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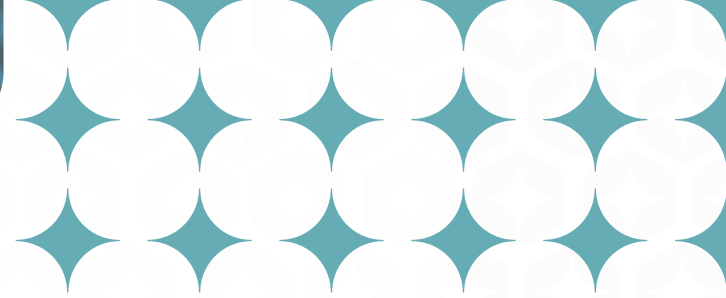# The CIO's Guide to Generative AI

Everything you need to know to see positive ROI

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Introduction

The CIO's Guide to Generative AI (GenAI) aims to answer one simple question: How do you capitalize on GenAI opportunities to see positive ROI?

Whether it's leveraging GenAI to streamline operations and increase productivity internally, or creating competitive differentiation, the question of "How do we do this in a way that delivers ROI?" is a common one.

In a recent Gartner survey, CIOs expressed their expectations for the role of technology in the coming years. They anticipate a decrease in the involvement of both full-time and part-time employees in technology work, as robotic automation and AI augmentation take on a larger share. However, when asked about the current utilization of AI within their business, the top response from CIOs was uncertainty, with 38% stating that they were "not sure." Interestingly, when asked to estimate the usage of AI in five years, the number of CIOs who were unsure dropped to 18%. This suggests that while CIOs may not fully understand the current landscape of AI implementation, they anticipate a significant increase in its use in the future.

Now is the time to fortify your AI ambition and build real solutions for your everyday problems to drive efficiency and competitive differentiation. In this guide, we explore GenAI's diverse applications, resources necessary to get the job done, and the strategic considerations that CIOs must weigh for successful implementation. Whether you're considering pilot projects, optimizing existing workflows, or envisioning a transformative GenAI roadmap, this will guide your organization towards a future where innovation and ROI walk hand-in-hand.

For every $1 companies invest in AI, they are realizing an average $3.50 in return

*IDC

3.5x

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Current GenAI landscape

This year's top strategic technology trends are either driven by AI, or supported by an evolving AI-influenced world. However, there is a difference between AI and GenAI.

- **AI** applies advanced analysis and logic-based techniques, including machine learning, to interpret events, support and automate decisions, and take actions — ultimately deploying machine learning to complete an action that a human has done in the past.

- **GenAI** refers to AI techniques that learn a representation of artifacts from data and use it to generate brand-new, unique artifacts that resemble, but don't repeat, the original data — this can include text, images, videos, audio, structures, computer code, synthetic data, workflows, etc.

As of November 2023, GenAI is at the top of its hype cycle for emerging technologies.[1] We believe it won't take long for GenAI to greatly impact product development, customer experience, employee productivity, and innovation.

Gartner predicts by 2026, more than 805 enterprises will have utilized GenAI APIs and models and/or deployed GenAI-enabled applications in production environments. This represents a significant increase from less than 55 enterprises in 2023[2], which raises an important question for CIOs: **how will you capitalize on the current moment to lead your company's integration of GenAI?**
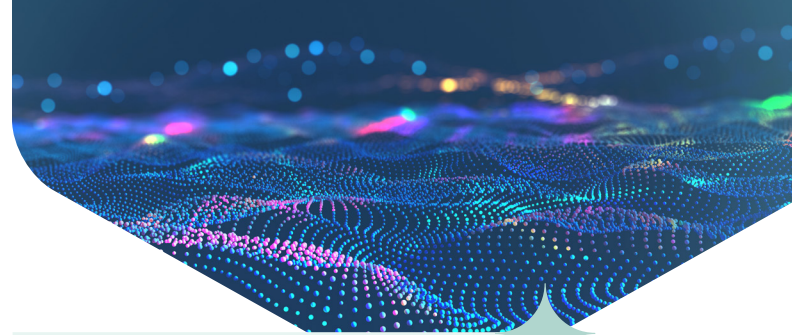
805 enterprises

will have utilized GenAI APIs and models and/or deployed GenAI-enabled applications by 2026

