



Essential Skills in the Age of Digital Disruption

Crisis or Opportunity?

Digital disruption is the phenomenon caused by new and emerging technology which is transforming industries – and how leaders and organisations respond. These technology trends have the potential to disrupt existing business models and have a fundamental impact on customer expectations and behaviours in a culture, market, industry or process. So, how are workers responding and how are they preparing for the future?





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The disruptors – current tech trends shaking up the status quo

Emerging technologies are numerous and their possible impact unlimited. Examples of technology trends which are disrupting or heralded to be the disruptors of the near future across all industries include but are not limited to: artificial intelligence/machine learning (AI/ML), blockchain, big data, robotic process automation (RPA), distributed cloud and edge computing, cybersecurity mesh, digital workplace technologies, virtual reality (VR) and 5G.

Sweeping changes to traditional industries caused by these digital disruptors have resulted in long-established institutions scrambling to find workers with the necessary skillsets to compete with disruptive start-ups. In many cases, this means relying on less experienced workers and recent graduates to provide the most in-demand skills.

In 2019, data from [Gartner TalentNeuron](#) already showed an outsized number of technologists being hired outside of IT. “That trend is only accelerating as organisations demand digital skills far beyond the IT function and deep into other areas of the business.” The figure below shows data on job postings by non-technology companies tied to skills around artificial intelligence, RPA and data science/analytics (source: Gartner TalentNeuron™ analysis).

In May 2021, we surveyed the talent pool across our family of brands – Aerotek (Life Sciences), Aston Carter (Professional Services) and TEKsystems (Technology), to understand how workers are responding to these so-called disruptive technologies and how they are preparing to meet the challenges and opportunities that these new technologies will bring.

Our respondents bring a range of skills and experience from a variety of industries. Predominantly, these include Banking & Financial Services (36%), the Life Sciences (27%), and Technology (15%) (see [Figure 1](#)).

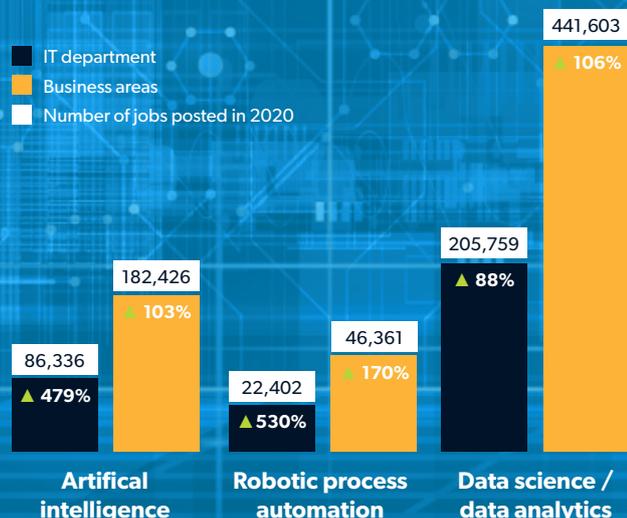
Digital skills in demand beyond tech companies and outside of IT

Growth in jobs posted by non-technology companies in top 12 countries by GDP, 2015-20

[gartner.com/SmarterWithGartner](https://www.gartner.com/SmarterWithGartner)

Source: Gartner TalentNeuron™ analysis
 Note: The top 12 countries are derived from the IMF 2020 ranking of countries by total gross domestic product (GDP), excluding Italy, Spain and South Korea due to limited time series data.

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DISRUPTIVE TECHNOLOGIES DEFINED



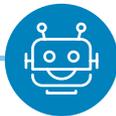
Artificial intelligence and machine learning: While AI is the broad science of mimicking human abilities, machine learning is a specific subset of AI that trains a machine how to learn. ([SAS](#))



Blockchain: The technology at the heart of bitcoin and other virtual currencies, blockchain is an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. The ledger itself can also be programmed to trigger transactions automatically. ([Harvard Business Review](#))



Big data: Big data is a term that describes the large volume of data – both structured and unstructured – that inundates a business on a day-to-day basis. But it's not the amount of data that's important. It's what organisations do with the data that matters. Big data can be analysed for insights that lead to better decisions and strategic business moves. ([SAS](#))



