

AI in the Enterprise

How businesses are turning
insights into action



Introduction:

Why enterprise-scale adoption of AI is growing

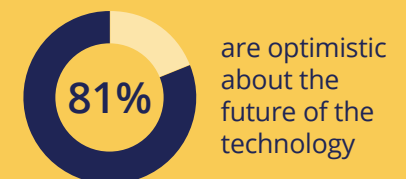
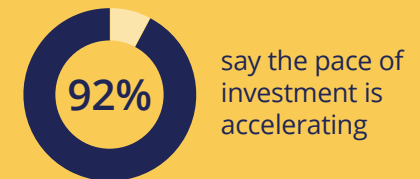
In the past, the promise of enterprise-wide artificial intelligence (AI) was akin to a ride in the family car: Picture kids endlessly asking, “Are we there yet?” and parents repeatedly responding, “Just a few more minutes.” Luckily for us, enterprise-scale intelligence has finally arrived.

A 2022 survey by NewVantage Partners on the impact of Big Data and AI found 92% of large companies are achieving returns on their AI investments, up from 48% in 2017, and the same percentage of businesses (92%) are increasing their investments in AI and data.¹

AI has always been on everyone’s radar. It’s a hot topic that’s gone in and out of the spotlight. One day it’s good; the next, it’s evil. There is a lot to unpack on the topic of artificial intelligence. But if we look across the last few years, real change in intelligent technologies and their enterprise applications has come about thanks to a few factors.

- **There is wider acceptance of AI.** As consumers, we likely interact with AI every day, whether we realize it or not. That song recommendation on Spotify? AI. Directions to a takeout pizza place near your current location? AI. Oh, and every time you Google something, deep learning is at play. Applications of AI are now commonplace in our daily lives.
- **There has been a shift in the perception of AI as some kind of futuristic, fringe technology to a practical, advanced technology that is viable at enterprise scale.** Artificial intelligence is now linked to top-level strategic goals at many of the largest enterprises around the globe. And we’re not just talking chatbots. Chief operating officers and chief information officers envision sweeping operational efficiencies and improved business effectiveness from AI technologies. Heads of customer service and experience use AI to anticipate customer service issues and resolve them proactively. And chief marketing officers, chief commercial officers, and chief data officers rely on central customer engagement platforms to drive empathic, personalized conversations and recommendations. Across the enterprise, AI has matured from experimental, emerging tech to a core requirement for operational success.

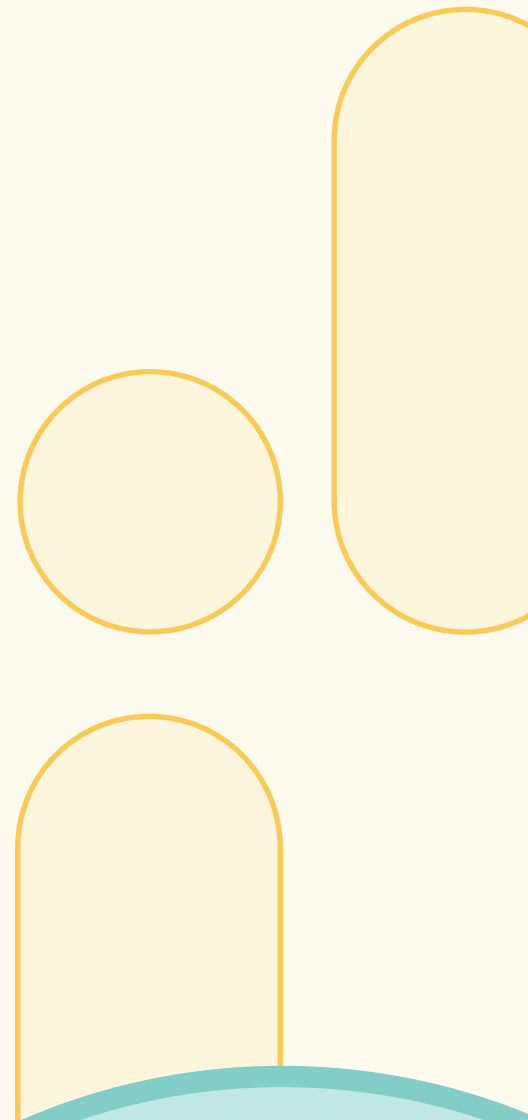
The impact of AI and Big Data on large enterprises: by the numbers



