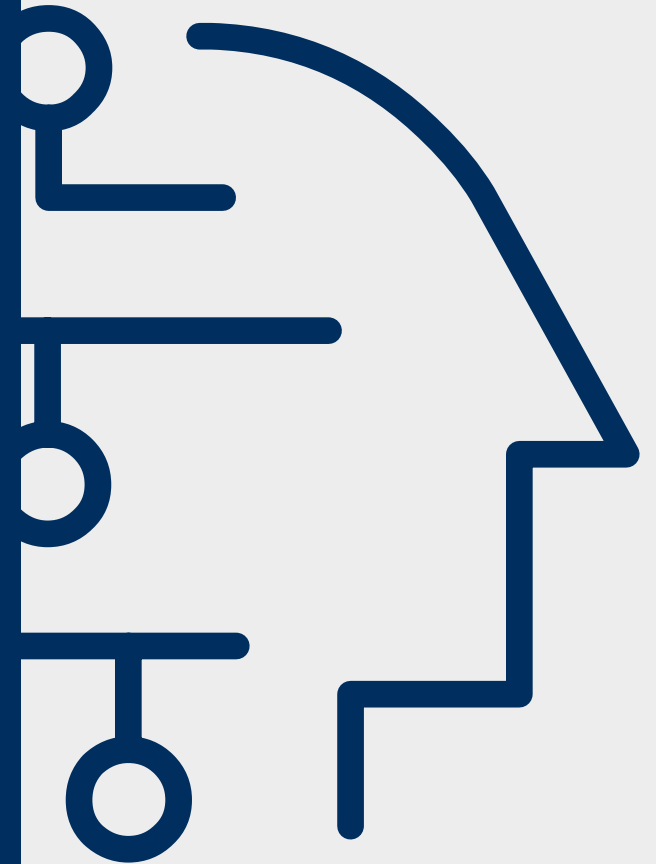


A CIO's Guide to AI

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for IT Operations



CIOs must recognize that AI projects differ from most other IT projects and plan accordingly

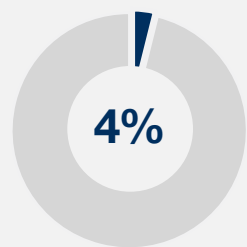
There is huge enterprise-level interest in artificial intelligence (AI) projects and their potential to fundamentally change the dynamics of business value — but most CIOs are struggling to accelerate deployment of AI.

The pressure to accelerate the use of AI puts CIOs in a challenging position. AI efforts can stress staff, skills, and the readiness

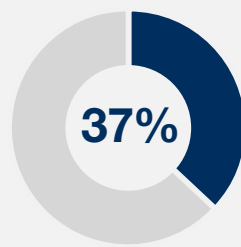
of in-house and third-party AI products and services. Without effective strategic plans for AI, organizations risk wasting money, falling short in performance and falling behind their business rivals.

This series of articles aims to help CIOs experiment with the technology, implement a plan and embrace the challenge.

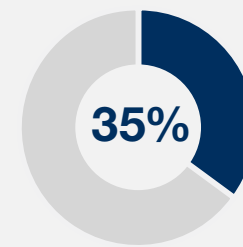
A recent Gartner survey of global CIOs discovered the following:



of respondents
had deployed AI



of organizations are
still looking to define
their AI strategies



are struggling
to identify suitable
use cases

The CIO's Guide to Artificial Intelligence

CIOs can separate AI hype from reality by considering these areas of risk and opportunity.

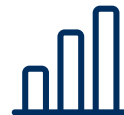
When a company realized that up to 30% of calls it received were from customers asking about order status, its leadership wanted to know if artificial intelligence (AI) would be able to help manage the interactions. The short answer was yes, a virtual customer assistant could answer questions ranging from “Where is my order” to “How long will I have to wait?” But the bigger question was if AI could help the company in even more impactful ways.

“Look at how you are using technology today during critical interactions with customers — business moments — and consider how the value of that moment could be increased,” says Whit Andrews, vice president and distinguished analyst at Gartner. “Then apply AI to those points for additional business value.”

