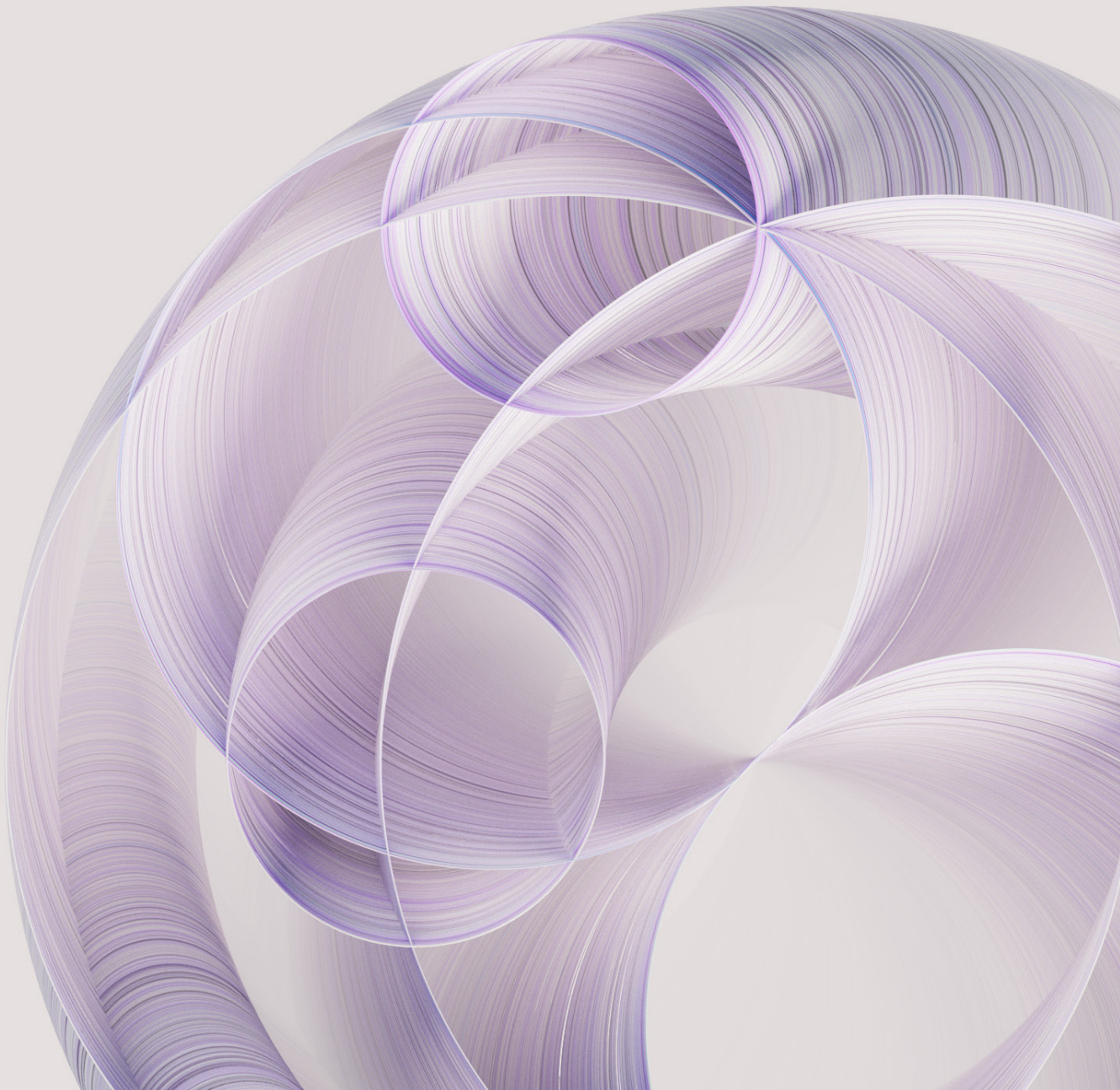
How to thrive in this new era of AI with trust and confidence



IBM

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The age of AI for business is here

Today we are witness to one of those rare moments in history—the rise of an innovative technology with the potential to radically transform business and society forever. That technology, of course, is artificial intelligence.

But why is this happening now when scientists and researchers have been developing AI for more than 70 years?

