

AI governance
for responsible,
transparent and
explainable
↔ AI workflows



Contents

01 →
Introduction: a responsible
approach to AI

02 →
Challenges of
scaling AI

03 →
The building blocks
of AI governance

04 →
IBM® AI Governance
solution

05 →
AI Governance
success stories

06 →
Create your ideal
solution



The research firm IDC predicts the global AI market could reach over \$500 billion by 2024—a more than 50% increase from 2021.¹

01

Introduction: a responsible approach to AI

Artificial intelligence (AI) is no longer a business experiment. It has progressed to become an integral part of enterprise strategy at companies large and small. AI presents an enormous opportunity to turn data into insights, spark action that's based on better decision-making, and to amplify human capabilities for the greater good—and for better business. AI can help decrease business risk and increase ROI by making breakthrough innovations possible. However, the promise of AI is not guaranteed. Thoughtful, unbiased AI doesn't always come easy.

As the outcomes of AI models and insights become more business-critical, models need to operate reliably with visibility and accountability during processes. Analytic decisions based on incomplete or inaccurate data, models, workflows, and processes can have dire consequences. Success requires automation and transparency across the AI lifecycle, coupled with documented explainable results.

Leaders of enterprises creating AI services are being challenged by an emerging problem of how to effectively govern the creation, deployment, and management of these services throughout the AI lifecycle. These enterprises want to understand and have control over their processes to meet internal policies, external regulations, or both.

This is where AI governance makes a difference. AI governance is the overall process of directing, managing, and monitoring the AI activities of an organization. Whether your organization is considering adopting AI or is further down the journey, establishing an AI governance framework should be a best practice. Organizations that stay proactive and infuse governance into their AI initiatives from the onset can help minimize risk while strengthening their ability to meet ethical principles and government regulations. In particular, leaders of organizations and enterprises in regulated industries, such as banking and financial services, are legally required to provide a certain level of transparency into their AI models to satisfy regulators.



Keep reading to get the full story or [try it for yourself](#) at no charge.

50% of business leaders surveyed said meeting external regulatory and compliance obligations was the most important aspect of explainable AI.²

02

Challenges of scaling AI

The influence of AI is growing exponentially as organizations deploy the technology in banking, transportation, healthcare, education, farming, retail, and many other industries.

At the same time, employees and leaders at many of these organizations have difficulty with the following aspects of implementing AI:

1. Operationalizing AI with confidence

There are a wide variety of tools for AI governance. But too often, models are built without proper clarity, monitoring or cataloging. That includes a lack of tracking through the end-to-end AI lifecycle, a lack of automated processes for scale, and a lack of transparency and explainability. You may have heard of “black box models,” which are a growing concern for AI stakeholders. Models are built and deployed, but it isn’t easy to trace how and why decisions were made, even for the data scientists who created them. These challenges lead to inefficiencies resulting in models that are delayed or never placed into production, or that have inconsistent levels of quality and unperceived risks.



Read key takeaways from a poll of global IT senior decision-makers on the pace of AI adoption.

[IBM Global AI Adoption Index 2022 →](#)

2. Managing risk and reputation

You've seen the stories in the press: unfair, unexplainable, or biased models in production. These issues can result in incorrect assumptions and decisions, which affect customers and harm an organization's brand. Explainable processes and results are crucial if a compliance auditor or customer wants to know how specific analytic results were reached and are key to ensuring that results don't reflect bias around race, gender, age, or other key factors. Scenarios in which explainability is critical include patient medical diagnoses and treatment plans, transactions flagged as suspicious, and loan applications that are denied.