Robotic process automation: RPA is an application of technology, governed by business logic and structured inputs, aimed at automating business processes. Using RPA tools, a company can configure software, or a "robot," to capture and interpret applications for processing a transaction, manipulating data, triggering responses and communicating with other digital systems. ([CIO](#))



5G: The fifth generation of wireless technology is much faster than previous generations, reduces latency, allows thousands more devices to connect simultaneously and has the potential for new, innovative services. ([Ofcom](#))



Distributed cloud and edge computing: Distributed cloud is a public cloud computing service that lets you run public cloud infrastructure in multiple different locations. Edge computing is a distributed computing framework that brings enterprise applications closer to data sources such as IoT devices or local edge servers which can deliver strong business benefits such as faster insights, improved response times and better bandwidth availability. ([IBM](#))



Cybersecurity mesh: Cybersecurity mesh is a distributed architectural approach to scalable, flexible and reliable cybersecurity control. ([Gartner](#))



Virtual reality: VR refers to a computer-generated simulation in which a person can interact within an artificial three-dimensional environment using electronic devices, such as special goggles with a screen or gloves fitted with sensors. ([Investopedia](#))



Digital workplace technologies: At their core, these technologies allow for businesses [or services] to be accessed, delivered and enabled anywhere — where customers [and end-users], employers and business partners operate in physically remote environments. ([Gartner](#))



36%



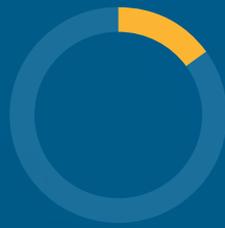
Banking & Financial Services



27%



Pharmaceutical/ Healthcare/Life Sciences



15%



Technology



22%



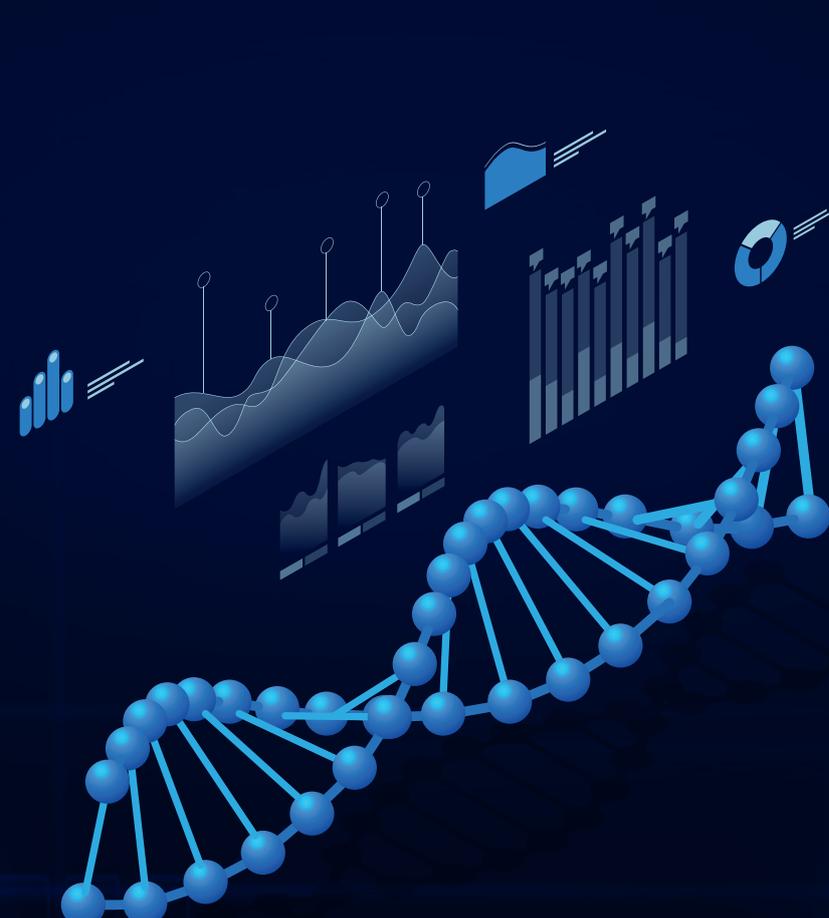
Other

Figure 1: Breakdown of respondents by industry

How have these industries responded?