Advances in machine learning (ML) and deep learning have led to significant progress over the past decade. But artificial intelligence (AI) has also been challenging to scale and operationalize, as each new use case requires a new model to be designed and built using specific data. So, although adoption is increasing—today, 35% of companies are using AI in their business,[1] while an additional 42% are exploring the technology—only 54% of AI projects make it from pilot to production.[2]

Generative AI that leverages powerful foundation models changes that dynamic and makes massive AI scalability possible. A foundation model is trained on large amounts of unlabeled data, which can then be adapted to new scenarios and use cases. Although a foundation model requires a significant investment up front, it amortizes the initial work of AI model building each time it's used as the data requirements for fine-tuning additional models are much lower. This will lead to increases in ROI and much faster time to market.

Foundation models are already the norm in natural language processing (NLP), where a single prompt can cause the model to perform a new task, from producing poetry to answering a customer service query. But language is only the beginning. IBM is building foundation models trained on multiple types of business data, including code, time-series data, tabular data, geospatial data and IT events data. These models can drive applications ranging from code creation to drug discovery to cyber security, and will dramatically impact how people interact with technology, changing not only how we do business, but how we think about business.

We believe the flexibility and scalability of these models will significantly accelerate AI adoption. Instead of treating the technology as a tactical "add on," enterprises will now be empowered to put AI to work at the strategic core of their business. Indeed, within two years, we expect foundation models to power about a third of AI within enterprise environments. In our work applying foundation models in early tests, we have seen time to value of up to 70% faster than with traditional AI.[3]

The three critical elements of a strong AI strategy

Given how much AI can already help businesses achieve, there is immense pressure to act now or risk falling behind AI-augmented competitors and losing the opportunity to meet tomorrow's elevated customer expectations. But success in applying AI, whether based on the most advanced machine learning or the latest foundation models leveraging generative AI, isn't just measured in speed. When determining an AI strategy, there are three critical considerations.

1. How to create competitive edge

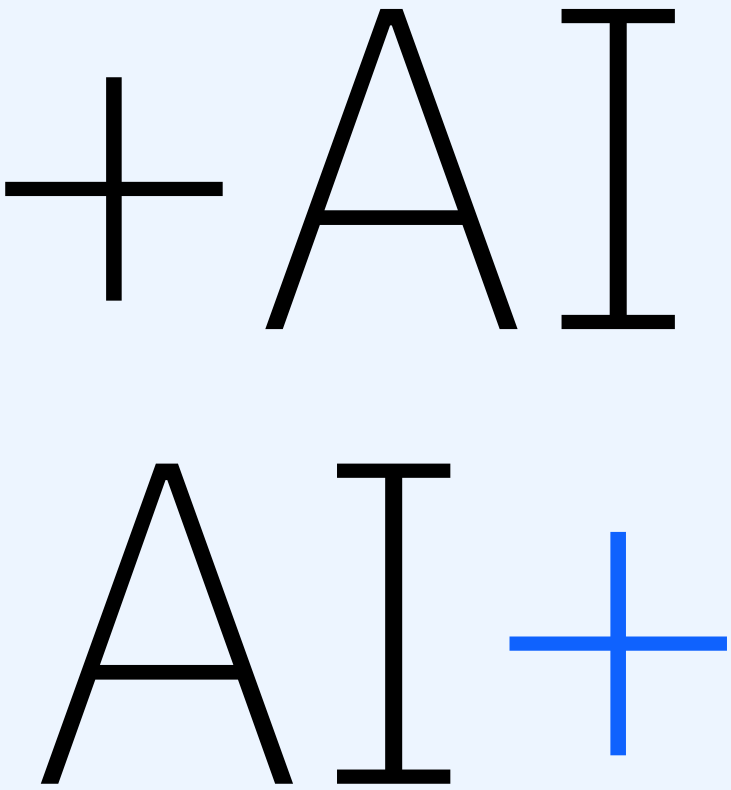
The key to your success is in the core of your business—the essential activities and capabilities that are fundamental to who you are and whom you serve. Whether based on ML or foundation models, the more customized your AI models are to those priorities, the better you will be able to serve your customers and deliver real business value. Foundation models make it possible to fine-tune AI to an enterprise's unique data and domain knowledge with a specificity that was previously impossible, so it's essential to let the business strategy guide the data strategy. To be truly impactful, AI should integrate into existing workflows and systems, automating key processes across areas such as customer service, supply chain and cybersecurity.

