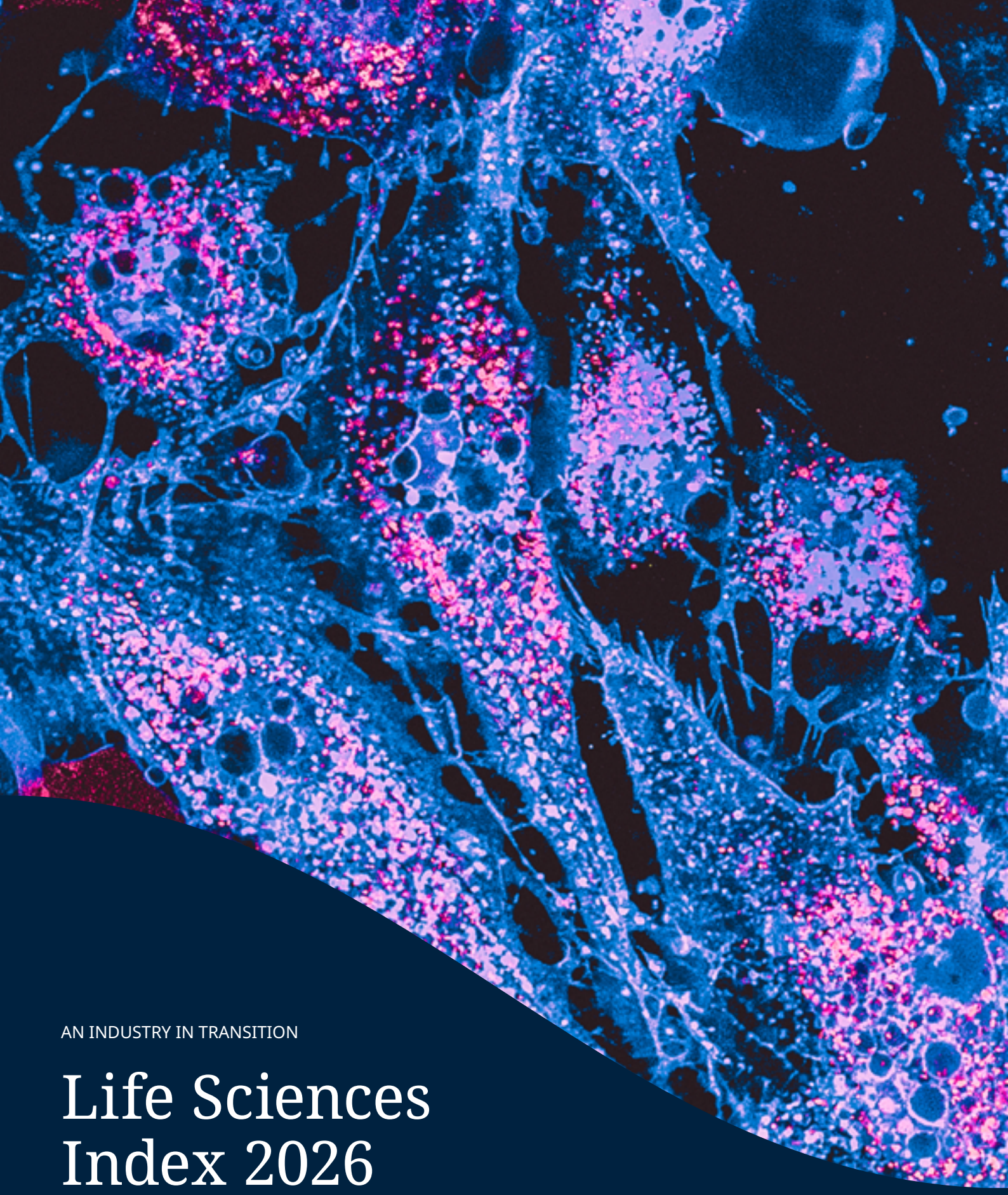


AN INDUSTRY IN TRANSITION

Life Sciences Index 2026

CHAPTER FIVE: INTELLIGENT TECHNOLOGY

DLA PIPER

Intelligent technology

The value of intelligent technology to the life sciences industry is immense. Generative AI alone is expected to create tens to hundreds of billions of dollars' worth of efficiency and productivity benefits every year for biopharma and medtech combined.

