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# Unlocking the Potential of Generative AI in Healthcare and Life Sciences

Why transparency is the key to meaningful transformation

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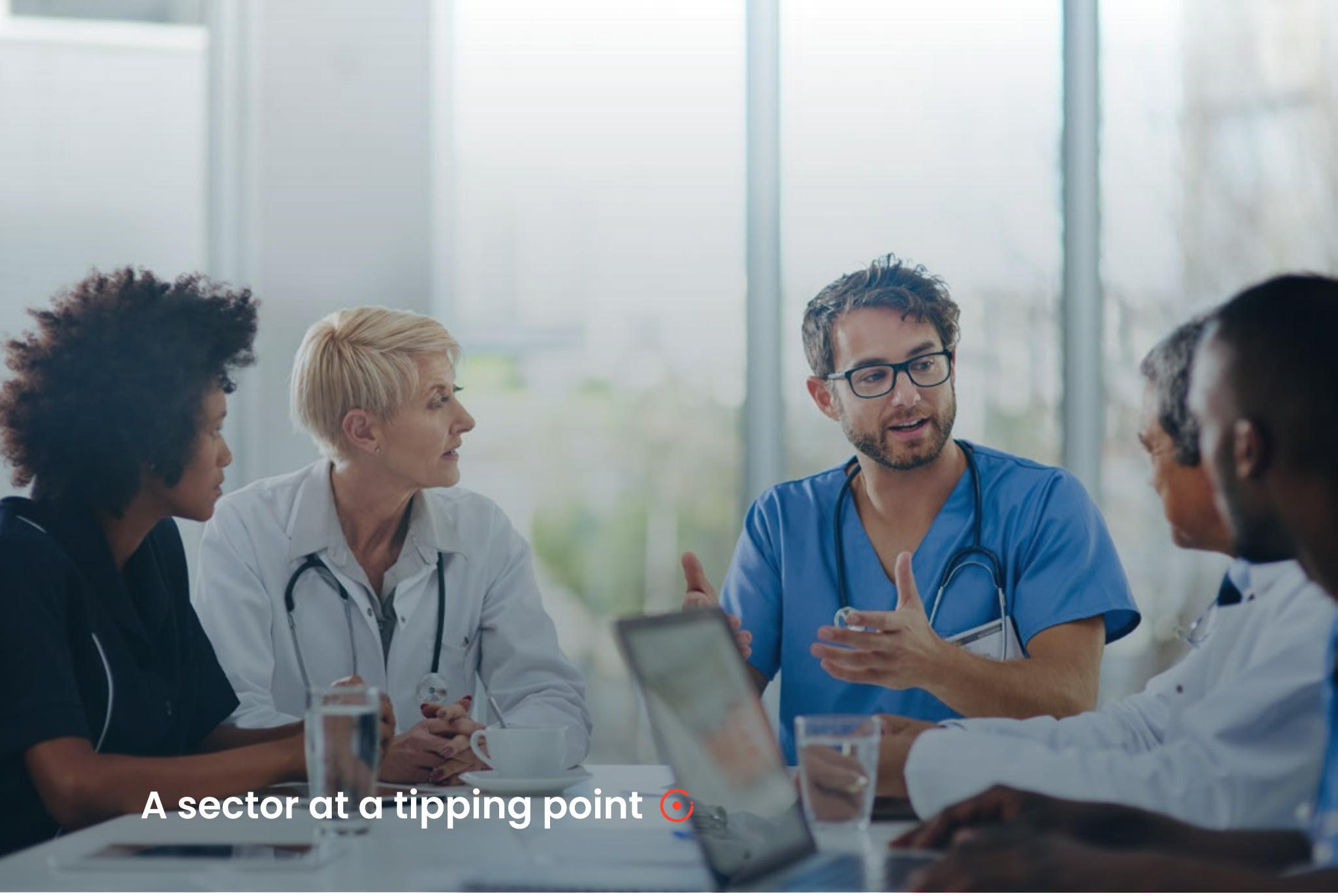


# A sector at a tipping point

Throughout the healthcare and life sciences ecosystem – from the frontiers of scientific research to the frontlines of care delivery – organisations are under pressure from multiple directions.