2. How to scale AI across the business

AI is only as good as the data that fuels it, and it's critical to identify the right data sets from the beginning: poor quality data can cause projects to falter, while businesses cite excessive data complexity and challenges with integration as posing major obstacles to AI adoption.[2] Ask: What is the most critical data? Which data provides the strongest competitive advantage? What's more, the data that fuels business processes is often widely distributed, so businesses must create AI-ready architectures. Data is everywhere: in on-premises data centers, on mainframes, in private clouds, public clouds and at the edge. In order to successfully scale your AI efforts, you need the ability to make use of all your data, wherever it resides. A hybrid cloud architecture provides the data foundation for extending AI deep into your business.

3. How to advance trustworthy AI

If your business is relied on to provide essential services or quickly deliver accurate information, insights or recommendations at scale, your systems need to help maximize availability and minimize errors. If the models contain bias, or if AI models are misleading, "hallucinate" or are not explainable, the risk and cost of reputational damage and regulatory fines could be high. AI must be explainable, fair, robust and transparent, and prioritize and safeguard consumers' privacy and data rights to engender trust. Data and AI lifecycle management is an important part of improving data access, applying governance, cutting costs and getting quality models into production faster.


+AI
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Put AI to work with IBM

With decades of experience in AI product development, consulting and research, IBM helps clients apply AI to make their businesses more productive and innovative. We have one of the most comprehensive portfolios to deploy ML in business, and we are dedicated to advancing enterprise AI.

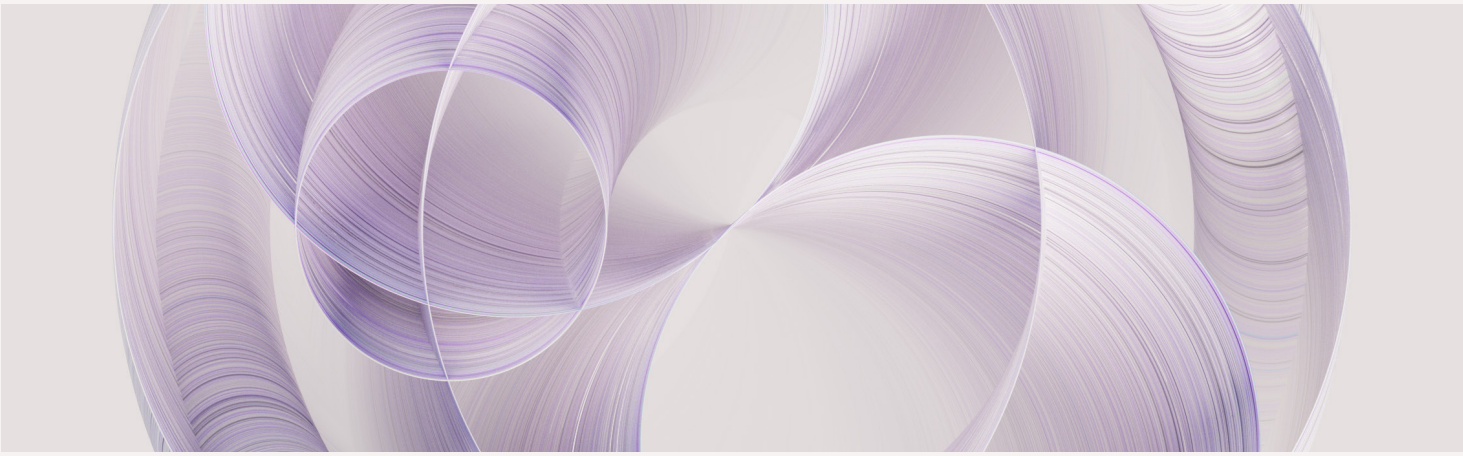
A platform to scale and accelerate the impact of AI

