

# Embracing emerging technology: why it needs to happen now



FUJITSU

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# Executive summary

The role of technology in society has rapidly evolved since the first mechanical computer was invented almost two hundred years ago. Businesses and governments alike are now paying meticulous attention to how technological innovation can improve customer and citizen experiences – a focus intensified by the pandemic.

This trend is fuelling investment. Our research shows that UK executives are allocating almost a quarter of their capital and R&D budgets to innovation, as they try to capitalise on emerging technologies' potential to enable transformation and meet heightened user expectations.

But despite this, a fear of failure means many innovation projects never get off the ground. 36% of the UK public and private sector leaders we surveyed cited this apprehension as the reason for not running initiatives involving emerging technologies such as artificial intelligence, quantum computing or digital twins.

Lessons in overcoming this inertia might come from abroad. Sector leaders searching for valuable insights to ignite innovation list countries such as Japan, the US and Germany as potential sources of inspiration.

Similarly, collaborating with domestic peers and competitors to drive innovation is viewed favourably by many. It's a sentiment which showcases the flexibility required to drive growth in current economic conditions. Emerging technologies can play a real role in enabling organisations to become more agile and adaptable, but overcoming the barriers that stall effective adoption, such as upskilling and learning from countries who are ahead of the curve, will be crucial.

Time is ticking, though. Over half of the executives we surveyed say the UK is at least five years behind the world's most innovative economies, whilst the drive to sustainably transform business

operations and bring carbon emission down to net zero by 2050 needs to be ramped up. Moreover, according to Fujitsu research, whilst more than half of organisations claim to be advanced on their sustainability journeys, less than one in 10 have completed major sustainability imperatives.

By understanding the intentions and decision-making process of these leaders, technology and business stakeholders from both private and public sectors can better identify opportunities to collaborate in ways that provide a much-needed boost to productivity and growth.

"The research suggests C-Suite leaders want to seize the opportunity presented by transformational technologies, but are unable to secure this advantage due to significant skills shortages. If you don't have, and can't find, people with the skills to maximise the probability of success in innovation, the fear of failure is justified and rational. The willingness to collaborate with competitors is a long-standing reality in business – you can't be competing with everyone, everywhere, all at once. But it might also be an acknowledgment of the skills organisations don't have, and are struggling to hire-in."

"To succeed, companies are going to need to both upskill and outsource: it isn't either/or. If the UK is to achieve its science superpower aims, commercialising new technologies at scale is essential – we need to be what Minister George Freeman describes as 'an innovation nation'. Our survey is a useful data point in showing the perception, and perhaps the reality, of what needs to be done."

**Keith Dear**, Managing Director, Fujitsu's Centre for Cognitive and Advanced Technologies

## About the research

Fujitsu commissioned independent third-party research company Vitreous World to survey 300 C-level executives and Director-level employees across multiple UK public and private sector organisations with >1,000 employees. The survey took place between November and December 2022.



# Chapter 1:

## Investment in emerging technology: why it's growing

Despite recent economic disruption investment in emerging technologies continues to grow.

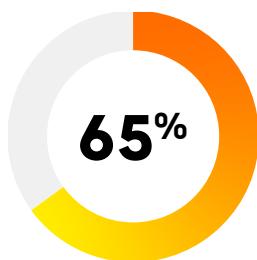
Asked if they plan to increase, decrease, or keep budgets the same, more than half (65%) of C-Suite leaders say they expect their innovation/innovative activities' budget to increase in 2023, while 34% say they expect it to stay the same.

This continued investment in emerging technologies is perhaps unsurprising given that four-in-five (79%) leaders define innovation – which is estimated to have accounted for 51% of labour productivity growth between 2000 and 2008 – as the ability to adopt technology effectively. And this is congruent with their belief that they can enhance growth in the coming year, with 95% of decision-makers we surveyed saying their organisation is equipped to generate revenue growth in 2023 – despite the state of the UK economy.

It's clear that innovation leaders are poised to invest their time, money, and resources to harness the value that emerging technology can provide, with organisations allocating (on average) almost 25% of their £62m annual capital and R&D budgets towards innovation.