An aging population is increasing the demand for fast access to effective care, but clinician burnout and staff shortages make it difficult to meet this demand. Meanwhile, governments and regulators expect providers to improve healthcare equity and quality, maintain clinical safety and protect growing volumes of patient data. Against this background, healthcare leaders face pressure to recruit and retain staff while improving productivity and driving the shift towards value-based care.

At the other end of the spectrum, life sciences leaders must meet shareholder demands for cost reductions and faster time-to-value for innovative drugs, devices and therapies –without compromising regulatory compliance.

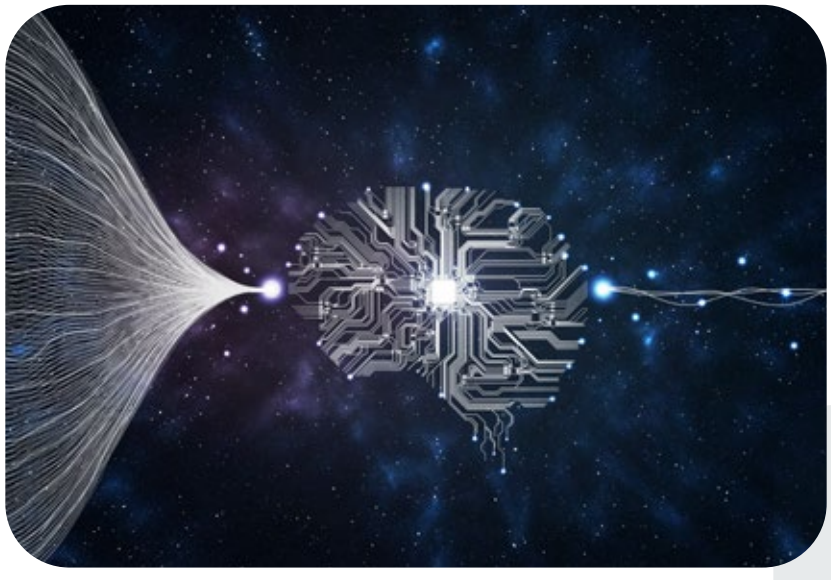
## Overcoming critical challenges with AI

For many years, organisations throughout the sector have harnessed artificial intelligence (AI) in various forms to automate routine processes and streamline everyday workflows – from machine learning systems for analysing vast quantities of genomics data to speech recognition tools for dictating clinical notes.

Now, healthcare and life sciences organisations have an opportunity to use emerging generative AI technologies to meet today's challenges head-on. Pioneering organisations are exploring how generative AI can help their teams advance scientific research, create powerful new treatments and improve care delivery and patient outcomes – all while reducing costs and maintaining compliance. They understand that generative AI can augment the expertise and ingenuity of their people, and free them from mundane tasks to focus on the things that can really make a difference to patients' lives.

With such transformative potential, the appetite for generative AI adoption is growing fast. A 2023 survey of healthcare organisations found that, although only 25% said they had implemented generative AI solutions, 58% said they were likely to implement one in 2024.[i] So, it's no surprise that analysts expect the global market for generative AI in healthcare to grow to $17.2 billion by 2032, up from just $800 million in 2022.[ii]

In this guide, we'll explore the generative AI opportunities in healthcare and life sciences, outline key considerations for adoption and show how transparency can help unlock this technology's full potential.



## What is generative AI?

Generative AI tools use deep learning models to understand users' natural language prompts and respond by summarising existing content or creating new content based on huge quantities of training data.

# The generative AI opportunity in healthcare and life sciences

Although generative AI is still maturing, it's evolving fast. Organisations are already finding valuable applications for it throughout the healthcare and life sciences landscape, with many more on the horizon.

## Generative AI use cases in life sciences

Using generative AI tools could dramatically reduce the time and cost of ***medical research*** and accelerate scientific breakthroughs. Generative AI models can rapidly summarise large quantities of scientific literature, saving researchers hours or days of sifting through studies to stay abreast of the most recent developments in their field. This technology can also be used to generate synthetic data to give scientists easy access to population-size data pools for their research.

In ***pharmaceuticals,*** generative AI can accelerate drug discovery and design processes. For example, generative AI tools can model protein structures and sequences to predict the results of various permutations. They can identify therapeutic candidates and new therapeutic uses for existing drugs. They can even accelerate the selection of clinical trial participants based on rapid analysis of patient data.

