Technology Skills Report

Workforce Skills Division

April 2024

Executive Summary

Skills Transformation for US Technology Professionals

In the next five years, 8% of technology roles in the US could be automated. This relatively low risk underscores the need for tech professionals to upskill, as technology will enhance, not replace, their jobs.

By 2029, tech professionals will need to achieve a proficient level in 23 future-proof capabilities, and an expert level in 4: IT, personal learning and mastery, digital collaboration and achievement focus.

Our analysis of US job ads shows that problem-solving is highly sought after. It's not only a common requirement but also a growing trend in the job market, highlighting employers' preference for candidates who can creatively and effectively address challenges.

While technical skills are valuable, power skills like collaboration and problem-solving are crucial.

Executive Summary

Skills Transformation for US Technology Professionals

Digital transformation enablers

Redefining critical roles through the power of predictive analytics

1. Software Application Developers
2. Computer and Information System Managers
3. Data Engineers
4. Computer Systems Engineers/Architects

Roles that possess emerging skills:

- Web Developers
- Video Game Designers
- Test Coaches
- System Software Developers

Popular skills:

- Problem solving
- Java
- Software development
- Python

Top future-proof capabilities:

- IT
- Personal learning and mastery
- Digital Collaboration
- Achievement focus

Tech job ads: problem-solving is the top skill

This report analyzes the changing skills landscape for the roles withing the technology job family within Pearson's proprietary occupations ontology.
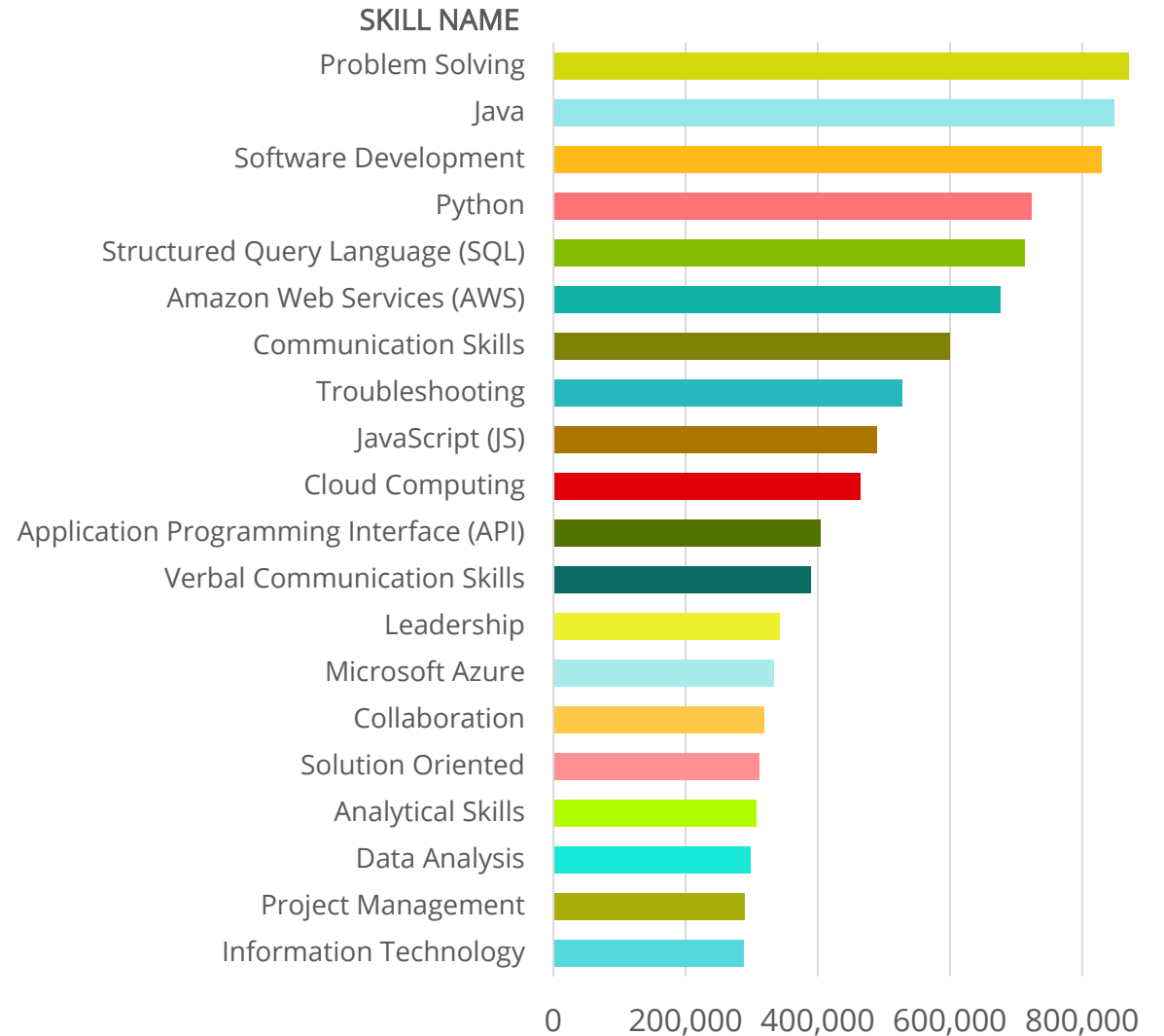
An analysis of recent tech job advertisements in the US shows that problem-solving is the most sought-after skill for those roles, which suggests that employers highly value the ability to tackle issues creatively.