It's not just about staying on-trend with new technologies, but also driving business outcomes. IDC found that for every $1 companies invest in AI, they are realizing an average $3.50 in return. The leading adopters, about 5% of organizations worldwide, are realizing an average of $8 in return.[3] Companies that recognize the opportunity of GenAI and put intentional effort into infusing their organizations with AI-driven initiatives will thrive.

GenAI has the potential to radically transform existing economic and business frameworks, much like the internet and earlier innovations such as electricity. When deployed effectively, GenAI will become a competitive advantage and differentiator, opening up new opportunities to achieve enterprise goals such as increased revenue, greater customer engagement, reduced costs, and improved productivity.

If you haven't already started, now is the time to invest in GenAI opportunities for your business, and in time you will see positive ROI.

[1,3] IDC: "The Business Opportunity of ROI", Nov 2023.
[2] Gartner: "Hype Cycle for Emerging Technologies", Aug 2023.

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The GenAI steward

As a technology leader, all eyes are pointing to the CIO to manage the implementation and strategy of GenAI. You can be the leader who helps the executive team explore the opportunities and risks associated with AI.

Afterall, 56% of CEOs say AI is the tech that will most significantly impact the industry over the next three years. And they predict by 2025, 35% of large organizations will have a chief AI officer who reports to the CEO or COO.[4]

CIOs can lean on technology teams and those outside traditional IT functions to identify use cases and help with deployment. As for yourself, read on to understand the risk and opportunity cost, time it will take, and how to overcome some of the biggest barriers to adoption (people, process, and technology).

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56% of CEOs

say AI is the tech that will most significantly impact the industry over the next three years

*Gartner

> " High-business-impact leaders don't create a data or analytics strategy — they create a business strategy that is enabled by data, analytics, and AI. It is core to the organization's success and the value delivered is very clear."

Rita Sallam
Distinguished VP Analyst, Gartner

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4 Gartner: "What Generative AI Means for Business", 2023.

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Areas of opportunity

The number of use cases, applications, and business benefits are endless. But here are a few areas of opportunity that CIOs can consider when developing a GenAI strategy.

Revenue opportunities

Product development: Many CIOs are exploring natural language processing (NLP) applications powered by GenAI for tasks such as chatbots, virtual assistants, and sentiment analysis. These applications can enhance customer service, streamline communication, and extract insights from large volumes of textual data.

Better customer experiences: By 2026, GenAI will significantly alter 70% of the design and development effort for new web applications and mobile apps.[5]

Productivity opportunities

Automation of repetitive tasks: Reduce manual workload and increase operational efficiency by automating data entry, report generation, and other time-consuming processes. According to McKinsey research, the use of AI technology could potentially add $2.6-$4.4 trillion annually to the global economy. Additionally, AI has the potential to automate work activities that currently consume 60-70% of employees' time.[6]

Process improvement: GenAI can speed up developer work by augmented coding or training large language models (LLMs) that generate code. McKinsey suggests that the direct impact of AI on software engineering productivity could range from 20-45% of current annual spending on the function. This value would primarily come from reducing the time spent on certain activities and relying on AI to assist with coding and architectural design.

Risk opportunities

Data analysis and insights: GenAI solutions can analyze large datasets to uncover patterns, trends, and insights. The use of synthetic data is expected to reduce the volume of real data needed for machine learning by 70% by 2025.[7]

Cybersecurity: GenAI can be utilized for anomaly detection, threat intelligence analysis, and the development of predictive models to enhance cybersecurity measures.

[5,6] Gartner: "What Generative AI Means for Business", 2023.
[7] McKinsey: "The economic potential of generative AI" June 14, 2023.