Source: NewVantage Partners, “Big Data and AI Executive Survey 2021”

- **The volume of workers with complementary skillsets and training has grown.** Development and application of the business rules, algorithms, and analytical models that drive AI require workers who are trained to think quantitatively and analytically. Over the past decade, there has been a generational shift toward number-savvy business folks who are adept at discovering useful information through data modeling and analysis. This quantitative management mindset is heavily ingrained in a generation of people who, for example, hold quantitative natural and social science degrees or MBAs and are moving into mid- or high-level leadership roles.
- **Though the number of workers skilled in data analysis has grown, the employment market, overall, is still tight – especially in the field of customer service.** Enterprises are looking to AI to help them drive more efficiencies from their staff. A significant benefit of AI is that it relieves people of mundane and time-consuming tasks, so they can focus on more important, impactful, or high-value work.
- **The ability to apply guardrails to AI-based applications has given enterprise leaders the tools they need to develop and govern trustworthy AI.** Bias creep in AI, for example, is real. But tools have evolved to help detect, prevent, and remove bias, opening the door for enterprise leaders to apply AI to mission-critical operations – even in highly regulated industries. We’ve also seen a shift from soft regulation into hard law, which provides a level playing field and rewards the enterprises who apply AI in a responsible manner.

In this eBook, we provide an overview on the current state of enterprise-scale AI and its strategic uses and challenges. We also take a look at ways businesses can use AI for the better and the steps you can take to start building responsible AI into your strategic goals – after all, we are a technology company that helps enterprise leaders realize the potential of AI.



AI-based technologies for the enterprise:

- **Machine learning:** The application of computer algorithms designed to learn and improve through data and feedback. Typical machine learning use cases include:
 - **Predictive analytics:** The ability to predict customer behavior, the impact of actions and interventions, and future process and business outcomes. Models can be trained offline or can be always-on, adaptively learning.
 - **Natural language processing (NLP):** A form of machine learning that processes, analyzes, and understands written language and the context of that language used in documents.
 - **Speech recognition:** The ability for computers to process, analyze, and understand spoken language and the context of that spoken language.
 - **Event monitoring and mining:** The ability to detect patterns in streaming data.
 - **Process mining:** The ability to analyze event logs and process execution for the discovery, monitoring, and improvement of processes.
- **Reasoning and decisioning:** The ability to combine data and machine learning output with business rules, strategies, and policies to drive automated decisions and recommendations.
- **Trustworthy AI:** Capabilities, policies, and methodologies to ensure that AI systems and decisions are fair, transparent, explainable, robust, and aligned with human values.

AI is driving strategic goals

A [PwC survey](#) of more than 1,000 executives at U.S. companies found 52% of respondents have accelerated AI adoption plans. Of those, 33% have already started implementing AI in their use cases and 25% have processes fully enabled by AI with widespread adoption.²

Open up any annual report of a global company and you will find top-level strategic goals that typically include language, such as “Become more customer-centric,” “Use data and intelligence to get closer to our customers,” or “Be smarter and more operationally efficient.” These are transformational initiatives that require cross-departmental adoption to be successful, and C-suite leaders are looking to new, digital technologies to help them.

The race toward digital transformation began prior to the pandemic but has accelerated over the past several years, with businesses focused on digitizing and automating processes and improving data access and management. But enterprises that are ahead of the curve are beginning to hit a wall. They’ve transformed their businesses from the center out, have automated everything that makes sense to automate, and now realize they need a way to make their processes more efficient, such as achieving faster average handle time or a quicker mean time to repair. However, to reach higher goals, businesses will need to apply AI to their data and processes to work smarter – making their operations not only more efficient but more effective as well.