And for the healthcare systems that innovators serve, the benefit is expected to be even greater. Add emerging agentic AI capabilities and the longer-term promise of quantum computing into the mix, and the magnitude of value creation moves from transformative to potentially revolutionary.

In a 2024 Accenture Biopharma R&D Executive Survey, 87% said AI and machine learning are imperative to business success. Appropriately deployed – that is to say, at scale across the value chain – intelligent technologies are expected to significantly reduce R&D and manufacturing costs, bring innovations to market significantly faster, and generate extra revenue per innovation, running into the billions.

Given the scale of the opportunity, it might seem surprising that only 37% of our respondents say intelligent technology is a significant priority for their business, up just one percentage point on our 2024 report. But if you look at the distribution of responses across the five-point scale, you can see a marked shift towards the higher end (4 or 5 out of 5). Intelligent tech is clearly becoming a higher priority for businesses overall **(Figure 16)**.

In our 2024 report we suggested that intelligent technology isn't a significant priority in more life sciences businesses because many don't know how best to deploy it, despite recognising its transformative value. A 2025 Financial Times analysis of the SEC filings and investor calls of S&P 500 companies confirms this: the risks associated with intelligent technology are much more frequently mentioned (and better defined) than the opportunities. More on risks and opportunities shortly.

The lack of confidence in how best to use intelligent technology is reflected in how well it's integrated into life sciences businesses. Almost half of respondents say integration is basic, but there is an aspiration to go further **(Figure 17)**.