Disruptors in the banking and financial services sector

Emerging competitors in the fintech market have not disrupted the legacy banking and financial services sector as dramatically as once predicted. However, they have served as a critical driver for evolution, forcing the hand of laggard banking systems to digitalise more rapidly than they might have. Instead, a surge in customer demand for digital experiences, the increasing sophistication of cyber criminals and the ever-changing nature of the regulatory landscape is putting constant pressure on the market to invest in digital products, respond with agility and constantly evolve. In particular, [the sector is investing in AI/ML, blockchain, big data, robotic process automation, cloud computing, voice interfaces, and cyber resilience.](#)



Cautious pharma is catching up

The Life Sciences, including pharma and healthcare, has traditionally been resistant to the change driven by digital disruption. The tight regulatory grip coupled with lengthy R&D phases has resulted in suspicion of the potential benefits automation and digitalisation can bring. However, the sector has recognised that the digital revolution is here to stay and brings considerable benefits to a data-rich industry. Digital acceleration, remote care and health technology is driving investment in big data, VR, predictive healthcare, wearable medical devices, AI/ML, blockchain and 5G.

Technology sector – disrupting the disruptors

The pace of change coupled with considerable competition from a broad spectrum of technology giants and revolutionary start-ups is driving development and innovation at an unprecedented rate. Enterprise IT architecture and its providers are compelled to respond with bigger, better, faster, smarter, snazzier solutions on an almost constant basis. The COVID-19 crisis has also highlighted how we look to Big Tech to respond and immediately provide solutions to challenges of all sizes. Digital workplace technologies that can be accessed remotely, AI/ML, RPA, distributed cloud and multiexperience platforms are putting equal pressure on the tech industry as they are on any other – “these emerging technologies automate process and decisions, enabling a faster pace and scalable digitalisation.” (Gartner)



Crisis versus opportunity – How do workers regard their prospects?

When asked how they believe emerging technologies will disrupt their careers, 10% of respondents point to the new way of working, where remote office technologies and workflow processes need continued refining to achieve true efficiency. This period of remote working, a result of the COVID-19 pandemic, has “all but proved we don’t need a strong physical presence with the advancement of video technologies.”

However, associated threats cited by our respondents include the offshoring of jobs and increased expectations from employers as the lines between home life and work life are increasingly blurred.

While 18% of respondents (see Figure 2) don’t believe that new technologies will have a notable impact on the status-quo in the immediate future, 24% feel threatened by limited opportunities or even the potential loss of jobs that will be a result of encroaching automation.

It’s also interesting to note that those workers with Life Sciences and Professional Services skillsets feel the threat more strongly (32% and 30% respectively) than those in Technology (19%).

“A large part of the pharmaceutical industry requires quality checks and regulatory documents to be double checked. Artificial intelligence technology will remove the need for manpower and automate these processes. This will disrupt the industry.”

On a whole though, respondents are optimistic about the future of work. 48% of respondents believe that new and emerging technologies will improve efficiency, create new opportunities and act as a driver for continuous upskilling.

“Any ‘disrupting’ change is a good opportunity to adapt and learn, and to be creative. I always look forward to the next challenge and the opportunities it will bring.”

“Any ‘disrupting’ change is a good opportunity to adapt and learn, and to be creative.”

- Improved efficiency, new opportunities, driver to remain skilled
- The threat of automation will lead to the loss of jobs
- There will be no change to the status-quo
- The remote office brings challenges and opportunities