[PwC research](#) estimates economic gains from AI will total \$10.7 trillion by 2030 and account for nearly 70% of global economic impact from a combination of increased productivity and consumption side effects.³

Enterprises continue to move with urgency because of the internal and external pressures they are facing. On the one hand, they have to address market needs – the need to get closer to their customers and do more with less. On the other hand, they don’t want to just become efficient, but really become more effective around the processes they execute. Enterprises want to deliver on the high expectations of their customers and on the high expectations their governing boards have set for the future directions of their companies. This mix between service, marketing, and back-office initiatives is driving the adoption of AI at enterprise scale.

Enterprises best poised for AI adoption share these characteristics

AI-based capabilities that first matured at digital-native companies like eBay and Netflix are now being adopted by a much larger set of industries. Organizations that can realize the greatest results by applying intelligence to their services and operations share certain characteristics:

- **They are further along in their roadmap for digital transformation.** Organizations that have digitized manual processes, built integrations to data sources, restructured their business architecture from the center out, and are automating processes have laid the groundwork for applied AI. A Center-out™ business architecture is inherently structured with business rules and machine learning intelligence at the center of enterprise operations. When workflows and customer journeys exist at the same operational layer, it is easier to inject intelligence into those workflows. The result is AI, decisioning, and automation working in concert as part of a unified effort – either through a centralized hub or centralized governance – increasing the ability to build a knowledge-driven culture, monetize data, and reduce risk along the way.
- **They know their customers.** Organizations that have an existing relationship or connection with their customers have an advantage. For example, banks and insurers that onboard customers are responsible for taking in or paying out money; or telcos that have contracts with customers already have some understanding of their customers' needs, preferences, behaviors, and experiences. Organizations in these industries can build value by using AI to get closer to their customers, engage them one-to-one with empathic and personalized recommendations, anticipate and proactively resolve customer service issues, and build better customer experiences.
- **They have sophisticated processes and generate high volumes of data.** Organizations that have large volumes of rules, data, and processes are well-positioned to benefit from AI-based technologies. With so many variables and workflows, AI can help find the opportunities to eliminate waste, optimize front- and back-office operations for efficiency, and make improvements that can amplify overall business effectiveness.



Common applications for enterprise-scale AI

For organizations with the above characteristics that have already done the work to standardize processes, digitize data, and automate workflows, applied AI is the next logical evolution of operations. AI can help businesses work smarter, making it possible to identify, anticipate, and act on unforeseen opportunities in real time by applying AI capabilities in concert:

	Sense	Decide	Act
Capabilities	Filtering, transforming, and making sense of multiple forms of data.	Deciding across alternative courses of action. Using logic to filter options, predict likelihood of success of each action, express strategy and policy, and decide on the best action.	Executing the action, capturing the outcomes, and feeding information back to learn and adapt.
Common enterprise applications	<ul style="list-style-type: none"> • Detecting patterns in streaming data • Translating speech to text • Classifying images • Detecting intent and sentiment in a customer service email • Predicting customer behavior and other relevant data points 	<ul style="list-style-type: none"> • Recommending the best offer for a customer • Predicting the likely service issue a customer is facing and the best solution • Routing work to the people best suited for it • Determining eligibility for straight-through processing 	<ul style="list-style-type: none"> • Making an offer and capturing the response • Providing resolution and checking to ensure work is resolved • Routing work, and measuring if work was resolved within given time • Confirming whether manual investigation was indeed required or not

The value AI brings to an enterprise is its usefulness in identifying opportunities, then driving the decisions and actions to create value from those opportunities – especially for anticipating customer needs, servicing customers more quickly and accurately, delivering individualized and personalized customer engagements, and identifying areas for operational improvements. Using AI, enterprises can really transform these activities at their core.