However, capital and R&D spending varies between industries, with retailers leading the charge (£121m), followed by manufacturing (£105m), insurance (£62m), and public sector organisations (£33m). These results are reflected in TechMarketView's research, which shows that private sector spending on software and IT services (SITS) grew by 11.6% in 2022, compared to a 6.2% rise in public sector SITS expenditure.<sup>1</sup>

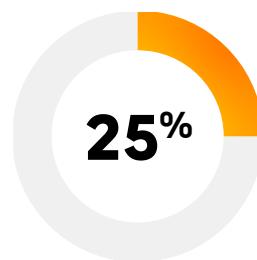
1. Outside-In: The UK Software & IT Services market in 2023 pdf Pg 5



More than half of C-suite leaders say they expect their innovation/innovative activities' budget to increase in 2023



The vast majority of private and public sector leaders expect their budget to stay the same or increase

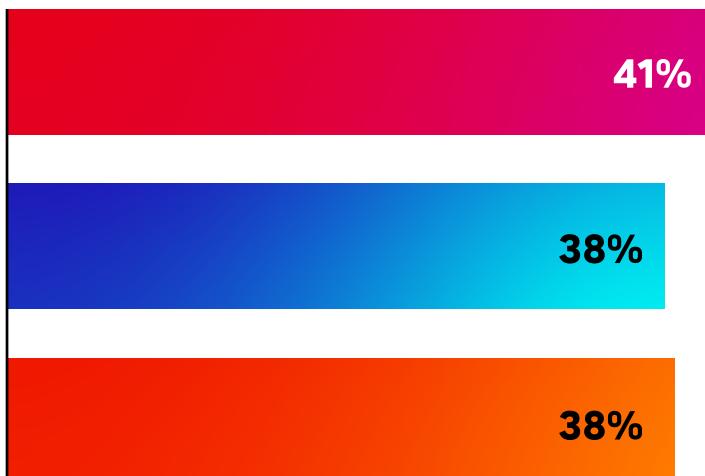


25% of their £62m annual capital and R&D budgets towards innovation

# What's driving the continued investment in technology?

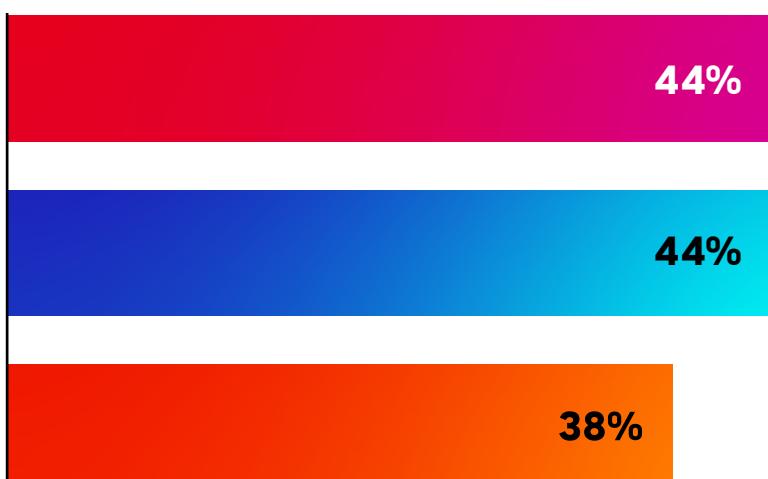
Beyond the impact innovation has on productivity – an increasing priority for government – it's also vital to generating revenue growth, according to UK industry leaders. They list emerging technology as among the top three drivers of top line growth:

## Top three drivers of revenue growth



Conversely, leaders say the top three barriers to generating revenue growth are:

