

## IDC PERSPECTIVE

# How CIOs Can Prepare Their IT Organizations and Enterprises for Generative AI

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## EXECUTIVE SNAPSHOT

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### FIGURE 1

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#### Executive Snapshot: How CIOs Can Prepare Their IT Organizations and Enterprises for Generative AI

CIOs have faced many challenges over their careers, but generative AI may be one of the thorniest, offering immense power but laden with potential risks. CIOs can and must harness that potential while mitigating risk factors by preparing themselves and their IT organizations, their enterprises, and their ecosystems through education, training, guidance, and support.

#### Key Takeaways

- Generative AI is here gaining traction and evolving quickly and must be a high priority for CIOs' time and attention.
- CIOs can't block the technology but must embrace and guide its integration into the enterprise IT fabric.
- Full readiness for generative AI adoption requires collaborative preparation of IT organizations and business units and leaders, along with ecosystem partners.

#### Recommended Actions

- Establish a COE for AI including generative AI, leveraging IT staff, LOB technologists, and strategic partners to educate, train, guide, and support users.
- Proactively educate the CEO, board, and LOB executives about what generative AI can and can't (yet) do as well as the potential risks it embodies including threats to personal and organizational proprietary information, brand damage, litigation, and confabulation.
- Promote open discussion across the enterprise to help existing and potential users learn about successes and failures while focusing efforts on the most promising applications.

Source: IDC, 2023

## SITUATION OVERVIEW

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Powerful new digital technologies often pose a "best of times, worst of times" conundrum for CIOs, and generative artificial intelligence (AI) fits that pattern. The confluence of deep learning, natural language processing, large language models (LLMs), transformers, and massive volumes of training data has spawned powerful tools and applications that promise major leaps in automating tasks and processes as well as augmenting human intelligence. Yet generative AI also portends some prickly challenges for CIOs. The very power of the technology to seemingly think and create content like humans is ironically also a major element of risk.

Generative AI is a branch of computer science involving unsupervised and semi-supervised algorithms that enable computers to create new content by using previously created content – such as texts, audios, videos, images, and code – in response to short prompts (see *An Introduction to Generative AI and Enterprise Adoption: Perspectives from IDC's Global CIO Advisory Board – January 2023 Edition*, IDC #US50453323, March 2023). ChatGPT is the most visible symbol of generative AI, but there are many others including DALL-E 2, Jasper AI, Google's Bard, Baidu's Ernie, and Stable Diffusion, and the list is rapidly growing.

Generative AI offers myriad opportunities to businesses including production of highly personalized marketing, more effective knowledge management, creation of conversational applications for customer service, and even improved software development productivity. Yet the broad availability, power, and flexibility of the technology also bring potential risks to businesses whose CIOs have not prepared for the coming avalanche of generative AI vendors and applications. One key to reaping the benefits of generative AI without experiencing the pitfalls is to prepare the IT organization and enterprise to leverage the technology while protecting the business from undue risk. CIOs must play a key role in providing the education, training, guidance, guardrails, and technical support to help their businesses succeed with generative AI.

This IDC Perspective helps CIOs understand what generative AI is, why it demands CIOs' attention, and how CIOs can prepare their IT organizations and enterprises. It also provides actionable advice on strategies for effectively managing generative AI.

### What Is Generative AI?

Generative AI is a form of artificial intelligence technology that can create texts, videos, images, audios, and data from prompts in the form of images, texts, videos, designs, music, or any form of content that a given system can process. The technology has been around for some time but garnered much attention with the public release of DALL-E 2 in April 2022 and ChatGPT in late 2022 with rapid uptake due to approachable and simple-to-use interfaces.

The breakthroughs that led to the current buzz include transformers that help greatly increase the scale and speed of training, larger large language models containing billions – even trillions – of parameters, multimodal capabilities to handle a variety of content formats, and conversational interfaces that enable users to start with simple prompts and get answers or results in seconds. The result is technology that promises to revolutionize businesses, albeit with some accompanying challenges.

Some evidence of the power and potential dangers of ChatGPT came recently in the form of an *open letter* sponsored by the Future of Life Institute and signed by Elon Musk, Steve Wozniak, and tens of thousands of other people, including many entrepreneurs and scientists. The letter requests

companies like OpenAI, Google, and Microsoft to stop training more powerful AI systems so the industry can determine the risks they pose. Italy has enacted a temporary ban as have some businesses.

On a positive note, however, generative AI is already solving problems including accelerating drug discovery, writing articles and social media posts, creating new algorithms and writing software, creating engaging customer experiences, and increasing knowledge worker productivity.