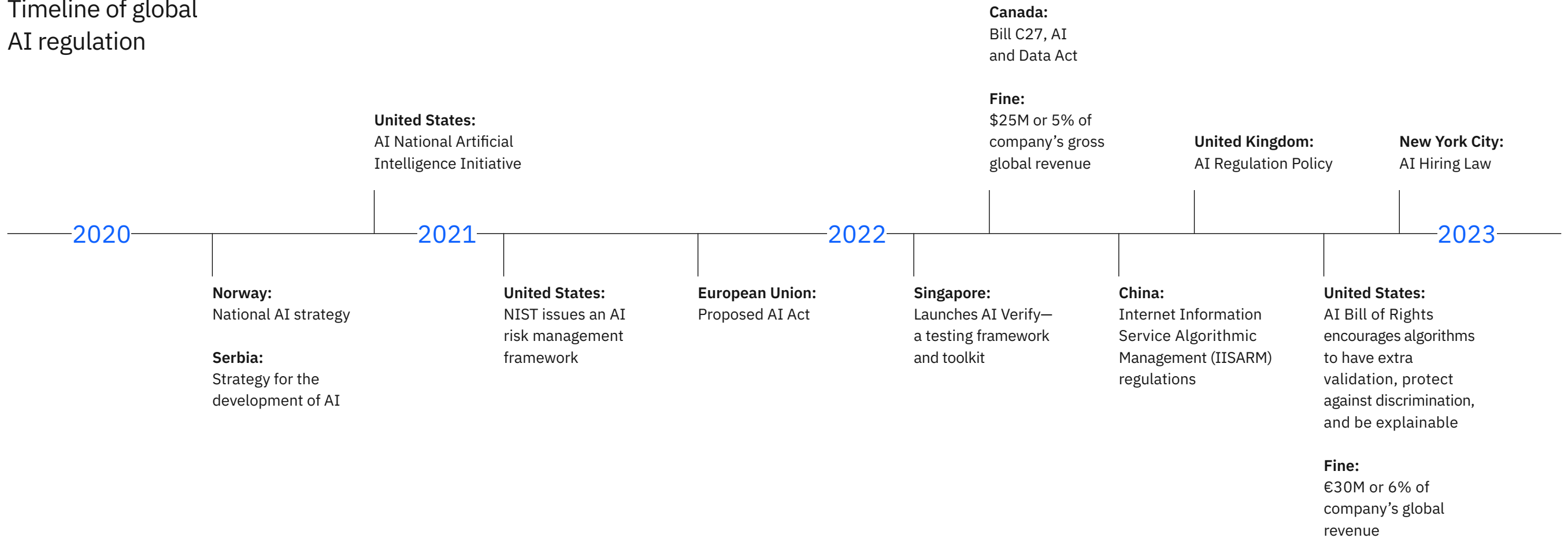
That is why it is important to practice responsible AI. Responsible AI is an approach that results in AI systems which are transparent, explainable, fair and inclusive—preserving privacy, security, customer loyalty and trust.

3. Responding to changing AI regulation

Successful and responsible AI requires an awareness of local, regional, and national laws and regulations, which are growing at a rapid pace. Noncompliance may ultimately cost an organization millions of dollars in fines, as demonstrated by some of the most stringent AI regulations being debated around the world, like the proposed EU AI Act. The current draft of the EU AI act contemplates fines of up to €30 million, or 6% of a company's global revenue.

Model documentation is key for regulatory compliance—an area with aspects easy to miss for a data scientist pressed for time and whose organization lacks clear requirements. Since new regulations will require model documentation for metadata and lineage, this step is especially important.



Timeline of global
AI regulation

Most leaders haven't yet taken the key steps toward establishing an AI governance framework. 74% are not reducing unintended bias.³

03

The building blocks of AI governance

Like any other initiative, successful AI governance depends upon the intersection of people, process, and technology.