***Medical device*** manufacturers are also exploring generative AI's possible applications, including how it could analyse regulatory submissions to enhance compliance oversight, or streamline the creation of accurate technical and promotional content. As the technology evolves, other use cases will become possible, such as building natural language interfaces that make it easier to access the full capabilities of next-generation diagnostic and therapeutic equipment.

## Generative AI use cases in healthcare

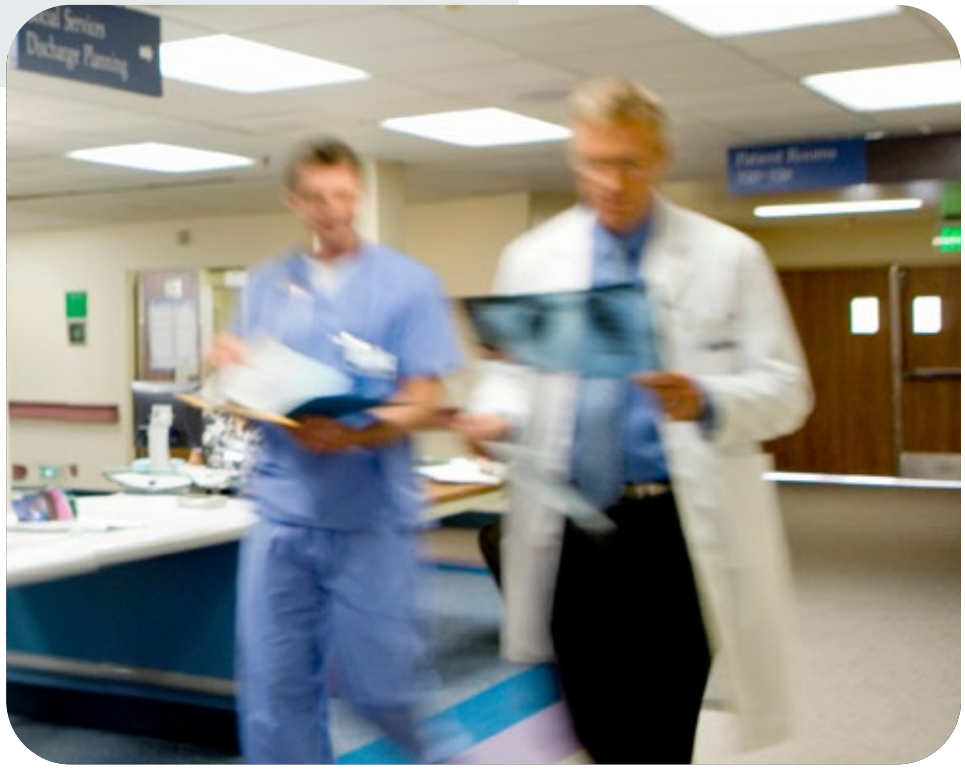
There are countless potential applications for generative AI across the care continuum, and we're just beginning to scratch the surface of what's possible. For example, generative AI copilots can enhance ***diagnostics*** by helping pathologists and radiologists spot easy-to-miss anomalies and correlations in samples and medical images, and automating the creation of thorough, accurate reports.

Similarly, in frontline ***care delivery,*** copilots can minimise clinicians' documentation burden and cognitive load by automatically creating clinical notes from dictations and offering evidence-based clinical decision support. These tools can suggest appropriate care pathways and personalised treatment plans based on individual patients' data and positive outcomes in similar cases. With AI surfacing relevant clinical guidance and suggesting potential actions, clinicians can focus on engaging and supporting their patients.

As well as streamlining everyday clinical workflows, generative AI can give providers valuable insights into social determinants of health and population health trends and issues, helping them improve care for individuals and entire communities.

### Spotlight on: Automating emergency room triage

In a busy emergency room (ER), every second counts. Endava's ER Triage Assistant saves clinicians time by automating vital patient intake processes by gathering relevant information directly from patients and assessing the relative urgency of each case. Importantly, the solution also keeps patients informed about their position in the queue, so ER teams can focus on patient care rather than handling multiple patient inquiries.

