



Extracting value from Generative AI and emerging technologies

Uncovering the realm of possibility

Generative AI (GenAI)'s release to the public quickly amassed adoption and delighted users, enchanted by chat-enabled interfaces and powerful new large language models (LLMs).¹ LLMs are foundation models—machine learning (ML) models pre-trained on a broad dataset that can be adapted to solve a range of problems, offering new ways to build applications or other foundational models.²

Early traction for GenAI was seen from consumer releases, but GenAI is quickly showing its potential to add contextual awareness and human-like decision-making to enterprise workflows.³ This inventive era of GenAI advancement puts tremendous pressure on leaders to harness the technology's capabilities and promise, without being disrupted.⁴ In the year ahead, extracting GenAI's value and managing its risks, while maintaining trusted enterprise status, are at the forefront of many leaders' strategic priorities.⁵

Amazon CEO Andy Jassy says that GenAI could be one of the most transformative technological transformations in decades,⁶ while World Economic Forum (WEF) President Børge Brende, reminds leaders that the immense potential productivity gains underscore the need for responsible AI governance.⁷

The Winter 2024 Fortune/Deloitte CEO Survey of viewpoints—from the CEOs of some of the world's largest and most influential companies—shows there has been a marked increase in the adoption of GenAI.⁸ The majority of CEOs (57%) intend to integrate new technologies into their business models to uncover growth opportunities, with a significant portion (56%) already leveraging GenAI to enhance efficiencies.⁹

Creating competitive advantage

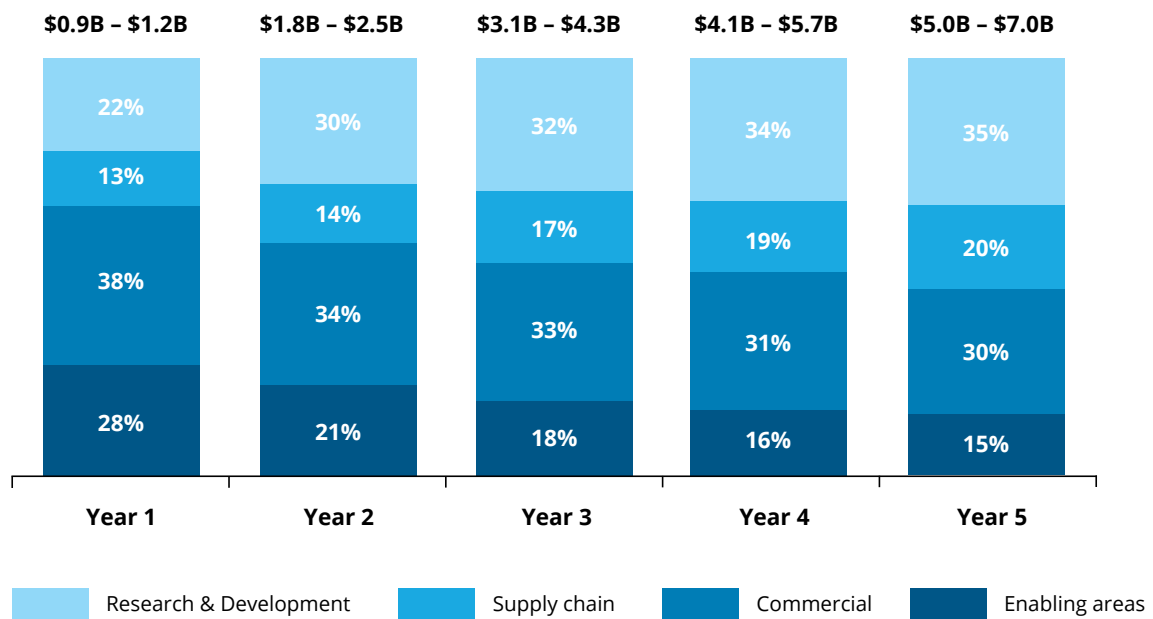
Increasing efficiencies and cost savings

In the next year, more than 90% of biopharma and medtech respondents surveyed by Deloitte say they expect GenAI to have some impact on their organizations.¹⁰ GenAI and other AI technologies coupled with digital transformation tools are poised

to increase overall efficiencies and process innovation across many areas of the life sciences value chain (figure 1).¹¹

A top 10 biopharma company with an average revenue of US\$65-75 billion could capture between US\$5-7 billion of peak value by scaling the use of AI over 5 years. This varies depending on an organization's size.¹²

Figure 1. Average 5-year value accretion schedule of AI impact (percentage of peak value realized)



Assumptions:

1. Foundational data and infrastructure are in place to enable transformational use case development
2. Each function implements the full portfolio of transformational AI use cases (e.g., AI clinical trials, AI manufacturing, AI marketing)

Source: Deloitte, "Realizing Transformative Value from AI and Generative AI in Life Sciences," 2024.