For example, the interaction between company and consumer provides data about the customer. When combining information with other data about that particular customer (i.e., they order X amount of Y products every Z weeks), the company can use AI to further enrich the relationship beyond that interaction.



During future interactions, the data might allow the seller to ask questions specific to the customer, such as “We know you are frequently waiting on delivery. Would you like to subscribe to this product or order larger quantities?” AI enables companies to collect data from a wide variety of places and apply self-improving analysis that can take action — and on a level of granularity never before available.



“AI allows companies to collect data from a wide variety of places and apply self-improving analysis that can take action.”

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Contributor: Kasey Panetta

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Key insights for CIOs

“Savvy CIOs are experimenting jointly with business peers to discover top use cases for AI to evaluate its potential to disrupt markets and remake existing business models,” says Janelle B. Hill, vice president and distinguished analyst at Gartner.

Here are three key insights for CIOs to know before they start a successful AI journey.

1. Digital business is accelerating interest in AI at a pace that has left many CIOs hurrying to build an AI strategy and investment plan appropriate for their enterprise.

Over the past few years, the pace of innovation in AI technologies has been staggering, predominantly coming from small vendors. CIOs are in the perfect position to educate their company's CEO and board about recent developments in AI and illustrate how AI might influence their business and competitive landscape. By following this approach, CIOs can potentially flip the traditional engagement model between IT and the business, influencing business strategy at the outset, rather than simply developing implementation projects that follow up on the executive team's decisions.

2. Deep learning, natural-language processing (NLP) and computer vision are leading areas of rapid technology advancement, and are the areas where CIOs need to build knowledge, expertise and skills.

Recent breakthroughs in machine learning, big data, computer vision and speech recognition are increasing the commercial

potential of AI. But AI requires new skills and a new way of thinking about problems. CIOs must ensure that IT owns the strategy and governance of AI solutions. Although pilot AI experiments can start with a small investment, for full production rollout, the biggest area of investment is building and retaining the necessary talent. These skills include technical knowledge in specific AI technologies, data science, maintaining quality data, problem domain expertise, and skills to monitor, maintain and govern the environment.

3. Market conditions for commercial success with AI technology are well-aligned, making AI safe enough for CIOs to investigate, experiment with and strategize about potential application use cases.

Capabilities like voice recognition, NLP and image processing benefit from advances in big data processing and advanced analytical methods such as machine learning and deep learning. Leading-edge AI technologies will play an increasingly important role in the top three business objectives often cited by CEOs — greater customer intimacy, increasing competitive advantage and improving efficiency. CIOs should look for cloud SaaS applications that apply AI to these areas. Greater experience with AI solutions will help CIOs to build business cases and identify the limitations in current-generation technologies to understand skills needed to fill talent gaps.

AI basics

Common definitions of AI focus on automation and, as a result, often miss the hidden opportunities available to IT and business leaders. AI is technology that emulates human performance, typically by learning from it.

“CIOs should look for critical business points where human interaction or human expertise adds value.”

The most common mistake with AI is to focus on automation rather than augmentation of human decision making and interactions. If CIOs focus only on further automation via AI, they also miss the hidden opportunities for greater personalization and differentiation. AI can augment humans, as it has the ability to classify information and make predictions faster and at higher volumes than humans can accomplish on their own.

CIOs should look for critical business points where human interaction or human expertise adds value. They then should consider how AI might augment those efforts to create even more value.



“What matters the most is where your business should use AI,” says Andrews. “If you’re interested in exploring AI, the most important first step is to pursue something that is critical to your organization.”

Common AI applications

Typically, common AI applications analyze contextual interaction data combined with historical data in real time.

Sales and marketing: Customize the sales process, personalize communications to prospects and clients, match sales staff to buyers and offer personalized pricing.

Service: Offer virtual customer assistance and triage, predict maintenance and upcoming repair needs, connect service staff to customers and discover process gaps.