1. People and objectives

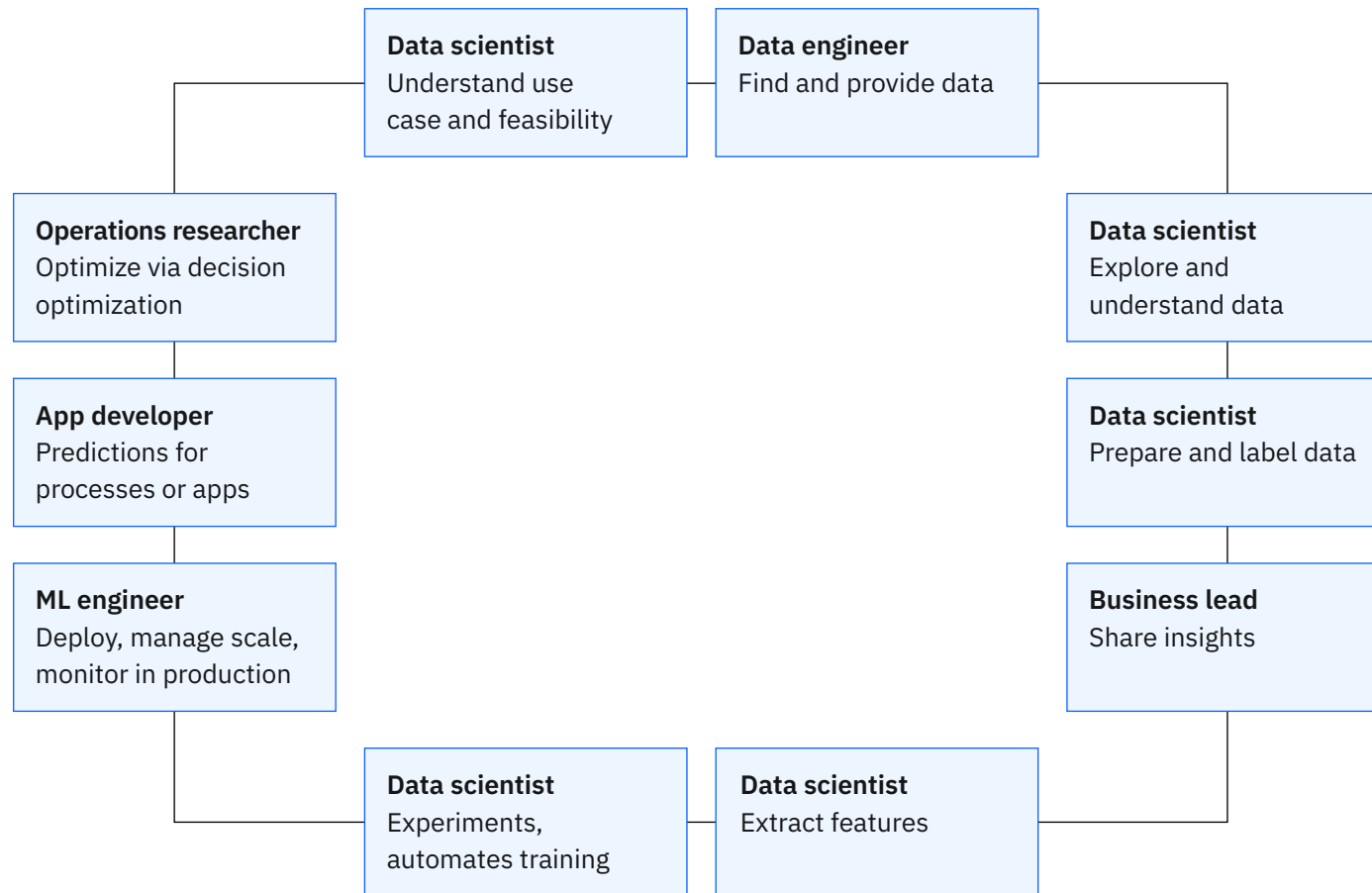
To implement AI properly, you need a strong cross-functional team. AI continues to be a strategic imperative for many leaders, and it can feel like the list of stakeholders grows longer by the day. Some of these people are new to the AI lifecycle concept, while others have new reasons to be involved in AI efforts. Try to meet the needs of each of these groups without overburdening your data scientist, who has little time to route or manage the approvals and requests for information.

Start by putting your stakeholders into alignment. Get buy-in from the right interested parties and encourage them to participate in ideation, align on outcomes and adopt thoughtful AI. Then, take steps to ensure that the correct set of metrics, KPIs, and objectives are defined in accordance with your company's business controls and regulations. You'll also want to monitor the specific metrics that have been identified for AI models.