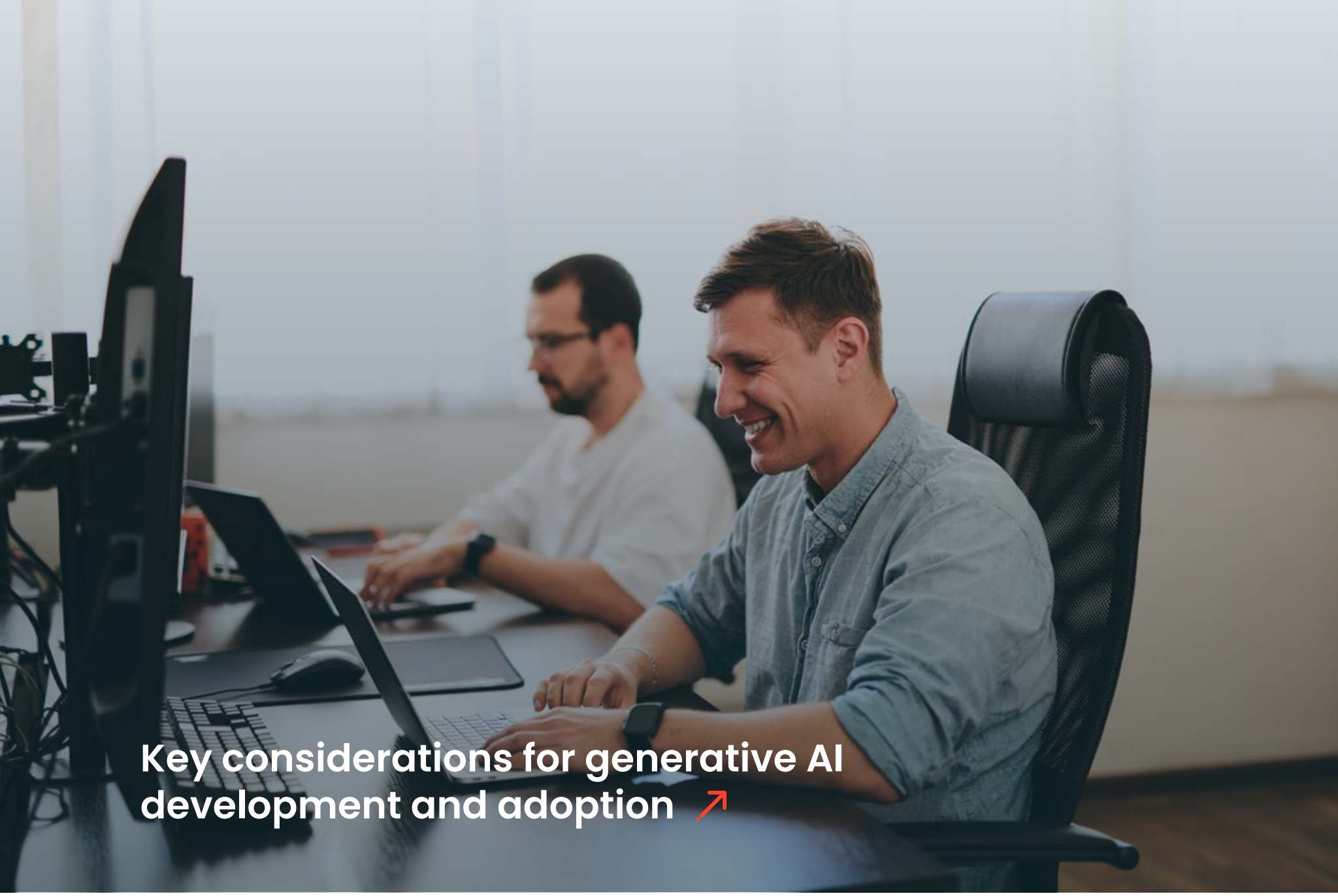


Generative AI can also enhance ***patient engagement,*** making it easier for patients to stay in control of their care journey. For instance, it can create easy-to-digest summaries of complex clinical notes, so patients can easily understand their diagnosis, prognosis and treatment. This allows clinicians to focus on empathetic, human connections during consultations, with AI creating a clear summary of the conversation for patients.

By automatically creating personalised patient communications and alerts, generative AI can help providers encourage care plan adherence without the need for staff to send information and reminders.

