally, it explores **Emerging AI Jobs** and **AI Job Demand Concentration**

**in Fastest-Growing Regional Cities and Tech Hubs**. By mapping these trends, this section provides a comprehensive view of how AI is reshaping the ICT workforce and driving regional innovation.

### Section 3: Decoding the Skill Transition

An in-depth look at the shifting skill landscape reveals how job requirements are changing and where the most critical gaps lie. This section identifies **Emerging Technical Skills** and **In-Demand AI Skills**, while tracing the **Evolution of AI Skills from 2023 to 2025**. Additionally, it explores **In-Demand Human Skills** and identifies **Significant Skill Gaps** that require attention by workers and employers.

### Section 4: Preparing for an AI-Driven Workforce

The focus turns to the skills and roles shaping the future of work in an AI-driven economy. Through **Skills Stories**, we bring the data to life with compelling narratives of career progression within job roles. Additionally, we examine **AI usage across Entry, Mid, and Senior-Level ICT jobs** and analyze the distribution of **AI skills by leadership level** – from Individual Contributors to Senior Leadership.

<sup>5</sup> Cornerstone data is derived from its Quantum Labor Analysis platform, which uses machine learning to analyze labor market signals drawn from millions of job postings globally. Indeed data reflects trends in employer demand through job advertisements posted and/or indexed on its employment platform.

Section 5: Conclusions and Recommendations:

This section presents actionable conclusions and strategic recommendations aimed at equipping workers, policymakers, journalists, executives, researchers, and the public with key insights. By addressing the challenges and opportunities of an AI-driven economy, this section provides a roadmap for fostering collaboration, innovation, and workforce readiness across diverse sectors.

The report concludes with the Appendix:

Appendix A: G7 Country Infographics:

The G7 economies – Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States – are at the forefront of global innovation and workforce transformation. This section presents a detailed overview of key metrics shaping the future of work within these influential nations. Through visually engaging infographics, we explore each country’s **Leading Fastest Growth Job Role, Key Hubs** of AI Job growth, **Focus AI Strategy**, and **Key Initiatives**. Together, these insights provide a comprehensive snapshot of the trends and challenges defining the G7’s evolving the AI Transformation landscape.

Appendix B: Key definitions

This appendix section provides clear explanations of important terms and concepts used throughout the report.

Appendix C: Job Canvas for each Job Role

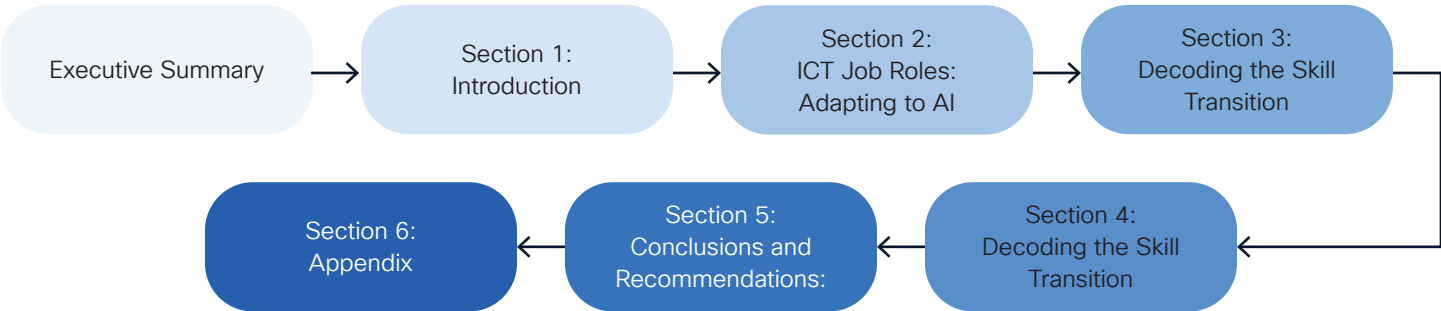
Building on the 2024 report, the Job Transformation Canvas is structured around three elements: ‘Job Role,’ ‘AI Transformation,’ and ‘Learning Recommendations,’ providing a comprehensive framework for understanding the evolving landscape of ICT job roles. It is designed to offer an overall outlook on the changing job landscape to employers, workers, and future workers for each of the 50 jobs included in this report.

Appendix D: The 2025 AI Skills Glossary

Developed through cross-industry collaboration by Members and Advisors of the AI Workforce Consortium, This glossary establishes a common vocabulary for today’s most in-demand AI skills, creating a shared language for workers, educators, and employers. This clarity helps align job requirements with training programs and empowers individuals to build the right skills for 2025.

Appendix E: Reference and Citations

This appendix lists the sources and materials referenced throughout the document, providing proper credit and supporting evidence for the information presented.





## 2. Job Roles: Adapting to AI

### Overview

Focusing on the transformation of ICT roles across G7 economies, this part examines how the workforce is evolving to meet the demands of an AI-driven economy across G7 economies. It highlights the **Top In-Demand ICT Jobs**. Additionally, it explores **Emerging AI Jobs** and **AI Job Demand Concentration in Fastest-Growing Regional Cities and Tech Hubs**. By mapping these trends, this section provides a comprehensive view of how AI is reshaping the ICT workforce and driving regional innovation.

2.1 In-Demand ICT Roles Across G7	22
2.2 In-Demand Specialized Supporting Roles Across G7	23
2.3 Top Fastest Growing ICT Jobs Across G7	24
2.4 AI Job Growth by Region and Tech Hubs	25
2.5 What Is Happening to Entry Level Jobs?	27

## 2.1 In-Demand ICT Roles Across G7

In the last twelve months, the G7 workforce has entered a dynamic phase of transformation, fueled by the nexus of multiple forces: Recalibration of post-pandemic tech hiring surges, rapid progress of Artificial Intelligence, economic uncertainty, and the rapid expansion of tech roles in sectors like healthcare, finance, and professional services. While the broader ICT job market may show signs of cooling down, our research highlights focused expansion within specific roles and job families, primarily fueled by the rapidly growing AI ecosystem.

- **AI/ML and Data Science roles now lead global talent acquisition.** These positions consistently rank at the top across major economies, signaling a strategic enterprise shift toward automation and data-driven insights.
- **Cloud, Cyber, and Software Engineering skills remain foundational.** Robust demand for Cloud Engineers, Cybersecurity Engineers, and Software Developers forms the essential infrastructure and application layer of the modern tech stack.
- **Regional markets exhibit specialized demands.** Key variations include a heightened need for Cybersecurity in the UK and France and a focus on Embedded Engineering in Germany and Japan, reflecting local industrial priorities.

### Top 5 In-Demand ICT Jobs by G7 Country

Rank	Canada	France	Germany	Italy	Japan	UK	USA
1	AI/ ML Engineer	Data Scientist	Software Engineer	Software Developer	Software Engineer	Data Scientist	AI/ML Engineer
2	Full-Stack Developer	AI/ML Engineer	AI/ML Engineer	Full-Stack Developer	Embedded Engineer	AI/ML Engineer	Cloud Engineer
3	Cloud Engineer	Software Architect	Embedded Engineer	Data Analyst	AI/ML Engineer	Cybersecurity Engineer	Data Scientist
4	Data Scientist	Cloud Engineer	Cloud Engineer	Cloud Engineer	Network Engineer	Cloud Engineer	Full-Stack Developer
5	DevOps Engineer	Cybersecurity Engineer	Data Engineer	IT Manager	Systems Administrator	Software Architect	DevOps Engineer

Legends:

- Artificial Intelligence & Data Science
- Architecture & Platform
- Business & Management
- Software Engineering
- Cybersecurity
- Specialized Support
- Infrastructure & Operations

Table 2: Top in-demand ICT jobs by G7 country. Source: Cornerstone

## 2.2 In-Demand Specialized Supporting Roles Across G7

Specialized supporting roles<sup>6</sup> continue to serve as essential enablers within the AI ecosystem. Among the 50 job roles analyzed, there are 10 job roles identified as specialized supporting roles that consistently demonstrate strong labor market demand. These roles span diverse domains such as finance, marketing, legal, compliance, and environmental functions. Their continued relevance reflects the need for cross-functional expertise<sup>7</sup> to support AI and technology-driven transformations. The figure illustrates the Top 10 in-demand roles in the last 12 months.

- **Digital Marketing Specialist** leads as the most in-demand supporting roles, significantly outpacing other supporting roles, indicating the rising need for AI-powered marketing

strategies to drive customer engagement, brand visibility, and business growth. Financial Analyst ranks second, reflecting the strong need for financial expertise to guide investment decisions and strategic planning.

- The role of **Learning and Development Specialist** ranks #1 in the US and Canadian markets, highlighting organizations’ increasing emphasis on cultivating a culture of learning agility and adopting innovative, personalized AI-driven education platforms.
- Most notably, the role of **Compliance Officer** ranks #1 in the UK, #2 in Germany, and #3 in the US, underscoring the growing organizational focus on managing AI-related risks, ensuring compliance, and upholding ethical standards

### Top 5 In-Demand Specialized Supporting Jobs by G7 Country

Rank	Canada	France	Germany	Italy	Japan	UK	USA
1	Learning & Development Specialist	Digital Marketing Specialist	Environmental Engineer	Digital Marketing Specialist	Environmental Engineer	Compliance Officer	Learning & Development Specialist
2	Digital Marketing Specialist	Environmental Engineer	Compliance Officer	Financial Analyst	Learning & Development Specialist	Financial Analyst	Digital Marketing Specialist
3	Environmental Engineer	Learning & Development Specialist	Learning & Development Specialist	Business Development Manager	Financial Analyst	Learning & Development Specialist	Compliance Officer
4	Financial Analyst	Compliance Officer	Financial Analyst	Environmental Engineer	Business Development Manager	Digital Marketing Specialist	Financial Analyst
5	Compliance Officer	Financial Analyst	Digital Marketing Specialist	Learning & Development Specialist	Digital Marketing Specialist	Legal Counsel	Environmental Engineer

Legends:

- Artificial Intelligence & Data Science

Software Engineering

Infrastructure & Operations
- Architecture & Platform

Cybersecurity
- Business & Management

Specialized Support

Table 3: Top in-demand Specialized Support jobs by G7 country. Source: Cornerstone

6 Specialized Supporting Roles are professional positions that operate outside the core ICT job families but are essential enablers within the AI ecosystem and technology-driven transformations. These roles span diverse domains including finance, marketing, legal, compliance, human resources, and environmental functions. More details can be referred in Section 6.2. Appendix B: Key Definitions.

7 These roles bridge the gap between technical AI capabilities and business operations, ensuring that AI initiatives align with organizational goals, regulatory requirements, and stakeholder needs.



## 2.3 Top Fastest Growing ICT Jobs Across G7

AI/ML Engineer, AI Risk & Governance Specialist, and NLP Engineer show the highest growth rate across G7 countries

Positions related to Artificial Intelligence represent the majority of the fastest-growing ICT job roles. Notably, seven of the top ten fastest-growing positions are directly linked to AI, with “AI Risk & Governance Specialist” experiencing the highest growth rate at 234 percent. This underscores a critical and rapidly expanding need for professionals who can design, implement, and manage intelligent systems, while simultaneously ensuring responsible usage, governance, and risk mitigation.

- Core AI roles such as **AI Risk & Governance Specialist**, **NLP Engineer**, **AI/ML Engineer**, **AI Business Consultant**, and **AI Infrastructure Engineer** have seen the largest increase in job demand (>100 percent) year over year, driven by the increasing adoption of Generative AI technologies and industrial application of AI/ML solutions.
- Other AI Roles like **Data Analyst**, **Data Engineer**, and **Business Intelligence Analyst** show a sustained demand.

### Top 10 fastest growing ICT Jobs (G7 country aggregate)

Rank	ICT Jobs	Job Demand Growth %
1	AI Risk & Governance Specialist*	234%
2	NLP Engineer*	186%
3	AI/ML Engineer*	145%
4	AI Business Consultant*	134%
5	AI Infrastructure Engineer*	124%
6	AI/ML Researcher*	98%
7	Cloud Engineer	89%
8	Cyber Threat Intelligence Consultant	84%
9	Data Scientist*	76%
10	Automation Engineer	72%

Legends:

\*AI Related Roles

Table 4: Top 10 fastest growing ICT Jobs based on job demand y/y growth percentage. Source: Cornerstone

## 2.4 AI Job Growth by Region and Tech Hubs

### Tech hubs in Silicon Valley, London, and Toronto are leading AI job growth

Across G7 countries, leading tech hubs are playing a pivotal role in driving AI growth and accelerating its adoption. Silicon Valley and New York city area in the United States, London and Manchester in the UK, and Toronto and Vancouver in Canada have evolved into leading ecosystems where startups, enterprises, research institutions, and skilled talent converge to drive emerging technologies. Similarly, hubs such as Paris, Berlin, Milan, Tokyo, and Osaka are gaining momentum as centers for AI-driven growth. As countries expand their AI capabilities, these hubs are increasingly critical in shaping workforce demand and AI skill development. Recent trends show a surge in AI job growth and emerging tech hubs across G7 regions.

- Silicon Valley leads with a remarkable +156 percent increase in AI jobs, followed “closely by London and Toronto, underscoring their position as global AI powerhouses. Berlin and Tokyo also reported strong momentum, with over +98 percent growth, highlighting the growing demand for AI talent across major G7 cities.
- Among the emerging tech hubs, Manchester stands out with the highest growth at +89 percent, positioning the UK as a rising innovation center. Lyon, Vancouver, and Munich are also gaining ground, reflecting a broader geographic distribution of the growing ICT job.
- Collectively, the rapid growth observed across G7 fastest growing regions and emerging tech hubs signals an accelerating global demand for AI and ICT talent.

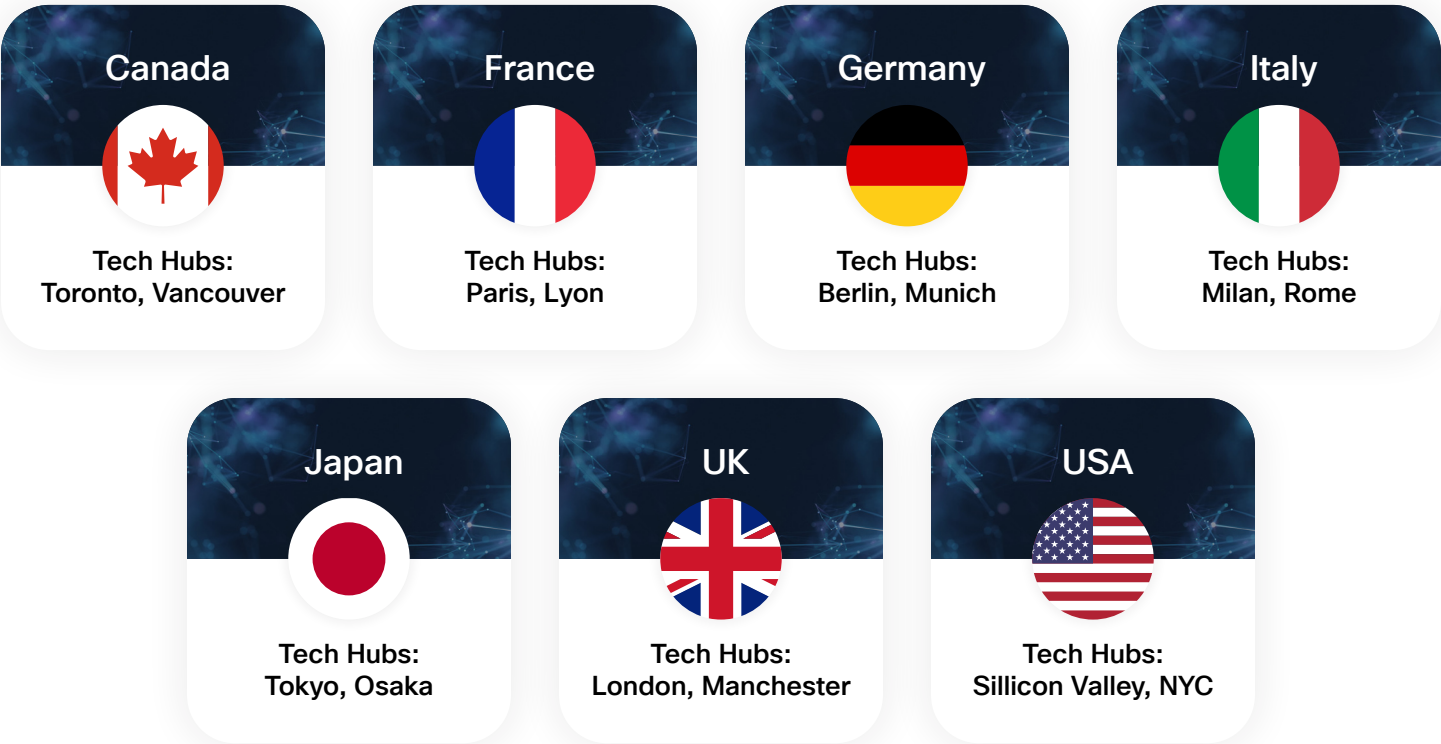


Figure 2: Tech hubs across G7 countries. Source: Cornerstone

Established Regions	AI Job Growth %
Silicon Valley, USA	+156%
London, UK	+132%
Toronto, Canada	+118%
Berlin, Germany	+104%
Tokyo, Japan	+98%

Emerging Tech <sup>8</sup> Hubs	AI Job Growth %
Manchester, UK	+89%
Lyon, France	+76%
Vancouver, Canada	+71%
Munich, Germany	+68%
Milan, Italy	+54%

Table 5: Geographic variation across G7 countries. Source: Cornerstone

8 Defined as a region with 10,000+ tech workers, tech roles comprising ≥5% of the workforce, and \$100M+ in recent venture capital investment – indicating a concentrated and active tech ecosystem.

## 2.5 What Is Happening to Entry Level Jobs?

A recent report<sup>9</sup> from the New York Federal Reserve, published in May 2025, sheds light on a notable trend: the unemployment rate for recent college graduates (ages 22–27) reached 4.8%, outpacing the overall U.S. unemployment rate of 4.2% for the same month<sup>10</sup>. This discrepancy has sparked widespread discussion about the growing impact of artificial intelligence on early-career opportunities, particularly within the information and communications technology sector.

The 2024 Consortium Report forecast that 92.6% of entry-level jobs<sup>11</sup> would face either high or moderate “Transformation Potential” due to generative AI. Importantly, this exposure does not necessarily signal direct automation of jobs. Instead, it highlights the likelihood that the very nature of these roles will shift—some skills will become more valuable as a result of AI augmentation, while others may diminish in importance due to automation.

Over the last year, generative AI has advanced at an extraordinary pace. Once limited to basic chatbots, AI systems have rapidly evolved into intelligent Agents with the ability to use specialized tools and perform complex reasoning. Today, Agent capabilities are doubling roughly every seven months<sup>12</sup>, enabling AI to handle increasingly sophisticated tasks across a wide range of industries.

While the rapid evolution of AI capabilities is undoubtedly transforming roles across the job market, all major articles and reports agree that this is just one of several forces influencing employment—especially for entry-level positions.

Researchers and commentators note that the landscape is also shaped by lingering effects of the post-pandemic hiring cycle, emerging economic uncertainties, and shifting employer expectations. In such a complex environment, Consortium members emphasize the need for practical, data-driven insights to help job seekers and educators navigate these ongoing changes,

A closer analysis of job postings shows that two emerging trends are particularly evident in the ICT sector. First, employers are increasingly seeking candidates with significant experience, often raising the required years of professional background for ICT positions more than in other industries. Second, there is a notable rise in demand for AI-related skills, with ICT job postings increasingly listing competencies in AI tools, data analysis, and machine learning as requirements. These trends highlight how the expectations for ICT professionals are shifting rapidly in response to technological advancements and shifting from AI experimentation to AI implementations.

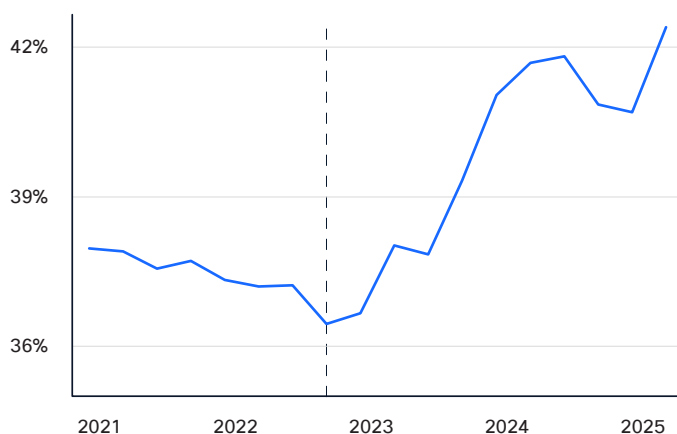
### Rising Experience Requirements in Tech Jobs

Data from the Indeed Hiring Lab indicates that the proportion of tech job postings demanding five or more years of experience has steadily increased (Figure 3), highlighting the sector’s shifting expectations for new hires. At the same time, the number of postings for non-tech occupations has been declining.

### Experience requirements for tech jobs have become stricter, while they have relaxed for most other industries

Share of job postings looking for 5+ years of experience (% , 3-month avg.)

Tech occupations



Other occupations

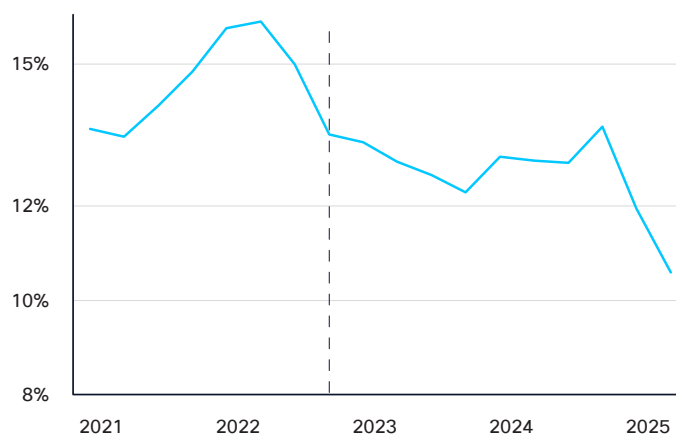


Figure 3: Last data point: June 2025, not seasonally adjusted Excluding postings that do not mention experience Dashed line is Q4 2022, when Chat GPT-3 was made public Source: Indeed

9 <https://www.newyorkfed.org/research/college-labor-market#--:explore=unemployment>

10 <https://www.bls.gov/charts/employment-situation/civilian-unemployment-rate.htm>

11 <https://www.cisco.com/c/dam/m/ai-enabled-ict-workforce-consortium/report.pdf>

12 <https://metr.org/blog/2025-03-19-measuring-ai-ability-to-complete-long-tasks/>

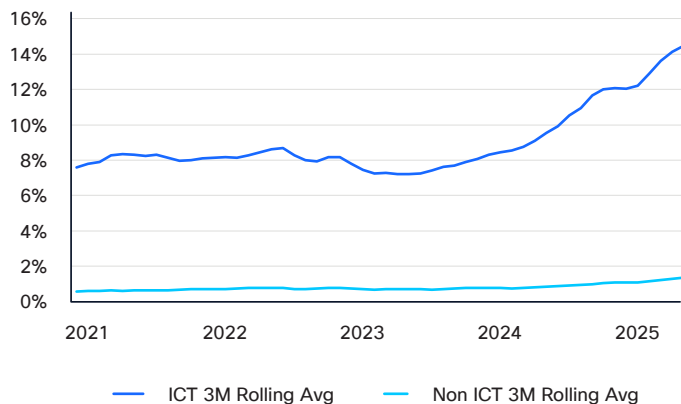
## Accelerated AI Skill Demand in ICT Jobs

The demand for AI skills has surged across all sectors in recent years, but the pace and scale of this growth are particularly dramatic in the ICT sector. As shown in Figure 4, both ICT and non-ICT sectors have experienced rapid increases in the integration of AI skills into job postings over time. However, the prevalence of AI skill requirements in ICT roles is more than ten times higher than in non-ICT positions. This stark contrast highlights how rapidly and deeply AI capabilities are being embedded into ICT jobs compared to other fields—a trend that will be explored in more detail in Section 3 of this report. The data clearly illustrates that, while AI is reshaping the broader job market, its impact is especially pronounced and accelerated within ICT.