Learn how to build a holistic approach to AI governance.

[Read the blog →](#)

Roles across
the AI lifecycle

Encourage collaboration with key stakeholders and understand their top concerns:

- CFO, risks to profitability
- CMO, risks to brand
- CRO, risks to enterprise
- CDO, efficient data operations
- CHRO, potential talent impacts
- CEO, organizational accountability

2. Process

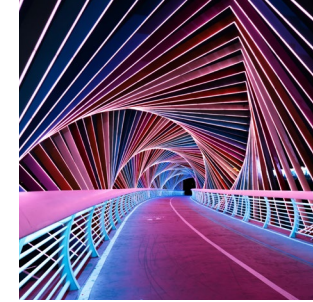
AI governance traces and documents the origin of data, associated models and metadata, and overall data pipelines for audit. Your documentation should include the techniques that trained each model, the hyperparameters that were used, and the metrics from testing phases. This results in increased transparency into the model's behavior throughout the lifecycle, including the data that was influential in its development and the model's possible risks.

You'll first want to benchmark and evaluate your organization's current AI technology and processes. Some processes and stakeholders may already be aligned and can be extended, while others might need to be replaced. Then create a set of automated governance workflows in line with compliance requirements. New and existing AI models can adopt these workflows, which should be designed to avoid the process delays mentioned above. Finally, set up a framework to alert owners and users when a model's metrics exceed the acceptable threshold.

3. Technology

The establishment of well-planned, well-executed, and well-controlled AI requires specific technological building blocks. Look for a solution that governs the end-to-end AI lifecycle and has the following capabilities:

- Integrates data of many types and sources across diverse deployments
- Is open, flexible and works with your existing tools of choice
- Offers self-service access with privacy controls and a way to track lineage
- Automates model building, deployment, scaling, training, and monitoring
- Connects multiple stakeholders through a customizable workflow
- Provides support to build customized workflows for different personas using governance metadata



A framework for
responsible, governed AI

	Operationalize with confidence	Manage risk and reputation	Strengthen compliance	Meet stakeholder demands
Plan	Define measurable performance metrics for AI usage across your organization	Review existing processes that monitor fairness and explainability	Conduct gap analysis against current and potential AI regulations	Review existing skills and demand for responsible AI, and align with business objectives
Build	Establish traceability and auditability of current processes	Operationalize updated processes and checkpoints throughout the AI lifecycle	Make sure model documentation is accessible	Specify the new roles, skills and learning agendas required to implement responsible AI
Create	Create automatic documentation of model lineage and metadata	Enable AI models that are fair, explainable, high-quality, minimize drift, and conduct an annual policy review	Act to ensure regulatory compliance for data science teams without overhead	Establish a repeatable, end-to-end workflow with built-in stakeholder approvals to lower risk and increase scale

04

IBM AI Governance solution

The IBM approach to AI governance helps you to direct, manage, and monitor your organization's AI activities. Built on the IBM Cloud Pak® for Data platform, this governance solution employs software automation to strengthen your ability to meet regulatory requirements and address ethical concerns. Expect a comprehensive AI governance solution without the excessive costs of switching from your current data science platform. This IBM solution spans the entire lifecycle from building to deploying, monitoring, and centralizing facts for AI explainability.

Before a model is put into production, it is validated to assess the risks to your business. Once the model goes live, it is continuously monitored for fairness, quality, and drift. Regulators and auditors can be provided with access to the model's documentation, which provides explanations of the model's behavior and predictions. These explanations provide visibility into how the model works and what processes and training the model received.

With this IBM solution, audits can become easier. You will be able to trace and document the origin of data, the models and associated metadata, and the pipelines. The documentation will include the techniques that trained each model, the hyperparameters used, and the metrics from testing phases. You will benefit from having increased transparency into the model's behavior throughout the lifecycle, knowledge of the data that was influential in its development, and the ability to determine possible risks.