## Top three barriers to revenue growth



# **Chapter 2:**

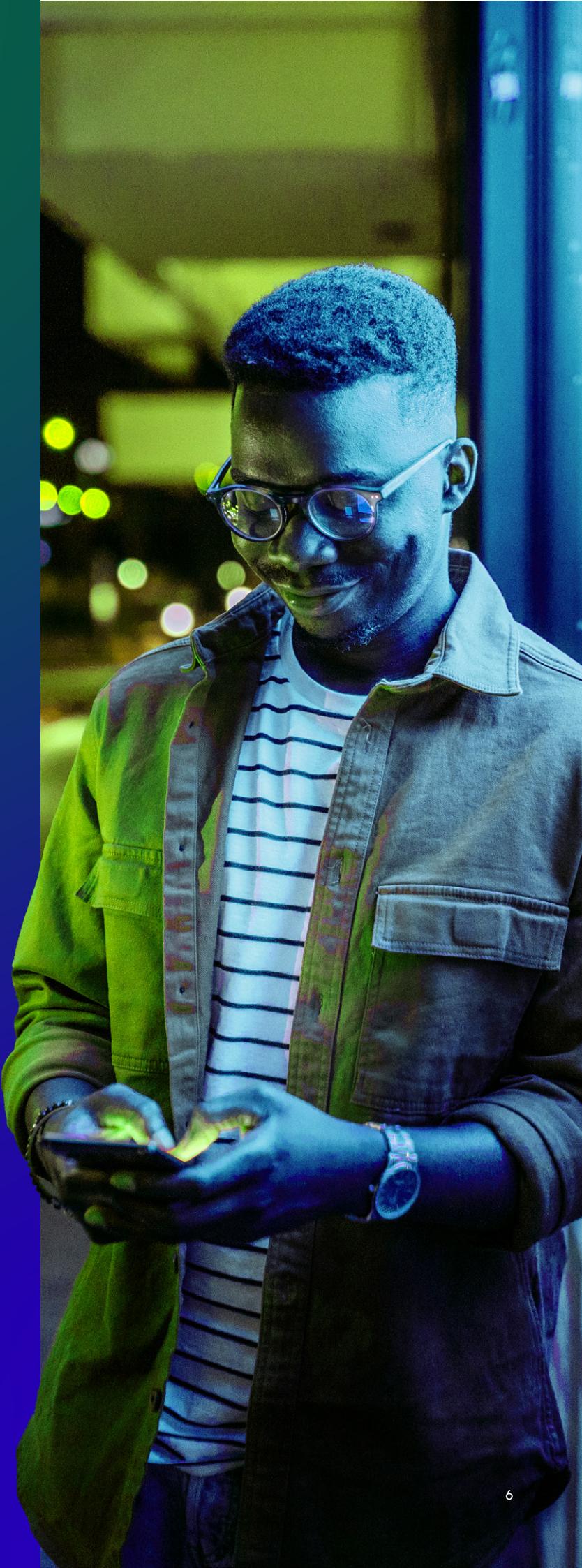
## Implementing emerging technology: what are the challenges to overcome?

### **Accelerating sustainability initiatives with technology**

The coming years will see global leaders racing to sustainably transform their organisations, in the face of growing regulatory pressure, media scrutiny and customer expectations.

Emerging technologies have the potential to act as both an enabler of digital and sustainability transformation. For instance, quantum-inspired computing can be used to cut carbon emissions by re-routing an organisation's deliveries based on traffic and weather conditions, reducing wasted journey time.

However, our Sustainability Transformation research shows that while over half (61%) of organisations claim to be advanced on their sustainability journeys, less than one-in-ten have completed major sustainability imperatives. This suggests that despite the importance many decision makers attach to sustainability, they are yet to make significant progress towards meeting their goals.