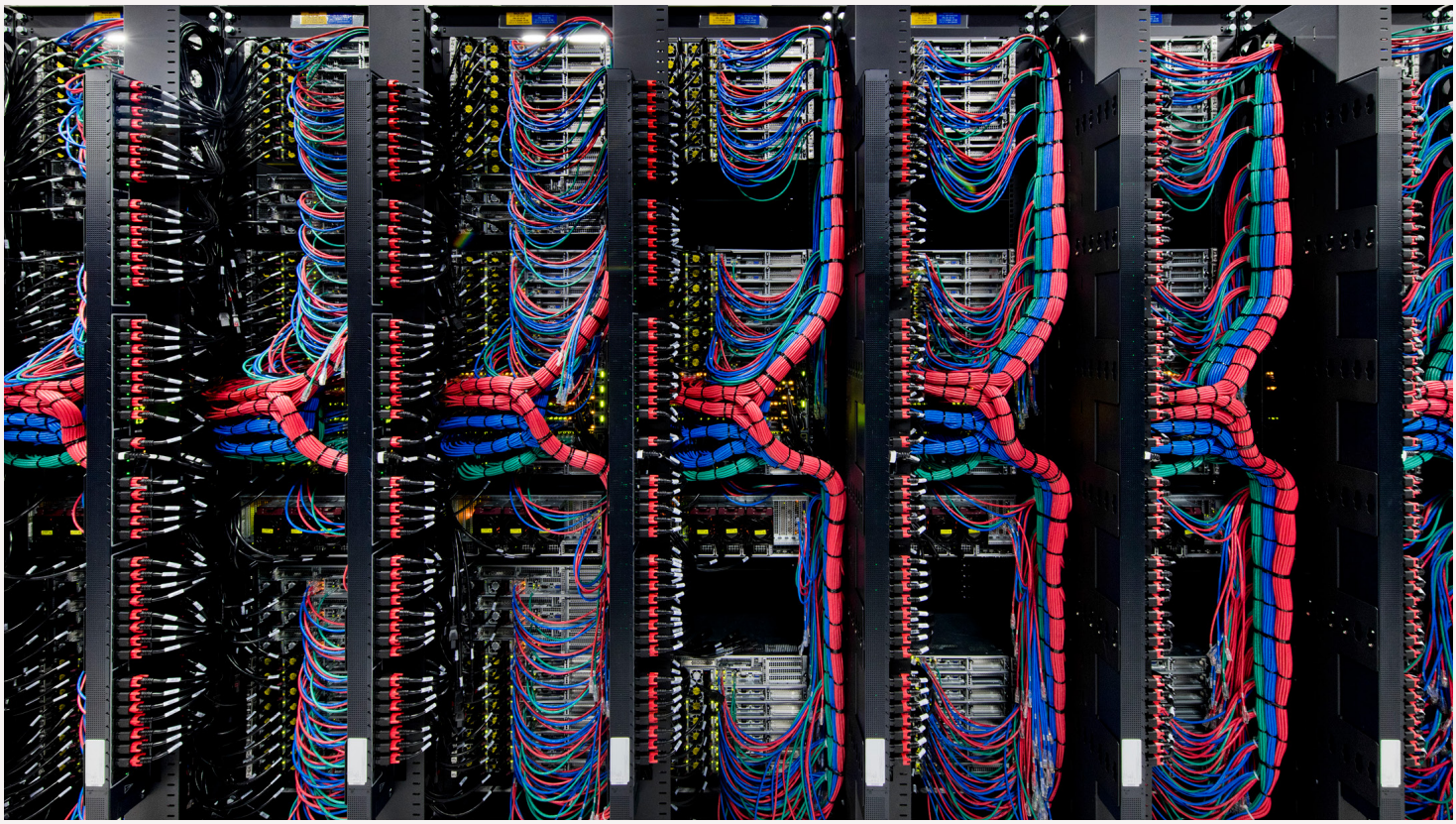
IBM® watsonx™ is a new AI and data platform designed with the three critical elements of an AI strategy in mind. Watsonx empowers enterprises to scale and accelerate the impact of AI across the business, leveraging data wherever it resides. IBM software products are embedding watsonx capabilities across digital labor, IT automation, security, sustainability and application modernization to help unlock new levels of productivity, performance and speed for greater business value for clients. The platform has three components:

A next-generation studio for enterprise AI
IBM watsonx.ai™ provides businesses with the ability to train, validate, tune, and deploy both ML and new generative AI capabilities powered by foundation models. These models are designed to work on multicloud architectures and are built with a rigorous focus on data acquisition, provenance and quality to serve enterprise needs. Watsonx.ai is expected to be generally available in July 2023.

An open, hybrid, and governed data store
IBM watsonx.data™ makes it possible for enterprises to scale AI workloads, using all their data with a fit-for-purpose data store optimized for governed data and AI workloads. It's supported by querying, governance and open data formats to access and share data. Watsonx.data is expected to be generally available in July 2023.