For example, AI can help improve efficiency and service for something as common as an insurance claim. It can be used to detect the type of claim; determine the best agent to review and service it; assess whether there is potential for fraud or, alternatively, if it can be routed to straight-through processing; route the claim; and identify when the work has been resolved.

That's just one industry example. There are a variety of ways AI is being used across industries to help build value and achieve strategic goals, especially to connect on a more personal level with customers and become more efficient.

Addressing the challenges of enterprise AI

As with any advanced technology, the successful implementation of AI into an enterprise ecosystem does come with some challenges. Enterprise leaders should be aware of them and plan a course of action to prevent or address them.

Starting out, you might think your largest challenge is access to enough data – Big Data, historical data, real-time data – but in today's enterprise ecosystems, enough data is available to effectively drive AI-based solutions. The challenge is in how you analyze and govern that data at enterprise scale.

Digital-first enterprises like fintechs, insurtechs, and ecommerce organizations have proven that AI can be applied to a wide range of processes across an enterprise. The key is not to start with the data bottom-up, but to identify the KPIs and outcomes you want to optimize top-down. Identify the decisions and actions to decide across, and the rules, models, and data that you need to support this. Not all data needs to be perfect, and some data will matter more than others.

The bigger roadblocks to enterprise-scale adoption of AI are a lack of a strategic vision and buy-in from critical stakeholders.

If your development of AI is not linked to top-level strategic goals, it's a hobby

Having C-level or board-level sponsorship is incredibly important for enterprises that want to make an impact with AI. You need to understand the potential and articulate the value AI can drive and see how it can be tied into your highest-level strategic goals. For example, if you want to get closer to your customers, AI-based analytics can help you better understand their needs. If you want to work smarter, machine learning can help you optimize your processes. You need to think first about how AI can improve your most important outcomes, then convey specific examples of how AI will help you reach those outcomes.

Removing friction is incredibly important

The democratization of AI is making intelligence-based technologies available to a wide range of users through tools that don't require specialized knowledge of AI. Over the past five years the barriers to using AI have been lowered significantly and continue to improve. AI-based technologies are transforming from something that only data scientists and IT professionals could configure to tools that domain and subject matter experts can own and manage. This allows the people closest to the application of AI-based technologies to have a role in steering the AI by using curated but configurable analytics, backed by governance and monitoring, to ensure expected performance and results can be achieved.

Identifying and eliminating bias in models and decisions

Bias in artificial intelligence is a real concern with real consequences. The same AI that can help organizations analyze large volumes of data and make decisions quickly can also unintentionally discriminate. That's because we – the humans who build the models, logic, and decisions on which AI technologies are based and the data that's used to train AI – can have biases that are unwittingly passed along in the way we interpret information, structure algorithms, build business rules, and design analytical models. Your data scientists likely have more awareness of the potential of bias in AI and how to mitigate it, but a wider range of business users may not.

We recommend that enterprises commit to the responsible use of AI applications and put structures in place to support fairness, transparency, value alignment, and responsibility. Prior to any AI activities, enterprises should establish a governance structure tasked with identifying potential biases and defining a methodology for trustworthy and responsible AI. We also recommend taking an always-on approach to bias protection by using tools and monitoring capabilities readily available in the marketplace that are designed to detect bias and allow users to adjust underlying rules, models, and strategies accordingly.

How to get started with AI

As we mentioned earlier, AI has evolved from the theoretical and experimental to technology that has practical applications at the enterprise level. While some advanced applications of AI are clearly still climbing the peak of the hype cycle, there are proven, practical uses for AI-driven applications for enterprises across industries.

To determine the best way to implement and operationalize AI in your organization, we suggest the following approach:

Formulate your strategy

Pick a problem that matters. At the strategy level, if you haven't formulated AI into a "top 5" initiative, you should. Align it with one or more of the top-level strategic goals that have been defined with your organization. This will also guide you toward the C-level executive who is aligned with the key goals you are focusing on.