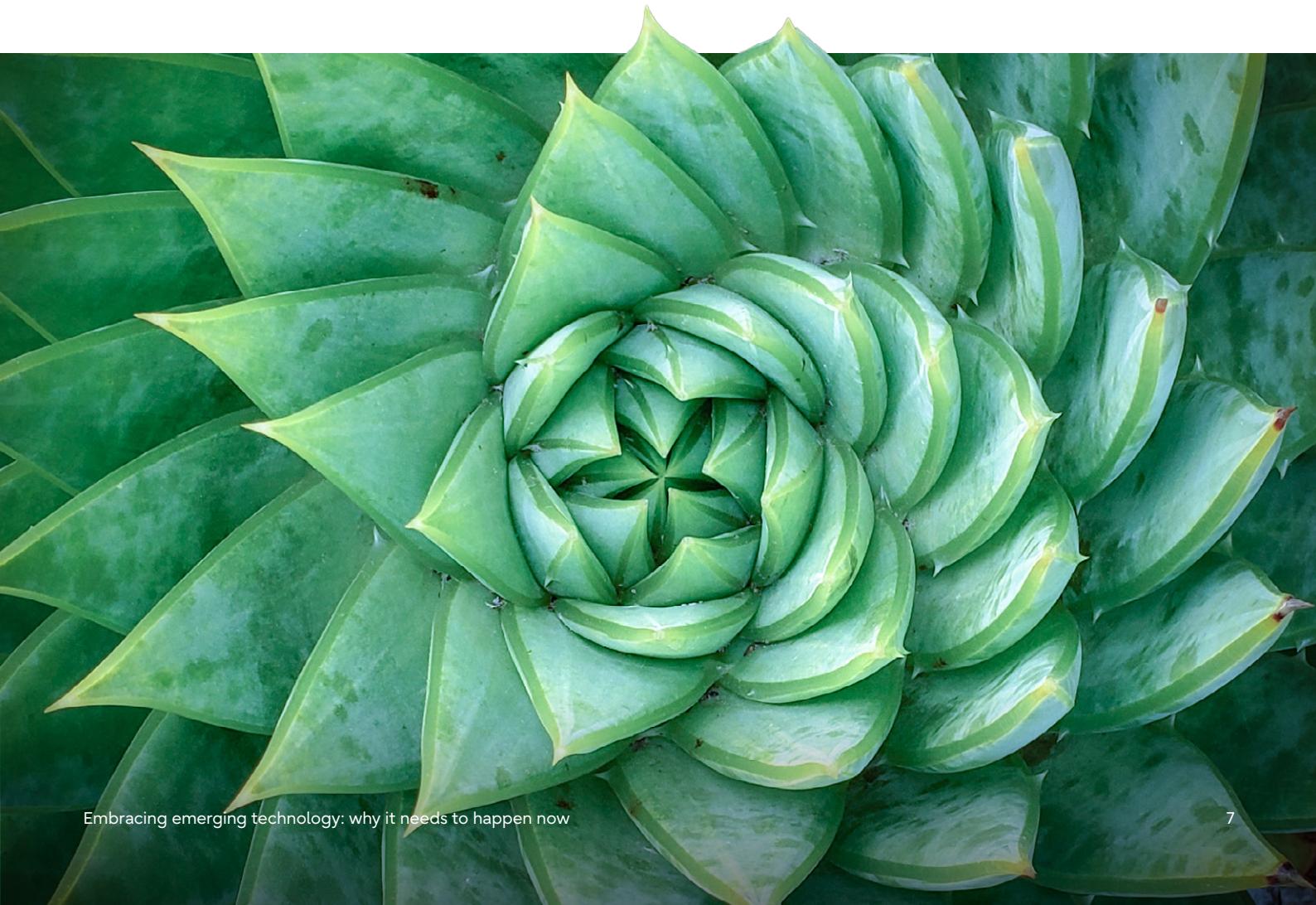


# Our research also revealed that most organisations are struggling to enact change across several environmental, social and economic areas:

<b>26%</b>	Of organisations have implemented health and wellbeing initiatives for employees
<b>15%</b>	Are developing products and services that improve the health and wellbeing of broader society
<b>12%</b>	Are using or creating carbon-neutral products
<b>10%</b>	Just one in ten are responding to consumer demand to become a more sustainable organisation
<b>09%</b>	Are developing sustainable supply chains and ecosystems

To take serious climate action, organisations of the future must transform to become more sustainable. But leaders are stuck between what they know they need to do to improve on sustainability measures and how to effectively act. Emerging technology has the potential to help close this gap.

If organisations can bridge the divide, the indications are that it will be part of a more holistic approach to innovation that contributes to developing solutions to long-term social issues. Indeed, the majority (83%) of the leaders in our survey think that innovation should focus on solving long-standing societal challenges (e.g. improving the UK's sewage or water system) rather than concentrating on short-term problems.



# Empowering employees

The UK's digital skills gap represents another barrier to effectively implementing emerging technology and capitalising on its benefits.

Indeed, when asked what they consider to be the biggest barrier to employees unlocking innovation, leaders listed a lack of relevant skills (38%) as the primary obstacle, closely followed by incentivisation to innovate (38%) and a lack of emerging technology in the workplace (e.g. artificial intelligence, blockchain, 5G/6G, high-performance and quantum computing) (33%).

This might be one of the reasons behind a collective 'fear of failure', which is currently causing more than a third (36%) of innovation leaders to shun innovation projects and campaigns all together.

For organisations looking to futureproof workforces with the right skills, our Digital, Data and Cloud (DDaC) service provides the foundational changes required to enable innovation to happen. We help our customers to bridge the skills gap by providing intelligent tools and the right people - ranging from agile practitioners to full stack and data engineering – to existing teams, whenever the need arises.

Right now, we're working with HSBC to address organisational readiness in maximising the potential of advanced technologies such as quantum computing. With this strategic partnership, HSBC has been able to leverage

our technology experts to develop their own capabilities, optimise their portfolios and understand real world applications of emerging technologies.