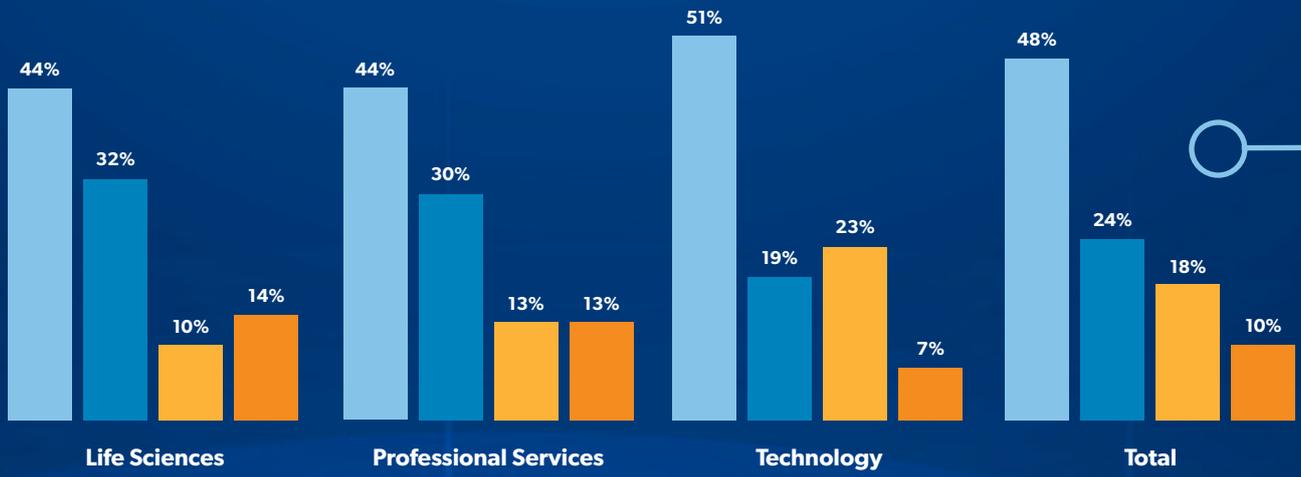


Figure 2: How will emerging technologies disrupt your career?



Snapshot: Available tech skills in the UK and Europe

To claim that the UK and Europe are struggling with skills shortages is no exaggeration. Tech Nation previously estimated that there would be 100,000 unfilled tech jobs in the UK by this summer. Demand for tech skills is rising and salaries are increasing, however positions remain unfilled.

Europe is experiencing similar – demand for digital skills is outstripping supply. The shortage was estimated to be 500,000 in 2020 creating a gap of 250,000 digital leaders.

A report by McKinsey & Company found that the EU-28 (Europe and UK) will experience a shortfall of approximately 8.6 million people without the necessary skills to fulfil their ambitious digitalisation plans in the public sector by 2023.

The lack of tech skills undermines the region's industrial prospects. Without a strategy to close the skills gap, fewer businesses will be able to integrate required technology into their operations, forgoing possibly significant gains.

Software developer is the most in-demand digital tech role, and skills employers are demanding are: Engineering using Java, C++, Python, JavaScript, and .net, as well as those for Data and Cloud technologies.

This illustrates the dynamic range of skills in demand. Programming skills are important, but across multiple languages.

Where tech skills are available, lack of work experience also brings a shortage in soft, transferrable skills or what McKinsey & Company coins 'classical skills' – problem-solving capacity, creativity, entrepreneurial thinking and self-initiative, adaptability, and grit.



“The EU-28 will experience a shortfall of approximately 8.6 million people without the necessary skills to fulfil their ambitious digitalisation plans in the public sector by 2023.”



How are skilled workers planning to future-proof their careers?

On the flipside, the shortfall in necessary tech skills is creating opportunity for skilled individuals. The chasm between demand and supply is reflected in increases in median salary ranges for the most sought skills. Demand for skills is also being experienced outside of traditional economic centres – businesses are basing themselves where the skills exist. Meaning that workers have more freedom of choice when it comes to deciding where to work and live.

Our savvy talent pool is only too aware of the opportunity these disruptive technologies are bringing, with respondents overwhelmingly (67%) planning to upskill IT-based knowledge regardless of role or industry (see Figure 3).

The most cited tech skill for workers in both the Professional Services and Life Sciences industries is data analysis in preparation for the maturation of automation and AI/ML.

Tech specialists are planning to improve their knowledge in blockchain, cybersecurity, cloud, AI/ML, big data and enterprise architecture with a particular emphasis on programming across multiple languages.