Goals, such as getting closer to customers and optimizing processes and operations, rely on the use of data and intelligence. A bank may need to regain customer trust, improve share of wallet, or offer personalized service while transforming into a digital business. A telco may need to improve retention, develop and sell converged offerings, and turn its network into a self-healing infrastructure. An insurance company may need to get smarter at underwriting and renew claims processes to service customers quicker, but also reduce losses due to claims fraud and leakage.

Identify your use cases

Be outcome-based. We can't emphasize enough how important it is to think about your business outcomes first. What do you want to optimize or maximize? How can you translate that strategy into very tangible KPIs? What are the underlying data and operational capabilities that you need to achieve those outcomes? Below we've summarized some of the ways enterprises can use AI to help achieve those strategic goals.

Keep in mind, AI at the enterprise-scale is about more than machine learning. Consider the potential ROI from inserting intelligence into an existing action or process. If you could combine data, analytics, business strategies, business rules, policies, and decisioning, what would be the impact to your organization? Look for use cases where you can build value from turning AI-based insights into action.

Foster cultural changes that support democratization of AI in the enterprise

To successfully apply intelligence at enterprise scale your workforce needs to have an intelligence mindset. That doesn't mean training everyone on how to construct machine learning algorithms. It's really about getting your workers thinking in terms of opportunities to apply data and intelligence to improve operations or deliver better service. What are your big business pains that can be eased by richer, real-time knowledge? Or what mundane, repeatable activities are your skilled people spending time on that could be automated if richer decisioning were available?

Some industries already have an edge in this area. Core operations for banks, insurers, and telcos, for example, rely on knowledge workers with quantitative skills. From your executive level to your front-line workers, the broader the set of people who can think analytically, the more opportunities you will find to build value with AI.

Common AI uses to support strategic goals

Goals/outcomes

Use cases

Engaging empathetically to optimize customer experience and lifetime value

- Customer acquisition, cross-sell, retention
- Welcome, educate, and service messaging
- Unified event-based, inbound, outbound, and paid media marketing

Anticipating customer needs and acting proactively to improve service outcomes

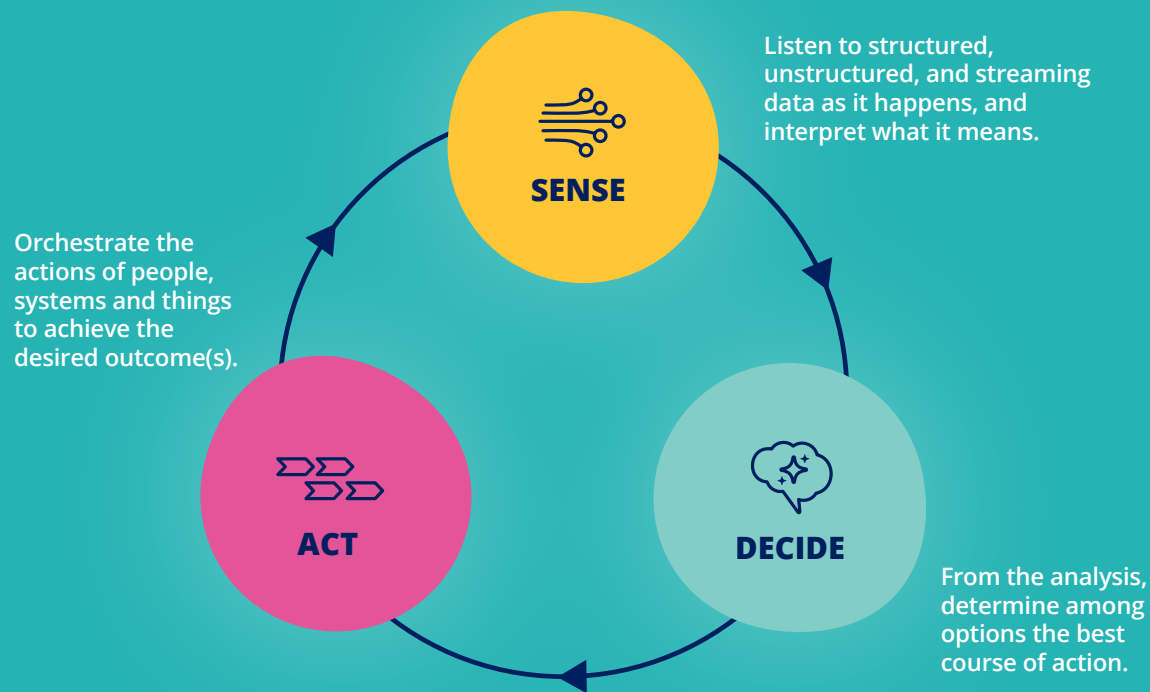
- Connected service and predictive maintenance
- Preemptive & proactive service
- Call deflection
- Smart routing
- Intelligent troubleshooting
- Conversational AI & self-service