Creating value across the value chain

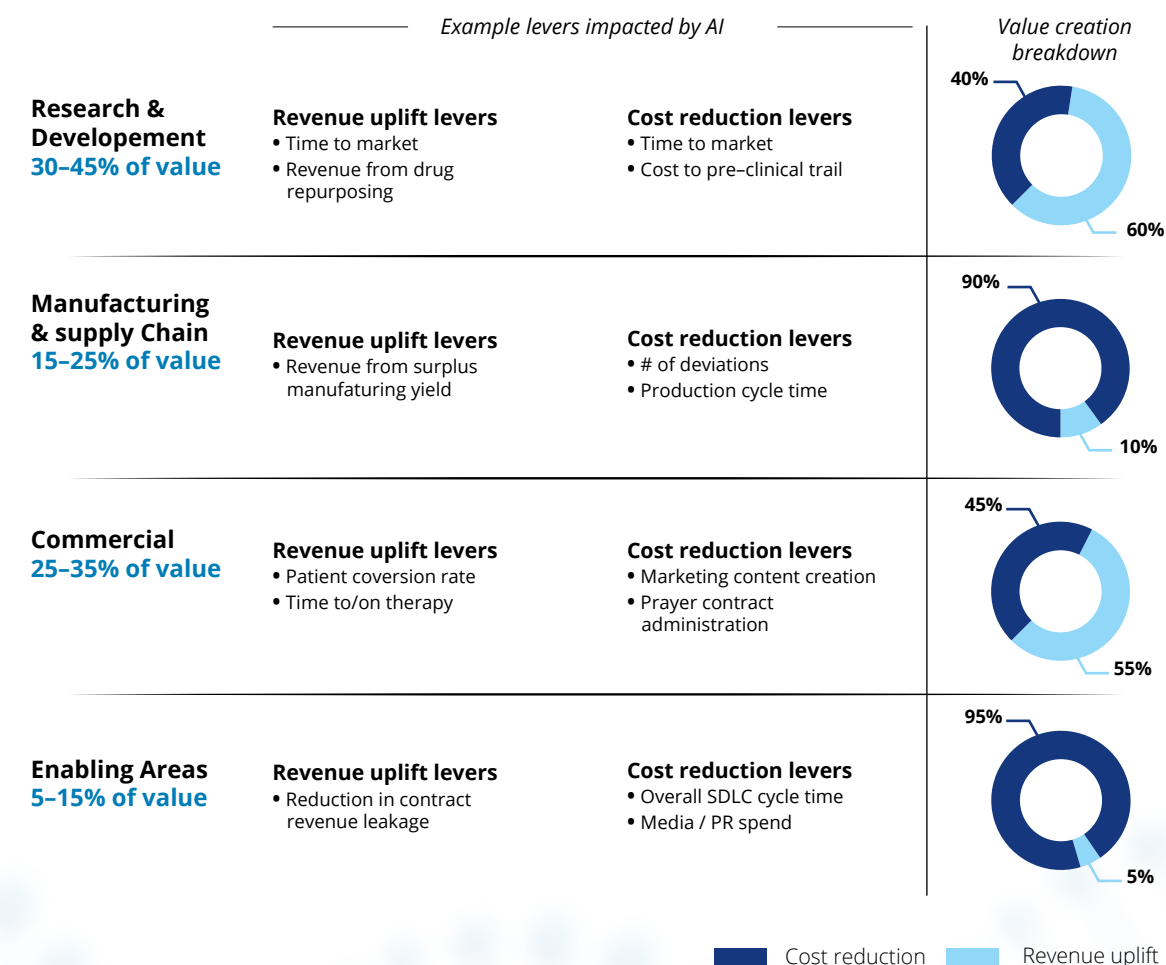
Are companies making choices for GenAI today that are going to create value and advantage? While it may be too early in the journey to declare, some approaches are gaining more traction and accelerating time to value vs. others.¹³ Nearly 90% of value from the use of artificial intelligence in life sciences may be derived from three functional areas: research and development (R&D), manufacturing and supply chain, and commercial (figure 2).¹⁴

R&D represents the leading area for value opportunity at 30-45%. AI applied to novel drug identification and accelerating drug development could provide both cost savings and revenue uplift. Commercial may provide

25-35%, where marketing costs could be optimized and activities such as script utilization could be enhanced by AI. In manufacturing, supply chain, and enabling areas (including IT, HR, and finance) AI primarily provides opportunities for cost transformation through efficiency realization and vendor cost reductions.

How can organizations turn these impacts into competitive advantage? Greater speed and efficiency can enable redeployment of capital to other value creating areas. Greater effectiveness can help companies advance their science and engage their customers and patients comparatively with others. Ultimately, greater patient outcomes could be achieved.

Figure 2. Value creation breakdown by function



Source: Deloitte, "Realizing Transformative Value from AI and Generative AI in Life Sciences," 2024.

Finding synergies: Big pharma and big tech collaborating with GenAI

In 2024, many biopharma companies are looking for novel ways to marry the rich data sets of science with the latest GenAI technologies.¹⁵ Alternatively, technology giants with advanced types of AI capabilities are looking to capitalize on the massive opportunities afforded by the life sciences and health care industry.¹⁶ By 2025, 36 percent of the world's data is estimated to be generated by life sciences and health care.¹⁷ Through GenAI, big pharma and big tech may be realizing these two sectors have more to gain from working together than by competing.¹⁸

Will GenAI create the trillion-dollar pharma company?