## Why Should CIOs Focus Attention on Generative AI?

With the seemingly daily emergence of powerful digital technologies in the AI space, it can be tempting to lump generative AI in as "just another intelligent technology." That would be a mistake as generative AI has several unique characteristics that make it not only more promising but also risky and that require different approaches to adopting and managing implementations. Adoption and uptake will be rapid as IDC's March 2023 *Future Enterprise Resiliency and Spending Survey, Wave 2*, found that Asia/Pacific (70%), EMEA (76%), and North America (46%) survey respondents are already either investing in or exploring potential use cases. Positive aspects of generative AI include:

- **Generative AI can address many business needs.** In its relatively short lifetime, generative AI has already found myriad applications from writing poetry to augmenting search and even to writing code. Examples of potential use cases in the enterprise include:
  - More conversational and capable chatbots for customer service and support
  - More personalized and relevant marketing material and customer interactions and experiences
  - Ability to create high-quality images, videos, music, and other content without having to learn new skills
  - Improved knowledge worker productivity through automated content creation, filling routine forms, email response and generation, handling repetitive reporting, and finding all relevant information on a topic regardless of where it resides and what form it is in
  - Improving software developer productivity through flow programming using generative AI for component development
  - Assisting human design specialists in creating new product and facility designs
- **Generative AI is genuinely transformative.** While many digital technologies have been marketed as "transformative," generative AI truly brings that potential. The technology could revolutionize how work is performed due to its rapidly increasing power and the broad range of applications and use cases it covers. That means that CIOs can't reliably predict where and how generative AI will be deployed, what benefits will be accrued, and what risks will be incurred. CIOs must help guide the adoption of generative AI or risk a hodgepodge of disconnected and siloed implementations that bring little value to the business.

**The technology is approachable and easily learned.** Within a short time of its release to the public, ChatGPT had over 100 million users due to the low barriers to use. Generative AI apps allow anyone with an internet connection to use simple prompts to create content. Unlike many new digital systems and tools, CIOs will find uptake is rapid and engagement is high. And generative AI will be embedded in enterprise tools and applications to improve their ease of use and power. Microsoft has already announced its intention to embed generative AI in the form of its product Copilot into its office productivity suite.

However, there are concerns, including:

- **The technology is powerful but not mature.** ChatGPT appears authoritative and infinitely knowledgeable – even when it isn't. Generative AI applications are subject to problems such as inaccuracy (dubbed hallucinations, or confabulation), bias, copyright violations, and other risks that have yet to be remediated as noted in *ChatGPT: Protecting Your Organization from Unintended Risks of Generative AI* (IDC #US50583423, April 2023). The market is also evolving rapidly, with myriad vendors jumping into the fray, making it risky to place bets on a given solution.
- **Expectations are skyrocketing.** A major concern for CIOs is that expectations are being set high early in the evolution of generative AI and LLMs. That can lead to the potential for premature adoption by users unaware of the potential shortcomings. Moreover, the high level of media coverage helps create unrealistic expectations on the part of business leaders, who may see generative AI as a silver bullet for their businesses. OpenAI's CEO Sam Altman recently stated that GPT-4 had passed a bar exam, and it's not hard to see how that would excite business executives looking for more knowledge worker productivity.
- **Guardrails are mostly provided by the creators.** Creators of some generative AI applications have provided built-in protections against misuse, yet some have also admitted that they don't fully understand how the LLMs actually work, and those models are impenetrable at best. That situation is not likely to change soon, making it essential that CIOs develop enterprise guidance and guardrails to avoid mistakes and mishaps.
- **The technology brings new combinations of threats.** All digital technologies bring risks, but generative AI brings some that are unique to its use and also pose substantive risks to an organization's brand and reputation and potential for litigation. Personally identifiable information (PII) poses the threat of litigation if used for training data and/or directly exposed in ways that lead to compromising of sensitive private information. Intellectual property can similarly be exposed, leading to leaking of confidential corporate information that aids competitors. Confabulation, or hallucinations, can result in misinformation that exposes the business to poor decision making or embarrassment and litigation resulting from publishing false information. Brand threat can result from generic or "off-brand" messaging generated by AI, plagiarism from copying of copyrighted source material, or false information.

The good news for CIOs is that while generative IT brings some new wrinkles and challenges, many of the strategies CIOs already use for managing digital technologies are still germane and should be employed. Careful vetting of vendors and technologies, identifying potential risks and mitigating strategies, using worker- and customer-centric change management, and focusing on investments that provide a healthy return on investment (ROI) are all tried, true, and applicable to governing generative AI in the enterprise.