Java, Python, and JavaScript are particularly popular, reflecting the necessity of programming languages in tech. Cloud computing expertise, especially in AWS and Azure, is also critical.

Additionally, the demand for power skills such as communication, leadership, and collaboration indicates a need for well-rounded professionals.

Most sought-after skills in the US tech industry
(highest occurring skills, 2019 to date)

SKILL NAME

Skill	
Problem Solving	
Java	
Software Development	
Python	
Structured Query Language (SQL)	
Amazon Web Services (AWS)	
Communication Skills	
Troubleshooting	
JavaScript (JS)	
Cloud Computing	
Application Programming Interface (API)	
Verbal Communication Skills	
Leadership	
Microsoft Azure	
Collaboration	
Solution Oriented	
Analytical Skills	
Data Analysis	
Project Management	
Information Technology	

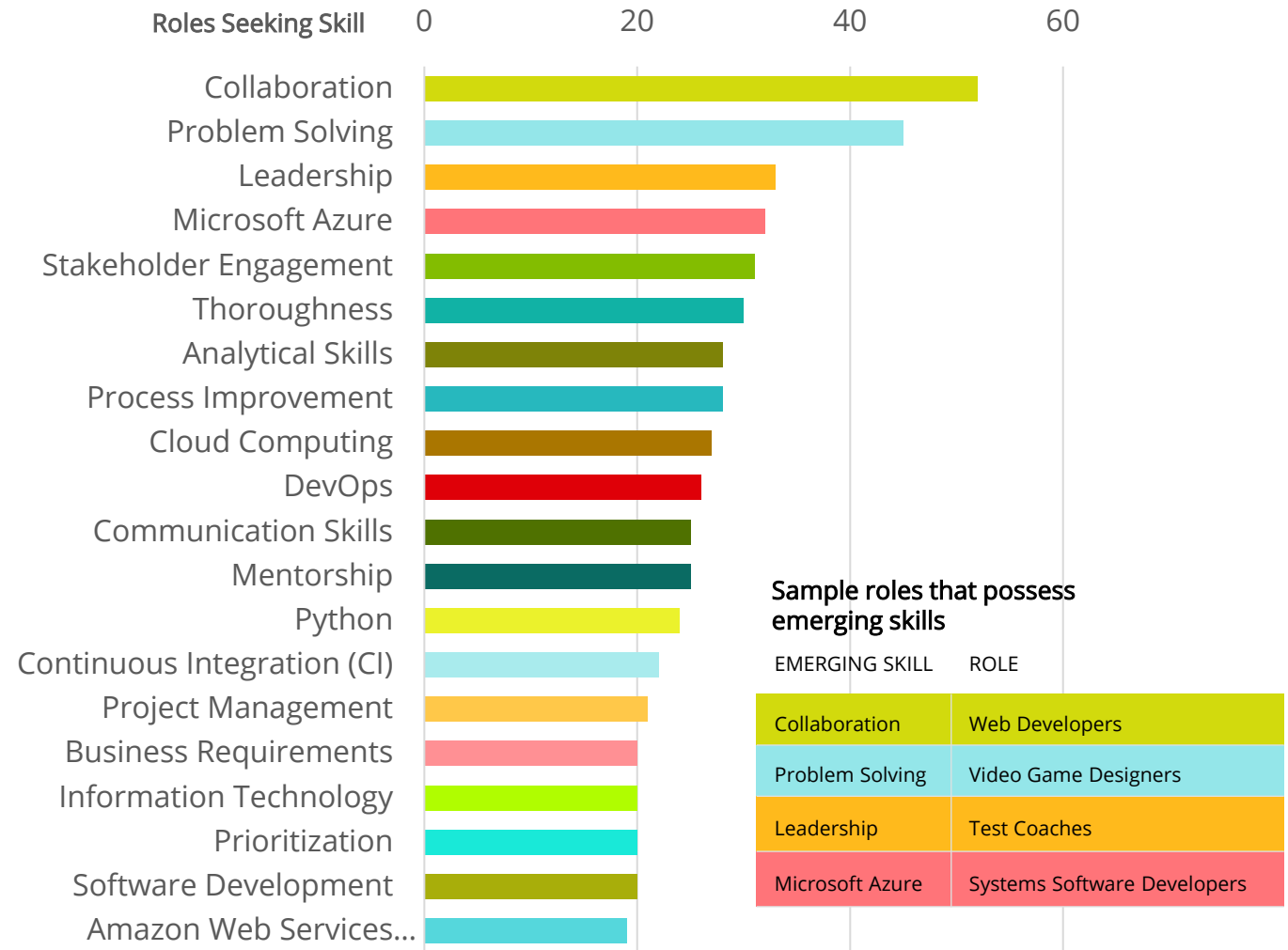0   200,000   400,000   600,000   800,000

Technology professionals are increasingly valued for power skills

Pearson's research into job market trends indicates that non-technical skills are increasingly in demand in the tech job sector.

Collaboration, problem solving, and leadership are the skills trending in the current tech jobs market. They are fundamental for steering teams and bringing projects to fruition.

Hiring strategies might prioritize individuals with a proven track record of these skills, and internal training programs should strengthen these competencies.

Trending skills for technology professionals
(skills showing a surge in the job market)

Roles Seeking Skill

Skill	
Collaboration	
Problem Solving	
Leadership	
Microsoft Azure	
Stakeholder Engagement	
Thoroughness	
Analytical Skills	
Process Improvement	
Cloud Computing	
DevOps	
Communication Skills	
Mentorship	
Python	
Continuous Integration (CI)	
Project Management	
Business Requirements	
Information Technology	
Prioritization	
Software Development	
Amazon Web Services...	

Sample roles that possess emerging skills

EMERGING SKILL	ROLE
Collaboration	Web Developers
Problem Solving	Video Game Designers
Leadership	Test Coaches
Microsoft Azure	Systems Software Developers

Not every tech role is a critical role

Pearson's predictive analysis identified roles essential for a successful digital transformation that should be considered critical.