Evidence of tech titans' interest was on display with their formidable presence at the J.P. Morgan Healthcare Conference in early 2024.¹⁹ Many tech company executives were looking to strike new deals with biopharma for GenAI/AI technologies, including NVIDIA, whose CEO attended the conference.²⁰ NVIDIA achieved a US trillion-dollar market cap status in 2023²¹ and believes these generative technologies will also enable a drug maker to become the next trillion-dollar company.²²

Pharma companies' collaborations with tech titans for GenAI

Tech titans are working with life sciences companies on more advanced GenAI in many areas that are constantly evolving, including the following:

NVIDIA: Provides a GenAI drug discovery cloud service, BioNeMo, to biopharma companies that want to create or customize their own generative models and then offer those as a Software-as-a-Service (SaaS) model to others via cloud APIs.²³ Some of NVIDIA's pharma relationships include Amgen, AstraZeneca, GlaxoSmithKline (GSK), and Roche subsidiary Genentech.^{24,25}

Microsoft: Provides GenAI through Microsoft services, including Copilot, Microsoft 365 apps, Microsoft Azure, and Bing search engine.²⁶ Microsoft is collaborating on AI drug discovery with Novo Nordisk²⁷ and Novartis.²⁸ Some GenAI relationships in health care include Epic,²⁹ Siemens,³⁰ and health systems, like Mercy and Duke Health.³¹

Alphabet: Provides GenAI through Google services, including Gemini and Google Cloud. Its Target and Lead Identification Suite is designed to accelerate drug discovery and the Multiomics Suite to share mass amounts of genomic data in precision medicine.³² Google Cloud is working on a GenAI relationship with Ginkgo Bioworks, for biosecurity and engineering biology,³³ and Insmed to bring about change in the drug development and commercialization process.³⁴ Insmed built a GenAI search capability for internal records leveraging Google Vertex AI Search that also allows categorized access to external medical articles.³⁵

AWS: Gen AI on AWS Cloud allows integration with many leading foundations models—including Amazon, AI21 Labs, Anthropic, Cohere, Meta, and Stability AI—for uses such as generating new therapeutic candidates, better matching patients with the right clinical trials, powering patient engagement applications, and enhancing manufacturing oversight.³⁶ AWS is working with Novo Nordisk on protein structure prediction at scale; with Amgen on drug discovery and manufacturing;³⁷ and with Eversana to “pharmatize” AI across the life sciences industry, starting with a GenAI application for medical and regulatory content approvals.³⁸ AWS also worked with Pfizer on VOX, a proprietary GenAI platform for giving workers access to LLMs.³⁹ The company enhanced productivity by using GenAI to create first drafts of patent applications and medical and scientific content for human review and finalization.⁴⁰

Democratizing a US\$1 billion investment in phenomics with GenAI models

Founded in 2013, Recursion Pharmaceuticals is a leading AI-biotech company in what is now known as “techbio,” advancing a clinical-stage pipeline in data-driven drug discovery.⁴¹ Recursion uses its own operating system, Recursion OS, to turn drug discovery into a “search” problem—generating, analyzing, and deriving insight from massive biological and chemical datasets.⁴² Its phenomics platform combines imaging and artificial intelligence for rapid validation and advancement of novel oncology targets.⁴³

Looking to democratize its US\$1 billion phenomics investment, Recursion is opening up access to years of proprietary work in hopes it will “move all of us forward faster.”⁴⁴ The company’s first in a potential series of GenAI foundation models—Phenom-Beta—is hosted on NVIDIA’s BioNeMo platform.⁴⁵ In July 2023, Recursion also received a US\$50 million investment from NVIDIA as part of a multi-year partnership to advance its AI technologies.⁴⁶ The aim is to leverage GenAI/AI technologies to benefit Recursion’s own internal pipeline along with those of their partners, including Bayer for fibrotic diseases, and Roche/Genentech for oncology and neuroscience.⁴⁷

Understanding the technology to extract its value

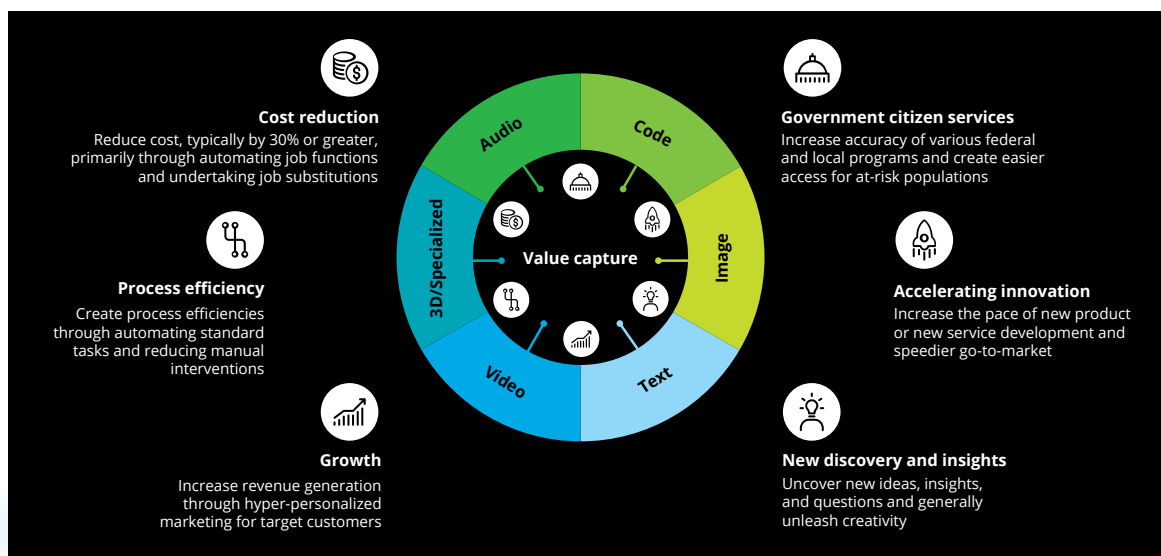
Multimodal LLMs, the building blocks of artificial general intelligence (AGI)

Currently, multimodal LLMs are a step closer to mimicking human intelligence.⁴⁸ The ability to integrate audio, code, images, text, simulations, and videos

with GenAI is already changing the way content is being generated and delivered and will likely remodel many types of consumer, business, and health care experiences (figure 3).^{49,50}

Half of consumers surveyed by the Deloitte US Center for Health Solutions, report using GenAI in some capacity, and more than half believe GenAI could improve access to health care; 46% think it could make health care more affordable.⁵¹

Figure 3. Broad categories of value capture from GenAI



Source: Deloitte, “Realizing Transformative Value from AI and Generative AI in Life Sciences,” 2024.