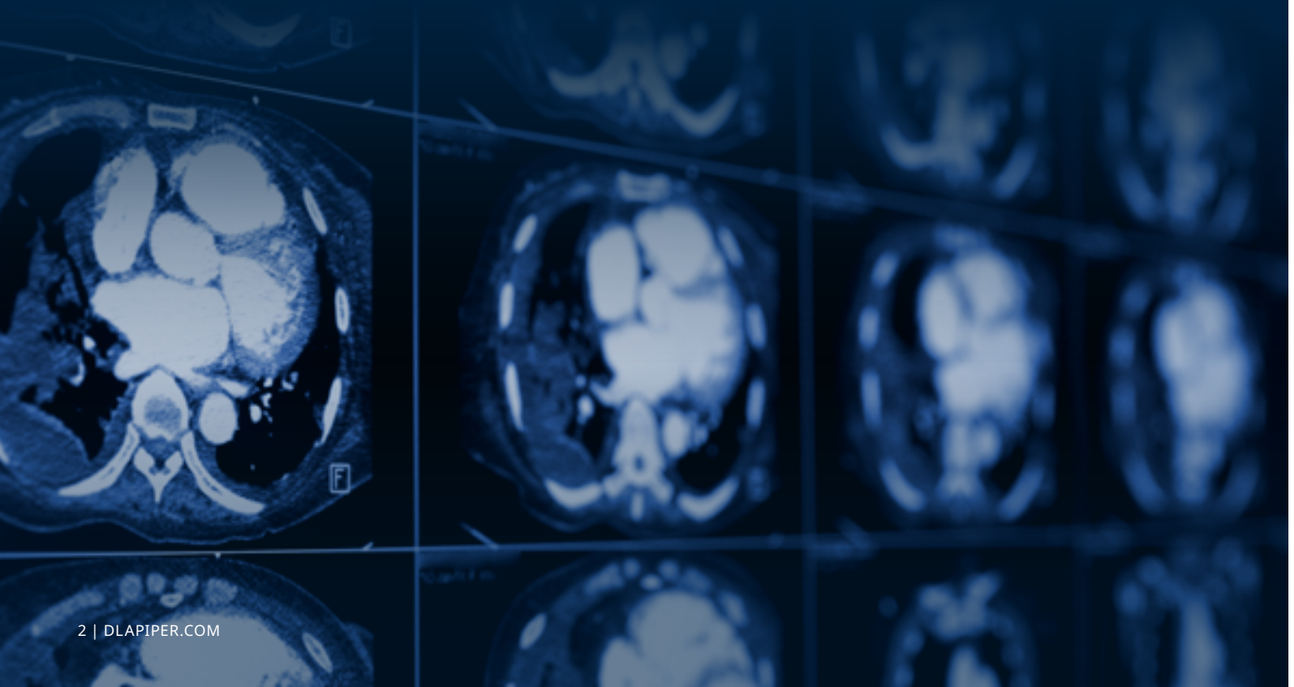


Figure 16: How much of a strategic priority is the application of intelligent technology for your business?
1 to 5 rating (1 not a priority at all; 5 significant priority)

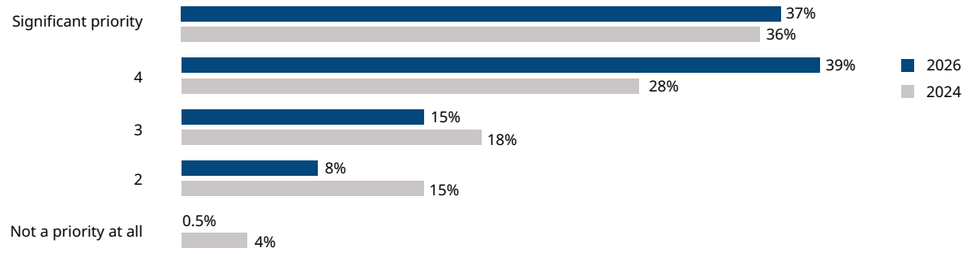
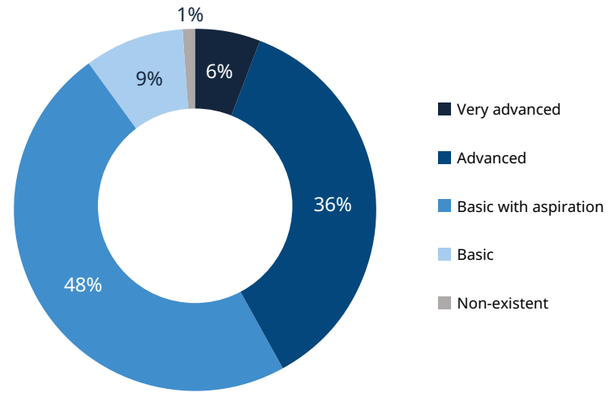


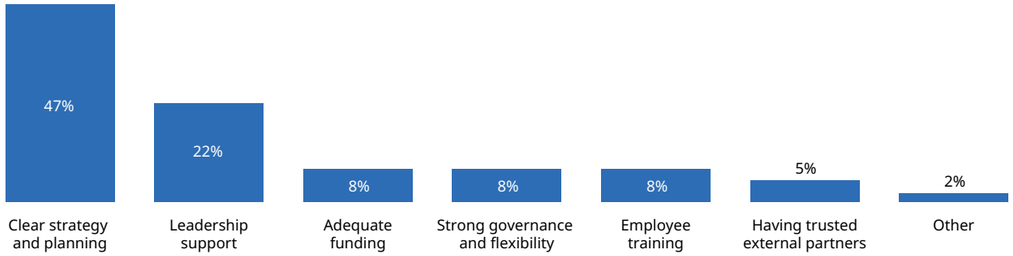
Figure 17: How do you rate the level of intelligent technology integration into your business?



So, what's the most critical factor for successfully adopting intelligent technology? Just under half of respondents say clear strategy and planning is key, followed by leadership support at 22% **(Figure 18)**. This aligns with what some say is the case across sectors: many businesses have a fear-of-missing-out mentality, rather than thinking about intelligent tech in a truly strategic way.

Gareth Stokes, Global Co-Chair of Technology at DLA Piper, says that "some are deploying AI for the wrong reasons. The worst examples are organisations undertaking projects simply to say that they're doing something with the technology, rather than because there's a well-identified problem for which AI is the best or only solution." Without the right tone from the top and a clear implementation plan with the "so what?" explicitly defined, companies will be slow to integrate and may never embed it fully, missing out on the transformative benefits it could bring.