## Average AI Skill Integration - ICT vs Non ICT (2021-2025)

(axes use different scales)

ICT Sector with Non ICT Sector (3M Avg)



Non ICT Sector (3M Avg)

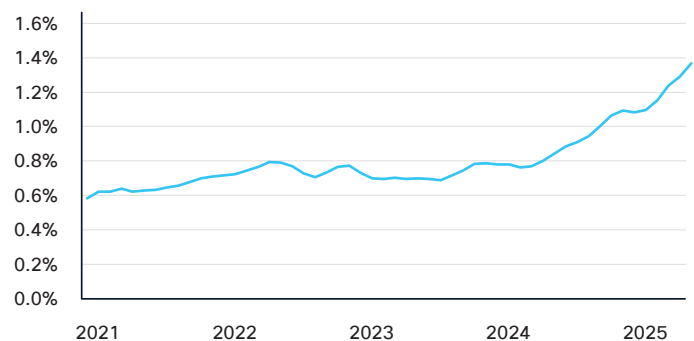


Figure 4: Average prevalence of AI Skills in Job post for ICT jobs in G7 Economies. Data Source Lightcast, 2025

### Possible actions

Rapid changes in the ICT job market require a coordinated response from educators, job seekers, and employers. Here are key actions for each group:

#### For Educators

- **Update Curriculum:** Accelerate the curriculum update and include emerging technologies and in-demand skills, especially in AI and data science.
- **Expand Practical Experience:** Integrate internships, apprenticeships, and industry projects to give students real-world exposure.
- **Support Career Readiness:** Help students build portfolios, achieve relevant industry certifications to validate their skills, and prepare for job applications, with an emphasis on hands-on accomplishments.

#### For Job Seekers

- **Focus on Relevant Skills:** Actively pursue training in high-demand areas like AI and stay updated on industry trends.
- **Gain Experience & Network:** Seek internships, apprenticeships, and projects; connect with mentors and peers in the field.

- **Showcase Your Value:** Build a strong portfolio and be ready to demonstrate how your fresh perspective and skills can benefit employers.

#### For Employers

- **Value Young Talent:** Continue hiring young graduates to infuse your organization with fresh ideas, digital fluency, adaptability, and enthusiasm for learning. Their diverse perspectives and forward-looking mindset are key drivers of innovation and long-term growth.
- **Support Early-Career Growth:** Provide mentorship, collaborative environments, and clear development opportunities.

Above all, educators should foster an environment of encouragement and resilience, helping students navigate uncertainty and empowering them to take ownership of their learning and career paths. By working together—students, educators, and industry partners—we can better equip the next generation for the opportunities and challenges ahead.





## 3. Decoding the Skill Transition

### Overview

An in-depth look at the shifting skill landscape reveals how job requirements are changing and where the most critical gaps lie. This section identifies **Emerging Technical Skills** and **In-Demand AI Skills**, while tracing the **Evolution of AI Skills from 2023 to 2025**. Additionally, it explores **In-Demand Human Skills** and identifies **Significant Skill Gaps** that require attention by workers and employers.

3.1 In-Demand and Emerging Skills per Job Family	30
3.2 Shift in AI Skills Focus	33
3.3 AI Technical Skills Integration	34
3.4 In-Demand Human Skills	37

# 3.1 In-Demand and Emerging Skills per Job Family

The skills landscape for ICT professionals is rapidly evolving, with AI competencies now essential in the 50 job roles analyzed

AI is no longer a niche specialization; it is becoming a core competency required across all ICT roles. From software development and data science to cybersecurity, infrastructure, and management, AI Skills integration is

redefining job functions, workflows, and expectations. This shift is driven by the rapid adoption of AI tools, automation platforms, and intelligent agents that demand new technical proficiency. ICT professionals across the eight job families are experiencing a growing integration of AI skills. This trend is highlighted by an analysis of the most in-demand and the fastest-emerging technical skills within each job family.

## AI & Data Science

### Most In-Demand Skills

- Python
- Machine Learning
- Data Science
- Deep Learning
- TensorFlow/PyTorch
- Large Language Models (LLMs)
- SQL
- Statistics
- RAG Systems
- MLOps

### Fastest Emerging Skills

- Foundation Model Adaptation
- Multimodal AI Development
- Diffusion Models & ControlNet
- State Space Models (Mamba)
- Neural Radiance Fields (NeRFs)
- Mixture of Experts (MoE)
- Direct Preference Optimization
- Constitutional AI & RLHF
- Multi-Agent Systems
- Quantum ML Algorithms

## Architecture & Platform

### Most In-Demand Skills

- System Design
- Microservices
- Cloud Architecture
- AI-Native Architecture
- Performance Optimization
- Security Architecture
- Platform Engineering
- DevOps
- Event-Driven Architecture
- Documentation

### Fastest Emerging Skills

- AI-Native Architecture Patterns
- Event-Driven LLM Systems
- AI Cost Optimization Strategies
- Multi-Model Orchestration
- Serverless AI Functions
- Vector-First Data Architecture
- Distributed Inference Architecture
- Hybrid Cloud-Edge AI Design
- AI Mesh & Service Discovery
- LLM Gateway Design

## Business and Management

### Most In-Demand Skills

- AI Strategy
- ROI Analysis
- Change Management
- AI Ethics
- AI Governance
- Leadership
- Communication
- Regulatory Knowledge
- Innovation Management
- Stakeholder Management

### Fastest Emerging Skills

- Responsible AI Implementation
- AI Governance Frameworks
- AI Product Strategy & Roadmapping
- LLM Cost-Benefit Analysis
- AI Transformation Leadership
- AI Team Building & Culture
- Cross-Functional AI Integration
- AI Performance Metrics & KPIs
- Risk-Adjusted AI Planning
- AI Vendor Evaluation

## Customer and Support

### Most In-Demand Skills

- Technical Expertise
- Communication
- Problem Solving
- Documentation
- Customer Success AI
- Technical Sales
- Presentation Skills
- Solution Architecture

### Fastest Emerging Skills

- Advanced Conversational AI
- Autonomous Customer Agents
- Customer Intent Recognition
- Emotion AI & Sentiment Analysis
- Real-Time Language Translation
- Predictive Support Analytics
- AI-Powered Knowledge Bases
- Omnichannel AI Integration
- Automated Knowledge Base Generation
- Voice Cloning & Synthesis

## Cybersecurity

### Most In-Demand Skills

- Threat Analysis
- Security Tools (SIEM)
- Zero Trust Architecture
- AI Security
- Compliance (GDPR/SOC2)
- Cloud Security
- Incident Response
- ML for Threat Detection
- Penetration Testing
- Security Orchestration

### Fastest Emerging Skills

- LLM Security & Jailbreak Defense
- AI Supply Chain Security
- Prompt Injection Prevention
- AI-Generated Content Detection
- Adversarial Testing for LLMs
- Model Backdoor Detection
- Privacy-Preserving ML (PPML)
- AI Watermarking & Attribution
- Homomorphic Encryption for AI
- Secure Multi-Party AI Computation

## Design and User Experience

### Most In-Demand Skills

- Design Tools (Figma/Sketch)
- User Research
- Prototyping
- Generative UI/UX
- Accessibility
- Frontend Development
- AI Design Systems
- User Testing
- Design Analytics
- Conversational Design

### Fastest Emerging Skills

- Generative UI/UX
- Conversational Interface Design
- AI-First Design Systems
- AI-Powered Personalization
- Voice & Multimodal Interfaces
- Predictive User Journey Mapping
- AI Accessibility Tools
- Emotion AI & Sentiment Design
- AI-Driven A/B Testing
- Spatial Computing UI

## Infrastructure and Operations

### Most In-Demand Skills

- AWS/Azure/GCP
- Kubernetes
- Infrastructure as Code (IaC)
- Docker
- MLOps
- Automation/Ansible
- Monitoring Tools
- GPU/TPU Management
- Terraform
- Cost Optimization

### Fastest Emerging Skills

- LLMops & Model Serving
- Cost-Optimized Inference
- Vector Database Management
- GPU Cluster Orchestration
- Serverless AI Modal
- Real-Time AI Pipeline Design
- Edge AI Deployment
- AI Observability Platforms
- Model Caching & CDN Strategies
- A/B Testing for AI Features

## Software Engineering

### Most In-Demand Skills

- Python/Java
- Cloud Services (AWS/Azure/GCP)
- Git
- System Design
- CI/CD
- React/Node.js
- Docker
- AI-Powered Code Generation
- Microservices
- TypeScript

### Fastest Emerging Skills

- AI-Powered Code Generation
- LLM Integration & RAG Implementation
- Multimodal AI Integration
- Vector Databases & Semantic Search
- WebAssembly & Edge Computing
- Rust & Zig Programming Languages
- Web5 & Decentralized Identity
- State Space Models
- Direct Preference Optimization (DPO)
- Neural Radiance Fields (NeRFs)

Table 6: Top 10 in-demand skills and key insights by ICT job family

# 3.2 Shift in AI Skills Focus

## Evolution of AI Skills: 2023 vs 2025

Between 2023 and 2025, AI skill priorities have evolved significantly, pivoting from traditional machine learning to strategic foundational generative model orchestration. The emphasis has moved from mastering foundational technologies – such as BERT, CNNs, TensorFlow, and basic ML model development – to leveraging advanced pre-trained models, generative, and agent-driven AI technologies in real-world applications. This shift is evidenced by the growing demand for skills in the area of multi-agent Large Language Models (LLMs), Vector Databases, Model Context Protocol (MCP), Retrieval-Augmented Generation (RAG), diffusion models, LangChain, and edge-based deployment methods. Concurrently, the infrastructure supporting AI has advanced from basic cloud-based Machine Learning Operations (MLOps) to specialized Large Language Model Operations (LLMOps) and sophisticated deployment techniques, reflecting the industry’s heightened prioritization of real-time responsiveness, alongside a significant increase in attention to AI security and safety.

### 1. From Model Building to AI Applications:

The industry has transitioned from foundational skills – focused heavily on building and training models – to a new emphasis on how AI models are integrated and deployed at scale in practical scenarios. Technologies like multi-

agent LLMs, RAG, and MCP exemplify this shift toward the creation of sophisticated AI Applications designed explicitly for real-world complexity.

### 2. Generative and Agentic AI Domination:

Generative AI (e.g., diffusion models, LLMs) and agentic AI (AI systems capable of acting autonomously or semi-autonomously) have taken center stage. There’s now greater importance placed on AI that can not only interpret but also autonomously generate, plan, and execute tasks, representing an evolution from simple prediction tasks to autonomous decision making.

### 3. Operationalizing AI at Scale:

AI infrastructure and development have evolved from generalized cloud-based machine learning to specialized, optimized deployment strategies such as LLMOps, edge AI, vector databases, and AI-enhanced IDEs. These advancements highlight the necessity of efficient, scalable, and real-time AI implementation.

### 4. Robustness and Safety as Core Priorities:

Safety and security have evolved significantly from focusing merely on bias detection to proactively building defenses against sophisticated misuse (e.g., jailbreak defenses, red teams, and Constitutional AI). The focus is now on maintaining trust, reliability, and ethical integrity amid increased complexity and autonomy of AI systems.

Skill Area	2023 Focus	2025 Focus
NLP	BERT, Basic Transformers	Multi-Agent LLMs, RAG, Prompt Engineering, MCP
Computer Vision	CNNs, YOLO, OpenCV	Diffusion Models, NeRFs, Multimodal Vision
Infrastructure	MLOps, Cloud ML	LLMOps, Vector DBs, Edge AI, Serverless
Development	TensorFlow, PyTorch	LangChain, LlamaIndex, AI IDEs (Cursor, Windsurf)
Deployment	Model Serving, APIs	Streaming Inference, Quantization, Edge LLMs
Safety	Bias Detection, Fairness	Jailbreak Defense, Constitutional AI, Red Teams

Table 7: Evolution of AI Skills in 2023 and 2025. Data Source: Cornerstone

# 3.3 AI Technical Skills Integration

The AI Integration analysis, assessing the prevalence of AI-related skills across 50 job roles, indicates that 78% of the job roles analyzed<sup>13</sup> included AI skills, highlighting early shifts in role requirements across the G7.

## ICT Job Family and Roles

No.	Job Family	Job Role	AI Skills Integration Level
1	Architecture and Platform	Platform Engineer	Significant
		Site Reliability Engineering	Initial
		Software Architect	Significant
2	Artificial Intelligence and Data Science	AI/ML Engineer	Core
		AI/ML Researcher	Core
		Business Intelligence Analyst	Initial
		Data Analyst	Initial
		Data Engineer	Significant
		Data Scientist	Core
		NLP Engineer	Core
3	Business and Management	AI Business Consultant	Core
		AI Risk and Governance Specialist	Core
		IT Manager	Immaterial
		Technical Product Manager	Initial
4	Customer and Support	Consulting Engineer	Initial
		Solutions Engineer	Initial
		Technical Solutions Specialist/Engineer	Initial

13 See appendix B for the AI Integration Level Methodology.



No.	Job Family	Job Role	AI Skills Integration Level
5	Cybersecurity	Cyber Threat Intelligence Consultant	Significant
		Cybersecurity Analyst	Initial
		Cybersecurity Engineer	Initial
		Ethical Hacker	Immaterial
		Incident Response Consultant	Immaterial
		Security Architect	Initial
6	Design and User Experience	UX Designer	Initial
		UX Engineer	Initial
7	Infrastructure and Operations	AI Infrastructure Engineer	Core
		Automation Engineer	Initial
		Cloud Engineer	Initial
		DevOps Engineer	Initial
		IT Analyst	Immaterial
		IT Support Technician	Immaterial
		Network Architect	Initial
		Network Engineer	Immaterial
8	Software Engineering	System Administrator	Immaterial
		Embedded Engineer	Initial
		Full-Stack Developer	Initial
		Principal Software Engineer	Significant
		Senior Software Engineer	Significant
		Software Developer	Initial
		Software Engineer	Initial

Table 8: List of ICT Roles AI Integration Level. This reflects the proportion of job postings that include AI-related skills or tools, providing insight into the spread of AI across occupations.

Specialized Support Roles

No.	Specialized Support Roles	Job Role	AI Skills Integration Level
1	Specialized Support	Business Developer (for ICT)	Immaterial
		Compliance Officer	Initial
		Customer Support Representative	Initial
		Digital Marketing Specialist	Initial
		Environmental Engineer	Immaterial
		Financial Analyst	Initial
		Human Resource Generalist	Immaterial
		Learning and Development Specialist	Initial
		Legal Counsel	Immaterial
		Technical Project Manager	Initial

Table 9: List of Specialized Support Roles AI Skills Integration Level. This reflects the proportion of job postings that include AI-related skills or tools, providing insight into the spread of AI across occupations.

# 3.4 In-Demand Human Skills

AI is shifting the workplace skillset. But human skills still count.

As AI transforms the workplace and reshapes the demand for technical skills, human skills remain not only relevant – but increasingly essential. The findings reveal that the top in-demand human skills can be grouped into three categories: **Leadership and Management, Problem Solving and Innovation, and Collaboration and Communication**. These categories reflect a synthesis of skills that enables employees to lead change, navigate complexity, and foster effective teamwork in an AI-augmented environment.

Leadership & Management	Problem Solving & Innovation	Collaboration & Communication
<ul style="list-style-type: none"><li>• AI Strategy Development</li><li>• Cross-Functional Team Leadership</li><li>• Change Management</li><li>• Stakeholder Communication</li></ul>	<ul style="list-style-type: none"><li>• Critical Thinking</li><li>• Creative Problem Solving</li><li>• Systems Thinking</li><li>• Ethical Decision Making</li></ul>	<ul style="list-style-type: none"><li>• Technical Communication</li><li>• Cross-Cultural Collaboration</li><li>• Agile Methodologies</li><li>• Presentation Skills</li></ul>

Table 10: Top In-Demand Human Skills Fall Into Three Categories. Source: Cornerstone



## 4. Preparing for an AI-Driven Workforce

### Overview

The focus turns to the skills and roles shaping the future of work in an AI-driven economy. Through **Skills Stories**, we bring the data to life with compelling narratives of career progression within job roles. Additionally, we examine **AI usage across Entry, Mid, and Senior-Level ICT jobs** and analyze the distribution of **AI skills by leadership level** – from Individual Contributors to Senior Leadership.

4.1 Role Priorities for Upskilling/Reskilling Initiatives	39
4.2 Technical Skills Gap	40
4.3 Technical AI Skills by Career Level	42
4.4 AI Skills by Leadership level	44
4.5 Skill Overlap Among Roles and Job Families	45
4.6 Skills Stories	48
4.7 Practical Resources	59

# 4.1 Role Priorities for Upskilling/Reskilling Initiatives

This section of the report presents upskilling and reskilling high priority job roles. To achieve this, we collected input from Consortium members regarding the upskilling and reskilling priority for each of the job roles analyzed in the report. Following extensive individual and group discussions,

we identified and prioritized 16 job roles across 8 ICT job families for focused upskilling and reskilling efforts. The ICT job families with the highest number of roles requiring upskilling and reskilling are Infrastructure and Operations, Software Engineering, and Cybersecurity.

Job Family	Job Role	Priority Level for Upskilling Within the Consortium’s Organization
Infrastructure and Operations	Automation Engineer	High Priority
	Cloud Engineer	High Priority
	DevOps ENGINEER	High Priority
	Infrastructure Engineer	High Priority
	IT Analyst	High Priority
	Systems Administrator	High Priority
Software Engineering	Embedded Engineer	High Priority
	Principal Software Engineer	High Priority
	Software Developer	High Priority
Cybersecurity	Cybersecurity Analyst	High Priority
	Security Architect	High Priority
AI & Data Science	Data Scientist	High Priority
Architecture and Platform	Platform Engineer	High Priority
Business and Management	Technical Product Manager	High Priority
Customer & Support	Solutions Engineer	High Priority
Design and User Experience	UX Designer	High Priority

Table 11: Upskilling and Reskilling High Priority Job Roles. Source: Consortium Intelligence

## 4.2 Technical Skills Gap

Our research shows that demand for AI technical skills is now integrated into 50 job roles across all career levels, contributing to a critical skills deficit throughout G7 economies. To address this, we conducted a skills gap analysis using a supply-demand model to identify the gap severity for these 50 job roles across the G7 countries.

Large Language Models (LLMs), LLM Architecture, Prompt Engineering, Conversational AI, and Generative AI are identified to have the highest demand growth rate among AI skills and required immediate skills learning interventions to cater to job market demand. AI/ML Researcher and Natural Language Processing (NLP) Engineer are the ICT jobs that require these varied skillsets.

The demand for AI Governance and AI Ethics skills are growing exponentially, further widening the gap between the supply of qualified professionals and the needs of employers.

### Technical Skills Gap

Skill Name	Gap Severity
Large Language Models (LLMs)	Critical
LLM Architecture	Critical
Prompt Engineering	Critical
Conversational AI	Critical
Transformer Architecture	Critical
Generative AI and Tools	Critical
RAG Systems	Critical
AI Product Management	Critical
Data Mesh Architecture	Critical
AI Governance	Critical
AI Ethics	Critical
AI Security	Critical
Secure Access Service Edge (SASE)	Critical
Vector Databases	Critical
MLOps/LLMOps	High

This imbalance has made it challenging for organizations to fully leverage the transformative potential of these cutting-edge technologies, thereby emphasizing the urgent need for targeted upskilling and reskilling initiatives.

While human skills remain critical to navigating AI transformation, the data indicates there is no widespread shortage compared to AI-specific skills. Only two skills – data storytelling and strategic thinking – show moderate gaps.

These critical shortages jeopardize organizations’ ability to scale AI responsibly, securely, and effectively, highlighting the urgent need for targeted learning and security upskilling.

Skill Name	Gap Severity
Platform Engineering	High
Service Mesh	High
Edge Computing	High
Zero Trust Architecture	High
Container Security	High
GitOps	High
Customer Health Scoring	High
Multi-Cloud Management	Medium
DevSecOps	Medium

Table 12: Skills Gap Analysis Across Key Technical AI Skills. Source: Cornerstone

**Gap Severity Level:** The Gap Severity uses a four-tier system based on the supply-demand imbalance.

- Critical:** <30% of demand met
- High:** 30-50% of demand met
- Medium:** 50-70% of demand met
- Low:** >70% of demand met







# Human Skills

Skill Name	Gap Severity
Data Storytelling	Medium
Strategic Thinking	Medium
Cross-Functional Collaboration	Low
Emotional Intelligence	Low

Table 13: Skills Gap Analysis Across Key Human Skills. Source: Cornerstone

**Gap Severity Level:** The Gap Severity uses a four-tier system based on the supply-demand imbalance.

-  **Critical:** <30% of demand met
-  **High:** 30-50% of demand met
-  **Medium:** 50-70% of demand met
-  **Low:** >70% of demand met

# 4.3 Technical AI Skills by Career Level

## AI Skill Cluster cross Entry, Mid, and Senior-Level ICT Jobs

The AI skills landscape evolves significantly with an individual’s career progression, shifting from hands-on execution to strategic oversight and ethical leadership. This analysis reveals distinct skill clusters that dominate at different seniority levels, reflecting the changing demands and responsibilities.

### Prevalence of AI Skills per Seniority Level

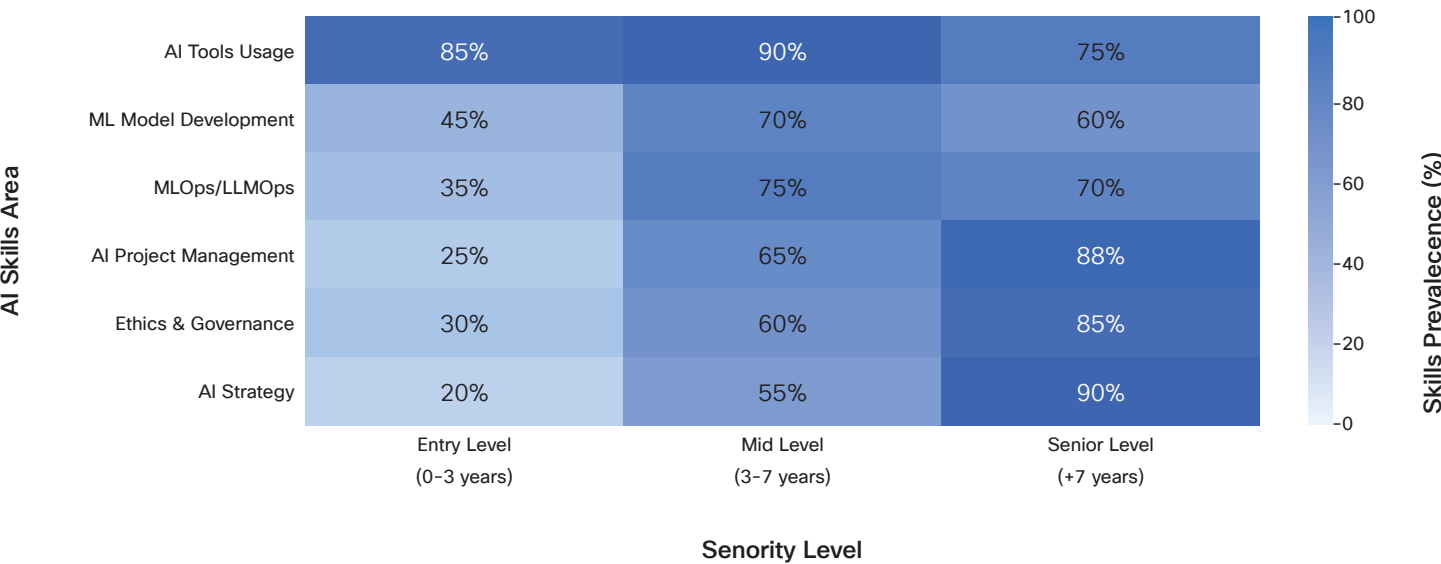


Table 14: AI skills Prevalence per Seniority Level. Considering only the subset of Job Post including AI skills. Data Source: Cornerstone

## Entry-Level (0–3 years): The Foundation Builders

At the entry level, the primary focus is on acquiring fundamental, hands-on capabilities. Professionals in this stage are expected to be proficient in utilizing existing AI tools and, for technical roles, understand the basics of machine learning model development.