Investment in emerging technology can improve employee wellbeing, all while boosting productivity. This can range from helping employees to work faster and smarter through AI, to supporting life-long learning and training through automated workplace solutions.

The benefits from investing in technology extend to employers too, with tools such as predictive analytics allowing organisations to better target resource and make informed decisions, faster.

"Together we're exploring the quantum opportunity and potential use cases. By outlining how HSBC could move from the software simulations and bridging technologies, that are available now, to quantum advantage in the future"

**Philip Intallura**, Global Business Lead for Quantum Computing, HSBC

# **Chapter 3:**

## **Applying emerging technology: learning from domestic and international counterparts to speed up growth**

### **Working together for long-term growth**

The start of this decade has seen the UK's economy stuttering in challenging conditions. Moreover, since the financial crisis in 2008, our productivity has lagged behind countries like Germany, France and the US.

In our survey, almost all leaders (91%) say the UK can learn from other countries when it comes to innovation, with Japan (51%), the US (48%) and Germany (35%) topping the list. Also, the majority (87%) of leaders would like to extend this openness by collaborating with other organisations to help growth and drive innovation.

Our Human Centric Experience Design (HXD) programme uses a similar approach to collaboration, which can help organisations to work together efficiently. This approach was developed over decades of experience in Japan and around the world, working with customers, exchanging perspectives, ideas, and information in a highly focused, purpose-driven, and innovative way. Using digital technologies, we bring multiple perspectives together to meet the strategic needs of public and private sector organisations.

But collaboration with external partners must not come at the cost of nurturing skills that exist within organisations. Technology teams (52%), in-house innovation teams (39%) and business teams (39%) are cited as the top three ways for organisations to create the most effective ideas.

Despite such a positive outlook, over half (61%) of UK organisations believe it will take at least five years to compete with international leaders. This viewpoint is understandable given the overall lack of technology expertise across sectors and the many challenges faced by UK public and private sector organisations. There is much to do and little time to lose. Now is the time to act.

### **The Centre for Cognitive and Advanced Technologies**

Stimulating domestic and international collaboration is a key part of the work initiated by The Centre for Cognitive and Technologies, established as part of a £22m investment announced by Fujitsu in June 2022. An important milestone in Fujitsu's global technology innovation strategy, the Centre serves as a catalyst for cross-sectoral innovation and wider Fujitsu transformation, focused on the commercialisation of research and partner collaboration. It brings together Fujitsu's activity on a range of emerging technologies including quantum, AI, and digital twin technology, providing a direct link to work in Japan so that the UK can benefit from Japan's leadership in areas such as supercomputing.

This forms part of the 'great bridge of innovation' connecting the UK and Japan, which the UK Minister for Investment described in a speech at Lancaster House marking the Centre's establishment. The UK and Japan signed a Free Trade Agreement (FTA) in October 2020, with the FTA enabling greater collaboration in science and technology between the two countries and supporting the UK Government's commitment to maintain and enhance the UK's status as a science and technology superpower.



# As organisations continue their innovation journey, strategic approaches to implementing emerging technology will need to tackle three key challenges:



1

## **Understanding and reducing legacy debt to maximise the potential of emerging technology:**

To realise the benefits of emerging technologies, sector leaders must first overcome issues with their legacy systems. Without this step, adopting AI or digital twin solutions, for example, can seem ambitious or nebulous. By addressing their existing environments, organisations can realise emerging technology's ability to generate real business insight. Indeed, improvements in interoperability will go hand in hand with deriving value from data, according to TechMarketView.<sup>2</sup>



2

## **Using best practice to underpin continuous improvement:**

Accelerating the adoption of emerging technologies requires a continuous improvement mindset, informed by lessons taken from organisations and use cases in leading international economies.



3

## **Moving to a DevOps model to accelerate innovation:**

The best way to make sense of emerging technologies is to focus on the business benefit and outcomes they bring, rather than the technology itself. Adopting this approach in tandem with reducing siloes between development and operations teams, and rallying around a common challenge, allows organisations to be much more agile and open to innovation.