Figure 18: What is the most critical factor for successful intelligent technology adoption in your business?



While only 8% cited strong governance as key to adoption, Chloe Forster, Partner in our Technology Transactions and Strategic Sourcing group, highlights that "now is the time for life sciences companies to establish AI governance models that not only embrace the vast opportunities this technology offers but do so in a controlled and responsible way. The right governance model – driven from the top – is critical to becoming a truly AI-enabled business."

Delving more deeply into adoption of intelligent technology in the sector, we asked respondents to select their top three barriers to greater use and to rank those top three **(Figure 19)**. Based on weighted average scores, lack of appropriate IT infrastructure is the most important barrier to adoption, followed by regulations.

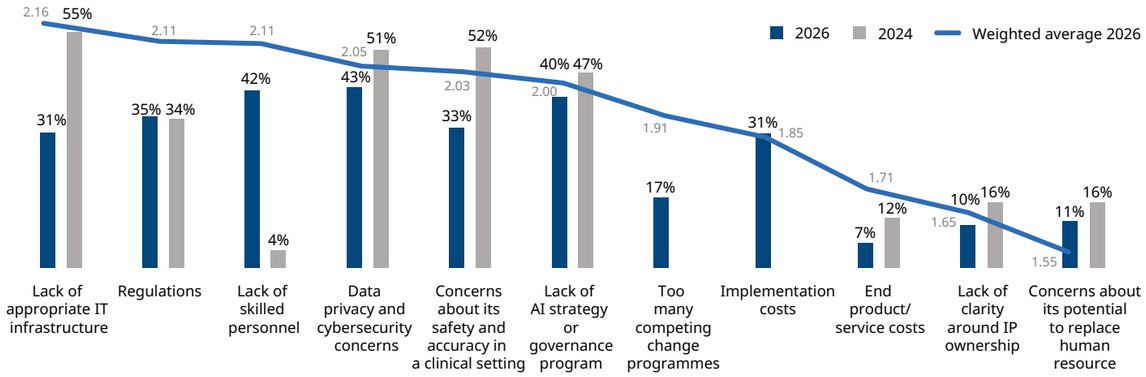
One respondent says it's a lack of regulation that's causing adoption resistance. And while data privacy and cybersecurity concerns are one of the top barriers, lack of skilled personnel is now considered a greater obstacle.

Gareth Stokes comments: "The shift in perceived barriers to adoption reflects both changes in the geopolitical landscape since 2024, and the maturing of AI technologies. With a continued rise in cyberattacks in a more polarised and unstable world, and an awareness that AI models (especially the large frontier AI models accessed via cloud subscriptions) require the passing of significant volumes of data to the model vendors, life sciences companies are right to perceive a risk in adoption. We've seen growth in experimentation with medium to medium-large size models (70 billion to 400 billion parameters) hosted in on-premises environments, often fine-tuned on specific medical datasets to produce fine-tuned AI models for life sciences applications. These models, in life sciences domain-specific tasks, equal or outperform the largest frontier models while taking far less compute resources. By running the models locally, life sciences and medtech organisations can more easily control privacy and cybersecurity risks. Based on current interest in these approaches across the sector, and an increasing array of highly performant pre-trained open weights AI models, we expect this trend to increase strongly in the next 12-to-24 months."

On the lack of skilled personnel point, Chloe Forster says that "life sciences AI projects demand a unique blend of capabilities: data science and algorithm design combined with an understanding of biology, clinical workflows, and regulatory requirements. As intelligent technology evolves, organisations must invest in continuous upskilling and regularly assess team composition to stay ahead."

Where are innovators using intelligent technology the most in their businesses? Marketing and customer interactions, and business insights, are the top areas for AI investment **(Figure 20)**.