**Key Insight:** The overwhelming emphasis is on practical application and learning the ropes.

#### Most Representative Skills:

- **AI Tools Usage (85%):** This cluster is paramount. Entry-level professionals are adept at leveraging readily available AI applications like **ChatGPT**, **Claude**, and **Gemini** for content generation and productivity. They also explore creative AI tools such as **Midjourney** and **DALL-E** for visual

content, and utilize **GitHub Copilot** for coding assistance. Familiarity with **AI-powered analytics tools** and **no-code AI platforms** empowers them to interact with AI without deep programming knowledge.

- **ML Model Development (45%):** While not yet experts, they begin their journey with foundational ML skills. This includes working with popular libraries like **TensorFlow**, **PyTorch**, and **Scikit-learn**, understanding basic **model training and validation** processes, and performing initial **feature engineering**. Their role is typically to assist in developing and testing models under supervision.

**Minimal Focus:** Strategic, ethical, and management skills are typically minimal at this stage, as the role is more about execution than direction.

## Mid-Level (3–7 years): The Operational Architects

Mid-level professionals bridge the gap between foundational knowledge and strategic leadership. Their expertise deepens in operationalizing AI models, while their responsibilities expand to include elements of strategy, ethics, and project management.

**Key Insight:** This stage marks a significant broadening and deepening of technical skills, particularly in bringing AI models to production, alongside a growing involvement in strategic and ethical considerations.

### Most Representative Skills:

- **MLOps/LLMOps (75%):** Operationalizing AI is a core competency. Mid-level professionals are skilled in designing and implementing **model deployment pipelines**, setting up **model monitoring & observability** systems, and applying **CI/CD practices for ML**. Proficiency in **containerization (Docker, Kubernetes)** is crucial for scalable deployments.

- **ML Model Development (70%):** Their model development skills mature considerably. They are capable of advanced techniques such as **hyperparameter tuning**, interpreting various **model evaluation metrics**, and working with complex **deep learning frameworks** to design and optimize **neural network architectures**.
- **AI Project Management (65%):** They start taking on more responsibility in project execution, applying **Agile methodologies for AI projects**, assisting with **AI project scoping**, and engaging in initial **stakeholder management**.
- **Ethics & Governance (60%):** A growing awareness of responsible AI emerges. They begin to understand and apply **responsible AI frameworks**, conduct basic **bias detection and mitigation**, and consider **privacy-preserving AI** techniques.
- **AI Strategy (55%):** While not leading strategy, they contribute by identifying potential **AI use cases** and performing preliminary **ROI analysis for AI projects**.

## Senior-Level (7+ years): The Visionary Leaders

At the senior level, the emphasis decisively shifts from direct technical execution to strategic leadership, governance, and long-term vision. These professionals are responsible for shaping the AI direction of an organization, ensuring ethical deployment, and managing complex initiatives.

**Key Insight:** Senior professionals are the architects of AI strategy, the guardians of ethical AI, and the orchestrators of large-scale AI initiatives. While technical understanding remains critical, their focus is on oversight, guidance, and strategic decision making.

### Most Representative Skills:

- **AI Strategy (90%):** This is the paramount skill. Senior leaders are responsible for developing comprehensive **AI roadmap development**, driving **AI transformation planning**, conducting **competitive AI assessments**, and formulating **strategic AI governance** frameworks. They also lead **AI investment planning** and foster **AI partnership strategies**.

- **AI Project Management (88%):** They lead and oversee complex AI initiatives, excelling in **AI project risk management**, intricate **cross-functional coordination**, and strategic **vendor management for AI**. They are responsible for **AI project budgeting** and ensuring **timeline management for AI initiatives**.
- **Ethics & Governance (85%):** Ensuring responsible and compliant AI is a critical leadership function. Senior professionals define and implement **responsible AI frameworks**, navigate **regulatory compliance (e.g., EU AI Act)**, conduct thorough **AI risk assessments**, and establish **ethical AI guidelines**. They champion **Explainable AI (XAI)** and oversee **AI audit procedures**.
- **MLOps/LLMOps (70%):** While not hands-on, they provide strategic direction and oversight for **model deployment pipelines**, **model versioning**, and **observability strategies**, ensuring robust and scalable AI operations.
- **ML Model Development (60%):** They possess a deep understanding of advanced ML concepts, providing guidance on **deep learning frameworks**, **neural network architecture**, and **model optimization** strategies, influencing the technical direction without necessarily writing code.

## 4.4 AI Skills by Leadership level

- **Individual Contributors:** This role embodies a ‘Deep Technical’ profile, focusing on hands-on practical execution. Their core expertise lies in **Model Development, Implementation, and Testing**, directly building and deploying AI solutions. They leverage a spectrum of **AI tools** (e.g., ChatGPT, Copilot, Midjourney) and foundational ML frameworks (e.g., TensorFlow, PyTorch) to deliver their individual technical contributions, forming the bedrock of AI initiatives.
- **Team Leads:** Operating at a ‘Balanced Technical/Strategic’ profile, Team Leads profile possesses a crucial hybrid skillset. They are the operational orchestrators, adept at **AI Project Management** and **Resource Allocation**, effectively bridging the gap between hands-on technical execution and broader strategic objectives. Their expertise in **MLOps/LLMOps** ensures models move from development to production efficiently, while they also begin to integrate ethical considerations and contribute to strategic planning.
- **Senior Leadership:** At the ‘Strategic & Governance’ profile, Senior Leaders pivot from technical execution to high-level oversight. Their expertise lies in defining the organization’s AI future through **AI Strategy, Ethics, and Governance**. They are ultimately responsible for demonstrating **Return on Investment (ROI)**, emphasizing the responsible deployment, strategic direction, and overall impact of AI across the enterprise.

Role type	Characteristics
Individual Contributors	<ul style="list-style-type: none"><li>• <b>Represents</b> “Deep Technical” profile</li><li>• <b>Focus:</b> Execution and technical proficiency</li><li>• <b>Skills:</b> Model Development, Implementation</li><li>• <b>Testing:</b> Hands-on technical skills for building and deploying AI solutions</li></ul>
Team Leads	<ul style="list-style-type: none"><li>• <b>Represents</b> “Balanced Technical/Strategic” profile</li><li>• <b>Focus:</b> Bridging technical execution and strategic planning by managing AI projects</li><li>• <b>Skills:</b> AI Project Management, Resource Allocation: Bridge between technical execution and strategic planning Skills for managing AI initiatives and coordinating team resources</li></ul>
Senior Leadership	<ul style="list-style-type: none"><li>• <b>Represents</b> “Strategic &amp; Governance” profile</li><li>• <b>Focus:</b> Business impact, ethical implications, and organizational AI governance</li><li>• <b>Skills:</b> AI Strategy, Ethics, Governance, ROI: High-level oversight and strategic decision making</li></ul>

Table 15: Key AI Skills Across Different Leadership Roles. Data Source: Cornerstone

# 4.5 Skill Overlap Among Roles and Job Families

Software engineering, AI, and data science roles have high skill overlap, enabling greater job mobility across these fields with targeted upskilling

The traditional distinctions between various ICT roles are increasingly blurring due to the rapidly evolving technological landscape. Specifically, the formerly distinct disciplines of software engineering and AI and data science are now exhibiting more pronounced skill overlaps. Within software engineering family roles, a software engineer demonstrates approximately an 87percent skill overlap with a full-stack developer. While full-stack developers place greater emphasis on cloud skills, software engineers prioritize algorithm-focused skills. Conversely, in the AI and data science family roles, a data scientist shows an approximate 85percent skill overlap with an AI/ML engineer. The key differentiator here is the AI/ML engineer’s heightened emphasis on MLOps (Machine Learning Operations) and a focus on production system-oriented skills.

## Software Engineering Roles

There are six software engineering roles among the group of jobs considered. Software Engineer roles maintain high overlap with Full-Stack Developer at 87percent, but specializations between both roles are deepening.

The lowest overlap with Software Engineer is Machine Learning Engineer (58percent) but represents a critical growth path as AI integration becomes mandatory across all software development.

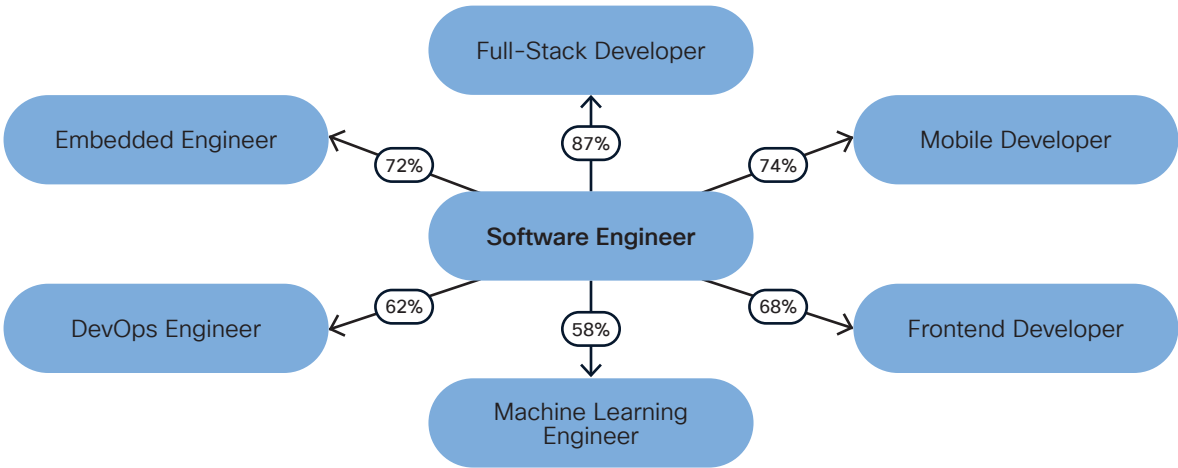


Figure 5: Skills Overlap for Software Engineer Role. Source: Cornerstone

The figure below illustrates possible career transitions for Software Engineers, emphasizing both horizontal and vertical movements. Horizontally, Software Engineers frequently transition into AI/ML Engineer roles, driven by high industry demand and significant skills overlap, and into DevOps Engineer roles due to the complementary nature of

infrastructure knowledge. Vertically, Frontend Developers commonly advance into Full-Stack Developer positions, expanding their technical scope, while Software Engineers and Full-Stack Developers often progress into leadership roles, notably as Software Architects.

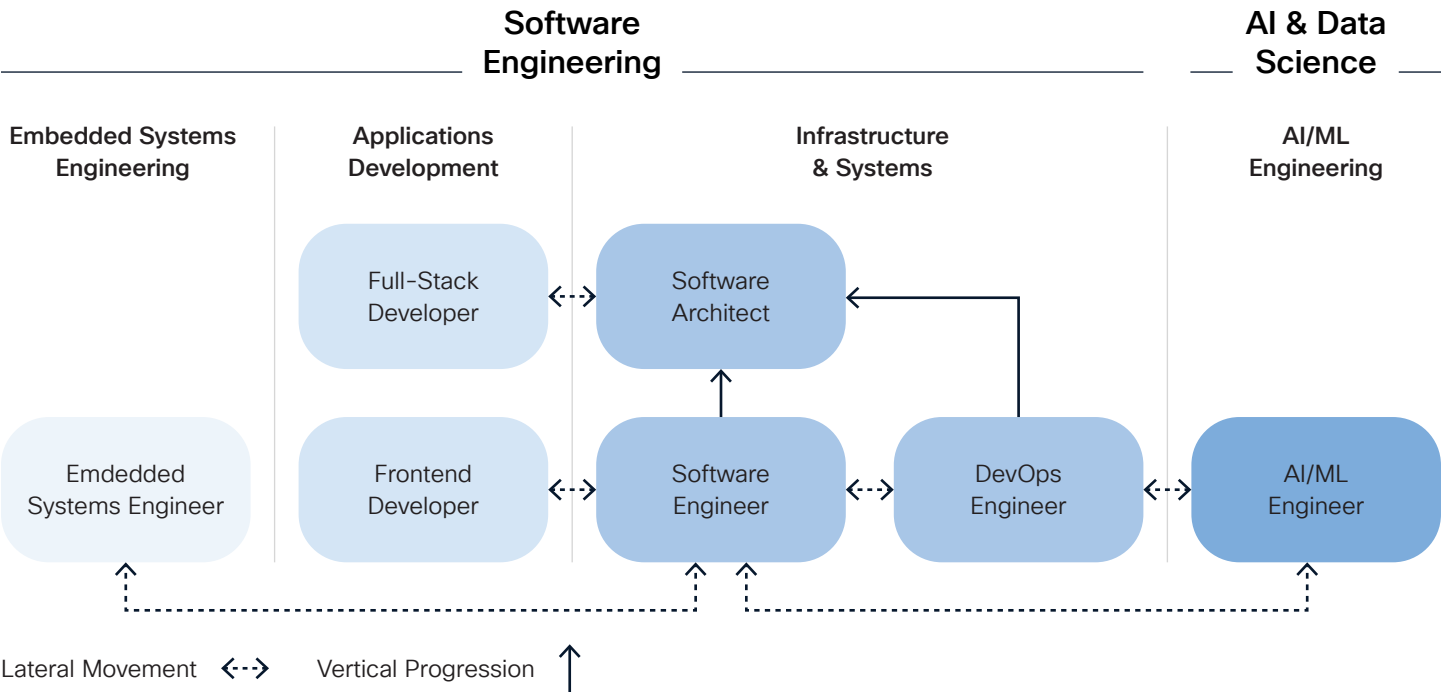


Figure 6: Career Mobility for Software Engineering Roles. Source: Cornerstone

## Artificial Intelligence (AI) and Data Science Roles

The AI and Data Science ecosystem is rapidly specializing and there are six specialized roles within the scope of roles identified. AI/ML Engineers show the highest overlap

(85percent) with Data Scientists but command 145 percent demand growth. Traditional boundaries are dissolving as AI becomes mandatory across all data and AI related roles.

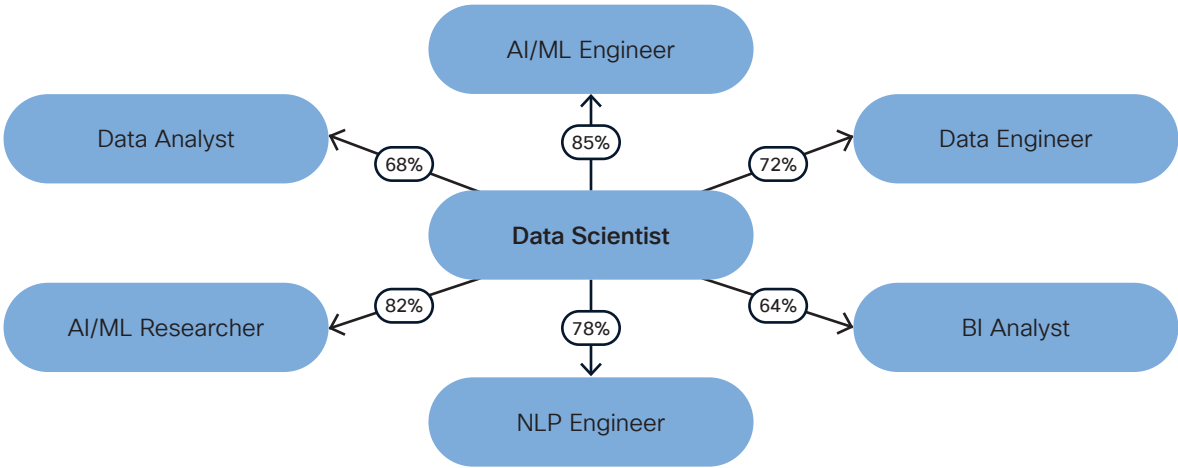


Figure 7: Skills Overlap for Data Scientist Role. Source: Cornerstone



Figure below outlines the potential career transitions for Data Scientists, emphasizing roles with high skills overlap and adjacent functions across the data and AI landscape. Lateral transitions into roles such as AI/ML Engineer (85

percent), NLP Engineer (78 percent), and AI/ML Researcher (82 percent) reflect strong alignment in core technical competencies.

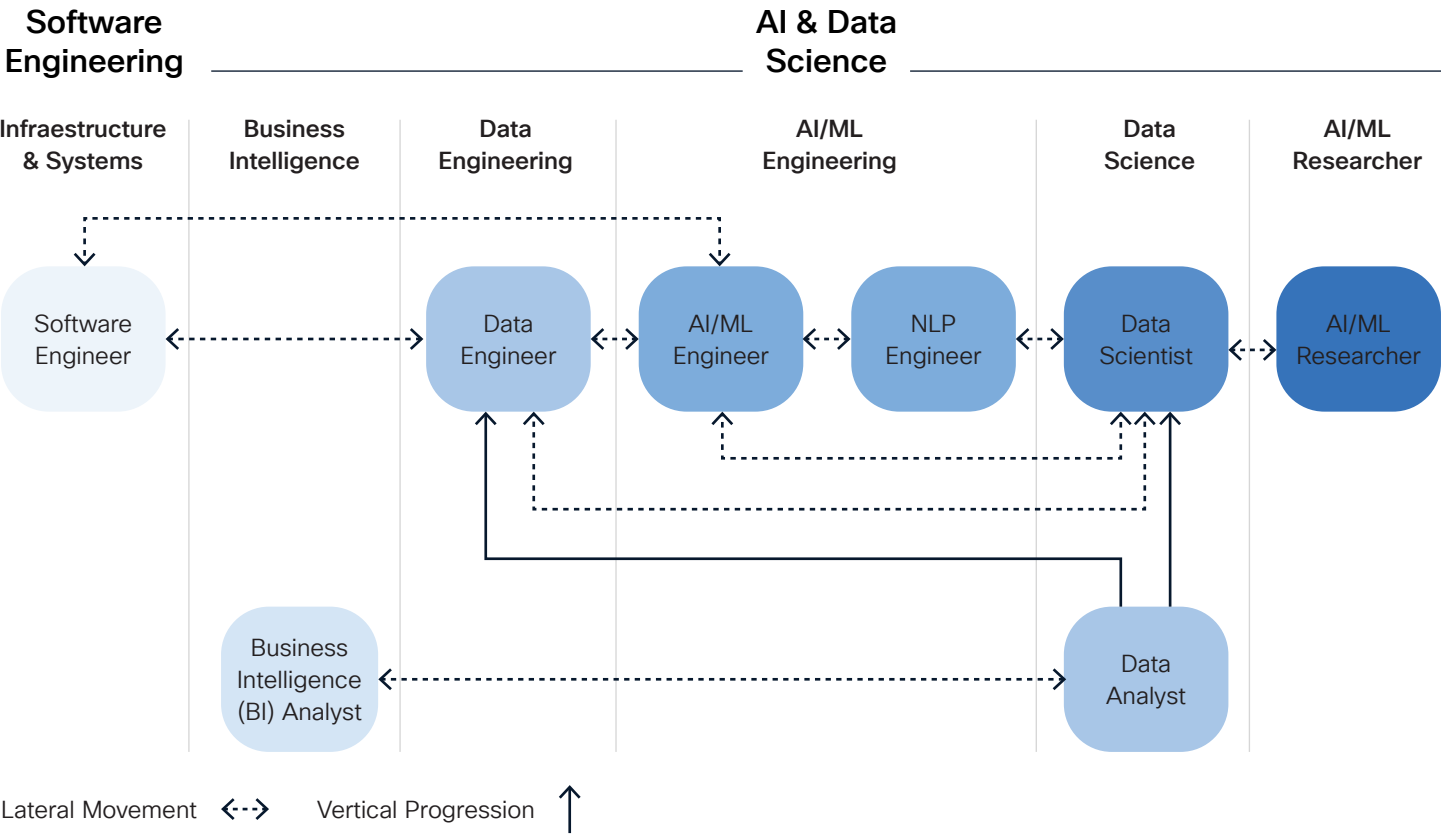


Figure 8: Skills Overlap for Data Scientist Role. Source: Cornerstone

# 4.6 Skills Stories

## How AI is Changing Tasks, Skills, and Careers through Personal Narratives

The advent of AI is reshaping job roles within the ICT sector, particularly by evolving the nature of tasks performed within existing roles and facilitating career transitions into adjacent, AI-focused positions, alongside other emerging pathways and possibilities. To illustrate this transformation clearly, we've created "skill stories" – fictional yet realistic narratives from the perspectives of professionals experiencing these shifts

firsthand. Each story highlights the specific changes in **tools**, **activities**, and **skills** required to succeed in roles that either integrate AI into existing tasks, as shown by Aisha, Maya and Liam, or transition fully into AI-focused positions, as illustrated by Priya, Emma, and Alex. These skill stories vividly exemplify how professionals can successfully adapt and thrive amidst the AI-driven evolution of the ICT landscape.



### Aisha's Skill Story as Software Developer: How AI Rewrote My Job Description

My name is Aisha, and I'm a 25-year-old software developer. Just a few years ago, my job was simple: Translating a manager's request into clean, functional code. My world was Jira tickets, specific frameworks, and late-night debugging sessions. I was a builder, executing on a well-defined blueprint.

Then, AI arrived – not as a replacement, but as a powerful new tool. The change became real when I was asked to build an intelligent search for our e-commerce site. Instead of me writing complex search algorithms, my job was to direct a Large Language Model (LLM) to do it, either through prompt engineering or vibe coding that leverages AI to transform user's plain speech and words into executable code for software development.

Suddenly, my primary skill wasn't just coding; it was communication. I spent my days engineering, testing, and refining prompts to guide the AI. The core challenge shifted from "How do I build this?" to "How can I provide effective prompts and relevant context to AI and validate its outputs?"

I had to become a critic on prompt inputs and context and a safety inspector. My role was now to scrutinize the AI's input and output for security flaws, logical errors, and hidden biases. I was no longer just following instructions; I had to lead the technology, anticipating its mistakes and building safeguards around it.

Today, my core coding skills are more critical than ever, where I play the role of manager/leader of AI in leveraging them to manage and direct AI systems rather than just writing everything from scratch. I've become an architect and a strategist. AI didn't take my job; it transformed it into something bigger and more essential than I ever imagined. I'm more productive than ever before, no longer bogged down by repetitive coding tasks. Instead, I'm able to dedicate my time to value-added tasks – strategic thinking and complex problem solving. This shift has led directly to higher quality outputs, as the AI handles granular execution while I focus on the overarching vision and refinement, producing innovative solutions quicker.

#### Aisha in 2023

##### Tasks



- **Code Implementation:** Writing code from scratch based on pre-defined specifications
- **Feature Building:** Developing standard components and API endpoints
- **Manual Debugging:** Finding and fixing bugs through logical analysis and testing

#### Aisha Today

- **Strategic Direction & Architecture:** Designing systems that decide when and how to use AI vs traditional code
- **Prompt Engineering:** Crafting, testing and managing instructions for AI models
- **Critical Validation:** Scrutinizing AI-generated code for security, performance and correctness

## Skills



### Aisha in 2023

- **Framework Proficiency:** Deep knowledge of specific libraries (e.g., React, Django)
- **Algorithmic Thinking:** Ability to write efficient, logical code
- **Problem Solving:** Using resources like Stack Overflow to overcome coding hurdles

### Aisha Today

- **System-Level & Critical Thinking:** Evaluating trade-offs (cost, speed, ethics) of using AI.
- **AI Interaction & Leadership:** Skill in guiding and correcting non-deterministic AI tools.
- **Security & Ethical Auditing:** Ability to spot potential bias, privacy issues, or vulnerabilities in AI output.