2. Outside-In: The UK Software & IT Services market in 2023 pdf. Pg 12

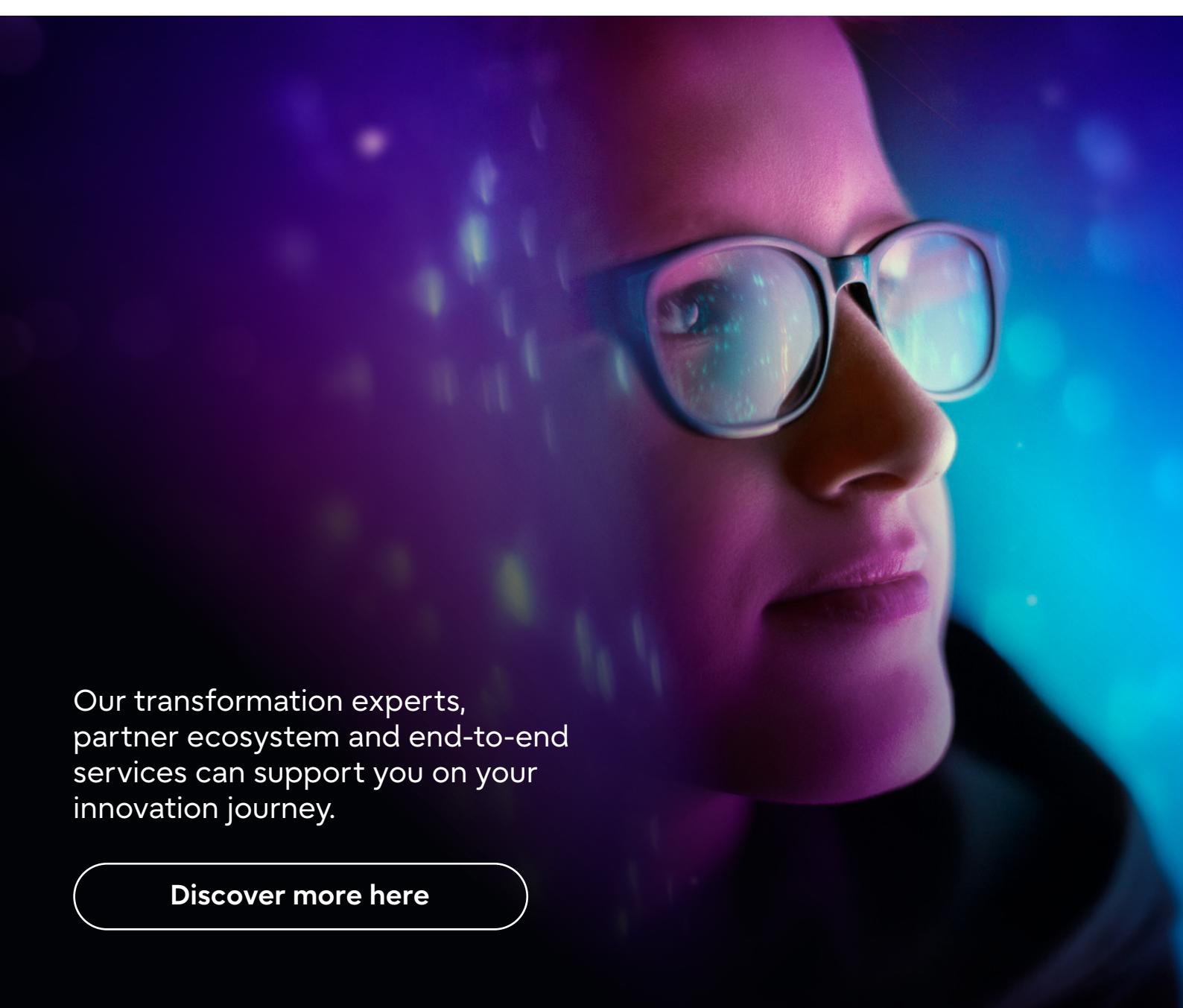
# Conclusion

The ability to deploy emerging technologies effectively and efficiently in organisations will only become more critical to business growth and the UK economy's overall productivity. More than half (69%) of organisations will move to new technology by 2025, according to TechMarketView.<sup>3</sup>

There are complex barriers to embracing emerging technology, which organisations must deal with. Upskilling employees, transforming sustainably and developing real insight from international best practice represent serious challenges to the UK public and private sectors.

But not clearing these hurdles is no longer an option. Whilst emerging technology is not a silver bullet for sustainable growth, it is a critical part of the innovation needed to boost both productivity and competitiveness, if the UK is to catch up with international leaders. The time to act is now.

3. Outside-In: The UK Software & IT Services market in 2023 pdf. Pg 9



Our transformation experts, partner ecosystem and end-to-end services can support you on your innovation journey.

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