Finally, a powerful toolkit for AI governance
IBM watsonx.governance™ helps clients create responsible, transparent and explainable AI workflows by providing AI governance capabilities like model management throughout the AI lifecycle. Watsonx.governance is expected to be generally available in October 2023.





Infrastructure fit for AI

Infrastructure is an essential consideration of any AI strategy: the right decisions help protect data and can pay dividends and accelerate time to value. IBM and Red Hat have added capabilities to Red Hat® OpenShift® so that our hybrid cloud platform is optimized for AI workloads, from the creation of new, large-scale models to prompt tuning of preexisting models. In addition, platforms including IBM zSystems, IBM Power® servers and IBM Storage, together with IBM Cloud®, are designed for performance, scale, security and sustainability to help deliver early AI wins and expand your AI footprint. And because foundation models are massive, IBM has built Vela, a cloud-native supercomputer for the specific purpose of advancing large-scale AI. Vela enables IBM and its Business Partners to create powerful foundation models. For almost a decade, IBM has matured fundamental advances to support efficiency all the way down to the silicon—including reduced-precision algorithms and architectures built into our zSystems to achieve improved power performance and higher energy efficiency for AI.

"Infrastructure is an essential consideration of any AI strategy."

Creating what's next in AI with clients and Business Partners

IBM Consulting™ has a diverse team of advisors with deep domain expertise skilled in creating AI workflows with clients to help improve business operations and create value with trust, speed and confidence. We work with clients to prioritize which AI use cases should be augmented with foundation models, balancing across precision, risk and ROI. Using IBM Garage™, we can rapidly design, co-create and scale new workflows and experiences that are underpinned by foundation models, tuned to the relevant domain. Our efforts span across areas such as customer care, finance, supply chain and HR workflows along with IT operations and security. With IBM technology and a robust set of ecosystem partners—including AWS, Microsoft, Google, Salesforce, SAP and others—IBM Consulting embraces an open ecosystem approach to help deliver the desired outcomes for clients.

“AI is fundamentally changing every part of the way we work to a degree never seen before.”

Rob Thomas
Senior Vice President, Software
and Chief Commercial Officer, IBM

Opportunities to put AI into action

Resist the urge to indulge in what fantastical things AI can do. Organizations that stay grounded in the practical things AI can help them achieve—both in the short term and the long term—are more likely to succeed. Chasing "moonshots" increases both complexity and risk, while placing a heavy burden on data and analytics teams whose energies are better directed to creating tangible business value using your most critical data.

Here are the best opportunities to derive benefit from AI in your business today:

Digital labor

AI is fundamentally about making things better for people. By putting AI to work across processes which are complicated or where the day-to-day is routine, you free your employees from repetitive work and help empower them to deliver faster outcomes and make better, data-driven decisions. Higher levels of job satisfaction lead to lower rates of attrition—and happier employees are more likely to produce happy customers.

Boost employee productivity with AI and automation
Productivity is about getting out more than you put in, but today's employees are frequently overloaded, juggling a multitude of applications while other tasks remain stubbornly manual. AI and automation solutions can help both increase productivity and reduce costs. With IBM Watson Orchestrate™, employees can automate repetitive tasks and spend more time on the strategic actions that drive results.

Create exceptional customer care
Customers today expect seamless experiences and fast answers to their questions, and companies that fail to meet these expectations risk falling behind. AI can empower customers to get what they need quickly and, through self-service action, free employees to handle more complex requests. Working with IBM Consulting to build a conversational assistant based on IBM Watson® Assistant software, in 2021 Dutch Bank ABN AMRO deployed a customer service agent that answered 90% of customer requests in English or Dutch.

AI for code
Watson Code Assistant leverages a watsonx foundation model that assists developers by generating code through a natural-language interface for the Red Hat Ansible® Automation Platform. Watson Code Assistant provides a simple yet powerful automation tool that enhances and improves developer productivity.

Process claims with accuracy, speed, and efficiency
Historically, claims processing has been convoluted and manual. Today, inefficient legacy systems make it challenging for organizations to operate at the speed of today's business. AI fine-tuned on business data can help reduce both the time and cost of claims processing by automating and simplifying tedious and time-consuming manual tasks.

IT Automation

A more automated information infrastructure massively augments the oversight capabilities of IT teams, enabling them to achieve new levels of resiliency and efficiency. As a result, they can spend their time and expertise more productively to develop new innovations and get products into the market faster.