## Spotlight on: Reducing the documentation burden

Medical professionals pursued their education and training to focus on patient care, not paperwork. Endava's Medical Transcript & Summary market demonstrator automatically transcribes and organises medical information into clinical notes, including SOAP (Subjective, Objective, Assessment and Plan) and referral forms. The technology helps providers enhance clinical documentation efficiency and accuracy. Even more importantly, it reduces clinicians' documentation burden, allowing them to dedicate more time to their patients.



# Key considerations for generative AI development and adoption ↗

While the potential value of generative AI is huge, there are numerous factors that will determine its success in the healthcare and life sciences sector.

Foremost of these is the need for clinical safety, which will be driven by following clear guidelines on the responsible development and usage of AI. It's essential to follow responsible AI practices to help eliminate bias, increase transparency and ensure data privacy – and legislation to enforce responsible and ethical approaches is continually evolving.

The European Union's forthcoming Artificial Intelligence Act[iii] will doubtless be followed by similar regulations across the globe as lawmakers attempt to catch up with the rapid evolution of AI technologies. In the United States, for example, The White House has already released an Executive Order on the safe and responsible development of AI.[iv]

## Driving solution efficacy and adoption

One of the most critical components of safe and effective AI development and deployment is having a human in the loop. While AI models can make data-driven predictions and suggestions, it's vital for human experts to evaluate those outputs and determine the right course of action.

In healthcare, it's especially important that AI tools support humans, not replace them. Effective care relies on the human empathy and professional experience of expert clinicians, so AI tools should offer support that augments their expertise and frees them to spend more time with patients.

For generative AI tools to deliver value in healthcare and life sciences, they must be based on sector-specific models and tested in real-world workflows. The efficacy of generative AI solutions can also be greatly enhanced through a user-centred approach to design, where input and feedback from end-users are incorporated at every stage of the design and development lifecycle.

As with any technological transformation, there are change management challenges to consider. Organisations must build education and ongoing communication programmes to help end-users understand how generative AI tools will deliver value for them and how to use the tools effectively.

# Accelerating adoption by building trust

Generative AI tools can’t deliver value if scientists, clinicians and patients don’t trust them; without trust, user adoption will be limited.

However, the technology is still in its infancy and there are ongoing concerns around ‘hallucinations’ in the responses of general-purpose generative AI tools and potential bias in foundation models’ training data.

With no visibility of the paths ‘black box’ AI models take to generate their outputs, there’s no way to ensure they’re complying with strict regulations on how healthcare data is collected, managed and used.

To build trust in AI systems, we must make their decision-making processes more transparent and fully understand how they use data. By unlocking the black box and looking inside, we can accelerate the viability of generative AI tools for highly regulated sectors – which is where the right approach to data management can help.