These positions, central to creating, maintaining, and optimizing tech and data systems, help organizations adapt to the evolving digital landscape and use technology for a competitive edge.
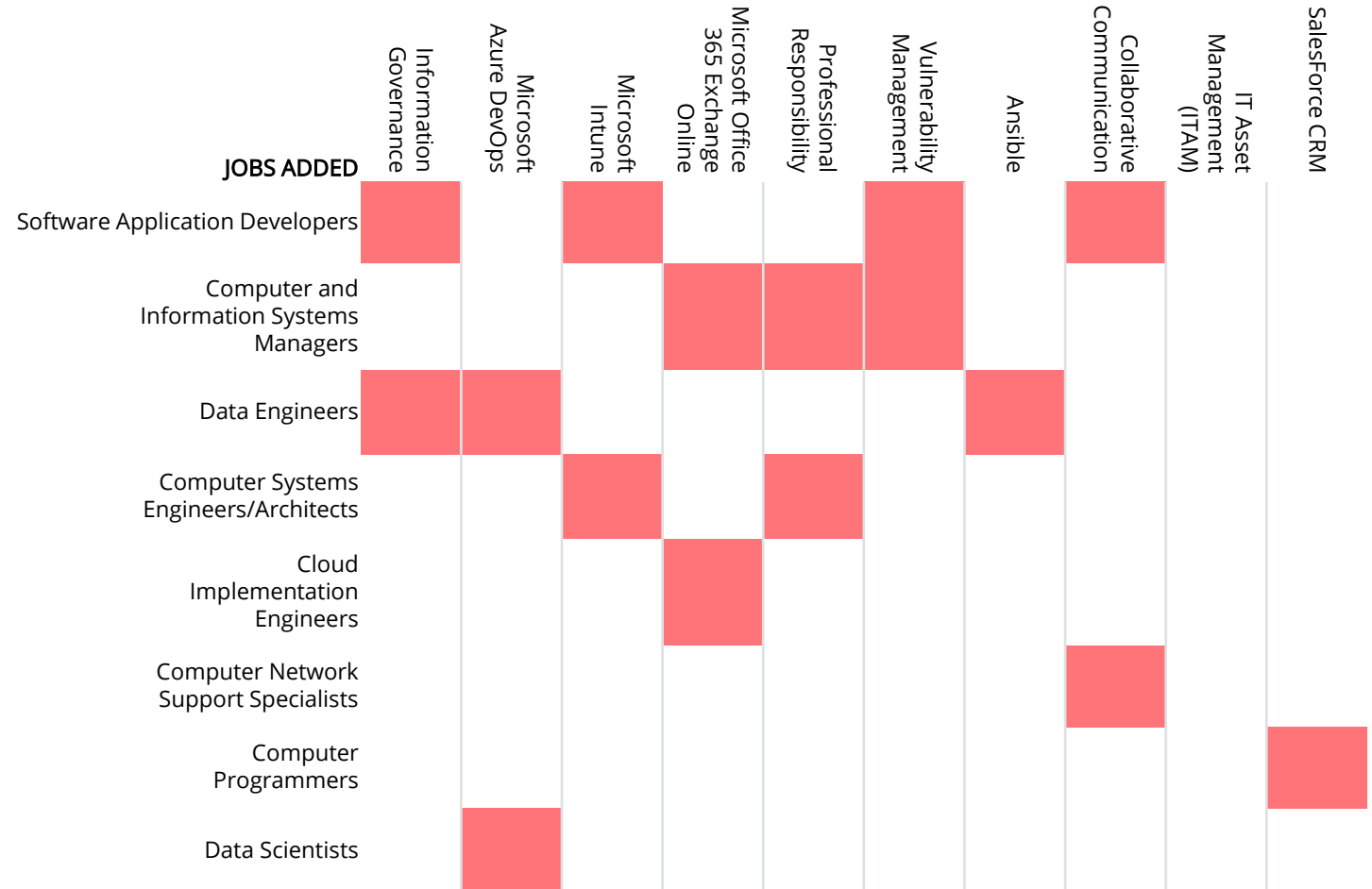
Individuals in these roles should be retained because they:

a) Will be essential for implementing future technologies, and

b) Possess the emerging skills that are in high demand in the current job market

* Pearson modeled the "Jobs Added" or the additional jobs that may be required in the US workforce to implement, use, and maintain emerging technologies. By summing up the emerging skills required for each "Job Added", we have identified the roles that have the highest concentration of emerging skills.