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Opportunity cost and risk

So, what's the opportunity cost? A question we often get is how to measure the opportunity cost between different strategies. Do you build your own LLM from scratch or pay for tools or tool enhancements?

The answer will depend on a number of factors including time-to-market, resource allocation, and customization needs. We'd recommend if you have more time and have the resources to support development of an in-house LLM, to take advantage of it. Building in-house gives you complete control over the development process and solution. Otherwise, most organizations are looking externally to help with rapid implementation and expertise of established AI professionals.

Outside of opportunity cost it's also essential to consider the risks and tradeoffs between different projects, technologies, or resources to ensure you're focusing on the right areas with the highest potential for growth and value creation.

| Risks	How to mitigate
Technological challenges Older systems might lack the necessary computational power, storage capacity, or compatibility required for seamless GenAI integration.	Collaborate with IT specialists to conduct a comprehensive technology audit to identify potential bottlenecks and areas for improvement. Consider investing in system upgrades, adopting cloud solutions, and ensuring compatibility with modern AI frameworks.
Data security and privacy Handling sensitive information without robust security measures may lead to data breaches, compromising user privacy, and exposing the organization to legal and regulatory challenges.	Prioritize cybersecurity measures to safeguard data integrity and privacy. Implement encryption protocols, access controls, and regular security audits. Adhere to data protection regulations and ethical AI practices to ensure responsible handling of sensitive information.
Workforce adaptation Employees may face challenges adapting to GenAI tools, leading to resistance, reduced productivity, or disruptions in established workflows.	Develop a comprehensive change management plan that includes targeted training programs to foster a culture of AI adoption. Communicate the benefits of GenAI implementation clearly and involve employees in the decision-making process.

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Are these risks worth the opportunity? To determine if the implementation is warranted, you have a few options:

1 Conduct a comprehensive risk-benefit analysis with IT specialists, data scientists, and AI experts to assess your technological landscape, potential data security and privacy concerns, and workforce readiness. Establish clear success metrics aligned with your organization's strategic goals and evaluate how GenAI fits into the broader technology roadmap.

2 Try pilot projects or proof-of-concept initiatives to help validate assumptions before committing to full-scale implementation.

More than two in five executives say their organization is currently piloting GenAI and another 10% of organizations are in the production stage. Software development, marketing, and customer services are currently the most common functions enterprises are piloting for adoption.[9]

Key takeaway

Evaluate risks to help identify the most valuable investments and ensure that resources are allocated to areas with the highest potential return.

78%

of CEOs see benefits outweighing the risks[8]
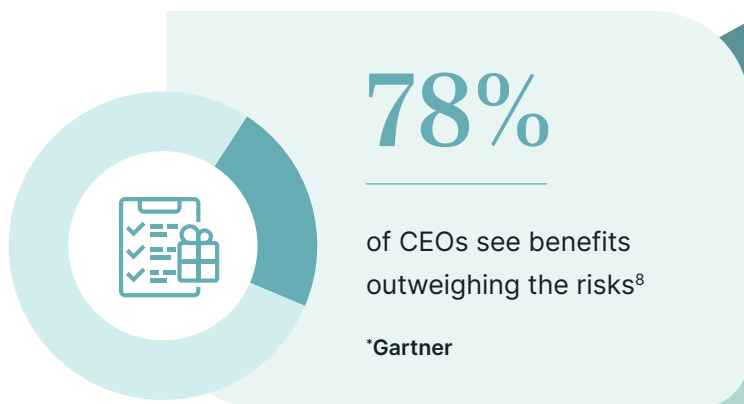
*Gartner

[8,9] Gartner: "What Generative AI Means for Business", 2023.

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Time horizon

For the CIO and tech leader, the GenAI boom presents a unique opportunity to experiment, pilot, and guide the c-suite in turning the promise of GenAI into sustainable value for the business. IDC reports that 92% of AI deployments are taking 12 months or less.[10] And most organizations are realizing a return on their AI investments within 14 months of deployment (on average). The IDC report also showed that 43% of organizations plan to reduce spend in other areas of the business to reallocate spending toward AI.