IBM principles of trust and transparency:

- The purpose of AI is to augment human intelligence
- Data and insights belong to their creator
- New technology, including AI systems, must be transparent and explainable

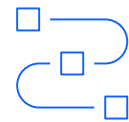
Consider these components:

Lifecycle governance

- Monitor, catalog and govern AI models from where they reside
- Automate the capture of model metadata
- Increase prediction accuracy, identifying how AI is used and where it lags

Comprehensive

Govern the end-to-end AI lifecycle.

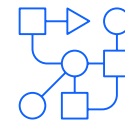


Risk management

- Automate facts and workflow for compliance to business standards
- Identify, manage, monitor and report on risk and compliance at scale
- Use dynamic dashboards for clear, concise, customizable results
- Enhance collaboration across multiple regions and geographies

Open

Support governance of models build and deployed in third party tools.

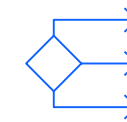


Regulatory compliance

- Translate external AI regulations into policies for automated enforcement
- Enhance adherence to regulations for audit and compliance
- Use dynamic dashboards for compliance across policies and regulations

Automatic metadata

Data transformation and lineage capture through Python notebooks.



05

AI Governance success stories

Change Machine ↻

This nonprofit tech organization employed an AI-powered recommendation engine to build financial security for low-income communities.

When Change Machine needed to improve fintech product recommendations for its customers, it engaged IBM to develop an AI-powered recommendation engine. Now, the engine incorporates bias mitigation, and recommendations are more relevant, helping customers achieve their financial goals.

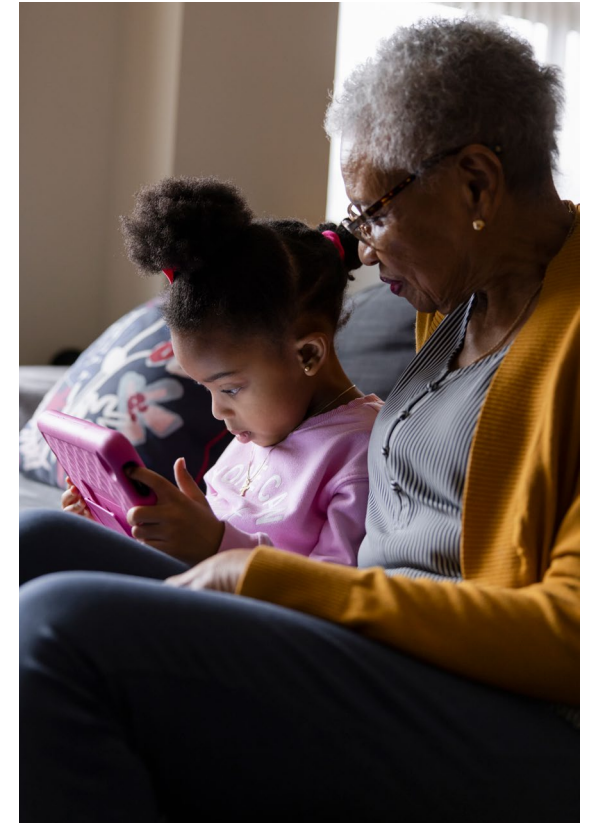
Systemic barriers to financial inclusion are real, particularly for Black and Brown women. The recommendation engine used at Change Machine capitalized on data to help financial coaches share fintech products that were most relevant to each customer's goals.

Leaders recognized that the recommendation engine could be improved using AI data analytics. For development assistance, in March 2021, they engaged the [IBM Data Science and AI Elite team](#).

To develop the data and AI models, the IBM team chose [IBM Cloud Pak for Data as a Service](#), which would link all data in a centralized data function. Developers used the [IBM Watson® Studio](#) solution with its AutoAI feature to ease development. The API-based [IBM Cognos® Dashboard Embedded](#) solution would power scalable dashboards. These tools reside within the IBM Cloud Pak delivered from [IBM Cloud®](#).

The result? The team took just six weeks to develop machine learning classification models. Ongoing usage of fintech products increased from 60% to 98%.

[Read the story →](#)



Innocens BV ↻

This healthcare startup uses predictive AI to protect the most vulnerable newborns.