Simple uses of GenAI, like generating ideas and design artifacts, can be “no regrets bets” for organizations to de-risk investments and accelerate progress when kickstarting their GenAI programs.⁵² More advanced use cases start incorporating more modalities and technologies.⁵³ Each modality, like text or video, is a potential value-driver for a use case; expanding modalities increases the potential benefits of a use case.⁵⁴

For example, a use case for unlocking cures in drug discovery may provide value-drivers through both simulations and images (figure 4). The potential benefits in this use case are GenAI’s ability to analyze and learn from vast amounts of data, including images, which can lead to more targeted and effective treatments. The ability to run simulations with GenAI to select the best potential drug candidates minimizes the need for real-world iterations.⁵⁵

Because multimodal AI systems can interpret multiple types of data together, such as textual and image data, their development and validation require collaborative efforts between a number of disciplines.⁵⁶ Leaders should bring together a cross-disciplinary team of people with the domain knowledge to think creatively about potential use cases.⁵⁷ (See Deloitte’s AI Institute’s [Generative AI Dossier](#) to explore more use cases.)

Moving beyond use cases to a string-of-pearls strategy

LLMs and other foundation models are starting to unlock a slew of high-value applications. About two-thirds of life sciences companies surveyed say they are building GenAI use cases, and 36% say GenAI will impact their strategy in the year ahead.⁵⁸

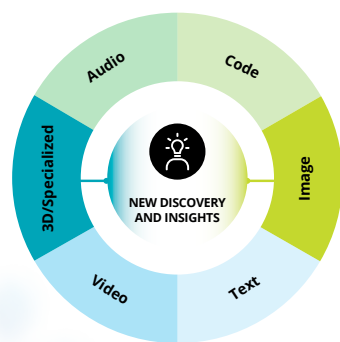
Vertical-specific use cases for life sciences are likely to command a premium due to the dependence on proprietary data. Incorporating proprietary content into a generative model can be accomplished by fine-tuning an existing LLM or training an LLM from scratch.⁵⁹ In 2024, new economies may be created for access to proprietary data and synthetic data.⁶⁰

While each individual GenAI use case may generate some improvements, stringing together multiple use cases—along with other digital tools like machine learning and Internet of Things (IoT)—could transform entire processes, and that is where the value gets unlocked. This string-of-pearls strategy could be applied to everything from research to clinical development to customer engagement and patient experience. Each individual use case connects to another use case, and another, etc.⁶¹

Figure 4. Example of a use case in drug discovery to identify new drug candidates

Unlocking the cures (New Drug Discovery/Generation)

Generative AI can be used to model the structure and function of proteins and biomolecules, accelerating the identification and validation of molecules and the creation of new drug candidates.



Issue/opportunity

Despite advancements in medical treatments, numerous diseases still lack effective solutions due to the complex, costly, and time-consuming process of drug discovery and verification. The challenge of drug development lies not just in discovering potential treatments but also in the rigorous verification of their effectiveness, a process that is both costly and time-consuming. Compounding these issues are the unique complexities of clinical trials, which need to account for diverse populations, varied interactions with other treatments, and potential side effects. Furthermore, the rarity of some diseases creates additional hurdles due to limited data from fewer patients, making the development even more challenging.

How Generative AI can help

Cost reduction

The use of Generative AI in the verification of drugs during clinical development could significantly reduce costs. This is due to its ability to run simulations and select the best potential candidates for further testing, thereby minimizing the need for extensive real-world iterations.

Promoting public health

Generative AI has the potential to significantly improve public health by accelerating the discovery of better treatments and cures for diseases. Its ability to analyze and learn from vast amounts of data can lead to more targeted, effective treatments, directly benefiting patients and, by extension, society at large.

Enabling collaboration

Generative AI can facilitate improved communication and knowledge sharing across research groups. It can process and make sense of data from various sources, breaking down data silos and opening new opportunities for collaboration and innovation in experimentation.

Source: Deloitte, “The Generative AI Dossier,” 2024.

String-of-pearls strategy in action, GenAI in scientific research

Thinking of use cases in the context of workflow, functional area, and greater mission to be accomplished can help assemble a string of use cases. Each “pearl” should have some major contribution that will make the main goal possible to achieve, thereby enhancing the power of the whole.⁶²

String-of-pearls for expanding scientific research productivity and global collaboration

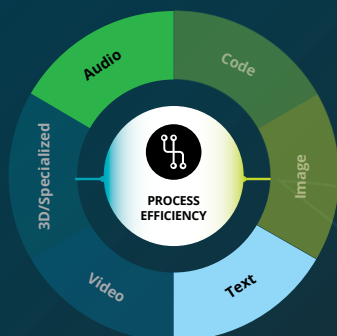
How can GenAI help?