## Preparing the IT Organization

CIOs and IT workers have cut their teeth on digital technologies, yet as we pointed out, generative AI is an emerging phenomenon that has some new "tricks." Vendors are rolling out easy-to-use apps and APIs that facilitate quick adoption, and the enormous versatility of the technology offers a wide range of potential uses. At the same time, pitfalls are being discovered in the form of inaccuracies, bias, copyright violations, and likely many more yet to be discovered. Forewarned is forearmed, but only if CIOs take the necessary actions to prepare their organizations.

Some key steps in getting ready are:

- **Get ahead of the curve and start building knowledge and expertise by applying generative AI to IT applications.** There is no better way to understand the technology than to apply it to solving IT organizational needs. CIOs should find low-risk but useful use cases for experimenting with generative AI in the IT organization.
- **Find trusted partners with greater expertise in deploying and managing generative AI.** The technologies are complex and powerful, and uptake from consumers and business workers has been rapid. To shortcut the learning curve and help optimize the adoption and use of generative AI, CIOs should seek partners with greater expertise who can help with technology vetting and use case selection and also provide knowledge transfer to IT staff.
- **Build generative AI support structures to prepare for rapid uptake by LOB executives and workers.** CIOs should start now to create scaffolding for enterprisewide usage of generative AI to get ahead of the adoption curve. Centers of excellence (COEs), labs, and sandboxes staffed with knowledgeable IT and LOB staff can help channel and guide efforts while avoiding blunders – if they are marketed and highly visible to LOB executives and workers and they are inviting and approachable.
- **Hire and train "prompt" engineers to speed effective adoption and usage.** Early experiences with ChatGPT and other implementations have established that the ability to create effective chat prompts and refine them is key to achieving results. Given the importance of chat prompt skills to achieving desired results, CIOs must ensure that users have access to training and support from chat prompt engineers.
- **Devote resources to guiding and channeling how generative AI is deployed throughout the enterprise.** CIOs are arguably uniquely equipped and qualified for ensuring that generative AI is integrated into the digital technology and intelligence of the enterprise. As the de facto architects of digital infrastructure and applications in the enterprise, CIOs need to ensure cohesive integration of generative AI with existing IT assets.

## Preparing the Enterprise

In preparing the enterprise for an onrush of generative AI applications and tools, CIOs have some unique challenges. One big challenge is the fact that unlike many digital technologies that appear complex and imposing, conversational interactions with ChatGPT and other implementations of generative AI can feel like conversing with a friend who seems to have all the answers. That's good on the one hand but can lull users into unquestioning acceptance of answers and results generated by the apps.

Preparing the IT organization is only half the battle as CIOs also need to lay some groundwork in preparing the rest of the business for generative AI. Prospective users need to know how generative AI can and should be used, how to extract the best results, and how to avoid misapplications and mishaps. Further:

- **Educate starting with the board and executive team to set expectations and garner support in managing the introduction, adoption, and management of generative AI.** The level of buzz and hype surrounding ChatGPT is bound to raise excitement levels while escalating expectations, some that are unrealistic about the "miracles" that the technology can perform for the business. Setting proper expectations is essential to optimizing the use of generative AI across the enterprise.
- **Train potential users on optimal usage, prompting, refining, and vetting accuracy of answers.** CIOs should invest in training workers across the enterprise as many, if not most, are potential generative AI users. Trained business users not only will extract more business value from the technologies but also can help CIOs identify risk factors.

- **Encourage experimentation, but with precautions and transparency.** Business users will inevitably experiment with generative AI, sometimes with inauspicious results. It's important that CIOs establish some fences around risky areas of experimentation while encouraging transparency to aid in enterprise learning about the promise and perils of the technology.
- **Work with HR, legal, finance, and marketing to identify risks, plan preventative and mitigating strategies, and create policies for fair and effective use of the tools.** Generative AI has implications for all parts of the enterprise, so CIOs should err on the side of more inclusion rather than less to avoid gaps in strategies for managing the technologies. Of particular concern at least in the early stages are potential issues with worker and customer privacy, bias, misinformation, and avoidance of copyright violations.
- **Don't try to block or create overly restrictive policies as generative AI is like a horse that has already left the barn.** Onerous restrictions will only drive activity underground where mistakes become visible only when they cause harm to the business. Moreover, hobbling the use of generative AI means that the business will be foregoing all of its benefits while enabling competitors to gain advantage.