This is all to say that early ROI can be hard to show. It's a long game that you have to stick with for at least a year. We suggest starting with small incremental changes that fit seamlessly into workflows. This approach allows for wider adoption from a larger audience without major migrations, delays, or downtime.

Use cases that typically require a shorter amount of time to implement are characterized by attributes and factors that simplify the development and deployment process.

[10] CompTIA: "Artificial Intelligence in Business", 2023.

Here are some of the use cases that commonly exhibit quicker implementation times:

- **Text generation and summarization**
  Pre-trained language models and extensive NLP libraries significantly reduce development time.

- **Image enhancement and style transfer**
  Ready-made models for image processing tasks are available, enabling quick implementation.

- **Data augmentation for machine learning**
  Numerous pre-built libraries and frameworks can be easily integrated into existing machine learning pipelines.

- **Code generation to AutoML**
  The well-defined structure of code and availability of pre-trained models for programming languages facilitate quicker development. This is often valuable for accelerating software development processes.

- **Chatbots and virtual assistants**
  Pre-trained models and frameworks for building chatbots integrate with existing messaging platforms and APIs expedites deployment.

- **Anomaly detection**
  Anomalies are often identifiable through deviations from established patterns, making it a task well-suited for GenAI. The use of pre-trained models or transfer learning can speed up implementation.

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Use cases that typically take longer to implement are often characterized by their complexity, the need for extensive training on large datasets, and the intricacies involved in achieving desired outcomes.

Here are some use cases that commonly exhibit longer implementation times:

- **Natural Language Understanding in highly specialized domains**
  Building models for NLU in highly specialized fields, such as legal or scientific research, often requires in-depth understanding and customization. Specialized vocabularies, nuanced context, and the need for domain-specific knowledge contribute to the extended implementation timeline.

- **Language translation with context understanding**
  Training models to comprehend context, idiomatic expressions, and cultural subtleties adds complexity.

- **Advanced robotics manipulation**
  Ensuring safety, adaptability to dynamic environments, and precise control contribute to a longer timeline.

- **Financial risk assessment and portfolio optimization**
  Handling vast financial datasets, adapting to dynamic market conditions, and meeting regulatory standards contribute to a longer timeline.

Key takeaway

When selecting a use case, consider the specific requirements of your organization, the readiness of existing data, and the potential for leveraging pre-built models and tools to streamline the implementation process.

2 in 5 executives

say their organization is currently piloting GenAI

*Gartner

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Optimize resource allocation for positive results

The biggest barriers to GenAI adoption are people, process, and technology. To achieve a positive ROI, it's crucial to address skills and talent shortages, monitor for potential misuse, and manage technical complexity.

PEOPLE
Foster a culture of growth and curiosity

Many organizations that are transitioning from experimental AI projects to production often face challenges due to weak AI culture. The existing workforce's limited expertise in AI technologies is a major obstacle, with 67% of companies struggling to find skilled professionals for AI/ML roles.[11] Only 4-5% of enterprises have these roles today, but more than half plan to adopt them within the next five years.[12] These roles must be in place before enterprises can implement more advanced, value-creating GenAI use cases.

30%
of workforces are reskilling as a result of AI adoption

We recommend enlarging your talent pool by employing a broader range of talent practices including hiring from untapped talent pools (such as neurodivergent talent), removing limits on where the organization hires talent, fostering relationships to build future talent pipelines, and upskilling existing employees.

Companies that employ GenAI initiatives are over three times more likely than others to reskill more than 30% of their workforces as a result of AI adoption.[13]

As technology continues to advance, taking the time to educate and train employees is crucial to improve AI literacy. Carve out time for people to learn, keep up with the trends, and familiarize themselves with new tools. GenAI features are being added to tools organizations already use that they're not capitalizing on.

In addition to upskilling and reskilling, a robust change management plan should include effective communication, education, and involvement strategies. It's important to highlight the benefits of GenAI adoption and involve employees in the decision-making process. This approach should also prioritize employee training and wellbeing so they are able to use GenAI tools safely and confidently, while automating routine tasks.