1. Serves as a brainstorming research partner, providing the ability to search a broader knowledge base, including proprietary data
2. Summarizes scientific literature for meta-analyses⁶³
3. Processes and makes sense of data from various sources
4. Breaks down silos, to facilitate communication and knowledge sharing across research groups and geographies
5. Assists in writing research papers, grants, literature reviews, and non-technical summaries of data
6. Creates presentations in multiple modalities
7. Translates work, making it shareable across geographies (figure 5)⁶⁴

Figure 5. One use case in the string-of-pearls for expanding scientific research collaboration

Language translation at scale (Content localization)

Gen AI can be used to quickly and easily scale content across regions by translating and converting text and audio into regional languages.



Issue/opportunity

The ability to create and translate content at scale can be a competitive differentiator for multinational enterprises, but it can also command significant time and resources, and rapid, on-demand translation may be difficult to achieve.

How Generative AI can help

Tools for custom localization and quality assurance

Generative AI can be used to help organize and manage complex file types, analyze content before translation to optimize localization, and integrate glossaries, term bases, and language tools into workflow.

Content personalization across industries

AI-powered content personalization can supercharge localization efforts by improving engagement, building brand loyalty, and increasing conversions.

Speech recognition during translation

Generative AI can be leveraged to enable voice user interfaces (VUI), transcribe video and audio content into text, and simultaneously translate spoken content into the target language.

Source: Deloitte, “The Generative AI Dossier,” 2024.

How can the language translation use case be expanded to provide more than two value-drivers of text and audio? GenAI could not only convert text to audio in multiple languages, but also generate a supporting video in another language—adding another value-driver to support sharing content across geographies and on more platforms.

Adopting an evolutionary AI mindset

As leaders start looking beyond siloed pilots and individual use cases, they could consider how GenAI can be part of an enterprise-wide transformation that not only fundamentally changes the way work is done and value is created, but also addresses compliance, privacy, regulation, and trust.⁶⁵ Successfully driving large-scale AI transformation requires an evolutionary mindset across the AI journey (figure 6).

Integrating GenAI into the enterprise tech stack

Ultimately, decision-makers should develop a strategy that harmonizes its existing AI enterprise strategy with GenAI, while considering GenAI's capabilities and limitations.⁶⁶ Getting the most from GenAI may require enterprise-wide infrastructure and platforms spanning the entire tech stack.

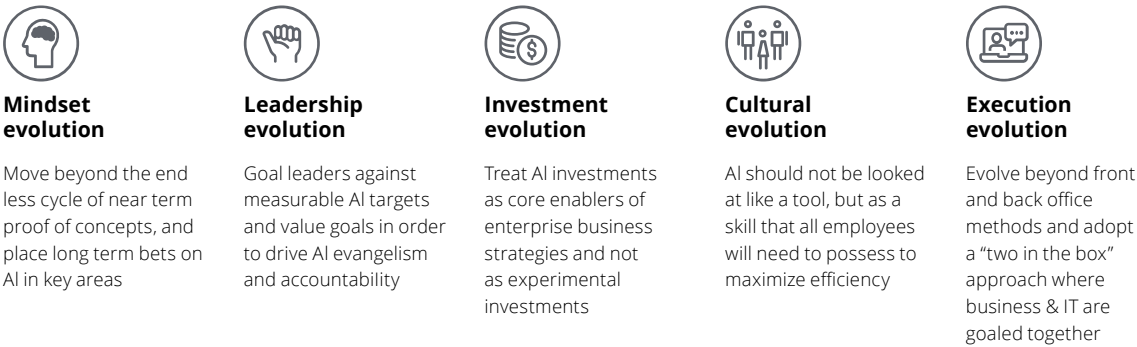
This includes secure cloud infrastructure, foundation models, modernized data platforms that manage high quality, context-rich data, and low-code/no-code platforms—to build and scale applications, in addition to establishing practices such as Large Language Model Ops (LLMOps) and Cloud Cost Management.⁶⁷

Foundation models, the model layer of GenAI

Foundation models differentiate the GenAI tech stack from previous AI (figure 7).⁶⁸ Just as Microsoft's Win32 offers APIs for developers to access base-level hardware and OS functions, the model layer is designed to connect application developers to optimized hardware for adoption and democratization of GenAI.⁶⁹ Experts say foundation models will form the basis of GenAI's future in the enterprise.⁷⁰