## Strategies for Managing Generative AI

The mantra for CIOs in managing generative AI is "embrace but guide," not only providing "carrots" but also providing guidance and caution. CIOs should be seen as forward-thinking not only in finding the potential of generative AI but also in taking necessary precautions to avoid untoward risks to the business. Steps that CIOs should take in managing generative AI in the enterprise include:

- **Garner executive support and involvement for managed adoption of generative AI through education about the potential benefits and risks of generative AI couched in business terms.** CIOs should work with LOB executives and business leaders to craft a strategy that includes business priority-driven road maps for adoption, targeted initiatives and applications, and standard ways to evaluate trade-offs among risk, cost, and rewards. The strategy should view generative AI as only one part of a broader palette of intelligent technologies and create an umbrella strategy for embedding intelligence into the enterprise and its ecosystems.
- **Focus on people, not just technology, as adoption and appropriate usage will be make-or-break factors in the success of leveraging generative AI.** The technologies have broad implications for employees and how they work. CIOs need to work with business executives and HR to build a vision of how generative AI can be integrated into the enterprise without negatively impacting workers, instead improving their productivity while enriching their jobs. A win-win, for example, could come from training some impacted workers to become chat prompt engineers or data specialists on teams that will be required to fine-tune models.
- **Create effective governance strategies in concert with LOB executives who balance freedom to experiment and innovate with adequate protections for the business.** Generative AI usage will largely occur outside the CIO's purview and sometimes visibility. It is important that CIOs and LOB executives create mutually acceptable governance structures that promote innovation while managing risks. Governance must have teeth in the form of policies that cover acceptable use cases and processes for identifying new ones. Policies should also specify acceptable types and uses of training data as that data is key to the accuracy and risk mitigation in the use of generative AI. Policies are important as they are a front line in avoiding misuse of generative AI and in handling any fallout if such misuse occurs.
- **Use metrics to set priorities and manage use.** Generative AI can be so easy to use that it appears "free" to many users. In fact, there are many costs, such as the direct cost of computing power needed to power the AI, less visible costs including time spent learning and



experimenting, opportunity costs of not using that time for potentially more impactful work, and even the increased environmental impact for enterprises that are pursuing ESG initiatives. CIOs should work with business executives and finance to develop metrics to measure success, failures, ROI, and business impact.

- **Avoid premature lock-in by fine-tuning adoption strategies to match the speed of technology evolution – avoiding undershooting or overshooting the velocity of change.** Although generative AI is in its infancy, increasing numbers of vendors have already jumped into action offering a variety of tools and services. Locking in vendors at an early stage may foreclose waiting for better, more mature solutions and allow competitors to gain advantage. Generative AI is still in its adolescence, growing rapidly but still immature, so CIOs need to pace adoption and deployment to match the level of stability and maturity that the business requires.
- **Validate content and answers generated by generative AI early and often.** With known problems regarding accuracy, it's important to have a strategy and mechanisms for validation of any generative AI app. It's important to ascertain whether or not the app is doing what it is supposed to do, providing reliable and accurate information and content, and not providing spurious results. CIOs and LOB executives should designate specialists, including professional editors and fact-checkers to continually validate content being generated using standards and procedures to ensure accuracy while minimizing bias.
- **Make employee and customer privacy and security a high priority.** The key to maintaining proper privacy and security protections is knowing what data the AI app is trained on and how the app is being used. CIOs should be especially cautious about data sources that contain customer or employee data, any sensitive enterprise information, and intellectual property.

## ADVICE FOR THE TECHNOLOGY BUYER

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Generative AI is rapidly gaining traction, but CIOs still have time to guide its usage to the most beneficial applications in the enterprise – if they move now. That's important because once they fall into reactive mode, it will be difficult, if not impossible, to get ahead of the curve. As with any new, powerful, but risk-laden technology, it's tempting for CIOs to let others find the bumps in the road, but that is a mistake. Any business that thrives and survives on information, data, and software (virtually all modern enterprises) will be quickly left in the dust by more forward-thinking competitors. Neither is waiting nor is plunging in without preparation and planning an option. CIOs need to employ a measured approach of embracing generative AI with some caution; tempering expectations of business executives; making calculated bets on technologies, vendors, and applications; and then learning and refining their strategies.

## LEARN MORE

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### Related Research

- *ChatGPT: Protecting Your Organization from Unintended Risks of Generative AI* (IDC #US50583423, April 2023)
- *Organizations' Approach to Generative AI Across Regions* (IDC #US50552623, April 2023)
- *An Introduction to Generative AI and Enterprise Adoption: Perspectives from IDC's Global CIO Advisory Board – January 2023 Edition* (IDC #US50453323, March 2023)
- *OpenAI Launches Generative AI Text and Speech API Services* (IDC #IcUS50454523, March 2023)

## Synopsis

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"With the seemingly daily emergence of powerful digital technologies in the AI space, it can be tempting to lump generative AI in as 'just another intelligent technology,'" says Marc Strohlein, adjunct research advisor with IDC's IT Executive Programs (IEP). "That would be a mistake as generative AI has several unique characteristics that make it not only more promising but also risky and that require different approaches to adopting and managing implementations."



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