## Tools



- **Code Editor/ IDE** (e.g., VS Code, IntelliJ)
- **Version Control:** Git, GitHub
- **Project Management:** Jira, Asana
- **Community Support:** Stack Overflow

#### AI-Native Editors & Agents:

- **Cursor:** An editor built from the ground up for AI interaction
- **Windsurf Editor** (formerly Codeium): An agentic **Integrated Development Environment** (IDE) focused on developer flow
- **AI Assistants** (Plugins: GitHub Copilot, Tabnine)
- **Direct API access:** LLM APIs
- **Monitoring Tools:** Cost and performance dashboards

*All 2023 tools are still used*



# Liam Skills Story as a Data Analyst: My AI Awakening – How embracing AI Catalyzed a Fundamental Transformation in my Role as a Data Analyst

The growing trend of AI tools automating data analysis brought a quiet, internal realization: My traditional methods of data analysis simply couldn't keep pace. As a data analyst, I was spending weeks wrestling with scattered data, endless cleaning, and tedious model building, only to find insights outdated by the time I was done. I saw clearly that AI wasn't a distant concept, but the pragmatic solution I needed to integrate into my existing workflow to remain effective. My personal workload and the increasing data complexity were becoming unsustainable; I needed AI to help me, augmenting my analytical capabilities and shifting my role from manual execution to strategic insights driven.

To adapt, I embarked on a focused upskilling journey, largely through online courses, to strengthen my technical foundation specifically around interacting with and steering AI tools. I learned to engineer prompts for better predictions, validate AI output, and ensure data integrity. My traditional skills became foundational, but secondary to critical thinking and strategic storytelling, which AI now enabled at a far greater scale. Now, AI is an indispensable extension of my process, handling the heavy lifting and freeing me to interpret insights, challenge assumptions, and craft compelling data narratives that drive action, making me a far more effective and impactful data analyst.

## Liam in 2023

### Tasks



- **Data Extraction & Cleaning:** Manually pulling and preparing data from various sources
- **Report Generation:** Creating routine reports and dashboards based on predefined metrics
- **Statistical Analysis:** Performing descriptive statistics and simple regressions

## Liam Today

- **Strategic Data Storytelling:** Designing how AI-generated insights are presented and communicated to drive business decisions
- **Prompt Engineering for Analytics:** Crafting, testing, and refining queries and instructions for AI models to extract specific insights and forecast trends
- **Insight Validation & Bias Detection:** Critically evaluating AI-generated analyses for accuracy, potential biases, and logical soundness

### Skills



- **SQL Proficiency:** Deep knowledge of database querying.
- **Excel Spreadsheet Proficiency:** Expert use of Excel for data manipulation and visualization
- **Dashboarding Tools:** Ability to build interactive dashboards (e.g., Tableau, Power BI)

- **Critical Data Thinking:** Evaluating the implications and limitations of AI-generated insights, considering business context and ethical implications, including **data privacy norms**
- **AI Interaction & Guidance:** Skill in directing and refining the output of non-deterministic AI analytical tools
- **Ethical AI:** Ability to spot potential biases, privacy concerns, or misinterpretations in AI's data analysis

### Tools



- **SQL Clients:** (e.g., DBeaver, SSMS)
- **Spreadsheet Software:** Microsoft Excel, Google Sheets
- **BI Tools:** Tableau, Power BI, Looker
- **Version Control:** GitHub

- **AI-Powered Analytics Platforms:** Platforms specifically designed for AI-driven data exploration and modeling
- **Generative AI Tools:** Tools for interacting directly with LLMs for data analysis (e.g., Copilot)
- **AI-Enhanced BI Tools:** Business intelligence platforms with integrated AI capabilities (e.g., Power BI Copilot, Tableau GPT)



## Jordan's Skill Story: From Reactive to Proactive Threat Oversight: My Transformation as an AI-Powered Cybersecurity Analyst

Back in 2023, my role as a Cybersecurity Analyst revolved around constant manual effort. I reviewed endless alerts on our Security Information and Event Management (SIEM) platforms used for security monitoring and threat detection, combed through logs for anomalies, and applied static rules to flag suspicious activity. Fraud detection was reactive, and incident response meant following rigid playbooks while drafting lengthy reports. Most of my day was spent gathering evidence for audits and compliance teams, leaving little time for proactive threat hunting.

The shift began when our company introduced AI-augmented SIEM and Security Orchestration, Automation, and Response (SOAR) platforms. At first, I was skeptical, but I quickly realized I needed new skills to stay relevant. I learned Python to build automation scripts, mastered prompt design to guide AI agents in triaging incidents and studied AI

ethics and governance to ensure decisions were transparent and ethical. Over time, I started training AI models to detect financial fraud patterns and contextual nuances in financial workflows. It was a steep learning curve, but it shifted my focus from execution to strategy.

Today, I oversee AI-generated triage, validating critical alerts and refining detection logic. I run AI-driven attack simulations, orchestrate automated response workflows, and ensure every system aligns with compliance standards. My expertise now blends traditional cybersecurity knowledge with AI-driven threat hunting and governance. Instead of drowning in alerts, I spend my time shaping the defenses that prevent attacks before they happen. My expertise has expanded beyond traditional cybersecurity into AI oversight and strategic threat hunting.

### Tasks



#### Jordan in 2023

- **Alert Triage & Investigation:** Manually reviewed alerts from SIEM systems, checked logs for anomalies, and flagged suspicious activity
- **Fraud Detection Support:** Identified and escalated indicators of potential fraud using static rules and manual queries
- **Incident Response:** Drafted reports and responded to phishing, malware, and intrusion events with standardized playbooks
- **Compliance Documentation:** Generated reports for audits and coordinated with compliance teams on security events

#### Jordan Today

- **AI-Supported Threat Oversight:** Supervises AI-generated triage, validating critical alerts and ensuring contextual accuracy
- **AI Model Training:** Trains AI systems to recognize fraud patterns specific to financial workflows
- **Automated Response Orchestration:** Builds and tests automation scripts for incident response workflows and scenario simulations
- **Regulatory Alignment Auditing:** Ensures AI-driven processes meet audit, privacy, and compliance standards

## Skills



### Jordan in 2023

- **SIEM Proficiency:** Skilled in security monitoring, log analysis, and incident response
- **Threat Detection Knowledge:** Familiar with common attack patterns, malware behavior, and intrusion techniques
- **Compliance & Policy Awareness:** Understands regulatory reporting standards and legal escalation procedures
- **Basic Scripting:** Utilized Bash or PowerShell for log parsing and alert automation

### Jordan Today

- **LLM Prompting & Query Design:** Crafts queries and instructions to guide large language models in triaging security incidents
- **Threat Hunting (AI-Driven):** Uses behavioral analytics and AI-enriched intel to proactively uncover hidden threats
- **AI Governance & Explainability:** Assesses transparency and ethical risk in AI-generated decisions
- **Python Automation:** Develops scripts to enhance AI models and customize detection logic

## Tools



- **Traditional SIEM and logging platforms:** Firewall log analysis, and reporting tools.
- **Ticketing & Reporting Systems:** Jira, ServiceNow, manual incident templates.
- **Static Threat Intelligence Feeds:** Relied on manual parsing of vendor and open-source feeds.

- **AI-Augmented SIEMs:** Security platforms enhanced with AI-driven anomaly detection and log correlation
- **SOAR Platforms:** Automation tools integrated with AI assistants for streamlined workflow execution
- **AI-Enriched Threat Intelligence:** Real-time threat enrichment via LLM-integrated feeds and APIs



## Priya's Job Transition: From Code to Cognition: How Self-Realization Fueled My Transition to AI/ML Engineer

For over a decade, I thrived as a software engineer, building backend systems, APIs, and cloud infrastructure that kept businesses running smoothly. As AI began reshaping industries, I realized that the systems I worked so hard to optimize were no longer enough on their own. Intelligence was becoming the new infrastructure, and I no longer wanted to simply maintain systems. I wanted to create ones that could learn, adapt, and transform industries. That realization made me pause and reflect on where my work was heading.

I began exploring machine learning (ML), initially just to understand the growing interest around it. The deeper I went, the more I saw how naturally my skills aligned with this emerging field. I understood production-level systems, pipelines, and deployment, which were critical to making ML

models work beyond experiments. I leaned into this overlap, studying core ML concepts, experimenting with TensorFlow and scikit-learn, and combining these new skills with my experience in Python, AWS, and data engineering. It was not about discarding my past experiences but evolving it into something more forward-looking.

By early 2025, that exploration transformed into a new career. I became an AI/ML engineer at a health tech startup, where I now design predictive models that assess patient risks and work alongside clinicians to ensure responsible AI practices. What began as a moment of self-realization – recognizing the growing impact of AI – turned into a complete career transition, blending my engineering roots with the future of intelligent systems.

### Tasks



#### Priya as Software Engineer

- Built and maintained backend **APIs**
- Designed and deployed **cloud-based infrastructure**
- Managed **databases and data** pipelines

#### Priya now as AI/ML Engineer

- Develops **ML models** for patient risk scoring
- Collaborates with medical teams for **ethical AI use**
- Deploys and monitors **models** in production environment

### Skills



- Proficient in **Python, Java, AWS**
- Strong **system design and testing** practices
- **Database and cloud infrastructure** management

- Knowledge of **ML algorithms** and evaluation metrics
- **Data** pre-processing and feature **engineering**
- Model deployment using **CI/CD and MLOps tools**
- Acts as the connector between **engineering, design, and ethical AI** review processes

### Tools



- **Python, Java, AWS, PostgreSQL**
- **Git, Docker, Jenkins**

- **Python** (scikit-learn, TensorFlow, Pandas)
- **MLflow, FastAPI, GitHub Actions, AWS SageMaker**





## Emma's Job Transition: How My Career Shifted from Building Software to AI Experiences

Today, I work as an AI Product Manager, shaping how intelligent systems interact with real people. I lead cross-functional teams where data scientists, ML engineers, and UX designers come together to build features like predictive recommendations, smart summarizations, and AI-driven insights. My job isn't just about delivering functionality; it's about ensuring the AI agent is transparent, trustworthy, and deeply aligned with user needs. I often think about how this version of my role didn't even exist for me a few years ago.

My path here wasn't linear. I didn't start out as an AI enthusiast; I had to earn my way into this space through curiosity and persistence. I explored AI tools like OpenAI Playground, tested models, and learned prompt design – not because I wanted to switch careers, but because I needed

to speak the same language as our engineers. I joined pilot programs, co-created training datasets, and built lightweight evaluation frameworks to see where AI succeeded and failed. Those experiments gave me both confidence and credibility.

Looking back, I started as a Technical Product Manager, focused on delivering predictable SaaS features. I managed roadmaps, wrote specs, and shipped dashboards, but I wasn't thinking about "intelligent" products. The shift began when I realized that static solutions couldn't keep up with user expectations anymore. What began as a few "smart" feature requests slowly turned into a full reimagining of my role. In hindsight, that past version of me couldn't have imagined where I'd end up but every skill I built back then became the foundation for what I do now.

### Tasks



#### Emma as Product Manager

- Defined **product requirements** and wrote **technical specs** for engineering teams
- **Prioritized features** based on business needs, user feedback, and dev effort
- Managed **sprint cycles, delivery timelines, and cross-functional communication**
- Delivered traditional **SaaS features** like dashboards, admin tools, and integration

#### Emma as an AI Product Manager

- Designs and refines **AI-driven features** by collaborating with ML engineers and data scientists
- Guides product decisions using **AI Product Design** and **LLM Integration Strategy**
- Oversees **AI development cycles**, including model evaluation, testing, and feedback loops
- Introduces **AI capabilities** such as auto-classification, intelligent summarization, and smart recommendations

### Skills



- **Product strategy, stakeholder communication**, backlog grooming
- **Wrote clear product specs** and managed scope changes
- **Collaborated** with engineers and UX designers

- **AI ethics** in products, **User AI Experience**, **AI Monetization**
- **Risk-aware prioritization**, **A/B testing** with AI features
- **Writes effective prompts**, outlines edge cases, and **co-creates training data structures**
- Acts as the **connector** between engineering, design, and **ethical AI review processes**

### Tools



- Jira, Confluence, Figma, API tools
- Product analytics dashboards

- ChatGPT, OpenAI Playground, prompt testing tools
- Simple model evaluation tools and AI-enhanced platforms



## Alex's Job Transition: Beyond Traditional IT Consulting: My Journey to an AI Business Consultant Through Strategic Client Engagement

For years, as an IT consultant at a global IT consultancy, my expertise was in refining technology backbones – implementing ERP systems, overseeing cloud migrations, and optimizing enterprise software. My projects consistently focused on advising clients to optimize system efficiency and maintain data integrity, ensuring their IT systems and applications were robust and reliable.

Then, around three years ago, my firm made a decisive strategic pivot. Recognizing that clients were increasingly grappling with vast amounts of data but lacked actionable insights, the firm launched a dedicated “AI & Digital Transformation” service line. Sensing the profound market shift and driven by a personal curiosity about AI’s potential, I proactively engaged with every internal training program and thought leadership initiatives related to AI. This dedication positioned me for a new challenge when a manufacturing client, for whom I’d previously advised on and overseen the implementation of a comprehensive IoT data collection

system, returned with a critical issue: Despite abundant real-time data, unexpected machinery breakdowns were still causing costly production halts. They explicitly recognized they needed more than just data collection or system optimization; they needed an AI strategy and defined use cases to transform their reactive maintenance into proactive prediction. This specific request for an AI-centric solution, rather than another IT system upgrade, fundamentally changed the nature of the engagement. As a result, my role immediately pivoted from advising on traditional IT systems to spearheading workshops directly with the client to build their comprehensive AI strategy for predictive maintenance, identify precise business use cases, and articulate the tangible return on investment (ROI) that AI could deliver. This direct client demand for an AI strategy and use cases was the driving force behind my shift to an AI Business Consultant, helping businesses and organizations in driving strategic business outcomes enabled by AI.

### Tasks



#### Alex as IT Consultant

- **IT and Digital Transformation Strategy Development:** Supported clients in formulating their IT and digital transformation vision, initiatives, and roadmap
- **System Integrations & Implementations:** Oversaw the deployment of new software and hardware systems
- **Infrastructure Assessments:** Evaluated and optimized client IT infrastructure
- **Vendor Management:** Liaised with technology vendors and partners for procurement and support
- **Project Management:** Led IT projects from planning to execution, ensuring deadlines and budgets are met
- **Change Management and Training:** Cultivated new ways of working, impacted by the technology implementation and conducting training sessions for transfer of knowledge to key technology users in the organization

#### Alex as AI Business Consultant

- **Strategic AI Opportunity Identification:** Pinpoints specific business challenges and opportunities where AI can deliver significant value
- **AI Strategy and Roadmap Development:** Creates comprehensive strategies for AI adoption, including phased implementation plans and governance models
- **AI Project Management:** Oversees the execution of AI projects, coordinating between technical teams (data scientists, ML engineers) and business teams
- **AI Solution Design & Validation:** Collaborates with AI Engineers to select appropriate algorithms and frameworks, and validates AI solutions for business relevance
- **Ethical and Effective AI Use:** Considers ethical implications, checks for bias, ensures data privacy and compliance
- **Change Management and Training:** Educates and trains staff on new AI tools to drive user adoption

## Skills



### Alex as IT Consultant

- **Project Management Methodologies:** Expertise in Agile, Waterfall, etc.
- **Technical Problem Solving:** Diagnosed and resolved complex IT issues
- **Stakeholder Communication:** Translated technical concepts for non-technical audiences
- **IT Infrastructure Design:** Knowledge of network, server, and cloud architecture

### Alex as AI Business Consultant

- **AI Strategy:** Guides executive leadership on AI's strategic implications
- **AI Business Process Re-engineering:** Redesigns workflows and operations to incorporate AI
- **Ethical AI & Governance:** Advises on responsible AI deployment, data privacy (e.g., GDPR, CCPA), and bias detection
- **AI Landscape Knowledge:** Deep understanding of various AI technologies and vendors
- **Problem Solving & Critical Thinking:** Develops innovative AI solutions
- **Communication Skills:** Conveys complex technical concepts, active listening, negotiation, and facilitation
- **AI Project Management:** Oversees AI projects from inception to completion
- **AI Domain Expertise:** Understands specific industries to tailor AI solutions

## Tools



- **Project Management Software:** Jira, Asana, Microsoft Project
- **IT Service Management (ITSM) Tools:** ServiceNow, Remedy
- **Collaboration Tools:** Microsoft Teams, Webex, Slack

- **Same tools as IT consultant:** Project Management Software, ITSM, Collaboration Tools, but enhanced with AI
- **AI Development & Orchestration Platforms:** Azure ML, AWS SageMaker, Google AI Platform
- **Business Process Mapping Tools:** Visio, Lucidchart, Miro (for AI workflow design)



## Maya's Skills Story as Learning & Development Specialist: From Content Creator to Learning Experience Orchestrator – How AI Transformed My Role as an Instructional Designer

My name is Maya, and I'm a 32-year-old Instructional Designer in the Learning & Development department of a mid-size financial services company. Three years ago, my job was methodical and predictable: I'd spend weeks conducting needs assessments, months developing SCORM packages in Articulate Storyline, and countless hours writing detailed storyboards for compliance training that, frankly, most employees found tedious.

The transformation began subtly when our L&D team was tasked with rapidly upskilling 500+ employees on new AI-powered financial analysis tools. Traditional development timelines – 6 months for a comprehensive course – simply wouldn't work. We needed to deliver personalized, engaging training in weeks, not months. That's when I realized my approach had to fundamentally change.

I started experimenting with AI as my creative and analytical partner. Instead of spending days brainstorming scenarios, I now collaborate with large language models to generate diverse, realistic case studies tailored to different roles and experience levels. AI helps me analyze learner performance

data in real-time, identifying exactly where individuals struggle and automatically suggesting personalized learning paths. What once took me hours of manual analysis now happens instantaneously.

The most profound shift has been from creating static content to designing dynamic, adaptive learning experiences. I use AI to generate multiple versions of the same learning objective – visual, auditory, kinesthetic – and the system automatically serves the most effective format to each learner. My role has evolved from content creator to learning experience orchestrator, designing frameworks that AI personalizes for each individual.

Today, I spend less time on repetitive content development and more time on strategic learning design, analyzing learner behavior patterns, and creating innovative solutions that adapt in real-time. AI hasn't replaced my creativity – it's amplified it, allowing me to focus on the uniquely human aspects of learning: Motivation, emotional connection, and meaningful skill application. I'm more impactful than ever, and in all honesty, the work is far more intellectually stimulating.

### Tasks



#### Maya in 2023

- **Static Content Development:** Creating linear, one-size-fits-all SCORM packages and slide-based presentations
- **Manual Needs Assessment:** Conducting lengthy surveys and interviews to identify learning gaps
- **Time-Intensive Storyboarding:** Writing detailed scripts and storyboards for each learning module, often taking weeks per course
- **Basic Analytics Review:** Manually reviewing completion rates and quiz scores with limited insight into learning effectiveness

#### Maya Today

- **Dynamic Learning Experience Design:** Creating adaptive frameworks that personalize content delivery based on individual learner profiles and real-time performance
- **AI-Powered Needs Analysis:** Using predictive analytics to identify skill gaps before they impact performance, and AI-generated learner personas for targeted design
- **Rapid Content Generation & Iteration:** Collaborating with AI to generate diverse scenarios, assessments, and learning materials, then refining based on learner feedback loops
- **Advanced Learning Analytics:** Interpreting complex learner behavior data to optimize learning paths and predict learning outcomes

## Skills



### Maya in 2023

- **Content Authoring Tools:** Expert proficiency in Articulate Storyline, Captivate, and traditional e-learning development tools
- **Instructional Design Theory:** Strong foundation in ADDIE, Bloom's Taxonomy, and adult learning principles
- **Basic Data Analysis:** Using LMS reports to track completion and assessment scores
- **Subject Matter Expert Collaboration:** Conducting interviews and working with SMEs to extract knowledge

### Maya Today

- **AI-Human Collaboration:** Skill in prompt engineering for learning content generation, training AI systems on learning objectives, and validating AI-generated content
- **Learning Experience Architecture:** Designing sophisticated learner journey maps that account for multiple variables, personalization triggers, and adaptive pathways
- **Advanced Analytics Interpretation:** Understanding learning behavior patterns, engagement metrics, and predictive indicators of learning success
- **Ethical AI in Learning:** Ensuring AI-generated content is unbiased, inclusive, and aligned with learning science principles

## Tools



- **Traditional Authoring:** Articulate Storyline, Adobe Captivate, Camtasia
- **Standard LMS:** Basic learning management system with limited analytics
- **Microsoft Office Suite:** PowerPoint for storyboards, Word for documentation
- **Survey Tools:** SurveyMonkey for needs assessment
- **Stock Content Libraries:** Generic images and templates

- **AI-Powered Learning Platforms:** Adaptive learning systems with built-in personalization engines
- **Generative AI Tools:** ChatGPT, Claude, and specialized learning AI for content generation and scenario development
- **Advanced Analytics Platforms:** Learning analytics dashboards with predictive modeling and learner behavior insights
- **AI Content Creation:** Tools for generating realistic simulations, diverse case studies, and personalized assessment questions
- **Integrated Learning Ecosystems:** Platforms that combine content creation, delivery, analytics, and continuous improvement in one system

## 4.7 Practical Resources

### AI Workforce Playbook

The AI Workforce Playbook: Provides a comprehensive guide with recommendations for organizations to strategically align their workforce development with evolving business and Artificial Intelligence (AI) objectives. It underscores the critical importance of building an AI-ready workforce to ensure relevance, optimize resource allocation, and facilitate effective AI implementation.

[Go to AI Workforce Playbook](#)

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### 2025 AI Skills Glossary

This glossary establishes a common vocabulary for today's most in-demand AI skills, creating a shared language for workers, educators, and employers. This clarity helps align job requirements with training programs and empowers individuals to build the right skills for 2025.

[Go to 2025 AI Skills Glossary](#)

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### Learning Recommendations Catalog

Our curated database has been thoughtfully expanded to include a diverse range of learning recommendations that are aligned with the emerging technical and AI skills presented in this report. This enriched repository equips individuals and organizations with the tools needed to adapt, grow, and thrive in the face of ongoing technological change.

[Go to Learning Recommendations Catalog](#)





# 5. Conclusion

## Overview

This section presents actionable conclusions and strategic recommendations aimed at equipping workers, policymakers, journalists, executives, researchers, and the public with key insights. By addressing the challenges and opportunities of an AI-driven economy, this section provides a roadmap for fostering collaboration, innovation, and workforce readiness across diverse sectors.

5.1 Synthesis of Key Findings	61
5.2 Key Recommendations	63
5.3 The AI Workforce Playbook	65
5.4 A Forward-Looking Perspective	65



## 5.1 Synthesis of Key Findings

### Job Roles

- **AI & Data Science job family showed strong year-over-year growth across G7 countries.** AI and Data Science roles such as AI/ML Engineer, Data Analyst, Data Engineer, and Data Scientist consistently rank among the most sought-after across the G7 countries, while cloud and software engineering and cybersecurity skills remain foundational in support of AI transformation initiatives.
  - **Digital Marketing Specialist, Financial Analyst, and Learning & Development Specialist** emerge as the most in-demand specialized supporting roles across G7 countries.
  - **AI/ML Engineer, AI Risk & Governance Specialist, and NLP Engineer show the highest growth rate across G7 countries.** AI-related positions constitute most of the fastest-growing ICT jobs. Specifically, seven out of the top 10 aggregated fastest-growing jobs are directly related to Artificial Intelligence, with “AI Risk & Governance Specialist” leading with an impressive 234 percent growth rate.
  - **Silicon Valley (US)** leads with a remarkable +156 percent increase in AI jobs, followed closely by **London (UK)** and **Toronto (Canada)**, underscoring their position as **global AI powerhouses**, while **Manchester (UK)**, **Lyon (France)**, and **Vancouver (Canada)** are **emerging as technology hubs** with AI jobs growth more than 70 percent.
- 

### Skills

- ICT professionals across the eight job families are experiencing a **growing integration of AI skills**, as evidenced by the top in-demand skills and emerging skills.
- **78%** of the job roles analyzed included AI skills, highlighting early shifts in role requirements across the G7.
- From 2023 to 2025, the AI skill landscape shifted significantly from mastering **ML model building** toward **agentic AI applications and autonomous agents**. Leveraging **pre-trained Large Language Models (LLMs)** and technologies such as **MCP, RAG, LangChain, LlamalIndex, and agentic frameworks and platforms**, AI systems now autonomously plan, generate, and execute tasks with varying degrees of **human oversight**. As both the complexity and duration of tasks manageable by AI autonomously increase, prioritizing **robustness, security, and ethical standards** becomes essential to proactively manage risks and potential misuse.
- **Leadership and Management, Problem Solving and Innovation, and Collaboration and Communication** are the top in-demand human skills across G7, with communication consistently ranking among the top three in all G7 countries and appearing in over 30 roles, highlighting its critical need alongside AI adoption.