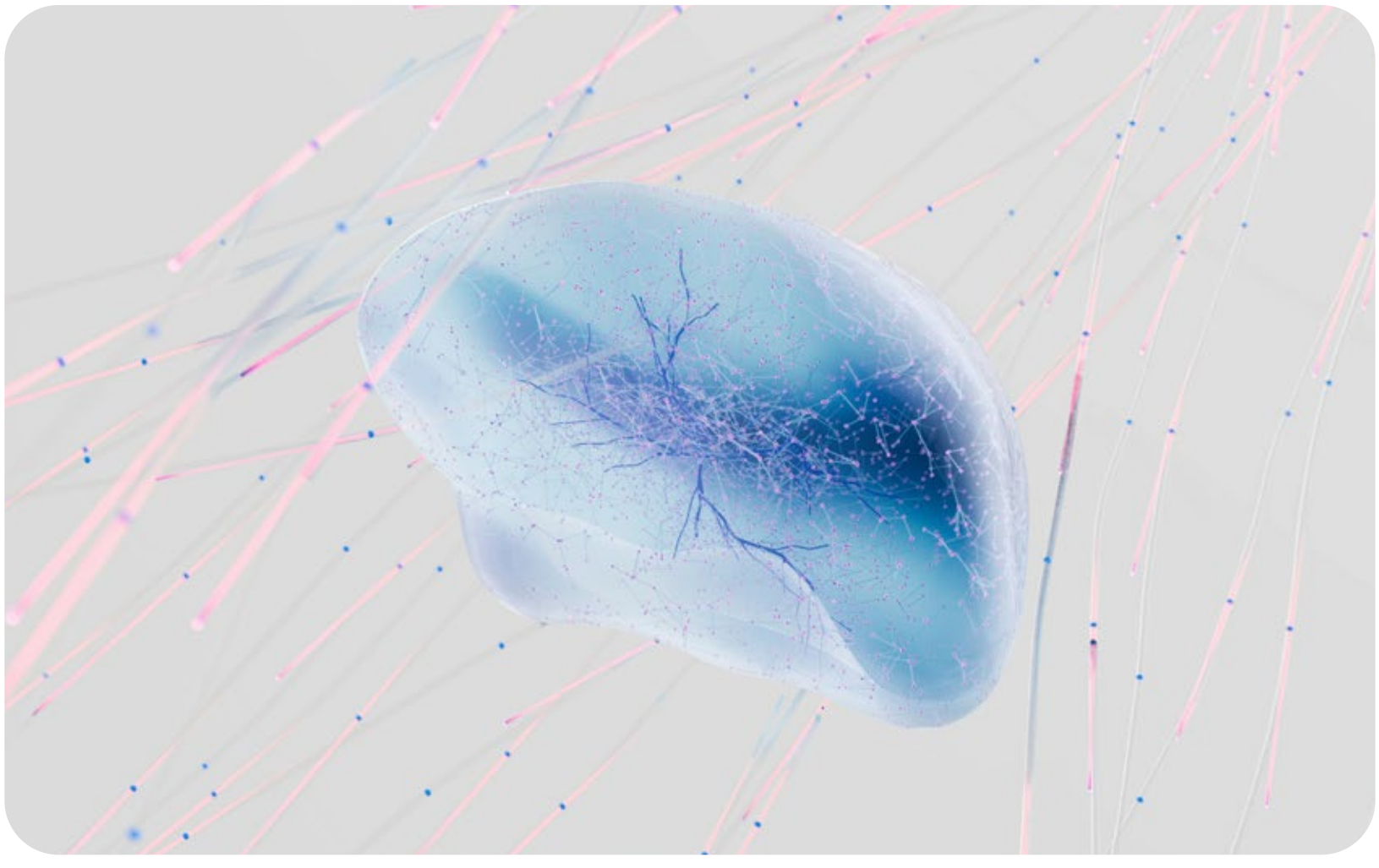
## Opening the black box with agentic AI