Critical roles: digital enablers meet emerging skill needs
Correlational analysis of the most populous Jobs Added* in the tech job family to emerging skills

JOBS ADDED	Information Governance	Microsoft Azure DevOps	Microsoft Intune	Microsoft Office 365 Exchange Online	Professional Responsibility	Vulnerability Management	Ansible	Collaborative Communication	IT Asset Management (ITAM)	SalesForce CRM
Software Application Developers	■		■			■		■		
Computer and Information Systems Managers				■	■	■				
Data Engineers	■	■					■			
Computer Systems Engineers/Architects			■		■					
Cloud Implementation Engineers				■						
Computer Network Support Specialists								■		
Computer Programmers										■
Data Scientists		■								

The US technology workforce will require expertise in four core capabilities by 2029

Pearson's predictive analytics identified 32 future-essential capabilities. To remain competitive and proficient, tech professionals should become proficient in 23 of these capabilities and achieve expert status in 4.

Chart legend

🔵 Baseline proficiency level for the industry in the current year. The figures have been informed by labour market surveys to assess the indicative view of the current state.

⚫ Projection on needed proficiency level for the industry in five years. This is informed by technology impacts that consider the role, function, and role seniority level.
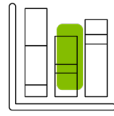
Future Capability Requirements, US Technology Roles

Group	Capability	Novice (0-20)	Adv. Novice (20-40)	Competent (40-60)	Proficient (60-80)	Expert (80-100)
Data	Data Ethics			56	76	
	Machine Learning and AI			56	78	
	Operationalising Data			54	75	
	Programming			56	76	
	Research & Problem Solv..			55	77	
	Statistics & Predictive Mo..			56	79	
	Visualising Data			53	74	
Digital	Cyber Awareness			56	78	
	Digital Collaboration			55	80	
	Digital Communication			54	78	
	Foundational IT				67	92
	Learning			54	78	
	Participation			53	72	
Core Future	Achievement Focus			54	80	
	Creativity			48	70	
	Critical Thinking			54	77	
	Cultural and Social Intellig..		27	41		
	Emotional Intelligence		34	50		
	Innovation & Entrepreneu..			47	68	
	Personal Learning & Mast..			55	80	
	Problem Solving			54	75	
Leadership	Agility			46	66	
	Direction and Purpose		40	59		
	Engagement & Culture		39	57		
	Judgement & Decision M..			47	66	
Outcome	Collaboration			46	66	
	Communication			46	67	
	Customer Focus		36	52		
	Ethics	14	21			
	People Management			44	64	
	Process Improvement			54	75	
	Value Orientation			46	67	
Grand Total				49	69	

Data
Sources

Pearson

Data Sources

Pearson Labor Market Data

Using Natural Language Processing (NLP), Faethm by Pearson collates millions of job ads every month throughout the US to determine the skills that are being sought in the marketplace. This data is then analyzed to find trends and patterns.

Capabilities Data

All occupations in our ontology have 244 work attributes assigned with their average levels of expertise required. These are derived from O*NET. Significant future work attributes are identified by calculating t-scores based on the average attribute-level of the future population (after automation and augmentation) and comparing them with the average attribute-level of the starting population. Based on the t-score, the importance score (between 0-1) of each capability is derived. Those work attributes that have been found to have a high-negative correlation to automated tasks, and high-positive correlation to augmented or unimpacted tasks are then grouped into higher-level 32 capabilities.