Supply chain: Discover and correct data errors, discover risks in the supply chain, elevate insights from Internet of Things (IoT) devices in the field and plan logistics.

Banking and financial services: Help customers access their bank balances using chatbots.

Healthcare: Follow up with patients post-discharge using virtual nursing assistants.

Avoid the hype

Hype isn't always a bad thing. Within limits, it fosters attention, and triggers innovation and potential investment. A little bit of hype can build excitement about potential, while too much may lead to false hopes and misguided planning assumptions.

How to sort the AI hype from reality

Although AI offers exciting possibilities, the huge increase in startups and established vendors claiming to offer AI products without any real differentiation has confused potential buyers and obfuscated the value of more straightforward, proven approaches.

“A vendor showed us a chatbot that was intended to provide a useful dialogue between a customer and a retail company regarding the products it has on consignment,” says Andrews. “However, when we inquired about how the chatbot would improve its own conclusions from subsequent data, or from the customers’ choices, the vendor indicated that the system was based entirely on its own rules, which were regularly updated manually.”

This might resolve a business challenge, but it’s not AI.

As AI accelerates up the Hype Cycle with the promise to change business forever, CIOs have to distinguish between faux and real AI offerings. One way to do this is by asking a vendor to describe the analytical model used in its AI solution and, from there, infer how well the solution might perform in a given situation. Ask how the system learns and listen closely for indicators of self-learning, necessary training by humans or just fancy “rules” that have to be manually changed.

3 questions to ask vendors

Determine these three things when questioning a vendor:

- 1. What AI learning method is it proposing to use in its solution?**
- 2. What specific skills and level of experience are needed to be successful?**
- 3. How much training data is needed to “prime” the solution, and how often it will need to be retrained?**

The answers to these questions go well beyond a traditional “demo.” Companies must understand how a vendor’s product uses AI and whether it would work well with the data and processes that they already possess.



“CIOs have to distinguish between faux and real AI offerings.”

Another factor to consider is the reason behind having AI in a product, as it introduces risks, complexity and costs.

Consequently, any vendor claiming that its product includes AI should also be able to explain how it will benefit the end user more than versions without AI. Go beyond verifying that AI makes the product better, and get a sense of how a given vendor's AI-enabled product is superior to others in the market.

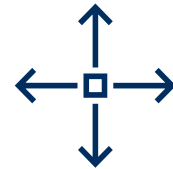
When comparing different AI products, ask vendors how they manage risk with their AI products, and how that surpasses their competitors' means of doing so. This is particularly important, as many vendors do not understand the risks involved in using AI.

AI systems are not static and require vendors to be fully invested in improving their flexibility and resilience. Find out what vendors are doing to improve their offerings, whether by collaborating with independent data scientists or being active players in the industry. Cloud SaaS deployment facilitates continuous innovation from a vendor, and potentially other participants in the shared environment.

Moving forward with AI

Keep these considerations in mind as you adopt AI for critical business priorities:

- Look for ideas and possibilities in areas you couldn't approach before because you didn't have or couldn't attract enough talented people.
- Learn the lessons that are unique to your organization and minimize those that are more mainstream in nature.
- Survey and engage your highest-value workers about mundane aspects of their roles that can be addressed through AI.



“AI systems are not static and require vendors to be fully invested in improving their flexibility and resilience.”

Lessons From Artificial Intelligence Pioneers

Can learnings from early projects give CIOs a head start with AI technologies?

CIOs are struggling to accelerate deployment of artificial intelligence (AI). A recent Gartner survey of global CIOs found that only 4% of respondents had deployed AI. However, the survey also found that one-fifth of the CIOs are already piloting or planning to pilot AI in the short term.

Such ambition puts these leaders in a challenging position. AI efforts are already stressing staff, skills, and the readiness of in-house and third-party AI products and services. Without effective strategic plans for AI, organizations risk wasting money, falling short in performance and falling behind their business rivals.

“AI is just starting to become useful to organizations but many will find that AI faces the usual obstacles to progress of any unproven and unfamiliar technology,” says Whit Andrews, vice president and distinguished analyst at Gartner. “However, early AI projects offer valuable lessons and perspectives for enterprise architecture and technology innovation leaders embarking on pilots and more formal AI efforts.”