## Preparing for an AI-Driven Workforce

- **16 job roles across 8 ICT job families** have been prioritized by the Consortium members for upskilling/reskilling, with the highest number of job roles coming from Infrastructure and Operations, Software Engineering, and Cybersecurity job families.
- **Significant skill gaps exist in high growth AI skills** such as Prompt Engineering, Large Language Models, AI Security, Generative AI and AI Ethics, and also human skills such as Strategic Thinking and Data Storytelling show moderate skill gaps.
- As career advances from entry to senior-level, depending on the years of experience, the focus shifts to highlight the skill areas required: **Entry-level** focuses on **hands-on technical skills** (AI tools, ML model development); mid-level requires **both operational and strategic responsibilities** (MLOps, AI strategy, project management, ethics); and **senior-level** emphasizes **leadership and guiding AI initiatives**, with **technical understanding** supporting oversight. AI skill requirements vary across leadership level based on role focus: **Individual Contributors** require deep technical expertise in **model development, implementation, and testing**; **Team Leads** focus on bridging execution with strategy through **AI project management and resource allocation**, while **Senior Leaders** emphasize **high-level strategy, ethics, governance, and return on investment (ROI)** – highlighting a shift from hands-on implementation to strategic oversight as roles advance.
- **Software Engineering, AI, and Data Science roles exhibit strong skills overlaps** – up to **87 percent** between **Software Engineers and Full-Stack Developers** and **85 percent** between **Data Scientists and AI/ML Engineers**, enabling high job mobility across these fields through targeted upskilling, with growing specialization driven by increased emphasis on cloud, MLOps, and AI integration.

## 5.2 Key Recommendations

The insights of the research indicate significant integration of AI technical Skills in ICT job roles across career levels and job family groups. It is crucial for everyone – businesses, academia, government, current workers, and future workers – to collaborate and actively participate in this skill development journey.

### For Business Leaders

- Businesses should consider investing in AI learning to ensure workforce competitiveness and innovation, fostering growth in a technology-driven market. By investing in worker learning and development, employers can attract and retain talent. Employers should take worker learning needs and feedback into consideration when developing learning programs.
  - Businesses should embrace a “skills-first” approach that prioritizes the identification, assessment, recognition, and continuous development of demonstrated capabilities. By focusing on real-world skills and adaptability, businesses can build a more agile, future-ready workforce prepared to meet emerging challenges. In addition, to support the “skills-first” approach, businesses should develop comprehensive AI literacy frameworks that map internal AI use, assign responsibilities by department, and embed training in compliance, risk management, and onboarding processes.
  - Businesses should craft a culture of learning agility, where people are rewarded and recognized for continuously learning in their everyday work. New personalized education AI platforms allow tailoring learning experiences to the individual needs and pace of each worker. They can provide customized content, adaptive assessments, and one-on-one tutoring to improve educational outcomes.
  - Businesses should develop strategic AI skills. In the AI era, robust strategy and governance go beyond compliance – they drive competitive advantage. Future leaders should cultivate expertise in AI strategy, ethics, governance, and in demonstrating the return on investment (ROI) of AI initiatives. These capabilities are essential for providing effective oversight, direction, and responsible deployment of AI within organizations.
- 

### For Educational and Learning Institutions

- Educational institutions should consider updating their curricula to include AI technologies and offer concise certificate programs. By integrating practical, industry-specific AI technical skills, graduates will be well-prepared for the workforce, facilitating smooth transitions into professional roles. Educational institutions should prioritize investments in work-based learning initiatives, using flexible learning paths, and fostering collaboration with regional secondary education institutions. Equally important is upskilling educator from the educational institutions to ensure they are equipped with the necessary pedagogy in AI skills to teach and support students in their learning journey.
- They will need to accelerate the adoption of AI-teaching practices while developing comprehensive AI strategies, including governance frameworks, risk management protocols, and clear policies regarding the use of AI in the classroom and across academic activities.
- They should consider building permeable partnerships with the corporate industry. The traditional, arms-length relationship between academia and industry is no longer sufficient. This means moving beyond occasional guest lectures to co-developing curricula with industry leaders on relevant technical and human skills, including the creation of AI Skills repositories, competency-based training, modular learning, and flexible and responsive micro-credentialing programs that can quickly address emerging skills needs.

## For G7 Policymakers

- To accelerate national AI readiness, government leaders should expand funding and grant programs specifically targeted at individuals pursuing short-term, industry-recognized credentials. By investing in accessible upskilling and reskilling initiatives, policymakers can strengthen the workforce, address evolving labor market demands, and ensure broad participation in the digital economy.
  - To ensure that the economic benefits and opportunities generated by AI are distributed more broadly, policymakers should work in partnership with industry and academic institutions to establish AI skilling hubs in rural regions and areas outside major urban centers. These hubs can provide accessible learning programs, foster local innovation, and attract investment, helping to bridge the digital divide and support inclusive workforce development.
  - To ensure a competitive public workforce and accelerate national innovation, governments should adopt skills-based hiring practices across public sector institutions. Additionally, policymakers can encourage and incentivize similar approaches within the private sector. This shift enables the recognition of diverse talents, broadens access to employment opportunities, and aligns workforce capabilities with the evolving demands of the digital economy.
  - Policymakers should ensure that investments in workforce development programs address the full spectrum of AI-related skills. This includes both foundational AI literacy for all citizens and advanced technical competencies for specialized roles. Equally important is continued investment in essential “human skills” such as critical thinking, creativity, ethical reasoning, and collaboration – qualities that complement technological expertise and are vital for success in an AI-driven economy.
  - Policymakers should collaborate with industry partners to systematically study the impact of AI on the labor market across key sectors. Leveraging successful models – such as the ICT consortium’s research on workforce trends – governments can facilitate data-driven insights, identify emerging skills needs, and anticipate workforce transitions. Replicating this collaborative approach in other industries will help ensure that policy responses are timely, targeted, and effective.
- 

## For Current Workers

- Current workers should embrace lifelong learning to stay relevant and proactively seeking reskilling and upskilling opportunities through employer programs, Vocational Education and Training (VET) providers, technical colleges, apprenticeship scheme, labor-sponsored learning implemented by labor unions, online courses, or certifications allows them to adapt to new roles and responsibilities brought about by AI advancements. Workers can leverage learning programs sponsored by companies, academia, non-profits, governments, and labor unions. For mid-career working adults, continued VET and AI upskilling through competency-based training, modular learning and micro-credentialing can be integrated as part of their life-long learning strategies.
- 

## For Future Workers

- To thrive in today’s AI-integrated workplace, a powerful synergy of human skills – including communication, critical thinking, and collaboration – and robust AI technical skills is paramount. Future workers should proactively build this dual foundation to ensure their competitiveness and adaptability in the rapidly evolving job market. Additionally, AI learning programs should be tiered, with entry points for non-technical users and clear progressions toward more advanced AI Technical Skills.
- When learning opportunities are anchored in real-world use cases and practical scenarios, future workers gain a deeper understanding of how these skill sets complement one another in solving complex problems and driving innovation. This practical, scenario-based approach not only builds confidence but also ensures individuals are well-prepared to navigate and contribute to rapidly evolving, technology-driven environments. Vocational Education and Training (VET) systems – including technical colleges, apprenticeship schemes, and dual-training models – play a critical role in enabling such experiential learning at scale. Integrating VET providers as implementation partners, alongside universities and industry, can expand access to AI-focused training and ensure that pathways into skilled employment are inclusive and aligned with market. Additionally, early exposure through apprenticeships, internships, hands-on projects, and mentorships can accelerate learning and boost employability.

## 5.3 The AI Workforce Playbook

**The AI Workforce Playbook** provides a comprehensive guide for organizations to strategically align their workforce development with evolving business and Artificial Intelligence (AI) objectives. It underscores the critical importance of building an AI-ready workforce to ensure relevance, optimize resource allocation, and facilitate effective AI implementation.

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## 5.4 A Forward-Looking Perspective

Looking ahead, the pace of AI innovation will continue to accelerate, reshaping job roles, skills requirements, and the very nature of work. To thrive in this evolving landscape, it is imperative that stakeholders move beyond traditional silos and embrace a culture of co-creation – one that values diverse perspectives, anticipates future disruptions, and empowers individuals at every career stage. Governments, industry leaders, academic institutions, and workers themselves should unite in a shared commitment to continuous learning, agile adaptation, and ethical stewardship.

Through joint investment in upskilling and reskilling, the cultivation of responsible AI practices, and the proactive alignment of policies with technological change, we can collectively build a resilient workforce and a future where human potential is amplified, not diminished, by artificial intelligence.



# 6. Appendix

## Overview

The appendix provides essential resources to support the main report. It includes G7 country infographics, key definitions, job transformation canvases, an AI skills glossary, and references. Together, these sections offer valuable context and insights into the evolving landscape of AI and workforce transformation.

6.1 Appendix A: G7 Country Infographics	67
6.2 Appendix B: Key Definitions	81
6.3 Appendix C: Job Canvas for each Job role	86
6.4 Appendix D: The 2025 AI Skills Glossary	106
6.5 Appendix E: Reference Material Citations	107
6.6 Appendix F: Other Data	109

# 6.1 Appendix A: G7 Country Infographics



## Most In-Demand ICT Roles



- |                         |                    |
|-------------------------|--------------------|
| 1. AI/ ML Engineer      | 4. Data Scientist  |
| 2. Full-Stack Developer | 5. DevOps Engineer |
| 3. Cloud Engineer       |                    |

## Fastest-Growing ICT Roles



- |                                    |                           |
|------------------------------------|---------------------------|
| 1. AI Risk & Governance Specialist | 4. AI/ML Engineer         |
| 2. NLP Engineer                    | 5. AI Business Consultant |
| 3. AI Infrastructure Engineer      |                           |

## Region and Tech Hubs



- |  |  |
|--|--|
| • <b>Toronto</b> – AI research hub (Vector Institute)      | • <b>Montreal</b> – AI and deep learning center          |
| • <b>Waterloo</b> – Part of Toronto-Waterloo tech corridor | • <b>Ottawa</b> – Government tech and telecommunications |
| • <b>Vancouver</b> – Gaming and VR/AR hub                  |  |





## Market Data



**Note:**

**Fastest:** Refers to the job role experiencing the most rapid growth in demand within the scope of the roles analyzed.

**Main Gap:** Refers to the job role with the largest disparity between the supply of qualified candidates and the demand for that role within the scope of the roles analyzed.

**Focus:** Highlights the strategic priorities for each G7 country, identified by analyzing their government policies, strategies, and investment trends within the Artificial Intelligence sector.

## AI Initiatives



- **Canadian Sovereign AI Compute Strategy** <sup>[9]</sup>: Launched in December 2024, this strategy outlines a plan for allocating \$2 billion CAD over five years to provide companies and researchers with tools for AI development.
- **AI Strategy for the Federal Public Service 2025-2027** <sup>[18]</sup> Launched in March 2025, this strategy provides a structured framework for advancing AI adoption while maintaining public trust and accountability.
- **Canada Government Shared Services AI Program** and the **AI Center of Excellence (CoE)** <sup>[19]</sup> incubate AI use cases and promote the use of AI to foster digital innovation. Established in 2019, the AI Program has incubated more than 15 use cases, including CANChat.
- **AI Compute Challenge** <sup>[9]</sup>: The federal government is investing up to \$700 million through this challenge to support projects that establish fully integrated AI data-center solutions, prioritizing those that build out commercial AI-specific data centers in Canada, provide affordable compute offerings, and advance innovative solutions.



## United States

### Most In-Demand ICT Roles



1. AI/ML Engineer
2. Cloud Engineer
3. Data Scientist
4. Full-Stack Developer
5. DevOps Engineer

### Fastest-Growing ICT Roles

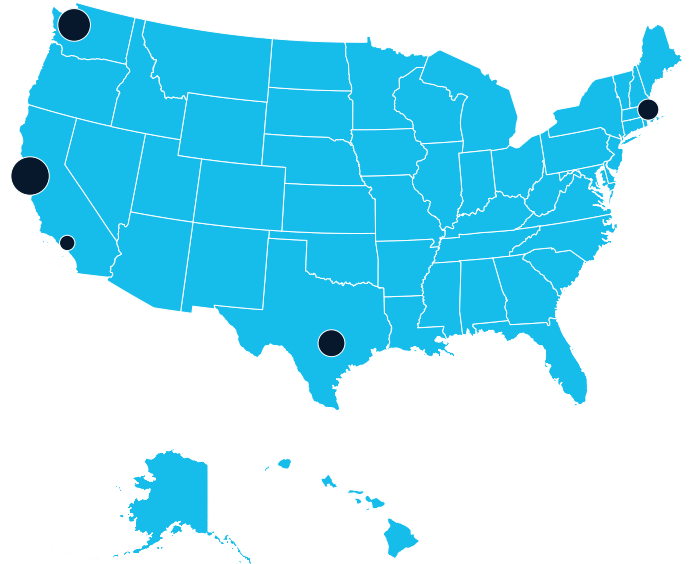


1. AI Risk & Governance Specialist
2. NLP Engineer
3. AI/ML Engineer
4. AI Infrastructure Engineer
5. AI Business Consultant

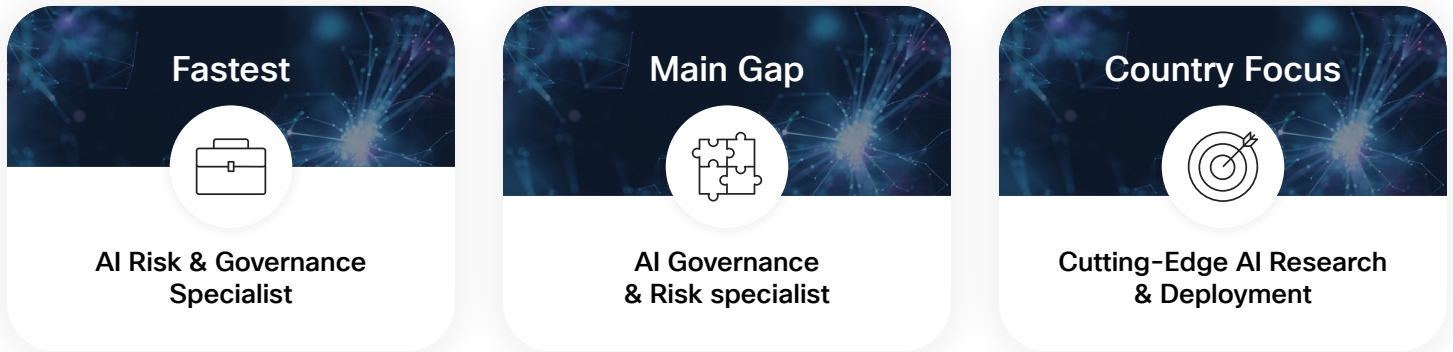
### Region and Tech Hubs



- **Silicon Valley / San Francisco Bay Area** - Leading global AI hub
- **Seattle** - Amazon, Microsoft headquarters
- **Austin** - Emerging tech center
- **Boston** - Biotech and AI research
- **New York** - Fintech and enterprise tech
- **Los Angeles** - Entertainment tech and startups



## Market Data



**Note:**

**Fastest:** Refers to the job role experiencing the most rapid growth in demand within the scope of the roles analyzed.

**Main Gap:** Refers to the job role with the largest disparity between the supply of qualified candidates and the demand for that role within the scope of the roles analyzed.

**Focus:** Highlights the strategic priorities for each G7 country, identified by analyzing their government policies, strategies, and investment trends within the Artificial Intelligence sector.

## AI Initiatives



- The United States is advancing its comprehensive **AI Action Plan** through the implementation of an Executive Order designed to accelerate innovation, promote responsible development, and ensure the global competitiveness of American artificial intelligence technologies <sup>[13]</sup>.
- **Stargate Initiative (OpenAI, Oracle, SoftBank)** <sup>[21]</sup>: This is a major private sector-led initiative, announced in January 2025, aiming to build a network of massive AI-optimized data centers, with an estimated cost of up to \$500 billion over four years. The project is designed to span multiple locations, with initial construction underway in Texas, and involves key technology partners like Microsoft, Nvidia, and Arm.
- In June 2025, over 60 organizations, including nonprofits, K 12 schools, and government agencies, signed the **White House Pledge to America's Youth** <sup>[22]</sup>.



## United Kingdom

### Most In-Demand ICT Roles



1. Data Science
2. AI/ML Engineer
3. Cybersecurity Engineer
4. Cloud Engineer
5. Software Architect

### Fastest-Growing ICT Roles



1. AI Risk & Governance Specialist
2. NLP Engineer
3. AI Infrastructure Engineer
4. Cyber Threat Intelligence Consultant
5. AI Business Consultant

### Region and Tech Hubs



- **London** – Europe's leading tech hub (68% of UK tech jobs)
- **Manchester** – Growing digital hub
- **Edinburgh** – Fintech and data science center
- **Birmingham** – Emerging tech cluster
- **Cambridge** – AI research and biotech



## Market Data



**Note:**

**Fastest:** Refers to the job role experiencing the most rapid growth in demand within the scope of the roles analyzed.

**Main Gap:** Refers to the job role with the largest disparity between the supply of qualified candidates and the demand for that role within the scope of the roles analyzed.

**Focus:** Highlights the strategic priorities for each G7 country, identified by analyzing their government policies, strategies, and investment trends within the Artificial Intelligence sector.

## AI Initiatives



- The UK is establishing dedicated “AI Growth Zones” and investing £1 billion in the public computing capacity required to train large models (Department of Science, Innovation and Technology, UK, 2025) <sup>[8]</sup>
- **Artificial Intelligence Playbook** <sup>[23]</sup>: launched by the UK Government in February 2025 to support the pursuit of its vision of becoming an AI superpower, with a strong emphasis on leveraging AI for economic growth, public service improvement, and establishing a robust governance framework. The playbook offers guidance on using AI safely, effectively and securely for civil servants and people working in government organizations in the UK.
- **AI Opportunities Action Plan** <sup>[24]</sup>: Launched on January 13, 2025, this comprehensive plan aims to position the UK as a global leader in AI, drive economic growth, create jobs, and modernize public services. It comprises 50 recommendations, focusing on investing in AI infrastructure, promoting AI adoption across various sectors, and nurturing national AI champions.
- **Sovereign AI Unit** <sup>[25]</sup>: As part of the Compute Roadmap and backed by £500 million, a new Sovereign AI Unit has been established. Its mandate is to oversee the development of sovereign AI infrastructure in the UK, ensuring continued leadership in global AI advancements.
- **One Big Thing Campaign** <sup>[26]</sup>: (AI Skills Focus): In autumn 2025, the UK civil service will launch its latest “One Big Thing” campaign, with a dedicated focus on Artificial Intelligence. This initiative aims to enhance the AI literacy of civil servants, equipping them with the necessary knowledge, tools, and practical experience to confidently and responsibly integrate AI into their work.



## France

### Most In-Demand ICT Roles



1. Data Scientist
2. AI/ML Engineer
3. Software Architect
4. Cloud Engineer
5. Cybersecurity Engineer

### Fastest-Growing ICT Roles

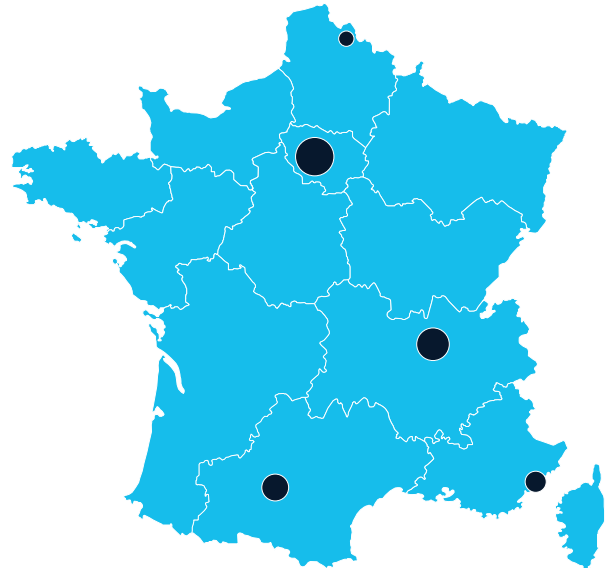


1. AI Risk & Governance Specialist
2. NLP Engineer
3. AI Infrastructure Engineer
4. AI Business Consultant
5. Data Science

### Region and Tech Hubs



- **Paris** – AI ecosystem and Station F
- **Lyon** – Software and digital services
- **Toulouse** – Aerospace and tech
- **Nice/Sophia Antipolis** – Tech park and research
- **Lille** – Cross-border tech hub





## Market Data



### Note:

*Fastest: Refers to the job role experiencing the most rapid growth in demand within the scope of the roles analyzed.*

*Main Gap: Refers to the job role with the largest disparity between the supply of qualified candidates and the demand for that role within the scope of the roles analyzed.*

*Focus: Highlights the strategic priorities for each G7 country, identified by analyzing their government policies, strategies, and investment trends within the Artificial Intelligence sector.*

## AI Initiatives



- At the AI Action Summit in February 2025, the French government announced its ambition to make France an **AI powerhouse**, with President Macron unveiling a significant **€109 billion investment in AI projects** <sup>[7]</sup>
- The French government announced the creation of **INESIA** – the **Institut national pour l'évaluation et la sécurité de l'intelligence artificielle** <sup>[27]</sup>: a national institute for the assessment of security of Artificial Intelligence on January 31, 2025. This move is part of France's broader strategy to ensure the safe, secure, and trustworthy development of artificial intelligence, with the involvement of major industry players in the AI security field.
- **AI Action Summit** <sup>[28]</sup>: (Paris, February 10–11, 2025): France hosted a major international Artificial Intelligence Action Summit in Paris, co-chaired by President Emmanuel Macron and Indian Prime Minister Narendra Modi. The summit gathered over 1,000 participants from more than 100 countries, including government leaders, researchers, and private sector representatives, to discuss AI governance and its role in serving the general interest.
- **An AI Pathway for Pupil** <sup>[36]</sup>: France is integrating AI into its vocational education and training (VET) system by adding a dedicated AI pathway to the PIX platform. Beginning in 2025 school year, this pathway will be a compulsory program for all secondary school pupils, focuses on fundamental topics such as how generative AI works and data management, ensuring all pupils gain a foundational understanding of AI technologies.
- **CurrentAI Foundation** <sup>[29]</sup>: Launched on February 11, 2025, with a €400 million endowment, this new foundation aims to foster the creation of AI "public goods," such as high-quality datasets and open-source tools. It is supported by nine governments and various philanthropic and private organizations.