[11] ZDNet: "More Skills are Needed to Help Plug AI Skills Gaps", Mar 6, 2023.
[12,13] McKinsey: "The State of AI in 2023", Aug 1, 2023.

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McKinsey's internal team found those that were trained to use GenAI tools rapidly reduced the time needed to generate and refactor code and engineers also reported a better work experience, citing improvements in happiness, flow, and fulfillment.[14]

PROCESS
Streamline workflows for efficiency

A common challenge during the adoption of GenAI is aligning initiatives with existing business processes. To address this, conduct a thorough process analysis to identify integration points, such as:

- **Data pre-processing** to clean, normalize, and augment data to enhance quality and make it more suitable for training machine learning models.

- **Content generation** to develop written emails, notes, articles, etc., that can free up human resources for more strategic tasks.

- **Predictive maintenance** to forecast equipment failures, enabling proactive maintenance and minimizing downtime.

- **Fraud detection** to identify anomalies in transaction patterns and enhance security, reducing the risk for fraudulent activities.

- **Automated code generation** to accelerate the coding process, improve code quality, and reduce the time required for development.

- **Supply chain optimization** to predict demand, identify potential disruptions, and recommend optimal inventory levels.

- **Customer support** to handle routine queries, provide instant responses, and escalate complex issues to human agents when necessary.

Modifying workflows to seamlessly incorporate GenAI is essential, ensuring it complements and enhances existing operations. Be prepared for a different work set-up where a human verifies the results of an automation. And set up transparent guardrails for people to review and verify.

[14] McKinsey: "The State of AI in 2023", Aug 1, 2023.

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54%

of companies struggle with inadequate tech infrastructure for AI/ML adoption

To ensure successful implementation, we recommend adopting an iterative approach starting with pilot projects. Lessons learned from these pilot projects can then be used to refine subsequent phases, creating a roadmap for gradual, organization-wide adoption.

Getting things to function well is more about improving processes and improving tools. There will be breakthroughs in terms of what works well just like any other new thing.

Finally, effective data management practices, prioritizing data governance, and quality assurance are critical for ensuring clean and relevant data for GenAI training and decision-making. Consider leveraging data augmentation techniques to enhance dataset completeness.

To extend current processes, we suggest relying on use cases that leverage GenAI within industry or custom applications. These applications allow for the use of enterprise data in unique ways.

TECHNOLOGY
Build a scalable infrastructure

Scalability poses a common challenge in the technology landscape. To meet the growing demands, build an architecture that can scale effectively. Currently, approximately 54% of companies struggle with inadequate tech infrastructure for AI/ML adoption, often due to the integration of AI into older tech environments.[15]

Designing an infrastructure that can accommodate the evolving needs of GenAI is of utmost importance. This can be achieved by leveraging cloud-based solutions, containerization, and microservices, which provide flexibility and scalability.

GenAI models will range from a few million parameters to 64 billion parameters. The larger the model, the more expensive and time-consuming it is to run. In our experience, smaller models tend to perform about the same as bigger models and are more cost effective.

For both though, it really matters to have your data organized and explained correctly. The more efficient your data is, the better your model is.

[15] Rackspace Technology: "2023 AI/ML Report: AI/ML adoption surges despite challenges", Apr 26, 2023.

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Outcomes you can expect

Given the relative newness of GenAI, some wonder if this technology will deliver ROI.
At Andela, we believe that GenAI initiatives will not only generate ROI, but will also improve workflows for the future.

There are limited examples of successful GenAI projects today, though that is changing as many companies are moving past the testing phases. As such, organizations that begin adopting are able to recognize a competitive advantage. Here's how a few companies that have worked with Andela on their GenAI initiatives are seeing competitive advantages:

1 Improving manual processing

A rapidly growing law firm was able to **save 80% of their team's time** (hundreds of manual hours) on researching and drafting legal documents through GenAI's creative prompt engineering. They implemented an advanced LLM tool within Salesforce, configured to efficiently process over 2,000 documents. This tool pulled relevant data from a spectrum of documents, transformed PDFs and images, and came equipped with improved response mechanics and built-in document templates.