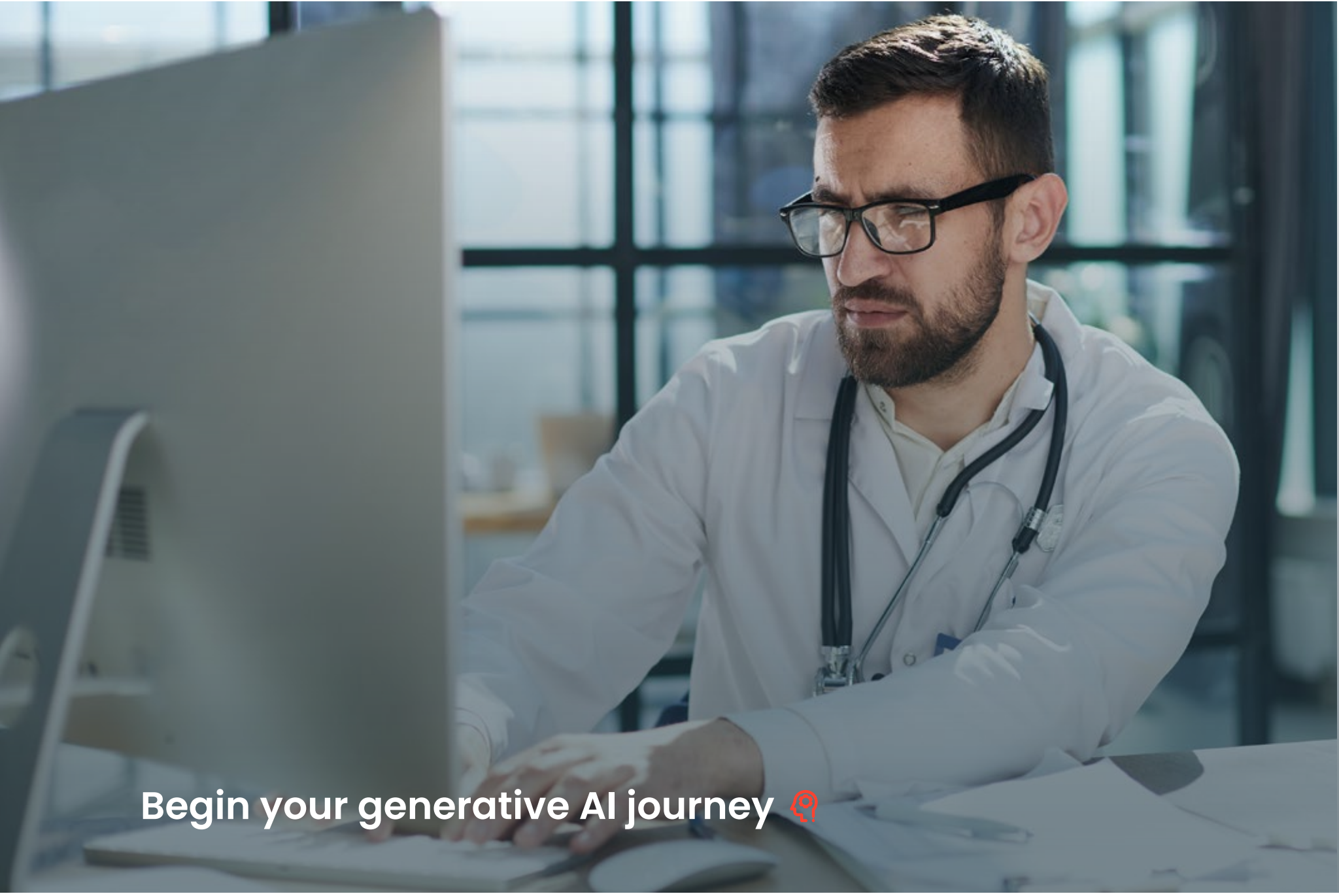
Effective data management is vital for implementing agentic AI, which combines various architectural components with AI models to work together as autonomous ‘agents’ within a system. Just like a human team, these agents collaborate to achieve more than they could alone. They also provide checks and balances for each other to mitigate risk and bring transparency to AI output generation.

However, the key to ensuring those safeguards is proper management of data throughout the system, auditing the inputs and outputs of agent activity and using source-of-truth validations to verify the accuracy of agents’ actions.

Endava has developed an agentic AI industry accelerator that provides full visibility into how agents ingest, transform and act on data using these methods. The system logs and tags every interaction with data, providing a complete audit trail of data usage and AI decision-making. By putting data management at the heart of the solution, the accelerator offers the transparency needed to build trust in deploying generative AI in healthcare and life sciences workflows.

Learn more about Endava’s agentic AI industry accelerator





# Begin your generative AI journey

Generative AI holds the promise of unlocking biomedical gamechangers that may be beyond human reach today. It has the potential to help accelerate diagnosis, identify effective new treatments and dramatically improve clinician and patient experiences.

As we've seen, there are still significant challenges organisations must overcome to implement generative AI safely and effectively. However, with the help of an expert partner, organisations can accelerate successful adoption.

For more than 20 years, Endava has worked with healthcare and life sciences organisations to help deliver tangible, lasting value from emerging digital technologies. We help organisations throughout the sector harness the power of technology to expand the boundaries of scientific knowledge, create groundbreaking treatments and devices, enhance care delivery and improve patient outcomes.

To learn more about how we can help you identify, prioritise, build and deploy the most valuable generative AI use cases for your organisation, get in touch with our healthcare and life sciences team.

# References

[i] https://klasresearch.com/report/generative-ai-2023-what-are-organizations-current-adoption-and-future-plans/3296

[ii] https://market.us/report/generative-ai-in-healthcare-market/

[iii] https://www.europarl.europa.eu/news/en/press-room/20240308IPR19015/artificial-intelligence-act-meps-adopt-landmark-law

[iv] https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/

# Get in touch to see how we can help.

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