## Germany

### Most In-Demand ICT Roles



1. Software Engineer
2. AI/ML Engineer
3. Embedded Engineer
4. Cloud Engineer
5. Data Engineer

### Fastest-Growing ICT Roles

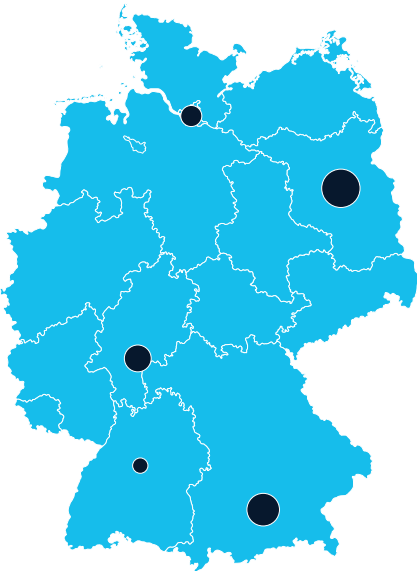


1. AI Risk & Governance Specialist
2. NLP Engineer
3. AI Infrastructure Engineer
4. Embedded Engineer
5. Automation Engineer

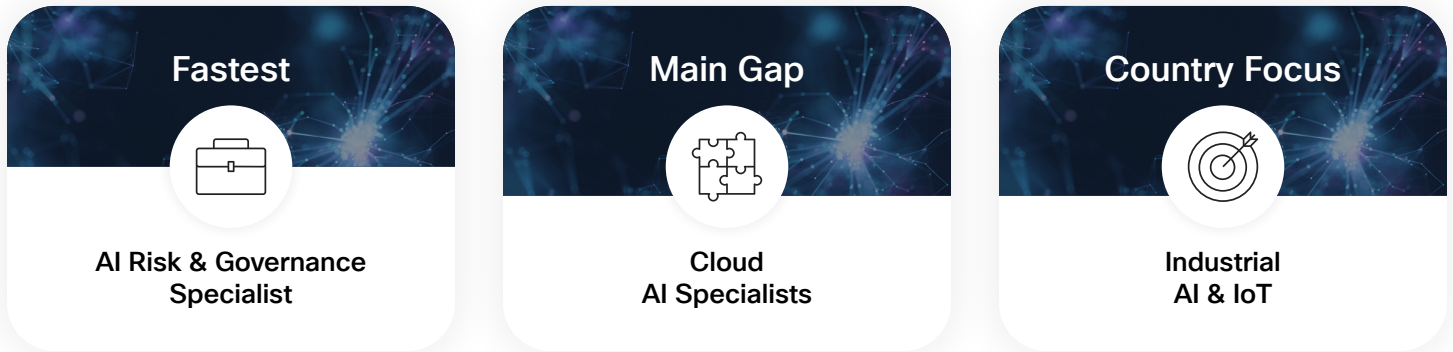
### Region and Tech Hubs



- **Berlin** – Startup capital of Germany
- **Munich** – Industrial tech and automotive AI
- **Frankfurt** – Fintech hub
- **Hamburg** – Logistics and e-commerce tech
- **Stuttgart** – Automotive tech center



## Market Data



### Note:

*Fastest:* Refers to the job role experiencing the most rapid growth in demand within the scope of the roles analyzed.

*Main Gap:* Refers to the job role with the largest disparity between the supply of qualified candidates and the demand for that role within the scope of the roles analyzed.

*Focus:* Highlights the strategic priorities for each G7 country, identified by analyzing their government policies, strategies, and investment trends within the Artificial Intelligence sector.

## AI Initiatives



- Germany is focused on integrating AI into its industrial base and building a skilled workforce through its national AI strategy <sup>[10]</sup>.
- Allianz für KI-Kompetenz <sup>[30]</sup>: Launched in early 2025, the AI Skills Alliance brings together universities, vocational institutions, and industry leaders to develop standardized, AI-focused training programs.
- Future of Work Labs (Zukunft der Arbeit Labore) <sup>[31]</sup>: A network of regional labs piloting AI-driven solutions for workplace transformation.
- National AI Workforce Observatory (Nationale KI-Arbeitsmarktbeobachtungsstelle) <sup>[32]</sup>: Established to monitor AI's impact on the labor market and inform policy-making.
- **The AI Campus** <sup>[37]</sup>, funded by the Federal Ministry of Education, is a digital learning platform that uses AI to personalise learning content. It targets all learning groups, from apprentices and trainers to teachers.



## Japan

### Most In-Demand ICT Roles



1. Software Engineer
2. Embedded Engineer
3. AI/ML Engineer
4. Network Engineer
5. Systems Administrator

### Fastest-Growing ICT Roles



1. AI Risk & Governance Specialist
2. NLP Engineer
3. Embedded Engineer
4. AI Infrastructure Engineer
5. Automation Engineer

### Region and Tech Hubs



- **Tokyo** – Japan's primary tech hub
- **Osaka** – Manufacturing and robotics
- **Kyoto** – Gaming and traditional tech blend
- **Fukuoka** – Startup-friendly city
- **Yokohama** – Part of Greater Tokyo tech area



## Market Data



**Note:**

**Fastest:** Refers to the job role experiencing the most rapid growth in demand within the scope of the roles analyzed.

**Main Gap:** Refers to the job role with the largest disparity between the supply of qualified candidates and the demand for that role within the scope of the roles analyzed.

**Focus:** Highlights the strategic priorities for each G7 country, identified by analyzing their government policies, strategies, and investment trends within the Artificial Intelligence sector.

### AI Initiatives

- Japan continues to advance its **“Society 5.0”** vision—a national strategy aimed at creating a human-centered, smart society by integrating digital technologies such as AI into all aspects of life. As part of this initiative, Japan has placed a strong emphasis on developing flexible AI governance guidelines to adapt to technological changes while promoting innovation, safety, and ethical considerations <sup>[12]</sup>
- Hiroshima AI Process (HAIP)** <sup>[33]</sup>: Japan continues to advance the HAIP, which originated from its 2023 G7 presidency. This process focuses on developing international guiding principles and a code of conduct for advanced AI systems, particularly generative AI, to foster trust and responsible deployment.



## Italy

### Most In-Demand ICT Roles



1. Software Developer
2. Full-Stack Developer
3. Data Analyst
4. Cloud Engineer
5. IT Manager

### Fastest-Growing ICT Roles



1. AI Risk & Governance Specialist
2. NLP Engineer
3. AI Business Consultant
4. Cloud Engineer
5. Automation Engineer

### Region and Tech Hubs



- **Milan** - Fashion tech and fintech
- **Rome** - Government tech and startups
- **Turin** - Industrial tech and automotive
- **Bologna** - University tech hub
- **Naples** - Emerging tech scene



## Market Data



### Note:

*Fastest:* Refers to the job role experiencing the most rapid growth in demand within the scope of the roles analyzed.

*Main Gap:* Refers to the job role with the largest disparity between the supply of qualified candidates and the demand for that role within the scope of the roles analyzed.

*Focus:* Highlights the strategic priorities for each G7 country, identified by analyzing their government policies, strategies, and investment trends within the Artificial Intelligence sector.

## AI Initiatives



- Italy's national AI strategy <sup>[34]</sup>: emphasizes research, enterprise adoption, public sector modernization, and workforce upskilling. Emerging AI skills identified in Italy such as AI implementation, generative AI, and data strategy directly support these priorities, reinforcing Italy's ambition to become a leader in responsible and innovative AI development.
- AI Bill (Legislative Framework): Italy's first comprehensive AI law, officially known as the "Act on the Promotion of Research, Development, and Utilization of Artificial Intelligence-Related Technologies," saw significant progress in 2025. This bill aims to complement the European Union's AI Act by introducing national measures in areas such as copyright, transparency, and criminal enforcement, and regulating AI use in critical sectors like national security, healthcare, employment, and intellectual property.
- National Coordination Committee on AI and Digital Innovation: As part of its implementation of the EU AI Act, Italy plans to establish a national coordination committee dedicated to AI and digital innovation
- IT4LIA AI Factory Initiative <sup>[34]</sup>: The Italian Ministry of Universities and Research is supporting and co-financing the IT4LIA AI factory initiative.
- "New Skills Fund" Enhancement: The "New Skills Fund," designed to support upskilling and reskilling initiatives, received an additional financial boost of €318.8 million in May 2025, bringing its total resources to over €1 billion

## 6.2 Appendix B: Key Definitions

### AI Skills Integration Level

AI Skill Integration is a key metric that quantifies the prevalence of AI-related skills within job roles, based on requirements specified in job postings.

Roles are classified into five levels according to the proportion of postings requiring AI skills (x):

- Immaterial ( $\leq 10\%$ ): At most, only 1 in 10 job postings require AI skills. AI skills are not yet considered essential for this role.
  - Initial integration ( $10\% < X \leq 25\%$ ): Between 10% and 25% of postings require AI skills—indicating the early stages of AI adoption in the role.
  - Significant integration ( $25\% < X \leq 50\%$ ): Between 25% and 50% of postings require AI skills—reflecting substantial integration of AI in daily responsibilities.
  - Established integration ( $50\% < X \leq 70\%$ ): Between 50% and 70% of postings require AI skills—AI integration is well-established and central to the role.
  - Core ( $X > 70\%$ ): More than 70% of postings require AI skills—AI expertise is a primary focus for the role.
- 

### AI Skill Areas

#### AI Tools Cluster – Skills included in this cluster:

- ChatGPT, Claude, Copilot
- Cursor, Windsurf (AI IDEs)
- Midjourney, DALL-E, Stable Diffusion
- Jasper AI, Copy.ai
- GitHub Copilot, Amazon CodeWhisperer
- Perplexity AI, You.com
- AI-powered analytics tools
- Voice AI assistants
- AI browser extensions
- No-code AI platforms

#### ML Model Development cluster – Skills included in this cluster:

- TensorFlow, PyTorch, Keras
- Scikit-learn, XGBoost
- Model training & validation
- Feature engineering
- Hyperparameter tuning
- Model evaluation metrics
- Deep learning frameworks
- Neural network architecture
- Transfer learning
- Model optimization

#### AI Strategy cluster – Skills included in this cluster:

- AI roadmap development
- AI use case identification
- ROI analysis for AI projects
- AI transformation planning
- Competitive AI assessment
- AI partnership strategy
- AI investment planning
- Change management for AI
- AI maturity assessment
- Strategic AI governance



#### Ethics & Governance Cluster – Skills included in this cluster:

- Responsible AI frameworks
- Bias detection and mitigation
- AI fairness assessment
- Privacy-preserving AI
- AI transparency requirements
- Explainable AI (XAI)
- AI audit procedures
- Regulatory compliance
- AI risk assessment
- Ethical AI guidelines

#### MLOps/LLMOps Cluster – Skills included in this cluster:

- Model deployment pipelines
- Model versioning (MLflow, DVC)
- Model monitoring & observability
- A/B testing for models
- CI/CD for ML
- Containerization (Docker, Kubernetes)
- Model serving (TensorFlow Serving, TorchServe)
- Feature stores
- Model registry management
- Infrastructure as Code for ML

#### AI Project Management Cluster – Skills included in this cluster:

- Agile for AI projects
- AI project scoping
- Resource allocation for AI teams
- AI project risk management
- Stakeholder management
- AI project metrics & KPIs
- Cross-functional coordination
- Vendor management for AI
- AI project budgeting
- Timeline management for AI initiatives

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## Artificial Intelligence

An AI system is a machine-based system that, for explicit or implicit objectives, processes input to generate outputs such as predictions, content, recommendations, or decisions. These outputs can influence physical or virtual environments. AI systems vary in their levels of autonomy and adaptiveness after deployment <sup>[35]</sup> (OECD, 2024)

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## Career Levels Classification

Career Levels Classification refers to a system used by organizations to categorize employees based on their experience, skills, responsibilities, and seniority

#### Experience-Based used in the report:

- Entry: 0–3 years
- Mid: 3–7 years
- Senior: 7+ years

Calculation Method: Each percentage represents: (Job postings requiring skill at X career level / Total job postings at X career level) × 10

**Demand Growth**

This metric quantifies the year-over-year percentage change in the volume of unique job postings and the skills demanded within them. It provides a comprehensive view of trends in job and skills demand. The growth rate is calculated by comparing the total demand from the most recent 12-month period (e.g., July 2024 – June 2025) against the total from the prior 12-month period (e.g., July 2023 – June 2024).

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**Emerging Skills**

Fastest developing new skills needed to adapt to evolving technologies and industry trends

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**Fastest (growing roles) (Appendix A)**

Refers to the job role experiencing the most rapid growth in demand within the scope of the roles analyzed.

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**Country Focus (Appendix A)**

Highlights the strategic priorities for each G7 country, identified by analyzing their government policies, strategies, and investment trends within the Artificial Intelligence sector

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**In-Demand Skills**

Skills that are highly sought after by employers due to current market needs and workforce shortages.

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**Job Family Domains**

A job family is a group of related job roles that share similar skills, responsibilities, and career paths.

- Artificial Intelligence & Data Science: Developing intelligent systems and extracting insights from data using algorithms and machine learning
  - Architecture & Platform Roles: Designing technology frameworks and managing foundational systems that support applications and services.
  - Business and Management: Overseeing the development, business analysis, and marketing of technology products and services
  - Customer & Support: Assisting users and resolving technical issues to ensure optimal use of products and services.
- Cybersecurity: Safeguarding systems, networks, and data from security breaches and cyberattacks
  - Design and User Experience: Creating intuitive user experiences and interfaces
  - Infrastructure and Operations: Managing computer networks, including installation, configuration, and troubleshooting
  - Software Engineering: Creating and maintaining software applications

## Job Transformation Canvas

The **Job Transformation Canvas** is a framework designed to describe the evolution of a job role, specifically considering **AI-induced changes**, and offering an overall outlook on the changing job landscape to employers, current workers, and future workers.

It is structured around three elements: 'Job Role', 'AI Skills Integration', and 'Learning Recommendations'

---

## Leadership Levels Classification

Leadership Levels Classification refers to a system used by organizations to categorize employees based on their leadership experience, skills, responsibilities, and seniority.

- Individual Contributors (IC): No direct reports
  - Team Leads: 1–5 direct reports
  - Senior Leadership: 6+ direct reports
- 

## Main Gap (Appendix A)

Refers to the job role with the largest disparity between the supply of qualified candidates and the demand for that role within the scope of the roles analyzed.

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## Upskilling Learning Programs

Learning designed to enhance or expand employees' existing skills to improve performance in their current role

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## Reskilling Learning Programs

Learning initiatives that teach employees new skills for a different job or role within an organization.

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## Specialized Supporting Roles

Specialized Supporting Roles are professional positions that operate outside the core ICT job families but are essential enablers within the AI ecosystem and technology-driven transformations. These roles span diverse domains including finance, marketing, legal, compliance, human resources, and environmental functions, providing critical cross-functional expertise that supports AI and technology implementations across organizations.

Key Characteristics:

- Cross-Functional Expertise: These roles bridge the gap between technical AI capabilities and business operations, ensuring that AI initiatives align with organizational goals, regulatory requirements, and stakeholder needs.
  - AI Integration Enablers: While not primarily technical AI roles, these positions increasingly require AI literacy and the ability to leverage AI tools to enhance their core functions—from AI-powered analytics in finance to automated compliance monitoring in legal roles.
  - Strategic Business Support: They provide essential infrastructure for AI adoption by managing the business, legal, regulatory, and human aspects of technological transformation, ensuring sustainable and responsible AI implementation.
  - Organizational Resilience: These roles help organizations navigate the complexities of AI transformation by addressing change management, risk assessment, talent development, and stakeholder communication needs.
- 

**Technical Skills Gap Analysis**

Identifying the difference between supply-demand of technical capabilities and the skills required for a job role.

Gap Calculation = (Demand for Skill - Supply of Skill) / Demand for Skill × 100

The Gap Severity column uses a four-tier system based on the supply-demand imbalance:

- Critical: Severe shortage where demand vastly exceeds supply. <30% of demand met
  - High: Significant shortage requiring urgent attention. 30-50% of demand met.
  - Moderate: Moderate shortage with manageable gaps. 50-70% of demand met
  - Low: Minor shortage or near equilibrium. >70% of demand met
- 

**Top In-Demand Jobs**

This metric identifies the job roles that had the highest volume of job postings over the past year (July 2024 – June 2025). It is determined by counting the total number of advertisements for each job role during this period and ranking them from most to least frequent.

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**Vocational Education and Training (VET)**

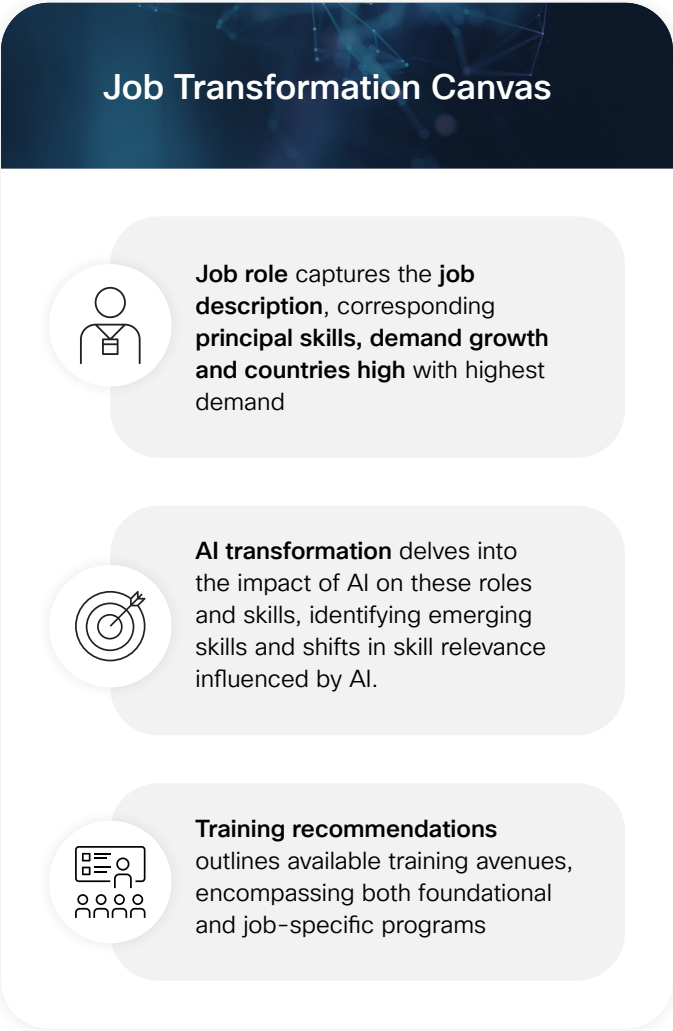
Vocational education and training, abbreviated as VET, sometimes simply called vocational training, is the training in skills and teaching of knowledge related to a specific trade, occupation or vocation in which the student or employee wishes to participate. Vocational education may be undertaken at an educational institution, as part of second-ary or tertiary education, or may be part of initial training dur-ing employment, for example as an apprentice, or as a com-bination of formal education and workplace learning.

# 6.3 Appendix C: Job Canvas for each Job role

The Job Transformation Canvas is structured around three elements: ‘Job Role’ ‘AI Transformation’, and ‘Learning Recommendations’ providing a comprehensive framework for understanding the evolving landscape of ICT job roles. It is designed to offer an overall outlook on the changing job landscape to employers, workers, and future workers. The Job Transformation Canvas enables workers to understand market expectations and provides avenues for upskilling or reskilling accordingly. With its primary focus on skills, the report aims to address the skill gap in a dynamic, AI-impacted job market. Furthermore, it offers educators and policy influencers a broad view of the expected evolution of job roles and the industry’s stance on the matter.

Each Job Transformation Canvas is broken down into two main categories: ICT Job family and Specialized Support Roles. ICT Job family is categorized into 8 job family domains:

- Architecture & Platform Roles
- Artificial Intelligence & Data Science
- Business and Management Roles
- Customer & Support Roles
- Cyber Security
- Design and User Experience
- Infrastructure & Operations
- Software Engineering



## ICT Job Family and Roles

No.	Job Family	Job Role	AI Persona / Cluster
1	Architecture and Platform	Platform Engineer	Enabler
		Site Reliability Engineering	Enabler
		Software Architect	Builder
2	Artificial Intelligence and Data Science	AI/ML Engineer	Builder
		AI/ML Researcher	Builder
		Business Intelligence Analyst	User
		Data Analyst	Enabler
		Data Engineer	Enabler
		Data Scientist	Builder
		NLP Engineer	Builder
3	Business and Management	AI Business Consultant	Leader
		AI Risk and Governance Specialist	Enabler
		IT Manager	Leader
		Technical Product Manager	Leader
4	Customer and Support	Consulting Engineer	Leader
		Solutions Engineer	Enabler
		Technical Solutions Specialist/Engineer	Enabler
5	Cybersecurity	Cyber Threat Intelligence Consultant	Enabler
		Cybersecurity Analyst	Enabler
		Cybersecurity Engineer	Enabler
		Ethical Hacker	Enabler
		Incident Response Consultant	Enabler
		Security Architect	Enabler
6	Design and User Experience	UX Designer	Builder
		UX Engineer	Builder

No.	Job Family	Job Role	AI Persona / Cluster
7	Infrastructure and Operations	AI Infrastructure Engineer	Builder
		Automation Engineer	Builder
		Cloud Engineer	Enabler
		DevOps Engineer	Enabler
		IT Analyst	Enabler
		IT Support Technician	User
		Network Architect	Enabler
		Network Engineer	Enabler
		System Administrator	Enabler
8	Software Engineering	Embedded Engineer	Enabler
		Full-Stack Developer	Builder
		Principal Software Engineer	Builder
		Senior Software Engineer	Builder
		Software Developer	Builder
		Software Engineer	Builder

Table 16: List of ICT Job Roles Analyzed



Specialized Support Roles

No.	Specialized Support Roles	Job Role	AI Persona / Cluster
1	Specialized Support	Business Developer (for ICT)	User
		Compliance Officer	User
		Customer Support Representative	User
		Digital Marketing Specialist	User
		Environmental Engineer	User
		Financial Analyst	User
		Human Resource Generalist	User/Enabler
		Learning and Development Specialist	User/Enabler
		Legal Counsel	User
		Technical Project Manager	Leader

Table 17: List of Specialized Support Roles Analyzed

# Job Canvas Architecture and Platform Roles

## Platform Engineer

**Job Description:** Builds and maintains internal platforms that enable development teams to be more productive; focuses on developer experience and automation

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Significant

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** Kubernetes, IaC, Automation, DevOps, Cloud Platforms, CI/CD, Monitoring, Security, Documentation, MLOps

**Top 10 Emerging Technical Skills:** LLM Platform Engineering, Multi-Model Serving Infrastructure, AI Observability Platforms, Cost-Optimized AI Inference, GPU Cluster Orchestration, Serverless AI Platforms, Edge-Cloud AI Hybrid, AI Security Platforms, Model Registry & Versioning, AI Development Platforms

## Site Reliability Engineer

**Job Description:** Site Reliability Engineers (SRE) are responsible for ensuring the reliability, scalability, and performance of an organization's IT infrastructure and systems

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Canada



UK



USA

**Top 10 In-Demand Skills:** Monitoring, Automation, Performance, Reliability, Kubernetes, Cloud, Scripting, Documentation, Incident Response, On-call

**Top 10 Emerging Technical Skills:** AI-Powered Incident Detection, Predictive Failure Analysis, Self-Healing Systems, Anomaly Detection ML, Automated Root Cause Analysis, AI Capacity Planning, Intelligent Alert Routing, Performance Prediction Models, Chaos Engineering with AI, AIOps Integration

## Software Architect

**Job Description:** Designs high-level software architecture, makes technology decisions, and ensures system scalability and maintainability

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:**  
Significant

**Countries with Highest Demand:**



France



UK



USA

**Top 10 In-Demand Skills:** System Design, Microservices, Cloud Architecture, Security, Documentation, Performance, Leadership, Communication, Strategy, Mentoring

**Top 10 Emerging Technical Skills:** AI-Native Architecture Patterns, Event-Driven LLM Systems, Multi-Model Orchestration, Serverless AI Functions, Vector-First Data Architecture, AI Mesh & Service Discovery, LLM Gateway Design, Distributed Inference Architecture, AI Cost Optimization Strategies, Hybrid Cloud-Edge AI Design



**Access Learning  
Recommendations**



Please click here to access the list of recommended foundational and job specific trainings.