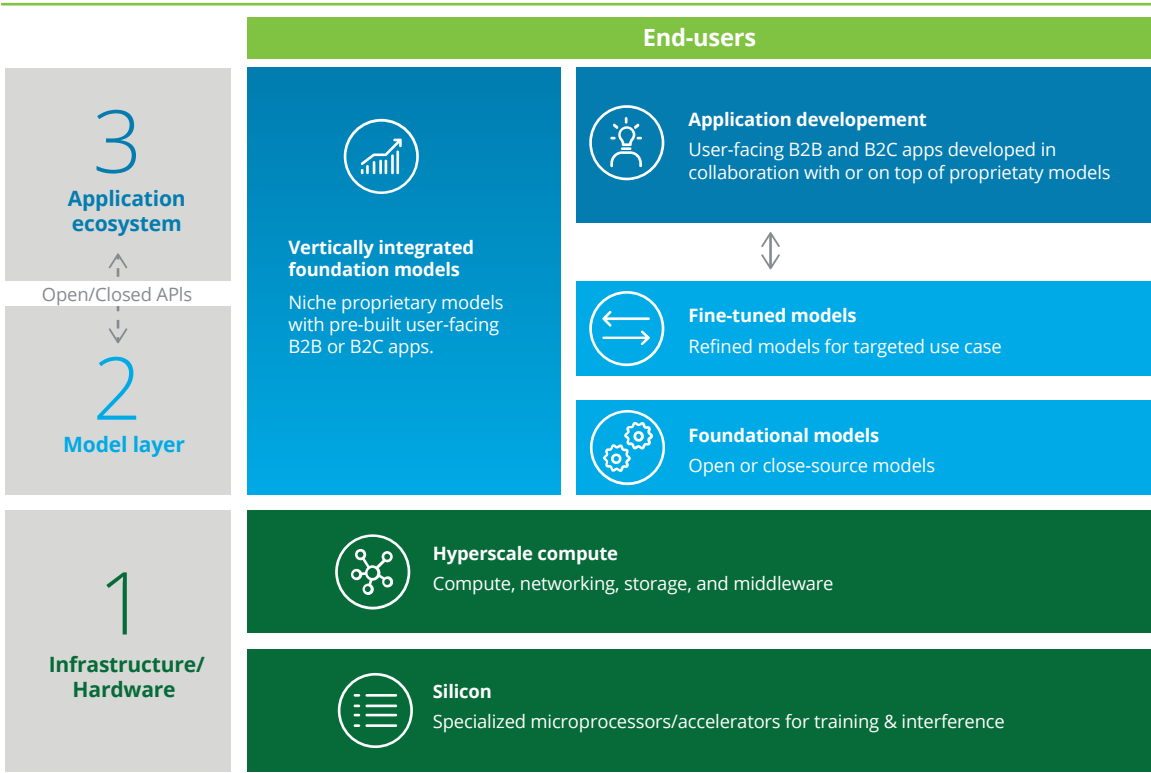
These foundation models are often available to developers via closed and open APIs, where developers can fine-tune them with additional training data to improve context, relevance, and performance for specific use cases and verticals.⁷¹ In the model layer, closed-source model providers, like Cohere and Google host and manage models built on a vast data corpus and charge for consumption. Open-source models providers, like Meta and Stability.ai, are managed by communities and are monetized when they are fine-tuned or are based on usage costs as a function of the size of a company.⁷²

Figure 6. AI value journey



Source: Deloitte, "Realizing Transformative Value from AI and Generative AI in Life Sciences," 2024.

Figure 7. GenAI Tech Stack



Source: Deloitte, "A new frontier in artificial intelligence," 2023.

Establishing operational efficiencies

Once these models are built, organizations need to establish operational capabilities around LLMOps. LLMOps focuses on unique needs of these models: compute, transfer learning, human feedback, tuning cost/performance, new metrics, prompt engineering, and building LLM pipelines. LLMOps tackles complexity of development of LLMs for efficiency, scalability, and risk reduction while scaling the applications into production.

In addition to LLMOps, another critical component is cloud cost management. This enables organizations to leverage the potential of GenAI while optimizing cloud resource consumption and maximize investments.

Managing risks, setting up the right base model

Deploying on premises (on-prem) and private LLMs

There are risks in deploying GenAI models across the enterprise, particularly LLMs, and there are several ways they can be deployed:

- Via a service provider, as a SaaS model, avoiding any configuration or installation issues
- Deployed on an organization's private cloud or network, "on-prem," enabling control and management of API configuration⁷³

On-prem LLMs are installed on the organization's infrastructure and available to users who have access to the organization's network and the application. Some on-prem systems are isolated or "air-gapped" from open access to the internet but may be connected via secure means.

In 2024, some life sciences companies will also be looking to private LLMs for a walled garden to protect their data from going into the public domain and to control costs.⁷⁴ GenAI trained from a private LLM operates within a controlled environment and the dataset can be curated to align with specific guidelines, quality standards, and desired outcomes.⁷⁵ Companies that build solutions on private, rather than general purpose, LLMs could also have the most impact.⁷⁶

Managing LLMs with orchestration startups

As more organizations put GenAI into action and face a myriad of choices, orchestration startups are predicted to play an outsized role in 2024. These startups are attracting significant venture capital interest⁷⁷ and designed to orchestrate the many tasks of managing LLMs, including:

- Simplifying model selection
- Choosing and fine-tuning models
- Integrating multiple LLMs into a single service
- Deploying applications at lower costs
- Creating platforms that democratize access to LLMs⁷⁸

Managing regulatory uncertainty, instituting governance

Closing the AI trust gap

The capability many people find so captivating is GenAI's ability to mimic human thinking and behavior. Of course, human thinking and behavior aren't always perfect, predictable, or socially acceptable—and the

same is true for technology.⁷⁹ Experts say keeping humans in the loop remains critical to check and validate the accuracy of AI and to address problems as they arise.⁸⁰

Society expects guardrails to be in place so people can trust what AI has to offer.⁸¹ Trust is not an inherent quality of AI but instead the product of AI governance, risk mitigation, and the intentional alignment of people, processes, and technologies across the enterprise.⁸²