Figure 19: What do you think are the biggest barriers to greater adoption of intelligent technology across the life sciences industry and healthcare ecosystem? *Top three selected and ranked*



Compared to other parts of a life sciences business, these areas typically show faster returns on investment, which encourages intelligent technology adoption. Marketing and business analytics also face fewer regulatory hurdles than R&D and manufacturing, making it easier to apply intelligent technology.

In an intensely competitive sector, AI helps innovators gain an edge. In marketing and customer engagement, it's about differentiation: greater personalisation and optimised omnichannel campaigns.

In business insights, it's about supporting overall competitive advantage: harnessing data-rich environments to make decisions faster and monitoring the regulatory and compliance environment to flag risks earlier.

"This strongly reflects our own experiences" says Gareth Stokes, "with intense interest from life sciences clients in generative AI use cases in marketing and creative areas, as well as more 'hard science' uses in R&D."

Overall, the data suggests a trend towards broader use of AI across business functions.

Compared to two years ago, there's much greater adoption in business support functions (+13pp) and operations (+11pp). Conversely, we're seeing less focus on its use in discovery (-13pp) and clinical trial optimisation (-12pp), relative to other parts of innovators' businesses. This reflects the fact that innovators are now turning their attention to broader business operations, having previously selected the R&D function – the innovation engine – as one of the early beneficiaries of intelligent technology.

Innovators are increasingly grappling with an explosion in data that needs to be made sense of, and operational pressure in the form of rising costs and market volatility. This is the push. And the pull is regulatory evolution – offering increased guidance on responsible AI use – combined with technological maturity.

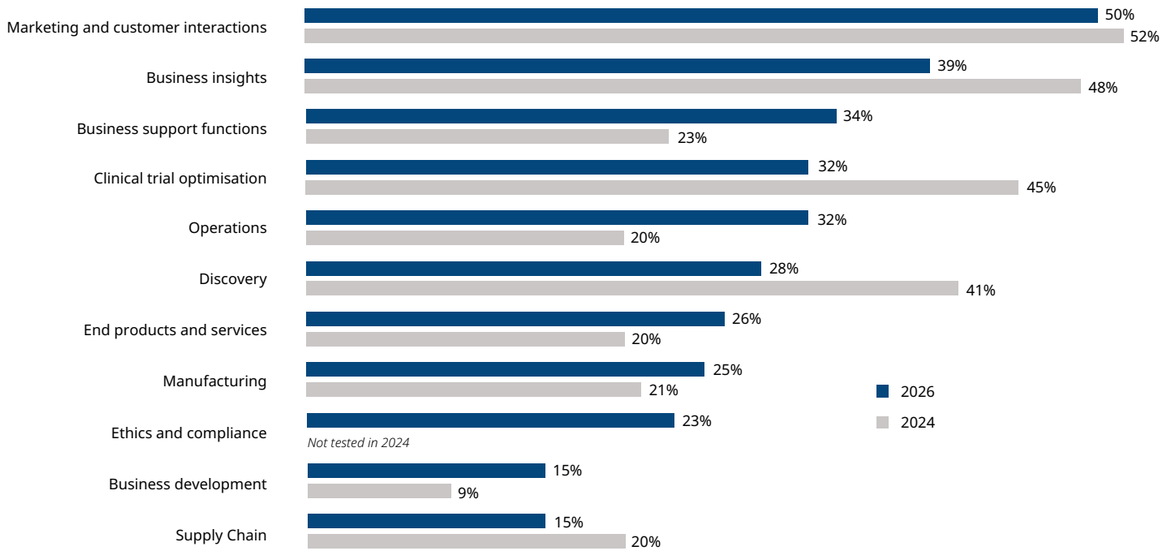
Generative AI (GenAI) and more recently agentic AI are opening up a more autonomous, adaptive and scalable world for life sciences innovators.

"The next great wave of use cases are the various classes of use under the agentic AI umbrella – those areas where the AI model is trusted to carry out certain third-party interactions or transactions independently. This obviously requires a far higher level of testing and assurance before the 'human in the loop' is removed. As agentic AI becomes more widespread, we expect this to influence areas of AI deployment in the near-to-medium term, with business support functions, supply chain uses and some limited customer interactions likely to be the main beneficiaries," says Gareth Stokes.