# Job Canvas Artificial Intelligence & Data Science Roles

## AI/ML Engineer

**Job Description:** Develops and deploys machine learning models and AI systems; works on the full ML lifecycle from data to production

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:**  
Core

**Countries with Highest Demand:**



Canada



USA



UK

**Top 10 In-Demand Skills:** Data Engineering, Cloud AI, LLMs, Model Deployment, MLOps, , Mathematics, PyTorch, Python, Research, TensorFlow.

**Top 10 Emerging Technical Skills:** Multi-Agent Systems, Constitutional AI, RLHF, Multimodal Models, Edge AI Deployment, Mixture of Experts, Neural Architecture Search, Federated Learning, AI Alignment, Quantum ML

## AI/ML Researcher

**Job Description:** Conducts research to advance AI/ML technologies; publishes papers and develops novel algorithms and approaches

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:**  
Core

**Countries with Highest Demand:**



Canada



USA



UK

**Top 10 In-Demand Skills:** Advanced ML, Collaboration, Communication, Experimentation, Innovation, Mathematics, Publications, Python, Research, Theory

**Top 10 Emerging Technical Skills:** Foundation Model Research, AI Safety Research, Mechanistic Interpretability, Constitutional AI, Multimodal Learning, Efficient Architectures, Reasoning Systems, Embodied AI, Neurosymbolic AI, AGI Research

## Business Intelligence Analyst

**Job Description:** Develops BI solutions and provides strategic insights from data. Bridges technical analysis with business strategy.

**AI Cluster / Persona:**  
AI User

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** Analytics, Business Acumen, Communication, BI Tools, Data Modeling, Documentation, Strategy, SQL, Reporting, Visualization

**Top 10 Emerging Technical Skills:** Predictive BI, AI-Driven Forecasting, Real-time Analytics, Natural Language BI, Automated Report Generation, Prescriptive Analytics, Augmented Intelligence, Decision Intelligence, Cognitive BI, AI Strategy Metrics

## Data Analyst

**Job Description:** Analyzes data to provide business insights and support decision making; creates reports and visualizations

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Canada



France



Italy

**Top 10 In-Demand Skills:** Business Intelligence, Communication, Data Visualization, Documentation, Excel, Problem Solving, Python, Statistics, SQL, Tableau

**Top 10 Emerging Technical Skills:** AI-Powered Analytics, Natural Language Queries, Automated Insights, Predictive Analytics, Augmented Analytics, Conversational BI, Anomaly Detection, AI Storytelling, Self-Service Analytics, Real-time Dashboards

## Data Engineer

**Job Description:** Builds and maintains data infrastructure and pipelines; ensures data quality and availability for analytics and ML

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Significant

### Countries with Highest Demand:



Germany



UK



USA

**Top 10 In-Demand Skills:** ETL, Big Data, SQL, Cloud Data Platforms, Python, Data Modeling, Streaming, Data Quality, Documentation, Performance Optimization

**Top 10 Emerging Technical Skills:** Real-time ML Pipelines, Vector Database Engineering, Feature Engineering Automation, Data Lakehouse Architecture, Stream Processing for AI, Graph Data Engineering, Data Versioning for ML, Distributed Computing, Data Mesh Implementation, ML Data Governance

## Data Scientist

**Job Description:** Analyzes complex data to derive insights and build predictive models; combines statistical analysis with machine learning

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:** Core  
Core

### Countries with Highest Demand:



France



UK



USA

**Top 10 In-Demand Skills:** Python, R, Statistics, Visualization, SQL, Cloud, Experimentation, ML, Communication, Business Understanding

**Top 10 Emerging Technical Skills:** AutoML Platforms, Causal Inference, Explainable AI, Real-time Analytics, Feature Stores, MLOps Integration, Synthetic Data Generation, Privacy-Preserving ML, Time Series AI, Recommender Systems

## NLP Engineer

**Job Description:** Specializes in natural language processing, developing systems for text understanding and generation

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:**  
Core

### Countries with Highest Demand:



Canada



UK



USA

**Top 10 In-Demand Skills:** Transformers, BERT, GPT, Language Models, Deep Learning, Python, Linguistics, APIs, Cloud, Research

**Top 10 Emerging Technical Skills:** Large Language Models, RAG Systems, Multi-lingual Models, Speech-to-Text AI, Sentiment Analysis 2.0, Knowledge Graphs, Conversational AI, Document Intelligence, Code Generation, Semantic Search



**Access Learning  
Recommendations**



Please click here to access the list of recommended foundational and job specific trainings.

# Job Canvas Business and Management Roles

## AI Business Consultant

**Job Description:** Advises organizations on AI strategy and implementation; bridges business needs with AI capabilities

**AI Cluster / Persona:**  
AI Leader

**AI Skills Integration:**  
Core

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** AI Strategy, Business Analysis, ROI, Change Management, Communication, Leadership, Innovation, Problem Solving, Industry Knowledge, Presentation

**Top 10 Emerging Technical Skills:** AI Transformation Strategy, LLM Business Cases, AI ROI Modeling, Industry AI Solutions, AI Maturity Assessment, Responsible AI Implementation, AI Operating Models, AI Partnership Strategy, AI Risk Management, AI Value Realization

## AI Risk & Governance Specialist

**Job Description:** Manages AI-related risks and ensures governance compliance; develops frameworks for responsible AI use

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Core

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** AI Ethics, Documentation, Compliance, Risk Assessment, Policy, Communication, Leadership, Regulatory Knowledge, Problem Solving, Stakeholder Management

**Top 10 Emerging Technical Skills:** AI Ethics Frameworks, Regulatory Compliance AI, Model Risk Management, Bias Detection Tools, AI Audit Methodologies, Privacy-Preserving AI, Explainable AI Governance, AI Impact Assessment, Responsible AI Metrics, AI Incident Management

## IT Manager

**Job Description:** Manages IT teams and operations; balances technical knowledge with leadership and business acumen

**AI Cluster / Persona:**  
AI Leader

**AI Skills Integration:**  
Immaterial

**Countries with Highest Demand:**



Italy



France



USA

**Top 10 In-Demand Skills:** ITIL, Leadership, Strategy, Budget Management, Team Development, Communication, Risk Management, Vendor Management, Performance Management, Change Management

**Top 10 Emerging Technical Skills:** AI Strategy Development, Digital Transformation, AI Team Building, AI Budget Planning, Change Leadership, AI Governance, Innovation Management, AI Vendor Management, Performance Analytics, AI Culture Building

## Technical Product Manager

**Job Description:** Manages technical products, working with engineering teams and stakeholders; balances business needs with technical feasibility

**AI Cluster / Persona:**  
AI Leader

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Canada



UK



USA

**Top 10 In-Demand Skills:** AI/ML, Data Analysis, Metrics, Product Strategy, Agile, Communication, Leadership, User Research, Roadmapping, Stakeholder Management

**Top 10 Emerging Technical Skills:** AI Product Strategy, LLM Product Design, AI Feature Prioritization, User Experience AI, AI Metrics & KPIs, Responsible AI Products, AI Monetization, AI Product Analytics, Competitive AI Analysis, AI Roadmapping

## Job Canvas Customer & Support Roles

### Consulting Engineer

**Job Description:** Provides expert consulting on technical implementations and works with clients on complex technical projects

**AI Cluster / Persona:**  
AI Leader

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** Architecture, Implementation, Documentation, Technical Expertise, Consulting, Communication, Problem Solving, Leadership, Project Management, Client Relations

**Top 10 Emerging Technical Skills:** AI Implementation Consulting, Solution Architecture AI, Best Practices AI, Migration Planning AI, Performance Optimization AI, Security Consulting AI, Cost Optimization AI, Training Development AI, Success Metrics AI, Innovation Consulting

### Solutions Engineer

**Job Description:** Works with customers to design technical solutions And combines technical expertise with customer-facing skills

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** Architecture, Cloud, APIs, Documentation, Troubleshooting, Technical Sales, Problem Solving, Communication, Presentation, Customer Relations

**Top 10 Emerging Technical Skills:** AI Solution Patterns, LLM Integration Design, Customer Success AI, Technical Demo AI, Solution Sizing AI, POC Automation, Architecture Visualization, Cost Estimation AI, Migration Planning AI, Success Metrics AI

### Technical Solutions Specialist

**Job Description:** Provides technical expertise to solve customer problems; specializes in specific products or technologies

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Canada



UK



USA

**Top 10 In-Demand Skills:** Technical Support, Documentation, Product Expertise, Troubleshooting, Problem Solving, Communication, Customer Service, Patience, Continuous Learning, Training

**Top 10 Emerging Technical Skills:** AI Troubleshooting, Automated Solutions, Knowledge Base AI, Predictive Support, Self-Service AI, Technical Training AI, Solution Recommendation, Issue Pattern Recognition, Performance Optimization AI, Documentation AI



**Access Learning Recommendations**



Please click here to access the list of recommended foundational and job specific trainings.

# Job Canvas Cyber Security Roles

## Cybersecurity Analyst

**Job Description:** Monitors and analyzes security events; identifies and responds to security threats and vulnerabilities

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



**Top 10 In-Demand Skills:** Threat Hunting, SIEM, Log Analysis, Security Tools, Documentation, Communication, Problem Solving, Continuous Learning, Attention to Detail, Teamwork

**Top 10 Emerging Technical Skills:** AI-Driven SIEM, Behavioral Analytics, Automated Threat Hunting, User Entity Analytics, Network Traffic AI, Endpoint Detection AI, Cloud Security Monitoring, Insider Threat AI, Security Orchestration, Predictive Analytics

## Cyber Security Engineer

**Job Description:** Protects systems and data from cyber threats; implements security controls and responds to incidents

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



**Top 10 In-Demand Skills:** Threat Analysis, Security Tools, Networking, Scripting, Documentation, Human Skills: Incident Response, Compliance, Communication, Problem Solving, Continuous Learning

**Top 10 Emerging Technical Skills:** AI Threat Detection, Behavioral Analytics, Automated Response, AI Security Testing, Deepfake Detection, Privacy-Preserving ML, Zero-Day Prediction, AI Red Teaming, Quantum-Safe Crypto, AI Governance Security

## Cyber Threat Intelligence Consultant

**Job Description:** Analyzes cyber threats and provides intelligence to prevent attacks; works with threat data and attack patterns

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Significant

**Countries with Highest Demand:**



**Top 10 In-Demand Skills:** Threat Analysis, ML for Threats, OSINT, Security Tools, Report Writing, Critical Thinking, Communication, Research, Collaboration, Continuous Learning

**Top 10 Emerging Technical Skills:** Predictive Threat Intelligence, AI-Powered OSINT, Automated Threat Hunting, Adversarial ML Detection, Threat Actor Profiling, Real-time Threat Correlation, Cognitive Security Analytics, Threat Simulation AI, Dark Web AI Monitoring, APT Prediction Models

## Ethical Hacker

**Job Description:** Tests systems for vulnerabilities through authorized hacking and identifies security weaknesses before malicious actors

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Immaterial

**Countries with Highest Demand:**



**Top 10 In-Demand Skills:** Penetration Testing, Security Tools, Scripting, Vulnerability Assessment, Documentation, Critical Thinking, Communication, Continuous Learning, Ethics, Problem Solving

**Top 10 Emerging Technical Skills:** AI-Powered Pen Testing, Automated Vulnerability Discovery, ML Fuzzing, AI Social Engineering, Red Team AI Agents, Code Security Analysis, API Security Testing, Cloud Security Testing, IoT Security AI, Adversarial Testing



## Incidence Response Consultant

**Job Description:** Responds to security incidents and breaches and conducts forensics and implements remediation strategies

**AI Cluster / Persona:**

AI Enabler

**AI Skills Integration:**

Immaterial

**Countries with Highest Demand:**



Canada



UK



USA

**Top 10 In-Demand Skills:** Forensics, Recovery, Security Tools, Documentation, Incident Management, Communication, Problem Solving, Leadership, Compliance, Continuous Learning

**Top 10 Emerging Technical Skills:** AI-Powered Forensics, Automated Incident Response, Behavioral Analysis, Threat Intelligence Integration, Predictive Recovery, AI Chain of Custody, Memory Forensics AI, Network Traffic AI, Malware Analysis AI, Incident Prediction

## Security Architect

**Job Description:** Designs security architectures and frameworks and ensures security is built into systems from the ground up

**AI Cluster / Persona:**

AI Enabler

**AI Skills Integration:**

Initial

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** Security Design, Zero Trust, Cloud Security, Enterprise Architecture, Documentation, Risk Assessment, Compliance, Leadership, Communication, Strategy

**Top 10 Emerging Technical Skills:** AI Security Architecture, LLM Security Patterns, Adversarial Defense, Privacy-Enhancing Tech, Secure AI Deployment, AI Threat Modeling, Federated Security, Homomorphic Encryption, Secure Multi-party AI, AI Audit Frameworks



**Access Learning  
Recommendations**



Please click here to access the list of recommended foundational and job specific trainings.

# Job Canvas Design and User Experience Roles

## UX Designer

**Job Description:** Designs user experiences for digital products. Focuses on usability, accessibility, and user satisfaction.

**AI Cluster / Persona:** AI Builder  
**AI Skills Integration:** Initial

**Countries with Highest Demand:**

 Canada  UK  USA

**Top 10 In-Demand Skills:** Design Tools, Prototyping, Testing, Documentation, User Research, Accessibility, Communication, Problem Solving, Creativity, Collaboration

**Top 10 Emerging Technical Skills:** AI Design Systems, Generative UI/UX, Personalization Engines, Voice & Multimodal UI, AI-Powered Prototyping, Emotion AI Design, Accessibility AI, User Testing AI, Design Analytics, Conversational Design

## UX Engineer

**Job Description:** Bridges design and development, implementing user interfaces with focus on user experience and performance


**AI Cluster / Persona:** AI Builder  
**AI Skills Integration:** Initial

**Countries with Highest Demand:**

 USA  Canada  UK

**Top 10 In-Demand Skills:** Frontend Dev, Design Systems, JavaScript, CSS, React, User Testing, Performance, Documentation, Accessibility, Collaboration

**Top 10 Emerging Technical Skills:** AI-Powered Components, Real-time Personalization, Adaptive Interfaces, Voice UI Development, Gesture Recognition, Accessibility Automation, Performance AI, A/B Testing AI, Design Token AI, Micro-interaction AI

 [Access Learning Recommendations](#) 

Please click here to access the list of recommended foundational and job specific trainings.

# Job Canvas Infrastructure & Operations Roles

## AI Infrastructure Engineer

**Job Description:** Builds and maintains infrastructure for AI/ML workloads and focuses on scalability and performance of AI systems

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:**  
Core

**Countries with Highest Demand:**



Germany



Japan



USA

**Top 10 In-Demand Skills:** Distributed Training, MLOps, GPU, Kubernetes, Cloud, Performance Optimization, Monitoring, Cost Management/Optimizations, Documentation, Troubleshooting

**Top 10 Emerging Technical Skills:** Inference Optimization, Model Serving at Scale, Distributed LLM Training, Edge AI Infrastructure, Serverless AI, AI Cost Optimization, Model Quantization, Hardware Acceleration, Multi-Cloud AI, Real-time AI Systems

## Automation Engineer

**Job Description:** Develops automation solutions to improve efficiency and reduce manual tasks; works across infrastructure, testing, and deployment automation

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** RPA, Python, Ansible, Terraform, , CI/CD, Scripting, Testing Automation, Process Optimization, Documentation, Problem Solving

**Top 10 Emerging Technical Skills:** Intelligent Process Automation, AI-Powered RPA, Self-Improving Automation, Cognitive Automation, Autonomous Testing, Natural Language Automation, Vision-Based Automation, Predictive Automation, Multi-Agent Automation, Adaptive Workflows

## Cloud Engineer

**Job Description:** Manages cloud infrastructure, implements cloud solutions, and ensures optimal performance and security of cloud environments

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Canada



UK



USA

**Top 10 In-Demand Skills:** AWS/Azure/GCP, IaC, Cloud Security, Cost Optimization, Networking, Automation, Monitoring, Documentation, Troubleshooting, Compliance

**Top 10 Emerging Technical Skills:** Cloud AI Platforms, Serverless AI Inference, GPU/TPU Management, AI Workload Optimization, Multi-Region AI Deployment, Cloud AI Security, Cost-Optimized AI Infrastructure, Real-time AI Streaming, Hybrid Cloud AI, AI Observability

## DevOps Engineer

**Job Description:** Bridges development and operations, focusing on automation, CI/CD, and infrastructure as code; enables faster and more reliable deployments

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Canada



Germany



USA

**Top 10 In-Demand Skills:** CI/CD, Docker, Kubernetes, Automation, Infrastructure as Code, Cloud Platforms, Monitoring Tools, Scripting, Git, Problem Solving

**Top 10 Emerging Technical Skills:** AIOps & Predictive Analytics, MLOps Pipeline Automation, AI-Driven Deployment Strategies, Self-Optimizing Infrastructure, Intelligent Resource Allocation, AI Security Scanning, Automated Performance Tuning, Predictive Scaling, AI-Powered Testing, ChatOps with AI

## IT Support Technician

**Job Description:** Provides technical support for hardware and software issues, first line of defense for IT problems

**AI Cluster / Persona:**  
AI User

**AI Skills Integration:**  
Immaterial

**Countries with Highest Demand:**



**Top 10 In-Demand Skills:** Hardware Knowledge, Software Installation, Networking, Help Desk & Remote Tools, OS Troubleshooting, Documentation, Communication, Customer Service, Problem Solving, Patience.

**Top 10 Emerging Technical Skills:** AI Diagnostics, Automated Troubleshooting, Predictive Maintenance, Remote Support AI, Self-Healing Systems, Knowledge Automation, Ticket Intelligence, Asset Management AI, User Behavior Analytics, Support Analytics

## IT Analyst

**Job Description:** Analyzes business requirements and translates them to IT solutions, bridge between business and technology

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Immaterial

**Countries with Highest Demand:**



**Top 10 In-Demand Skills:** Requirements Gathering, Documentation, Data Analysis, Testing Coordination, Business Analysis, Communication, Problem Solving, Process Mapping, Stakeholder Management, Project Support

**Top 10 Emerging Technical Skills:** AI Requirements Analysis, Process Mining AI, Predictive Analytics, Documentation AI, Stakeholder Analytics, Risk Analysis AI, Solution Recommendation, Impact Analysis AI, Test Planning AI, Change Analytics

## Network Architect

**Job Description:** Designs enterprise network architectures, ensuring scalability, security, and performance; creates network strategies and standards

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



**Top 10 In-Demand Skills:** Enterprise Architecture, SDN, Network Security, Network Strategy, Documentation, Cost Optimization, Performance Optimization, Compliance, Leadership, Vendor Management

**Top 10 Emerging Technical Skills:** AI-Driven Network Design, Cognitive Networking, Intent-Based Architecture

## Network Engineer

**Job Description:** Designs, implements, and maintains network infrastructure; ensures network security, performance, and reliability

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Immaterial

**Countries with Highest Demand:**



**Top 10 In-Demand Skills:** Network Automation, Routing/Switching, VPN/Security, Software Defined Networking, Troubleshooting, Firewalls, Load Balancing, Documentation, Network Monitoring, Network Protocols

**Top 10 Emerging Technical Skills:** AI Network Optimization, Predictive Network Analytics, Automated Threat Detection, SDN with AI, 5G Network AI, Intent-Based Networking, AI Traffic Analysis, Network Anomaly Detection, Self-Configuring Networks, AI-Driven QoS

## Systems Administrator

**Job Description:** Maintains and configures computer systems and servers; ensures system availability, security, and performance

**AI Cluster / Persona:**

AI Enabler

**AI Skills Integration:**

Immaterial

**Countries with Highest Demand:**



France



Italy



Japan

**Top 10 In-Demand Skills:** Linux/Windows, Virtualization, Scripting, Security, Networking, Backup/Recovery, Monitoring, Documentation, Troubleshooting, User Support

**Top 10 Emerging Technical Skills:** AI-Assisted System Management, Predictive Maintenance, Automated Troubleshooting, AI Security Monitoring, Self-Healing Infrastructure, Intelligent Backup Strategies, AI Capacity Planning, Automated Compliance, Performance Prediction, User Behavior Analytics



**Access Learning  
Recommendations**



Please click here to access the list of recommended foundational and job specific trainings.

# Job Canvas Software Engineering Roles

## Embedded Engineer

**Job Description:** Develops software for embedded systems, working with hardware constraints and real-time operating systems; focuses on IoT and edge computing

**AI Cluster / Persona:**  
AI Enabler

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Germany



Japan



USA

**Top 10 In-Demand Skills:** Edge AI, C/C++, RTOS, Hardware Interfaces, IoT Protocols, , Microcontrollers, Linux, Debugging, Testing, Documentation

**Top 10 Emerging Technical Skills:** TinyML & Edge AI Deployment, Neuromorphic Computing, AI Hardware Acceleration, Quantum-Classical Hybrid Systems, Federated Learning at Edge, AI Model Quantization, RISC-V AI Extensions, Embedded Vision Systems, Real-time AI Processing, Energy-Efficient AI

## Full Stack Developer

**Job Description:** Develops both client and server software, handling databases, servers, systems engineering, and clients; works across the entire technology stack

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Canada



Italy



USA

**Top 10 In-Demand Skills:** React, Node.js, Cloud Deployment, Databases, APIs, JavaScript, TypeScript, Docker, CI/CD, Agile

**Top 10 Emerging Technical Skills:** LLM Fine-tuning (LoRA/QLoRA), Prompt Engineering & Chain Design, Multi-Agent System Development, AI Code Review & Security Analysis, Embedding Models & Vector Search, Local LLM Deployment & Optimization, Real-time AI Inference, Serverless AI Functions, Edge AI Integration, AI-Driven Testing Frameworks

## Senior Software Engineer

**Job Description:** Leads complex software projects, mentors junior developers, and makes architectural decisions; requires deep technical expertise and leadership skills

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:**  
Significant

**Countries with Highest Demand:**



Canada



UK



USA

**Top 10 In-Demand Skills:** System Design, Architecture, CI/CD, Cloud Architecture, Performance Optimization, Code Review, Technical Strategy, Leadership, Mentoring, Team Management

**Top 10 Emerging Technical Skills:** AI Strategy Development, LLM System Architecture, Multi-Agent Orchestration, AI Safety & Alignment, Responsible AI Implementation, AI Team Building & Culture, Cross-functional AI Integration, AI Performance Metrics, Scalable AI Infrastructure, AI Governance Frameworks

## Software Developer

**Job Description:** Designs, codes, tests, and maintains software applications; creates functional programs and applications working individually or as part of a team

**AI Cluster / Persona:**  
AI Builder

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Canada



France



Italy

**Top 10 In-Demand Skills:** Python, Java, Cloud Services, Git, Agile, Programming, Debugging, Testing, Documentation, Problem Solving

**Top 10 Emerging Technical Skills:** AI-Powered Code Generation, LLM Integration & RAG Implementation, Vector Databases & Semantic Search, WebAssembly & Edge Computing, Rust & Zig Programming Languages, Web5 & Decentralized Identity, Cursor/Codeium/Devin, Multimodal AI (CLIP/LLaVA/Gemini), State Space Models (Mamba/S4), Neural Radiance Fields (NeRFs)

## Software Engineer

**Job Description:** Applies engineering principles to software development, focusing on systematic approaches to design, development, testing, and maintenance

**AI Cluster / Persona:**

AI Builder

**AI Skills Integration:**

Initial

**Countries with Highest Demand:**



Germany



Japan



USA

**Top 10 In-Demand Skills:** Python, Java, Cloud Services, Git, System Design, Architecture, CI/CD, Testing, Agile, Mentoring

**Top 10 Emerging Technical Skills:** Foundation Model Adaptation (PEFT/LoRA), Multimodal AI (CLIP/LLaVA/Gemini), Diffusion Models & ControlNet, State Space Models (Mamba/S4), Neural Radiance Fields (NeRFs), Mixture of Experts (MoE) Architecture, Direct Preference Optimization (DPO), AI-Powered Code Generation, LLM Integration & RAG Implementation, Vector Databases & Semantic Search

## Principal Software Engineer

**Job Description:** Provides technical leadership across multiple teams and projects; sets technical direction and standards for the organization

**AI Cluster / Persona:**

AI Builder

**AI Skills Integration:**

Significant

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** Architecture, System Design, Performance, Security, Communication, Technical Leadership, Strategy, Innovation, Mentoring, Cross-team Collaboration

**Top 10 Emerging Technical Skills:** AI Transformation Leadership, Enterprise LLM Strategy, AI Center of Excellence, Autonomous System Design, AI Ethics & Governance, AI-Human Collaboration Models, Next-Gen AI Architectures, AI Business Value Metrics, Regulatory AI Compliance, AI Risk Management



**Access Learning  
Recommendations**



Please click here to access the list of recommended foundational and job specific trainings.