2 Creating content

A media company leveraged text to image creation using stable diffusion to **generate high-quality images in record time**. They developed an infrastructure for the LLM solution and fed it specific prompts to get the image they were looking to create in a fraction of the time it would normally take someone to manually develop.

3 Personalizing user experiences

A weather broadcast channel leveraged a GenAI-powered approach to **generate personalized weather forecasts and individualized recommendations** for their current and future users. They started with an in-depth data review and merged various data sources to create a comprehensive, context-aware recommendation system, geared to accommodate millions of user data points efficiently. They delivered precise, tailored forecasts and significantly enhanced user engagement, reaffirming its industry-leading position and setting new benchmarks for meteorological services.

4 Enhancing predictive modeling

At Andela, we leverage LLMs to help with **hyperpersonalization for our clients**, sourcing the right technologists based on the client's needs and requirements. We built our proprietary Talent Decision Engine™ to learn from thousands of data points from across the hiring lifecycle, from skills and experience to geography, language proficiency and more to match technologists with clients. The artificial intelligence and machine learning algorithms helped to accelerate the time-consuming acquisition process making it up to 60% faster than before.

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The future of GenAI

While much of the world focuses on the short-term response to an emerging technology, we believe there's even greater potential in the long term. As millions of the world's brightest minds begin to question conventional workflows, they are able to make better choices about the future — choices that can benefit your customers, your teams, and your people.

People are opening their eyes to a refreshing reality and unlocking new potential. They can, as it turns out, make human lives easier with GenAI. When you have technology that can take on a low value action that a human has done in the past, you're able to open up new opportunities for scale and growth. You can focus on your customers, free up time for creativity, reduce burden on your employees, and create more value.

43% of organizations
plan to reduce spend in other areas of the business to reallocate spending toward AI

92%
of AI deployments are taking 12 months or less

*CompTIA

The long-term effects of this technological transformation are just barely within view:

- **Talented people** who have struggled with rote day-to-day tasks will now have the ability to scale their processes and work more efficiently. Those that upskill will be in high demand to help democratize and scale the use of the tools, and will be drawn to places that leverage GenAI.

- **Customers** will see a range of personalization efforts tailored to their needs that will improve their customer experiences.

- **Businesses** will be more agile and better equipped to deliver business ROI. They'll find it easier to generate data analytics, optimize data-driven decisions, and streamline data-oriented tasks.

At Andela, we're excited to play a part in this technological advancement as organizations around the world embrace the future of GenAI. If you're interested in learning more about how we can help you deliver on your GenAI objectives, contact us today.

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About Andela

Andela is the world's largest private talent marketplace, fundamentally changing how teams work by expanding the hiring pool and streamlining the complete hiring lifecycle into a single platform. Today, we stand as one of the first AI/ML driven Talent Cloud companies with a 94% customer satisfaction rating and over 600 successful clients. Andela Talent Cloud provides an AI-driven platform that helps enterprises source, qualify, hire, manage, and pay global technical talent in one integrated platform. Powerful AI-matching algorithms learn from thousands of touch points in the hiring journey to pinpoint the best technologists up to 70% faster at 30-50% less cost than other hiring approaches.

Market leaders partner with Andela to help rewrite their workforce strategies to include global, remote-fluent talent from emerging geographies such as Africa and Latin America to scale their teams and deliver projects faster. With a community of over 4 million technologists, Andela caters to specialized disciplines such as Application Engineering, Artificial Intelligence, Cloud Computing, and Data & Analytics.

The world's best brands trust Andela, including GitHub, Mastercard Foundry, ViacomCBS, and Mindshare. Discover more about Andela here.
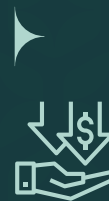
Performance

Hire

70%

faster when you partner with Andela

Savings

30%-50%

less cost than other hiring approaches

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