So what lessons can we learn from these early AI pioneers?



Aim for fairly “soft” outcomes, such as improvements to processes, customer satisfaction, products and financial benchmarking

When Gartner Research Circle respondents were asked what lessons they had learned from early AI projects, many urged others not to fall into the trap of seeking only immediate monetary gains. They advised instead to aim initially for less quantifiable benefits from which financial gains would eventually arise. These might come from “softer” or more “open” outcomes, such as improved marketing or brand identity, or they could lead to wider benefits altogether.

Of course, some companies need to demonstrate financial benefit in order to initiate an AI project. In such cases, it makes sense to pursue small-scale plans likely to deliver small-scale payoffs that will offer lessons for larger implementations.

- = “Pursue small-scale plans likely to deliver
- = small-scale payoffs that will offer lessons
- = for larger implementations.”

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Focus on worker augmentation, not worker replacement

AI's potential to reduce staff head count attracts the attention of senior business executives as a potential cost-saving initiative. A more informed expectation, however, would be for applications that help and improve human endeavors, as AI promises benefits far beyond automation. Organizations that embrace this perspective are more likely to find workers eager to embrace AI.

"Research Circle members said that the people who are actually on the frontline are really excited about being able to have this additional information available to them during that process to determine if we want to take that risk on or not," says Andrews. "They're certainly not cowering in the corner, afraid that AI will replace them. They're absolutely embracing it, saying they can make much better decisions with this additional information."

Plan for the transfer of knowledge from external service providers and vendors to enterprise IT and business workers

Lack of staff and skills to conceive and execute AI projects is a significant obstacle to progress for many organizations, so external service providers can play a key role in planning and delivering AI-powered software.

When using an external service provider, executives are adamant — knowledge transference is crucial. Organizations need to plan for the transfer of knowledge from external service providers and vendors to enterprise IT and business workers throughout the execution of projects. This will ensure that the internal skills are available to develop similar capabilities in the future.

Choose AI solutions that offer means of tracking and revealing AI decisions

It's important to opt for AI solutions that offer means of tracking and revealing AI decisions — ideally using action audit trails and features that visualize or explain results. To that end, Gartner predicts that by 2022, enterprise AI projects with built-in transparency will be twice as likely to receive funding from CIOs.

"One AI pioneer noted that workers need to be able to explain the basis of their decisions and require decision support that reveals the rules and processes that led to particular recommendations," explains Andrews. "If he predicts that something will fail, the immediate question someone asks is 'Why is it going to fail?' He said having the transparency will help him explain how he came to that conclusion."



"Lack of staff and skills to conceive and execute AI projects is a significant obstacle to progress for many organizations."

How to Build a Business Case for Artificial Intelligence

CIOs must recognize that AI projects differ from most other IT projects and plan accordingly.

There is huge enterprise-level interest in artificial intelligence (AI) projects and their potential to fundamentally change the dynamics of business value. However, most AI technologies are nascent at best. According to a recent Gartner survey, 37% of organizations are still looking to define their AI strategies, while 35% are struggling to identify suitable use cases.

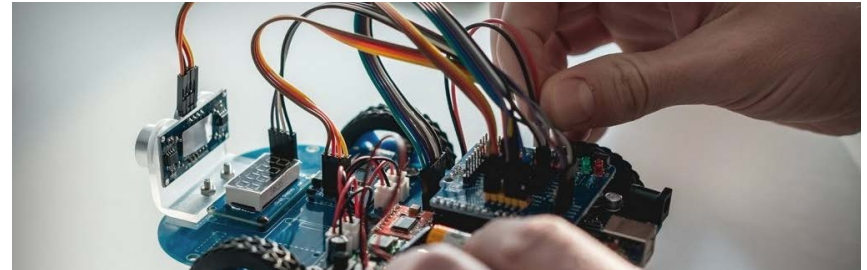
This is clearly problematic when, in order to secure the necessary investment for AI projects, CIOs must put forward a solid business case. Part of the issue is that there is no such thing as an AI business case. Instead, the business case will be for a particular business scenario, problem or use case that employs AI methods and techniques as part of the overall solution. Focus on answering these four questions when you want to define an AI project:

- 1. Why are you doing this project?**
- 2. For whom are you trying to deliver this solution?**
- 3. What solution and technology framework will you employ?**
- 4. How will you deliver this project?**

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Contributor: Christy Pettey

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“Business cases for AI projects are complex to develop as the costs and benefits are harder to predict than for most other IT projects,” explains Moutusi Sau, principal research analyst at Gartner. “Challenges particular to AI projects include additional layers of complexity, opaqueness and unpredictability that just aren’t found in other standard technology.”

To build a successful business case for AI projects, CIOs need to articulate and address the specific factors around how AI projects differ from other IT solutions.

AI solutions can appear costly without providing immediate gain

Building a business case includes analyzing the expected benefits and costs associated with a project. However, in the case of AI, the answer is unlikely to be straightforward. AI projects can appear costly without any immediate gains — particularly for loosely bound scenarios and in organizations that aren’t used to setting aside budget to develop and deploy solutions for new business scenarios.

The return values from the project are closely intertwined with the aspirational value that the organization is seeking. Past examples of significant and successful investments in AI show that organizations ahead of the curve in digital transformation have an advantage with AI. Organizations must have a serious strategy around investment in AI projects, along with strong management support.

Amazon's acquisition of Kiva Systems, for example, shows how the use of robots in its warehouse automation provided competitive advantage. It's no accident that companies now reaping the benefits of AI invested long before their competitors.

"An adaptive approach is required here. Don't be afraid to be upfront about expected costs and set expectations that they might change significantly as the solution scope is explored and refined," says Sau. "By the same token, there also needs to be readiness to close down experimental AI projects where no clear benefit is emerging from the early stages."



"The mindset shift required for AI can lead to 'cultural anxiety' because it calls for a deep change in behaviors and ways of thinking."

AI will need substantial cultural change

For most enterprises, the mindset shift required for AI can lead to "cultural anxiety" because it calls for a deep change in behaviors and ways of thinking. CIOs should acknowledge the cultural changes, be proactive in managing related challenges and build trust over time. Cultural change and successful transitions to new roles and practices are dependent on open dialogue and mutual respect among IT members and between management and staff.

AI projects require different technology and skills

The biggest pain point that emerged from Gartner's 2018 CIO survey was the lack of specialized skills in AI, with 47% of CIOs reporting that they needed new skills for AI projects. As such, talent acquisition is likely to be one of the biggest barriers to AI adoption going forward.

While long-term strategies should include how to leverage academic communities and open-source technologies to ease the lack of resources, the immediate priority is working out what needs to happen now. Leveraging and training existing resources — particularly on data science tools — will be a key strategy. Lessons learned from initial pilots will also help CIOs decide to whether they will ultimately build, buy or outsource future projects.

12 Steps to Excellence in Artificial Intelligence for IT Operations

Follow these steps to transform IT operations with artificial intelligence.

While only a small fraction of organizations have deployed and used artificial intelligence (AI) at scale, IT infrastructure and operations (I&O) leaders are already being challenged to create an agile infrastructure to support their organization's AI strategy.

In addition, I&O teams are exploring the use of AI technologies to improve their own operations. This will require radical modifications to tasks and processes, says Pankaj Prasad principal research analyst at Gartner.



“Start using AI-enabled I&O management tools and continuously reskill your teams with new AI and data analytics skills,” says Prasad. “We advise clients to start small, build fast and validate frequently.”

Gartner helps I&O leaders tackle the challenge of using AI in IT operations by breaking it down into 12 steps (see graphic on next page). They are grouped into four major stages of progress, creating a solid platform that truly transforms IT operations.

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Contributor: Rob van der Meulen

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12 Steps to Excellence in AI for IT Operations