Enterprise observability
Enhance comprehensive visibility with ready-to-use data-driven insights for health and performance monitoring, so you can provide immediate feedback on deployments, identifying issues before they become incidents. With IBM Instana™, ExaVault LLC reduced mean time to resolution (MTTR) for customer-impacting bugs by 56.6%.

Automated operations
As the applications that run your business become increasingly complex, AI can help you make optimization decisions, matching application-performance demand to infrastructure supply. With IBM Turbonomic®, Carhartt Inc., improved the efficiency of its cloud environment by 45%.

Incident management
Complex modern IT environments, coupled with the proliferation of tools used to manage them, can make it difficult for IT operations teams to maintain a complete view of the estate and effectively manage incidents. IBM AIOps Insights helps streamline incident management by aggregating and consolidating multiple tools to correlate resource status across silos.

Security and compliance

Cyberattacks are more prevalent, creative and faster than ever. AI can expand not only visibility and accelerate response times with orchestration and automation, but compliance and security controls can also be built into a hybrid cloud architecture, thereby determining who gets access to what and when. This helps firms automate their compliance controls with the ever-expanding set of regulations they must abide by.

Augment security teams to help detect and eliminate threats and reduce risk
Security teams are often short-staffed and stretched thin. AI and automation can help reduce incident response times from days or hours to minutes,[4] closing the gap with attackers. It can also help verify users' access, find exposed assets, and enforce compliance measures. And with the multitude of security tools most companies need to manage, AI can be used to create a unified workflow. With IBM QRadar®, TalkTalk contained potential threats eight times faster on average.

Protect your business with a cyber-resilient infrastructure
The possibility of a data breach is a risk all companies must face, and they come with a steep price tag attached—the average cost of a data breach in the U.S. today is USD 9.44 million.[5] The IBM z16™ system brings advanced quantum-safe encryption algorithms and cryptography to your data. Foundation models can also be developed and fine-tuned for inferencing on IBM z16 to tackle real-time fraud detection and even anti-money laundering. The ability to quickly adapt models to meet new requirements, while maintaining the security of private and sensitive data, also helps provide a better compliance posture.

Build and manage an integrated security program
IBM's seasoned practitioners apply a broad range of expertise across your defenses. AI and ML are a key part of the arsenal of IBM X-Force®, which both AI and ML use to drive rapid threat discovery and response efforts and to provide early warning by way of X-Force Threat Intelligence.

Application modernization

Organizations that can quickly connect applications and systems can outperform those that don't. AI can boost the enterprise-wide integrations that help teams operate quickly and proactively by unlocking data and applications to both internal and external consumers. The result is that business can better anticipate and address customer needs as they arise.

Boost digital transformation with API management
APIs play a critical role in driving digital business and transformation by facilitating the integration of software applications and systems, allowing for the seamless exchange of data. IBM API Connect® is a full-lifecycle API-management solution that comes with AI features, including automatically generated API test cases to accelerate testing and improve accuracy.

Connect all of your applications and systems
In the rapidly evolving world of digital business, organizations face the increasingly complex challenge of seamlessly integrating a multitude of disparate systems and applications. IBM App Connect provides hybrid integration capabilities that help businesses integrate data and applications across the enterprise seamlessly. It provides a no-code, AI-guided experience that allows users to easily map and transform data with just a few clicks.

Put events to work and respond in real time
With today's constantly shifting customer needs and market dynamics, thousands of business events pass through your organization every day. These can provide valuable insights, but they're often siloed and difficult to access. Launching in June 2023, IBM Event Automation is a new solution that we've designed to provide a complete and composable way to accelerate your event-driven journey. Event Automation can enable businesses to tap into these ongoing streams of information, connect the dots between disparate events and detect new trends and customer issues as they happen.

Sustainability

Becoming more sustainable is an opportunity to innovate—one that AI can help accelerate. It's both a goal and an outcome, driven by commitments that must be deeply embedded into an organization's culture, operating models and daily workflows to spur transformation and growth.

Intelligent assets, facilities and infrastructure
AI can help design smart buildings and factories with sustainability built into their fabric, gain operational insights to drive clean energy transition and boost efficient waste management and decarbonization. IBM Maximo® helped Sund & Bælt Partner A/S to reduce CO2 emissions on its Great Belt bridge by 750,000 tons.

ESG data, reporting and risk management
AI can help operationalize sustainability goals and increase transparency. IBM Envizi™ automates the collection and consolidation of more than 500 ESG data types into a single system of auditable, financial-grade data.