## Job Canvas Supporting & Specialized Roles

### Business Developer (ICT)

**Job Description:** Develops business opportunities in the ICT sector and combines technical knowledge with sales and partnership skills

**AI Cluster / Persona:**  
AI User

**AI Skills Integration:**  
Immaterial

**Countries with Highest Demand:**



France



UK



USA

**Top 10 In-Demand Skills:** CRM, Market Analysis, Sales, Partnership, Communication, Negotiation, Strategy, Networking, Presentation, Industry Knowledge

**Top 10 Emerging Technical Skills:** AI Market Intelligence, Predictive Sales Analytics, AI Solution Selling, Partnership AI Matching, Customer Intelligence AI, Competitive AI Analysis, Lead Scoring AI, Revenue Prediction, Deal Intelligence, Market Trend AI

### Compliance Officer

**Job Description:** Ensures organizational compliance with regulations and policies; manages compliance programs and audits

**AI Cluster / Persona:**  
AI User

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



USA



UK



France

**Top 10 In-Demand Skills:** Regulatory Knowledge, Audit Procedures, Documentation, Training Development, Communication, Analysis, Risk Management, Problem Solving, Attention to Detail

**Top 10 Emerging Technical Skills:** AI Compliance Monitoring, Regulatory Change AI, Risk Assessment AI, Audit Automation, Policy Management AI, Training Automation, Violation Detection, Reporting Automation, Third-party Risk AI, Ethics Monitoring

### Customer Support Representative

**Job Description:** Provides frontline support to customers and handles inquiries and resolves issues

**AI Cluster / Persona:**  
AI User

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



Canada



UK



USA

**Top 10 In-Demand Skills:** Troubleshooting, CRM Systems, Documentation, Product Knowledge, Communication, Customer Service, Problem Solving, Patience, Empathy, Time Management

**Top 10 Emerging Technical Skills:** Conversational AI, Sentiment Analysis, Automated Ticketing, Knowledge Base AI, Multi-channel Support, Real-time Translation, Emotion AI, Predictive Routing, Self-Service Automation, Voice AI Support

### Digital Marketing Specialist

**Job Description:** Develops and executes digital marketing strategies; uses data and technology to drive marketing success

**AI Cluster / Persona:**  
AI User

**AI Skills Integration:**  
Initial

**Countries with Highest Demand:**



USA



UK



Canada

**Top 10 In-Demand Skills:** Marketing Automation, SEO/SEM, Analytics, Social Media, Data Analysis, Campaign Management, ROI Analysis, Communication, Creativity, Content Strategy

**Top 10 Emerging Technical Skills:** AI Content Generation, Predictive Analytics Marketing, Personalization Engines, Campaign Optimization AI, Customer Journey AI, Sentiment Analysis, Attribution Modeling AI, Creative AI Tools, Conversion Optimization, Marketing Mix AI

## Environmental Engineer

**Job Description:** Develops solutions for environmental challenges and focuses on sustainability and environmental protection

**AI Cluster / Persona:**

AI User

**AI Skills Integration:**

Immaterial

**Countries with Highest Demand:**



Germany



UK



USA

**Top 10 In-Demand Skills:** Sustainability Metrics, Green IT, Carbon Analysis, Environmental Modeling, Regulatory Compliance, Data Analysis, Project Management, Communication, Problem Solving, Innovation

**Top 10 Emerging Technical Skills:** AI Environmental Modeling, Carbon Footprint AI, Sustainability Analytics, Climate Prediction, Resource Optimization, Waste Reduction AI, Energy Efficiency AI, Environmental Monitoring, Impact Assessment AI, Green Tech AI

## Financial Analyst

**Job Description:** Analyzes financial data and provides insights for decision making; creates financial models and forecasts

**AI Cluster / Persona:**

AI User

**AI Skills Integration:**

Initial

**Countries with Highest Demand:**



USA



UK



Japan

**Top 10 In-Demand Skills:** Forecasting, Technical Skills: Financial Modeling, Analytics, Tech Budgeting, Excel, Data Analysis, Risk Analysis, Documentation, Communication, Presentation Skills

**Top 10 Emerging Technical Skills:** AI Financial Modeling, Predictive Forecasting, Risk Analytics AI, Automated Reporting, Anomaly Detection Finance, Investment AI, Budget Optimization, Fraud Detection AI, Market Analysis AI, ROI Prediction

## Human Resource Generalist

**Job Description:** Manages various HR functions, including recruitment, employee relations, and HR administration

**AI Cluster / Persona:**

AI User/Enabler

**AI Skills Integration:**

Immaterial

**Countries with Highest Demand:**



USA



UK



Germany

**Top 10 In-Demand Skills:** HR Tech & Systems, Analytics, Employment Law, Recruitment, Documentation, Talent Management, Communication, Recruitment, Employee Relations, Problem Solving, Empathy

**Top 10 Emerging Technical Skills:** AI Recruitment Tools, People Analytics, Engagement Prediction, Talent Matching AI, Performance Analytics, Learning Recommendation, Bias Detection HR, Retention Prediction, Workforce Planning AI, HR Chatbots

## Learning & Development Specialist

**Job Description:** Designs and delivers training programs; focuses on employee skill development and organizational learning

**AI Cluster / Persona:**

AI User/Enabler

**AI Skills Integration:**

Initial

**Countries with Highest Demand:**



USA



UK



Canada

**Top 10 In-Demand Skills:** AI/Tech Skills, Adult Learning, Analytics, Assessment, LMS Administration, Innovation, Training Design, Communication, Content Development, Facilitation

**Top 10 Emerging Technical Skills:** AI Learning Platforms, Personalized Learning AI, Skill Gap Analysis, Content Generation AI, Adaptive Learning, VR/AR Training, Learning Analytics, Microlearning AI, Assessment Automation, Career Path AI

## Legal Counsel

**Job Description:** Provides legal advice and ensures compliance; manages contracts and legal risks

**AI Cluster / Persona:**  
AI User

**AI Skills Integration:**  
Immaterial

### Countries with Highest Demand:



USA



UK



Germany

**Top 10 In-Demand Skills:** Tech Law, Privacy Law, AI Regulations, Contract Management, Risk Assessment, Communication, Negotiation, Legal Research, Documentation, Ethics

**Top 10 Emerging Technical Skills:** AI Contract Analysis, Regulatory Compliance AI, Risk Prediction Legal, Document Review AI, Legal Research AI, Compliance Monitoring, Contract Generation AI, Litigation Analytics, IP Management AI, Ethics Assessment AI

## Technical Project Manager

**Job Description:** Manages technical projects from inception to delivery; coordinates teams and ensures project success

**AI Cluster / Persona:**  
AI Leader

**AI Skills Integration:**  
Initial

### Countries with Highest Demand:



Germany



UK



USA

**Top 10 In-Demand Skills:** Documentation, Project Management, Agile, Risk Management, Communication, Leadership, Budget Management, Stakeholder Management, Problem Solving, Time Management

**Top 10 Emerging Technical Skills:** AI Project Management, Predictive Planning, AI Resource Optimization, Risk Prediction Models, Automated Status Reports, AI Sprint Planning, Stakeholder Analytics, AI Project Health, Delivery Prediction, AI Team Performance



**Access Learning  
Recommendations**



Please click here to access the list of recommended foundational and job specific trainings.

## 6.4 Appendix D: The 2025 AI Skills Glossary

Developed through cross-industry collaboration by Members and Advisors of the AI Workforce Consortium, the **2025 AI Skills Glossary** establishes a common vocabulary for today's most in-demand AI skills providing clear, common definitions for the latest AI skills, helps align job requirements with training programs and empowers individuals to build the right skills for 2025.

The creation of this glossary was a meticulous and thoughtful process carried out in two key phases. First, an extensive market analysis was conducted, examining 50 job roles across G7 countries included in the **"ICT in Motion: The Next Wave of AI Integration"** report. This analysis identified more than 200 AI individual skills, capturing the essence of the skills driving the global AI workforce. Second, these

individual skills were systematically grouped into about 100 distinct AI skills concepts organized in 10 groups. This critical step ensured alignment with an established framework while making the glossary both intuitive and user-friendly.

### Core Goals of the **2025 AI Skills Glossary**

- **Standardizing AI Competencies:** This glossary establishes a common vocabulary for today's most in-demand AI skills creating a shared language for workers, educators, and employers.
- **Driving Workforce Development:** Supporting workers, employers, and educators in aligning learning and upskilling efforts with the evolving demands of AI-driven industries.

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This report contains content developed with the assistance of artificial intelligence (AI) tools. All AI-generated material has been thoroughly reviewed and validated by qualified human experts to ensure accuracy, completeness, and reliability.

## 6.6 Appendix F: Other Data

### Emerging Technical Skills (Demand Growth YoY)

ICT Job Family	Fastest Emerging Skills (Demand Growth YoY)	
AI & Data Science	<ul style="list-style-type: none"> <li>• Foundation Model Adaptation (267%)</li> <li>• Multimodal AI Development (234%)</li> <li>• Diffusion Models &amp; ControlNet (198%)</li> <li>• State Space Models (Mamba) (156%)</li> <li>• Neural Radiance Fields (NeRFs) (134%)</li> </ul>	<ul style="list-style-type: none"> <li>• Mixture of Experts (MoE) (187%)</li> <li>• Direct Preference Optimization (145%)</li> <li>• Constitutional AI &amp; RLHF (312%)</li> <li>• Multi-Agent Systems (245%)</li> <li>• Quantum ML Algorithms (78%)</li> </ul>
Architecture & Platform	<ul style="list-style-type: none"> <li>• AI-Native Architecture Patterns (234%)</li> <li>• Event-Driven LLM Systems (187%)</li> <li>• AI Cost Optimization Strategies (168%)</li> <li>• Multi-Model Orchestration (165%)</li> <li>• Serverless AI Functions (156%)</li> </ul>	<ul style="list-style-type: none"> <li>• Vector-First Data Architecture (148%)</li> <li>• Distributed Inference Architecture (145%)</li> <li>• Hybrid Cloud-Edge AI Design (142%)</li> <li>• AI Mesh &amp; Service Discovery (132%)</li> <li>• LLM Gateway Design (128%)</li> </ul>
Business and Management	<ul style="list-style-type: none"> <li>• Responsible AI Implementation (256%)</li> <li>• AI Governance Frameworks (234%)</li> <li>• AI Product Strategy &amp; Roadmapping (198%)</li> <li>• LLM Cost-Benefit Analysis (187%)</li> <li>• AI Transformation Leadership (178%)</li> </ul>	<ul style="list-style-type: none"> <li>• AI Team Building &amp; Culture (167%)</li> <li>• Cross-functional AI Integration (165%)</li> <li>• AI Performance Metrics &amp; KPIs (156%)</li> <li>• Risk-Adjusted AI Planning (154%)</li> <li>• AI Vendor Evaluation (143%)</li> </ul>
Customer and Support	<ul style="list-style-type: none"> <li>• Advanced Conversational AI (234%)</li> <li>• Autonomous Customer Agents (198%)</li> <li>• Customer Intent Recognition (178%)</li> <li>• Emotion AI &amp; Sentiment Analysis (176%)</li> <li>• Real-time Language Translation (167%)</li> </ul>	<ul style="list-style-type: none"> <li>• Predictive Support Analytics (165%)</li> <li>• AI-Powered Knowledge Bases (156%)</li> <li>• Omnichannel AI Integration (154%)</li> <li>• Automated Knowledge Base Generation (145%)</li> <li>• Voice Cloning &amp; Synthesis (143%)</li> </ul>
Cybersecurity	<ul style="list-style-type: none"> <li>• LLM Security &amp; Jailbreak Defense (298%)</li> <li>• AI Supply Chain Security (234%)</li> <li>• Prompt Injection Prevention (276%)</li> <li>• AI-Generated Content Detection (245%)</li> <li>• Adversarial Testing for LLMs (223%)</li> </ul>	<ul style="list-style-type: none"> <li>• Model Backdoor Detection (198%)</li> <li>• Privacy-Preserving ML (PPML) (187%)</li> <li>• AI Watermarking &amp; Attribution (156%)</li> <li>• Homomorphic Encryption for AI (134%)</li> <li>• Secure Multi-party AI Computation (145%)</li> </ul>



ICT Job Family	Fastest Emerging Skills (Demand Growth YoY)	
Design and User Experience	<ul style="list-style-type: none"> <li>Generative UI/UX (234%)</li> <li>Conversational Interface Design (198%)</li> <li>AI-First Design Systems (189%)</li> <li>AI-Powered Personalization (176%)</li> <li>Voice &amp; Multimodal Interfaces (167%)</li> </ul>	<ul style="list-style-type: none"> <li>Predictive User Journey Mapping (156%)</li> <li>AI Accessibility Tools (154%)</li> <li>Emotion AI &amp; Sentiment Design (145%)</li> <li>AI-Driven A/B Testing (143%)</li> <li>Spatial Computing UI (134%)</li> </ul>
Infrastructure and Operations	<ul style="list-style-type: none"> <li>LLMOps &amp; Model Serving (256%)</li> <li>Cost-Optimized Inference (189%)</li> <li>Vector Database Management (178%)</li> <li>GPU Cluster Orchestration (172%)</li> <li>Serverless AI Modal (165%)</li> </ul>	<ul style="list-style-type: none"> <li>Real-time AI Pipeline Design (156%)</li> <li>Edge AI Deployment (154%)</li> <li>AI Observability Platforms (143%)</li> <li>Model Caching &amp; CDN Strategies (134%)</li> <li>A/B Testing for AI Features (128%)</li> </ul>
Software Engineering	<ul style="list-style-type: none"> <li>AI-Powered Code Generation (245%)</li> <li>LLM Integration &amp; RAG Implementation (198%)</li> <li>Multimodal AI Integration (176%)</li> <li>Vector Databases &amp; Semantic Search (156%)</li> <li>WebAssembly &amp; Edge Computing (134%)</li> </ul>	<ul style="list-style-type: none"> <li>Rust &amp; Zig Programming Languages (128%)</li> <li>Web5 &amp; Decentralized Identity (112%)</li> <li>State Space Models (98%)</li> <li>Direct Preference Optimization (DPO) (92%)</li> <li>Neural Radiance Fields (NeRFs) (87%)</li> </ul>

## Entry-level ICT Roles – Mapping to European Qualification Framework (EQF)

The report examines 12 entry-level ICT job roles (0 – 3 years' experience) by mapping the range of proficiency levels required—based on the European Competence Framework (e-CF) to the corresponding European Qualification Framework (EQF) levels. Most entry-level roles align with EQF levels 3 to 5, which are typically associated with vocational education and training (VET), with level 5 serving as a bridge to higher education. However, certain roles such as Data Analyst, Business Intelligence Analyst, Data Engineer, and IT Analyst

may require proficiency levels that correspond to EQF level 6, indicating the need for a bachelor's degree or equivalent higher education qualification.

The table below shows the breakdown of each entry-level ICT jobs alignment with EQF levels, using e-CF (closest mapping of job roles with 30 ICT Professionals outlined in e-CF) and subsequently to EQF frameworks.

No.	Entry-level Job Roles	e-CF Proficiency Level for Entry Level Role	EQF Level
1	Data Analyst	<b>e-3:</b>	6
		• <b>Information and Knowledge Management:</b> Analyses business processes and associated information requirements and provides the most appropriate information structure	
		<b>e-2:</b>	
2	Software Developer	• <b>ICT Quality Management:</b> Communicates and monitors application of the organization's quality policy.	4 and 5
		• <b>Information Security Management:</b> Systematically scans the environment to identify and define vulnerabilities and threats. Records and escalates non-compliance.	
		<b>e-1:</b>	
3	Business Intelligence Analyst	• <b>Application Design:</b> Contributes to the design and general functional specification and interfaces.	3
		<b>e-2:</b>	
		• <b>Problem Management:</b> Identifies and classifies incident types and service interruptions. Records incidents cataloguing them by symptom and resolution.	
4	Cybersecurity Analyst	• <b>Component Integration:</b> Acts systematically to identify compatibility of software and hardware specifications. Documents all activities during installation and records deviations and remedial activities.	4 and 5
		<b>e-1:</b>	
		• <b>Application Development:</b> Acts under guidance to develop, test and document applications.	
5	Data Engineer	• <b>Testing:</b> Performs simple tests in strict compliance with detailed instructions.	3
		• <b>Document Production:</b> Uses and applies standards to define document structure.	
		<b>e-3:</b>	
6	IT Analyst	• <b>Information and Knowledge Management:</b> Analyses business processes and associated information requirements and provides the most appropriate information structure.	6
		<b>e-2:</b>	
		• <b>ICT Quality Management:</b> Communicates and monitors application of the organisation's quality policy.	
7	Data Engineer	• <b>Information Security Management:</b> Systematically scans the environment to identify and define vulnerabilities and threats. Records and escalates non-compliance.	4 and 5
		<b>e-2:</b>	
		• <b>Risk Management:</b> Understands and applies the principles of risk management and investigates ICT solutions to mitigate identified risks.	
8	Data Engineer	• <b>Education and Training Provision:</b> Organises the identification of training needs; collates organisation requirements, identifies, selects and prepares schedule of training interventions.	4 and 5
		<b>e-2:</b>	
		• <b>Risk Management:</b> Understands and applies the principles of risk management and investigates ICT solutions to mitigate identified risks.	

No.	Entry-level Job Roles	e-CF Proficiency Level for Entry Level Role	EQF Level
5	Data Engineer	<b>e-3:</b> <ul style="list-style-type: none"> <li>• <b>Information and Knowledge Management:</b> Analyses business processes and associated information requirements and provides the most appropriate information structure</li> </ul>	6
		<b>e-2:</b> <ul style="list-style-type: none"> <li>• <b>ICT Quality Management:</b> Communicates and monitors application of the organisation's quality policy.</li> <li>• <b>Information Security Management:</b> Systematically scans the environment to identify and define vulnerabilities and threats. Records and escalates non-compliance.</li> </ul>	4 and 5
		<b>e-1:</b> <ul style="list-style-type: none"> <li>• <b>Application Design:</b> Contributes to the design and general functional specification and interfaces.</li> </ul>	3
6	Embedded Engineer	<b>e-2:</b> <ul style="list-style-type: none"> <li>• <b>Problem Management:</b> Identifies and classifies incident types and service interruptions. Records incidents cataloguing them by symptom and resolution.</li> <li>• <b>Component Integration:</b> Acts systematically to identify compatibility of software and hardware specifications. Documents all activities during installation and records deviations and remedial activities.</li> </ul>	4 and 5
		<b>e-1:</b> <ul style="list-style-type: none"> <li>• <b>Application Development:</b> Acts under guidance to develop, test and document applications.</li> <li>• <b>Testing:</b> Performs simple tests in strict compliance with detailed instructions.</li> <li>• <b>Document Production:</b> Uses and applies standards to define document structure.</li> </ul>	3
7	Incident Response Consultant	<b>e-2:</b> <ul style="list-style-type: none"> <li>• <b>Risk Management:</b> Understands and applies the principles of risk management and investigates ICT solutions to mitigate identified risks.</li> <li>• <b>Education and Training Provision:</b> Organises the identification of training needs; collates organisation requirements, identifies, selects and prepares schedule of training interventions.</li> </ul>	4 and 5
8	IT Analyst	<b>e-3:</b> <ul style="list-style-type: none"> <li>• <b>Business Plan Development:</b> Exploits specialist knowledge to provide analysis of market environment etc.</li> <li>• <b>Information and Knowledge Management:</b> Analyses business processes and associated information requirements and provides the most appropriate information structure.</li> <li>• <b>Needs Identification:</b> Establishes reliable relationships with customers and helps them clarify their needs.</li> <li>• <b>Process Improvement:</b> Exploits specialist knowledge to research existing ICT processes and solutions in order to define possible innovations. Makes recommendations based on reasoned arguments.</li> </ul>	6
9	IT Support Technician	<b>e-2:</b> <ul style="list-style-type: none"> <li>• <b>Change Support:</b> During change, acts systematically to respond to day by day operational needs and react to them, avoiding service disruptions and maintaining coherence to (SLA) and information security requirements.</li> <li>• <b>Problem Management:</b> Identifies and classifies incident types and service interruptions. Records incidents cataloguing them by symptom and resolution.</li> </ul>	4 and 5
		<b>e-1:</b> <ul style="list-style-type: none"> <li>• <b>User Support:</b> Interacts with users, applies basic product knowledge to respond to user requests. Solves incidents, following prescribed procedures.</li> <li>• <b>Service Delivery:</b> Acts under guidance to record and track reliability data.</li> </ul>	3

No.	Entry-level Job Roles	e-CF Proficiency Level for Entry Level Role	EQF Level
10	Network Engineer	<b>e-2:</b> <ul style="list-style-type: none"> <li>• <b>Component Integration:</b> Acts systematically to identify compatibility of software and hardware specifications. Documents all activities during installation and records deviations and remedial activities.</li> <li>• <b>Problem Management:</b> Identifies and classifies incident types and service interruptions. Records incidents cataloguing them by symptoms and resolution.</li> <li>• <b>Information Security Management:</b> Systematically scans the environment to identify and define vulnerabilities and threats. Records and escalates non-compliance.</li> </ul>	4 and 5
		<b>e-1:</b> <ul style="list-style-type: none"> <li>• <b>Application Design:</b> Contributes to the design and general functional specification and interfaces.</li> <li>• <b>Solution Deployment:</b> Removes or installs components under guidance and in accordance with detailed instructions.</li> </ul>	3
11	Software Engineer	<b>e-2:</b> <ul style="list-style-type: none"> <li>• <b>Problem Management:</b> Identifies and classifies incident types and service interruptions. Records incidents cataloguing them by symptom and resolution.</li> <li>• <b>Component Integration:</b> Acts systematically to identify compatibility of software and hardware specifications. Documents all activities during installation and records deviations and remedial activities.</li> </ul>	4 and 5
		<b>e-1:</b> <ul style="list-style-type: none"> <li>• <b>Application Development:</b> Acts under guidance to develop, test and document applications.</li> <li>• <b>Testing:</b> Performs simple tests in strict compliance with detailed instructions.</li> <li>• <b>Document Production:</b> Uses and applies standards to define document structure.</li> </ul>	3
12	Automation Engineer	<b>e-2:</b> <ul style="list-style-type: none"> <li>• <b>Problem Management:</b> Identifies and classifies incident types and service interruptions. Records incidents cataloguing them by symptom and resolution.</li> <li>• <b>Component Integration:</b> Acts systematically to identify compatibility of software and hardware specifications. Documents all activities during installation and records deviations and remedial activities.</li> </ul>	4 and 5
		<b>e-1:</b> <ul style="list-style-type: none"> <li>• <b>Application Development:</b> Acts under guidance to develop, test and document applications.</li> <li>• <b>Testing:</b> Performs simple tests in strict compliance with detailed instructions.</li> <li>• <b>Document Production:</b> Uses and applies standards to define document structure.</li> </ul>	3

Table 18: Entry-level ICT jobs with EQF levels

Source: The e-CF Explorer - European e-Competence Framework (e-CF) provides a reference of 41 competences for 30 ICT Professionals as applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills, knowledge and proficiency levels that can be understood across Europe. [European Qualification Framework \(EQF\)](#) - an 8-level, learning outcomes-based framework for all types of qualifications that serves as a translation tool between different national qualifications frameworks across 27 EU member states and 11 other countries that are in process of implementing.

# AI Workforce Consortium

**Our vision is to enable the success  
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