While only 15% of survey respondents noted supply chain as a top area for intelligent tech investment, one example of how GenAI is being used in this area is to improve the distribution of advanced therapies. Using GPS-enabled vials for real-time tracking and route optimisation helps anticipate potential delivery challenges.

Figure 20: In what parts of your business is intelligent technology being applied the most?

% respondents who selected business areas as one of their top three



This year we added ethics and compliance to our question about where intelligent technology is being applied the most. Twenty-three percent of respondents selected it as a top three investment area in their business. This is a relatively lower priority use case for life sciences innovators. But given greater scrutiny of the use of AI from a compliance perspective, we expect to see this percentage increase in future editions of the report as it becomes increasingly important to ensure robust governance.

Chloe Forster notes that "horizon scanning and automated monitoring of a complex, evolving regulatory landscape is a clear use case for life sciences innovators. We're seeing an increasing number of clients looking to AI as a means to help manage this compliance burden."

In terms of the commercial opportunities that intelligent technology offers across the industry, patient screening and diagnosis are the strongest **(Figure 21)**.

Early detection and diagnosis mean better outcomes for patients, and screening tools and diagnostics are cost-effective interventions in the long-term, helping to reduce the resource burden on healthcare budgets.

One respondent noted that "chronic disease management accounts for about 70% of healthcare costs. Early intervention and preventative technology could make a significant difference here." Clearly the demand for innovation in this part of the care journey is there, and the addressable market is huge.

Technological advances like liquid biopsies, digital pathology and nano sensors mean less invasive and more precise testing. And the "omics revolution," which includes genomic screening, is driving demand for more advanced diagnostics. All of this is turbocharged by intelligent technology, enabling ever faster and more accurate screening and diagnoses, leading to more personalised, precise and more effective care.

In our 2024 report we highlighted GRAIL's Galleri multi-cancer early detection (MCED) blood test as a cutting-edge example of how intelligent technology is advancing the field of cancer diagnostics. The product has made significant strides in the past two years with positive trial results. It's commercially available in the US, but GRAIL is aiming for FDA approval this year. In the UK, NHS England will wait to see final results from its three-year NHS-Galleri trial – due this year – before it decides on rollout. The way we detect and treat cancer might look very different from then.

Interestingly, the perceived opportunity for intelligent healthtech products and services in care delivery – that is, how care is provided to patients across the care continuum and throughout the healthcare ecosystem – seems to be increasing.

Intelligent tech is a key facilitator of decentralised care delivery, a care model of focus for many countries as they seek to reduce the burden on hospital infrastructure and reduce healthcare costs, while increasing quality of care. And we're seeing agentic AI emerge as a powerful "digital healthcare assistant": a proactive, always-on, autonomous collaborator existing to optimise workflows, enhance patient engagement with care, and support healthcare IT infrastructure.

But experts have recently warned that AI tools in healthcare risk amplifying biases, leading to poorer outcomes for women and ethnic minorities. Academic studies show large language models (LLMs) often misinterpret symptoms and show less empathy toward certain groups because of biased training data. While AI innovators work on fixes, experts warn that without diverse datasets and strong oversight, health disparities could worsen. Initiatives like the NHS-backed Foresight model aim to improve accuracy, though privacy concerns persist.

Clinical management is also considered more of an opportunity among our respondents, while health and wellness tracking has dropped down the growth agenda. We can attribute this to two broad trends: increasing customer awareness of and confidence in intelligent technology and the benefits it can bring to the clinical environment, driving demand; and a maturing regulatory landscape, creating more predictable growth opportunities for those wanting to incorporate intelligent technology into their products and services.

Most life sciences innovators are experienced in navigating the highly regulated life sciences industry, but the much broader and less regulated consumer market that health and wellness tracking exists within is a new world for many life sciences businesses. It's harder to differentiate in a space dominated by well-known tech and consumer brands, margins are lower, and the products can be difficult to fit strategically into businesses largely focused on measurable health outcomes and clinical decision-making.