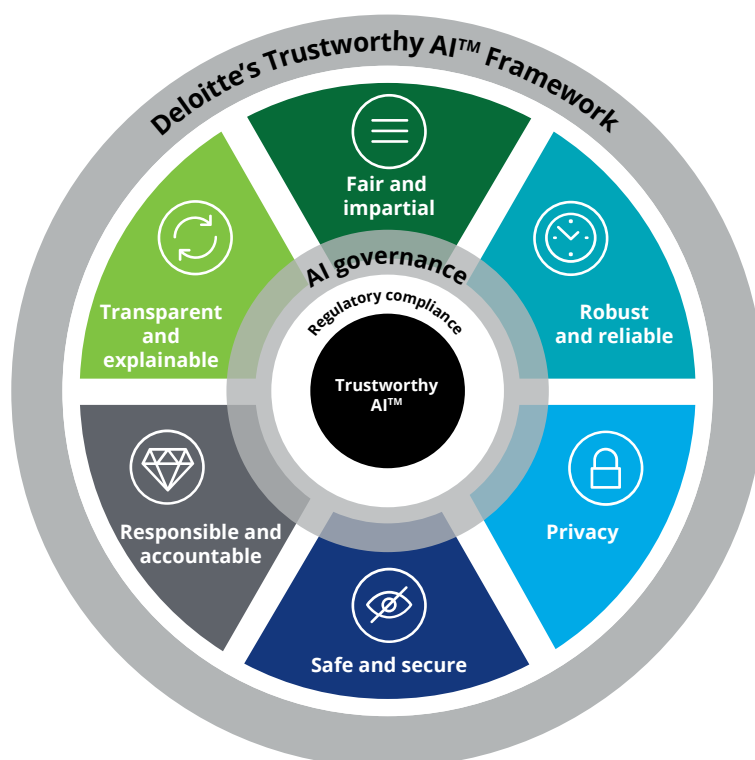
AI-experienced executives Deloitte surveyed across industries globally in December 2023 expressed a variety of concerns about GenAI risks, including the need to:

- Manage hallucinations and model bias,
- Assess potential intellectual property issues, and
- Ensure transparency and explainability.⁸³

By 2026, more than 80% of enterprises are predicted to be using GenAI and/or deploying GenAI-enabled applications in production environments.⁸⁴ Business users should have a real understanding of GenAI and keep end users in mind--not rely solely on AI engineers and data scientists to contend with the risks and the consequences of trusting a tool.⁸⁵ Uncertainty around regulatory and legal challenges is expected to affect the development of the overall market.⁸⁶ According to one survey of technologists, 41 percent say that they are concerned about the ethics of AI tools that their company uses.⁸⁷ In another study of consumers and buyers in 25 countries, more than half of respondents don't trust their companies to use AI ethically.⁸⁸ Almost 70 percent of these respondents believe advances in AI make it even more important to be able to trust companies.⁸⁹

Organizations can complement innovation with a strategy that also builds customer trust and brand equity. Deloitte developed its Trustworthy AI Framework to help organizations adhere to emerging regulations (figure 8).⁹⁰

Figure 8. Trustworthy AI Framework



Source: Deloitte, "Trustworthy AI," 2022.

Private: Privacy is respected. User data is not used or stored beyond its intended and stated use and duration and users are able to opt-in/out of sharing their data.

Transparent and explainable: Users understand how technology is being leveraged, particularly in making decisions; decisions are easy to understand, auditable, and open to inspection.

Fair and impartial: The technology is designed and operated inclusively—for equitable application, access, and outcomes.

Responsible: The technology is created and operated in a socially responsible manner.

Accountable: Policies are in place to determine who is responsible for the decisions made or derived with the use of technology. Because an AI model has no autonomy or intent, it cannot be held accountable in any meaningful sense.⁹¹

Robust and reliable: The technology produces consistent and accurate outputs, withstands errors, and recovers quickly from unforeseen disruptions and misuse.

Safe and secure: The technology is protected from risks that may cause physical, emotional, environmental, and/or digital harm to individuals or communities.⁹²

Appointing a chief AI officer (CAIO)

Forward-thinking enterprises are already appointing a chief AI officer (CAIO) to lead their business visions and manage reputational, regulatory, and legal risks.⁹³ An effective AI governance framework can help identify potential risks and gaps in capabilities, validate performance, and safeguard the business.⁹⁴

While AI shares some practices with IT governance, it is a distinct discipline that benefits from both technical and non-technical stakeholders.⁹⁵ The US government is expecting US federal agencies to appoint CAIOs and introduce new governance approaches to ensure their use of AI is lawful, secure, and transparent.⁹⁶

Of particular concern for life sciences is that LLMs have the potential to pose substantial risk with respect to proprietary or sensitive information that passes through these systems, despite current safeguards. Moreover, when existing foundation models are fine-tuned with a company’s own data, experts say companies should double down on data governance, especially if an outside vendor is used for fine-tuning.⁹⁷

Companies may also consider creating a “sandbox,” an isolated environment that allows employees to explore the capabilities of GenAI tools without sharing their

prompts or the data with developers. Developers, as well as users, need to apply monitoring and feedback processes—helping ensure quality of the outputs generated and to encourage continuous improvement while companies determine what level of transparency is best.⁹⁸

Anticipating future regulatory challenges

A string-of-pearls approach could also be utilized effectively in the context of regulatory—by aligning multiple technologies and geographies for a harmonized regulatory environment.⁹⁹ While a global set of regulations may not be feasible, the potential of global guardrails based on countries’ regulatory approaches may provide regulatory clarity and could be beneficial.¹⁰⁰ A global collaborative and clarity of the regulatory environment can help accelerate the AI journey and adoption across regions.¹⁰¹

Research finds AI-experienced directors and C-suite executives are looking for more regulation and collaboration globally (figure 9).¹⁰² A rapidly changing regulatory landscape and the speed of GenAI innovation can create a challenging environment for those building technologies and those looking to manage them.

Figure 9. Leader support for GenAI regulation and collaboration



Source: Deloitte, “State of Generative AI in the Enterprise,” January 2024.