A small minority of 4% either don't believe that any upskilling is necessary, are confident with current competencies or don't believe they will remain in the workforce long enough to be impacted by disruptive technologies. 9% of respondents are planning to improve their more business-based competencies such as project management or agile practices.

A further 9% are looking to improve on both IT and soft skills. While 11% cite soft skills only, such as adaptability, resilience, networking, negotiating and leadership skills.

“Being adaptable and resilient is key in the world of work since change is inevitable.”

“Skills such as communication, innovation, and leadership are core competencies that will always be required regardless of career trajectory. Furthermore, being adaptable and resilient is key in the world of work since change is inevitable and keeping this mindset will facilitate the transition.”

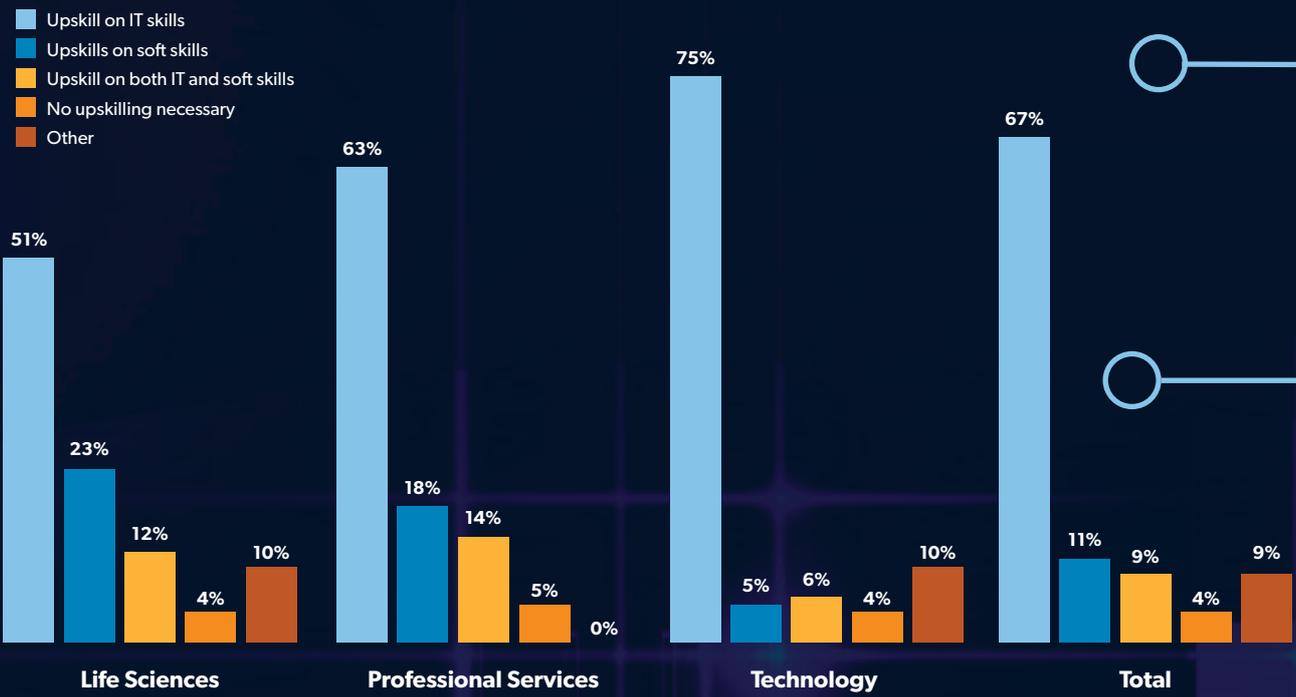


Figure 3: What skills do you need to develop to future-proof your career?



Upskilling, reskilling and preparing for the next big disruptor

It's difficult to quantify how quickly tech skills are becoming outdated, but the rapid pace of change in technology coupled with the COVID-19 pandemic has resulted in many businesses floundering as legacy systems have quickly become obsolete. These businesses were not able to respond and pivot as quickly as those who have been investing in new technologies and change methodologies.

Investing in upskilling and reskilling to retain the current workforce is as important as seeking out new talent with the required skillsets. The loss of business acumen and culture fit can be costly and take extended periods to suitably replace. Having a robust professional development plan in place is a strategic imperative.