Leaders at Innocens wanted to better detect when premature infants are at risk of sepsis, an infection of the bloodstream. Believing they could use AI to speed the time to diagnoses and treatment of sepsis, they contacted IBM.

Working with a team of IBM data scientists and developers, Innocens developed an edge computing solution that captures and analyzes real-time vital signs using machine learning models. The solution provides doctors with highly accurate detection for infants showing the risk factor patterns for sepsis.

The result? Innocens reduced the time required to identify infants at risk of developing sepsis by up to several hours—enabling earlier, more successful interventions. The AI-infused edge computing system is 75% accurate in detecting the potential signs of severe sepsis, minimizing false alarms and keeping doctors focused on what matters most.

[Read the story →](#)



06

Create your ideal solution

In a world where trust, transparency, and explainable AI matters, every organizational leader wants a better understanding of how analytic insights and decisions are being made—and every leader is serious about regulatory compliance. IBM believes that the purpose of AI is to augment human intelligence, that data and insights belong to their creator, and that new technology—including AI systems—must be transparent and explainable.

If you're eager to have greater trust in your AI, we encourage you to take advantage of a few free IBM resources below.

Get hands-on experience with AI governance

[Check out the trial →](#)

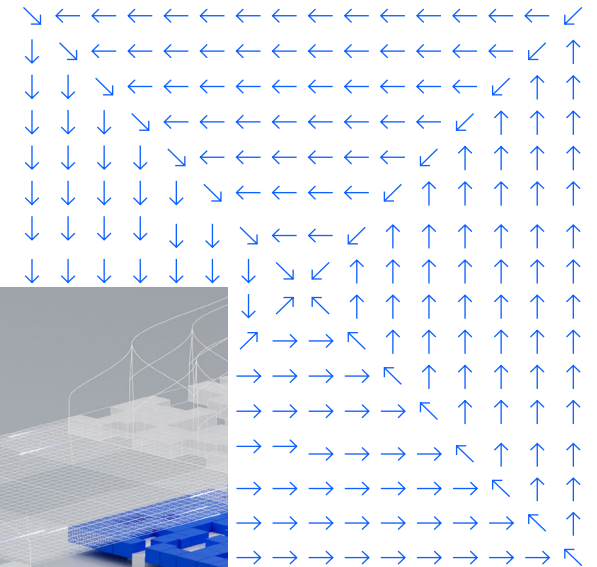
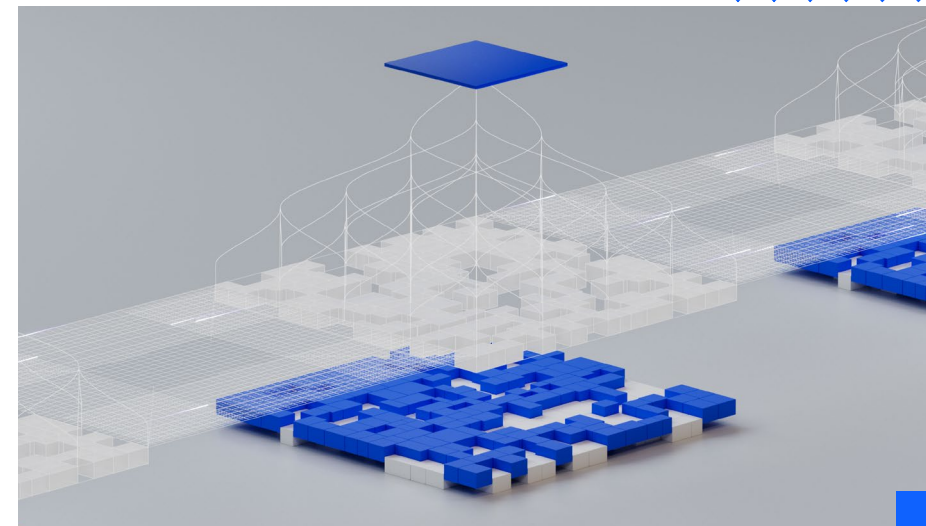
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Build a strong data foundation for AI

Explore the guide for data leaders

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