Some LLMs and foundation models are already testing the limits of regulations, including the EU's Digital Services Act.¹⁰³ Companies can incur risks if they do not have safeguards that help ensure that these technologies are used effectively, responsibly, and legally.¹⁰⁴

Almost half of organizations (47%) responding to the State of Generative AI in the Enterprise, survey report monitoring regulatory requirements as part of their risk management efforts. Many express concerns that widespread use of GenAI will concentrate power and increase economic disparity.¹⁰⁵

2023 saw lawmakers agree on a vision. But in 2024 we can expect to see policies start to morph into concrete action and tech companies being held accountable. In particular, the emphasis is expected to be on content labeling, watermarking, and transparency.¹⁰⁶

United States: The US set out its most sweeping set of AI rules and guidelines in an Executive Order (EO) issued by the US government on 30 October 2023.¹⁰⁷ In addition to AI safety and security, it includes a requirement that developers share safety test results for new AI models with the US government if the technology could pose a risk to national security. However, the EO lacks specifics on how the policies will be enforced.¹⁰⁸ Some highlights of the EO include:

- **Labeling guidance:** Requires the US Department of Commerce to develop guidance for labeling AI-generated content in hopes that labeling the origins of text, audio, and visual content will make it easier for consumers to know what's been created using AI online.
- **Labeling and watermarking tools:** Asks AI developers to develop labeling and watermarking tools that federal agencies may also adopt. Stakeholders say there are currently no fully reliable ways to label text or investigate whether a piece of content was machine generated. There is also no requirement to use these tools.¹⁰⁹

In 2024, the new US Artificial Intelligence Safety Institute will be responsible for executing most of the policies called for in the order. Similar to the EU's AI Act, we are likely to see an approach that grades AI by type, uses, and the level of risk they pose.¹¹⁰

European Union: The world's first comprehensive law is the EU AI Act.¹¹¹ The new rules establish obligations for GenAI/AI providers and users depending on their level of risk. Many AI systems may pose minimal risk, but the European Parliament believes they need to be assessed.¹¹² Critical infrastructure and other high-risk organizations are required to do AI risk assessments and adhere to cybersecurity standards.¹¹³

AI systems that pose "unacceptable risk" are those that are considered a threat to people and will be banned (there may be some exceptions for law enforcement).¹¹⁴ Critical infrastructure and other high-risk organizations will need to do AI risk assessments and adhere to cybersecurity standards.¹¹⁵

GenAI technologies that are general purpose, like Gemini by Google and ChatGPT, have transparency requirements to:

- Disclose that the content was generated by AI
- Design the model to prevent it from generating illegal content
- Publish summaries of copyrighted data used for training¹¹⁶

With limited-risk AI systems, transparency requirements call for providing enough information to allow users to make informed decisions. Users must be able to understand that they are interacting with an AI and have an opportunity to decide whether they want to continue using it or not.¹¹⁷

Most importantly, the EU AI Act ushers in binding rules on transparency and ethics.¹¹⁸ Companies building open-source AI models are exempt from most of the AI Act's transparency requirements, unless their models

are as computing-intensive as GPT-4.¹¹⁹ As other countries decide on policies, the EU's comprehensive regulations are poised to serve as a blueprint for overseeing the technology,¹²⁰ and tech companies are likely to have two years to implement the rules.¹²¹

Singapore: Another blueprint being looked at around the world is Singapore's approach to AI governance that was initiated in 2019.¹²² IMDA, Singapore's Information Media Development Authority, recently developed "AI Verify," an AI governance testing framework and software toolkit to support the current state of AI.¹²³

As governments continue to chart the course to mitigate AI's risk to society, enterprise-wide risk awareness—including AI literacy and individual responsibility—will play an increasing role in day-to-day operations with the advent of GenAI. To promote the necessary AI understanding, CIOs and business leaders could support business users with resources, enhance existing workforce training and learning sessions, and foster an enterprise culture of continuous learning.¹²⁴

(See more at Deloitte's [AI Institute](#).)

Looking ahead

To move beyond proofs-of-concept and scale, companies may need to upgrade enterprise technology and integrate GenAI into redesigned work processes. Organizations should identify where GenAI might make the most impact and build incremental digitization, moving beyond basic productivity use cases to higher order opportunities, such as new, differentiating services or business models.¹²⁵ In addition, a sound governance model can help drive adoption, ensure accountability for outcomes, and help to realize value.¹²⁶

Strategy questions for life sciences and medtech stakeholders regarding GenAI

1. Does our organizational approach to GenAI have a value creation and advantaged mindset?
2. How can we best scale up and build a foundation for longer-term value creation?
3. Are we sufficiently diversified in terms of the ecosystem partners we are working with? There are multiple different solutions and capabilities—how do we balance focus and diversification?
4. What guardrails does our organization need to ensure responsible use of GenAI and how do we stay aligned with shifting societal expectations?
5. What do we need to do to ready our talent and organization to adapt to transformed ways and technologies?

Contacts

Priya Arora

Director
Deloitte United Kingdom
tpriyaxarora@deloitte.co.uk

Debashish Banerjee

Partner
Deloitte India
debashishb@deloitte.com

Deborshi Dutt

Principal
Deloitte United States
debdutt@deloitte.com

Adam Israel

Senior Manager
Deloitte United States
adisrael@deloitte.com

Aditya Kudumala

Principal
Deloitte United States
akudumala@deloitte.com

Anjan Roy

Managing Director
Deloitte United States
anjroy@deloitte.com

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Can tech help keep patients safe during climate emergencies?

Endnotes

Extracting value from Generative AI and emerging technologies

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