That said, the use of wearables (the basis of health and wellness tracking) for remote patient monitoring is expected to increase, enabling earlier diagnoses and more dynamic clinical management. The increased convergence of clinical and non-clinical worlds through connected devices carries increased data privacy and cybersecurity risks, but patients and healthcare providers are more willing to embrace smart technology when they can see clear health and lifestyle benefits.

Gareth Stokes comments that "this is one area where more protective regulations (especially the EU's privacy, AI, cyber and digital markets rules) tend to engender public trust and lead to more confident uptake of products by consumers. They'll be more likely to use products if they know organisations that they're going to trust with some of their most sensitive data (health information, 'quantified self' wellness measures, location data, activity levels) have to hold, protect and process that data only in accordance with various mandatory standards. As more devices sit in the grey area between consumer wellness products and dedicated medical devices, the role of regulation in underpinning consumer confidence will be ever more important."

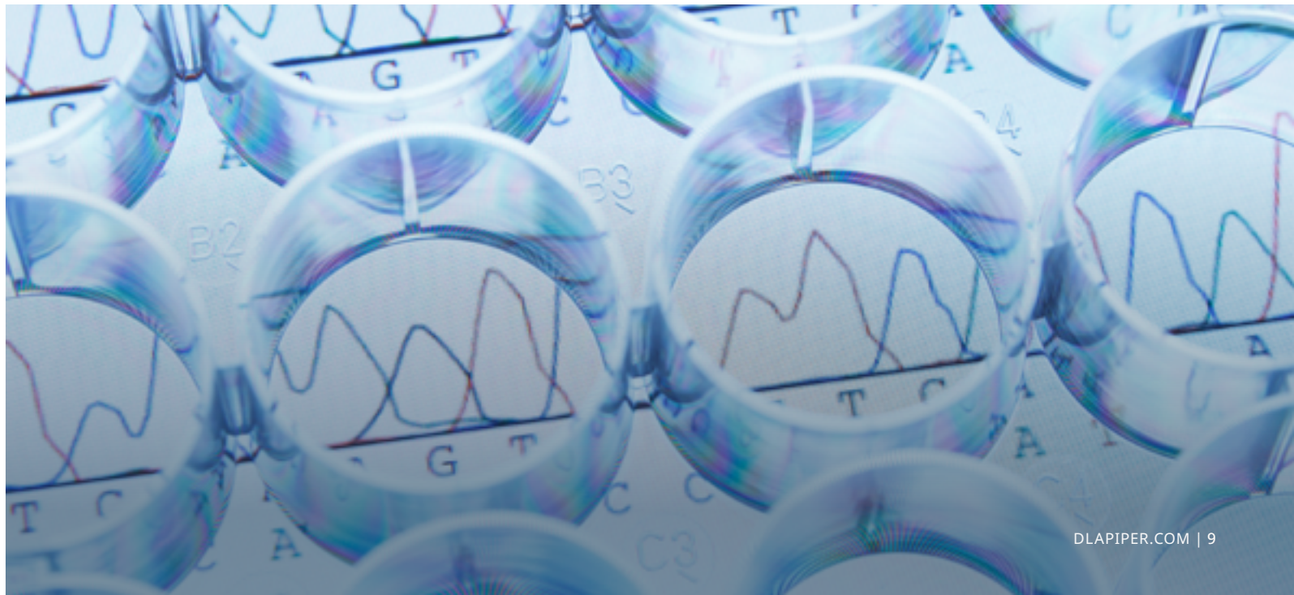


Figure 21: Which applications do you think represent the biggest opportunities for intelligent healthtech products and services? *1 to 6 ranking (1 is biggest opportunity)*

Rank	Theme	Weighted average
1	Patient screening and diagnosis	4.55
2	R&D	4.35
3	Clinical management	3.50
4	Care delivery	3.22
5	Health and wellness tracking	2.76
6	Healthcare operations and financial management	2.62

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Our clients span the full life sciences ecosystem, from the largest pharmaceutical and medtech innovators, biotech and healthtech trailblazers, suppliers and distributors, to contract research organisations, diagnostic companies, care providers, investors and payers.

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