Boosting business operations: Improve agility, efficiency, and effectiveness

- Process mining
- Event detection
- Smart onboarding
- Predicting process service levels & outcomes
- Increasing straight-through processing
- Self-optimizing processes
- Reducing exceptions

Build a capability layer into your business architecture

From an IT perspective, you will need to have the right systems and tech in place to plug intelligence into your workflows. As illustrated below, you'll need capabilities to observe data and outcomes, analyze context, determine optimal actions, and orchestrate workflows to deliver intended outcomes. Then, feed that information back into your intelligence component so it can learn.



Example of a capability layer for pervasive AI across applications and systems

Create a governance structure to foster trustworthy AI

Finally, you absolutely need to establish a governance process and guardrails for the responsible use of AI. Even if your industry does not outline a specific set of ethics or regulations, it's simply good business. We all have a moral obligation to use AI responsibly. **A responsible approach to AI embodies four critical elements: empathy, transparency, fairness, and accountability.** Best practices for responsible use include ensuring AI-driven decisions are interpretable and transparent to those who are affected by them. These can only be achieved through a construct that requires a consistent approach to data, governance, and model usage across your organization.

With digital transformations accelerating, now is the right time to start building AI into your enterprise platform

The latest [McKinsey Global Survey](#) on the state of AI indicates that AI adoption continues to grow, and the organizations that have adopted AI are seeing real impacts on their bottom lines.⁴ Over the past two pandemic-affected years, digitally-enabled organizations have gained an outsized advantage over their competition. This advantage will continue to grow as they incorporate intelligent technologies into their mission-critical operations. Don't risk being left behind in a world that increasingly moves at AI speed.

Learn more

- See how organizations like [Commonwealth Bank of Australia](#), [Wells Fargo](#), and [Verizon](#) are building value with applied intelligence.
- Read more on why a [responsible approach to AI](#) is essential.
- [Visit our website to learn about Pega's AI-based technology.](#)

Resources

¹ NewVantage Partners, "Big Data and AI Executive Survey 2021," https://c6abb8db-514c-4f5b-b5a1-fc710f1e464e.filesusr.com/ugd/e5361a_76709448ddc6490981f0cbea42d51508.pdf.

² PwC, "AI Predictions 2021," <https://www.pwc.com/us/en/tech-effect/ai-analytics/ai-predictions.html>.

³ PwC, "Sizing the prize," <https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html>.

⁴ McKinsey & Company, "The state of AI in 2021," <https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/global-survey-the-state-of-ai-in-2021>.



About Pegasystems

Pega delivers innovative software that crushes business complexity. From maximizing customer lifetime value to streamlining service to boosting efficiency, we help the world's leading brands solve problems fast and transform for tomorrow. Pega clients make better decisions and get work done with real-time AI and intelligent automation. And, since 1983, we've built our scalable architecture and low-code platform to stay ahead of rapid change. Our solutions save people time, so our clients' employees and customers can get back to what matters most.

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