Sustainable supply chain and circularity
AI can provide insights and intelligent workflows to enable more responsible sourcing and transparent supply chains. By applying AI and automation to our own supply chain, IBM Consulting saved USD 160 million related to reduced inventory costs and optimized shipping costs, leading to better decision-making and time savings.

AI helps Brazilian bank Bradesco answer 44 million questions monthly with a 91% accuracy rate.

Place trust at the core of your AI strategy

The AI capabilities that impress us today will soon be exceeded by greater, more disruptive advances to come. Possibilities that we are only beginning to imagine will become commonplace, and new technologies will lead to entirely new types of work. But to fully realize its potential and to be prepared for those future technologies, AI must be built on a foundation of trust and transparency.

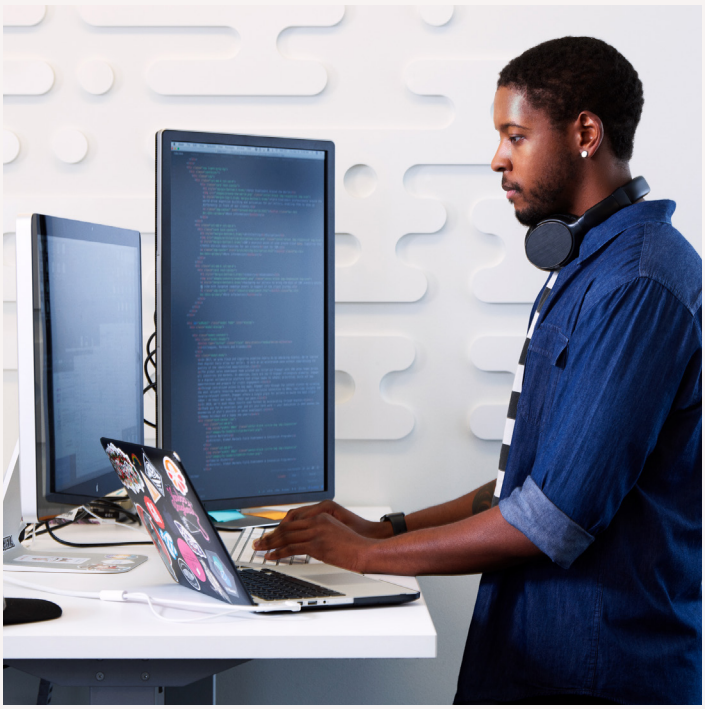
Taking ethical shortcuts in AI may lead to profits in the short term, but this approach is laden with risk. IBM believes that there are five fundamental properties to trustworthy AI: explainability, fairness, robustness, transparency and privacy. Each time an organization falls short of the standards of trustworthy AI, that shortcoming represents a new obstacle to a future in which as many people as possible benefit from this most transformational of technologies. The European Commission has already proposed a regulatory framework that could have a global, GDPR-style impact on the industry. Businesses that adhere to ethical principles in developing and using AI today will be better positioned for compliance with impending regulations and, potentially, will avoid the cost of redesigning or re-creating models that were created without AI ethics principles and human values in mind.

IBM adheres to three fundamental principles in its development of AI:

1. The purpose of AI is to augment human intelligence. At IBM, we believe AI should make all of us better at our jobs. We believe AI should augment, not replace, human decision-making.
2. Data and insights belong to their creator. IBM clients' data is their data, and their insights are their insights. We believe government data policies should be fair and equitable and prioritize openness.
3. Technology must be transparent and explainable. Companies must be clear about who trains their AI systems, what data was used in training and, most important, what went into their algorithms' recommendations.

We believe these are essential principles if AI is to realize its full potential. If we get it right, the benefits will be enormous.

Let’s put AI to work—and make the world work better—together.



1. IBM Global AI Adoption Index 2022, IBM Corporation in partnership with Morning Consult, May 2022.
2. Gartner Survey Reveals 80% of Executives Think Automation Can Be Applied to Any Business Decision, Gartner.com
3. Based on observational results from early proofs of concepts. The range of improvement was 40% to 70%. Client results will vary based on client use cases, systems, and conditions. As such, generally expected results cannot be provided.
4. AI and Automation for Security, IBM Institute for Business Value, June 2022.
5. Cost of a Data Breach Report 2022, IBM Security, July 2022. (Registration required)

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