We asked our respondents how they ensure they are continuously developing their skills. Preference for learning models is quite evenly spread over employer-led training (48%), certified training (54%), conferences and networking events (53%) and forums or communities (53%) (see *Figure 4*).

However, these results vary slightly when you drill into skillsets. Tech specialists prefer learning within forums and communities (60%) while only 35% selected employer-led training. On the flipside, our Life Sciences and Professional Services skillsets favour employer-led training (75% and 58% respectively) well above external, 'social' training opportunities such as networking events and participating in communities.

Disruption brings opportunity, and workers are only too aware of this. While competition for in-demand skillsets might be a cause for alarm for governments and businesses looking to advance their digital prowess, those workers who have acquired in-demand skills or have the savvy to reskill will put themselves at a competitive advantage and set themselves up for the future. Organisations will do well to nurture their existing talent pool and support their ongoing efforts to constantly upskill both IT and soft skillsets.

A mutual commitment to ongoing learning and development between employers, clients and managed service providers will ensure workforces are equipped to negotiate the technology challenges of the future and put organisations in a position where they are able to remain competitive in an ever-disrupted world.

- Employer-led training
- Certified training
- Conferences and networking events
- Forums or communities

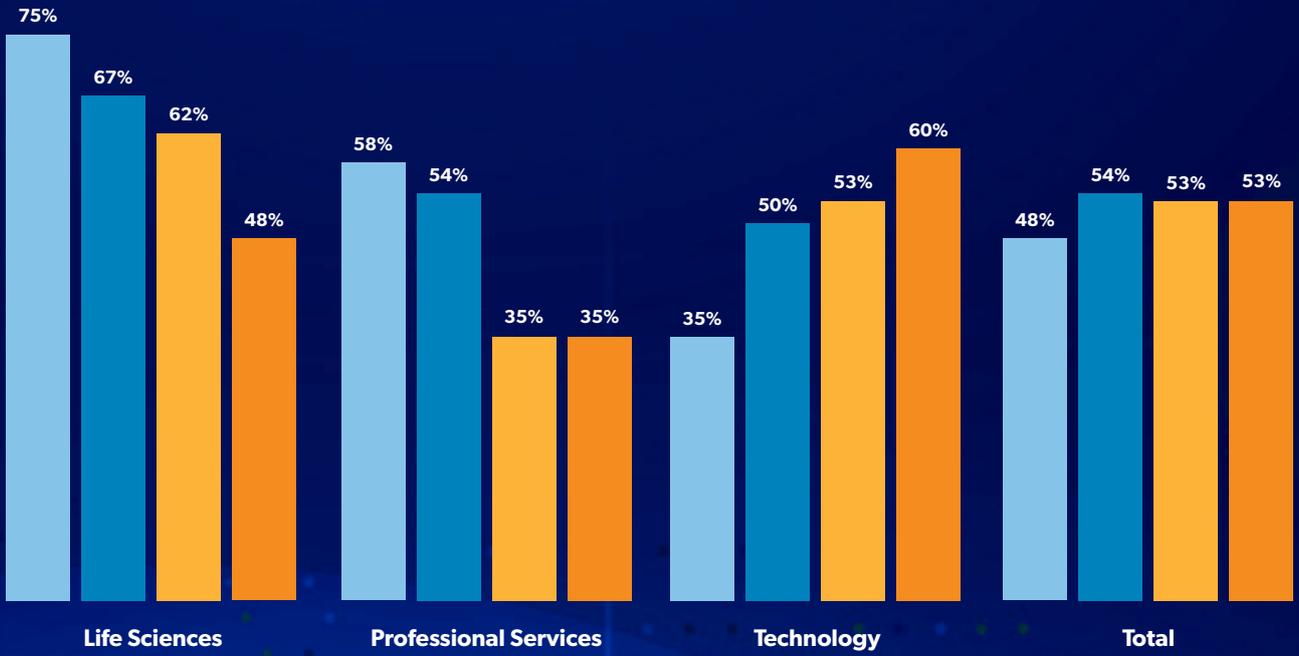


Figure 4: How do you ensure you are continuously developing your skills?



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