

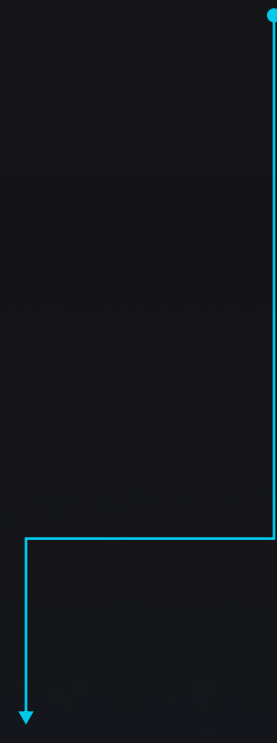
VISIUM

[ A PRACTICAL ROADMAP ]

# The C-level guide to kickstart your AI journey

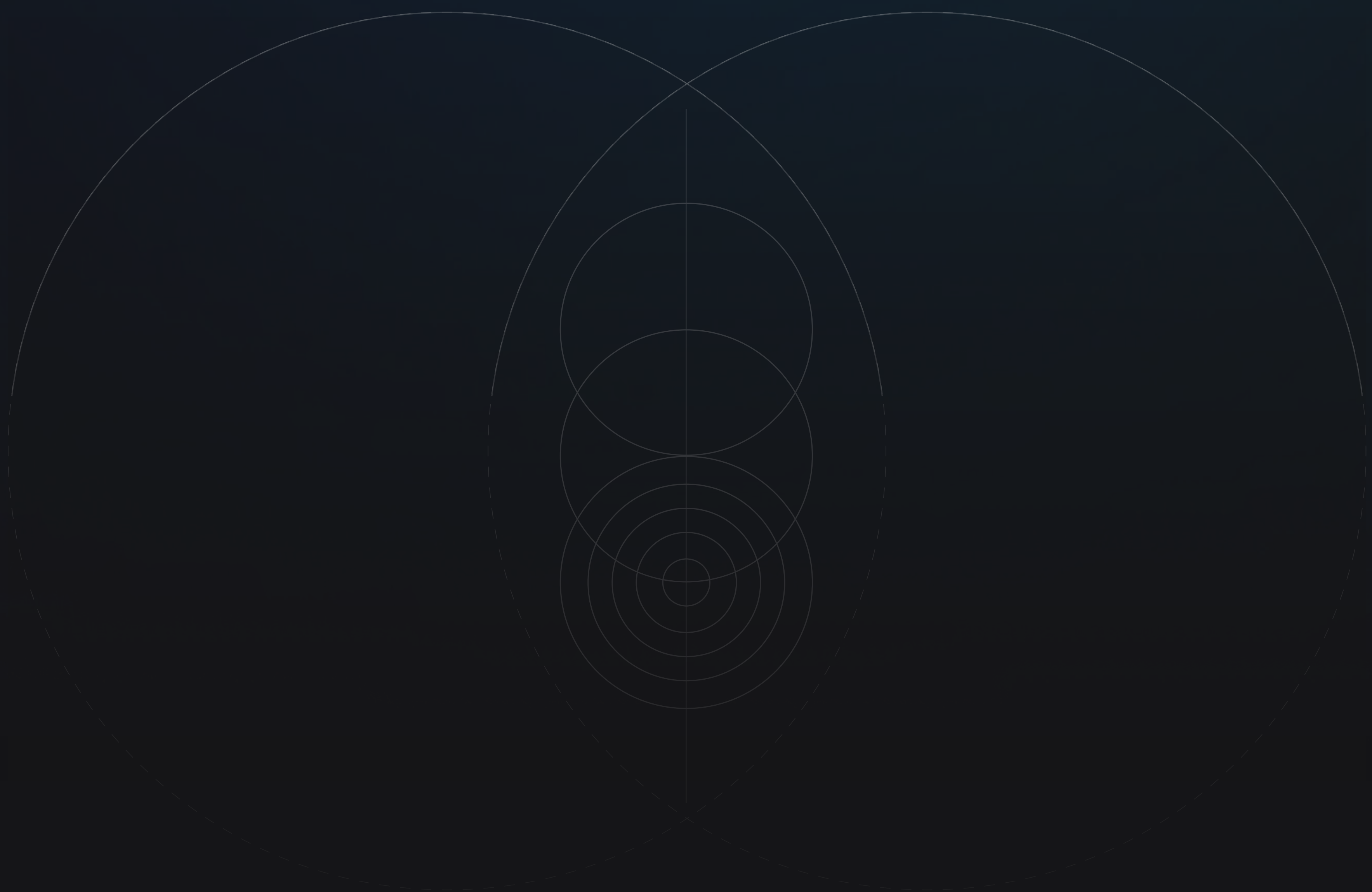
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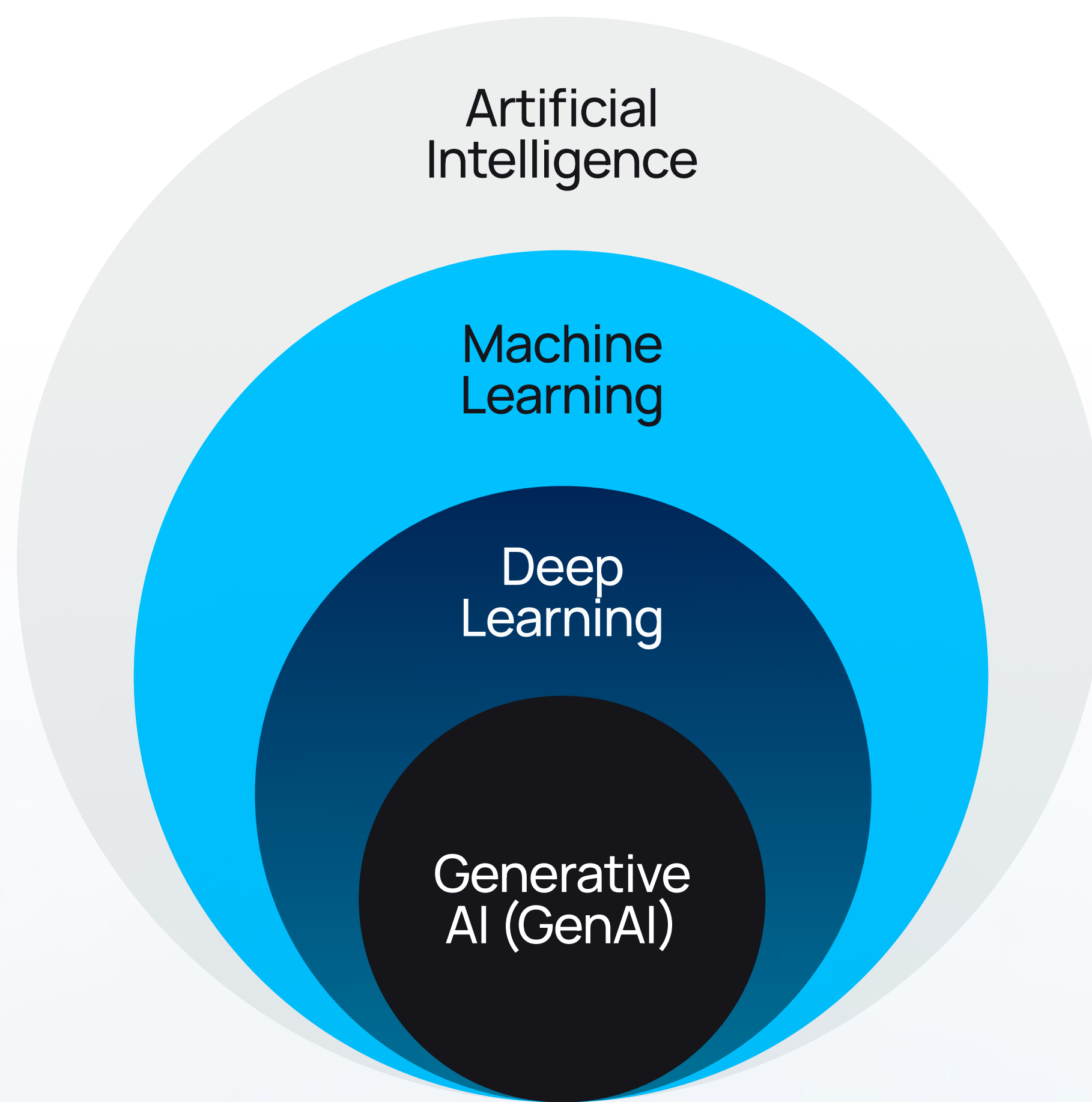


*Many companies feel overwhelmed when beginning their AI journey, and as a leader, you may feel the same amid a sea of information and recommendations.*

*This guide will help you cut through the noise and navigate your AI journey one step at a time.*



# AI glossary



## Artificial Intelligence (AI)

Refers to a field of computer science that creates machines capable of human-like tasks, such as perception, reasoning, planning, learning, and decision-making.

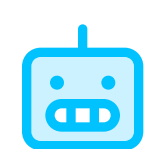
**Example:** AI optimizes scheduling for tasks like employee shifts or transportation.



## Machine Learning (ML)

A branch of AI where machines learn to solve problems by generalizing patterns from provided examples.

**Example:** ML detects patterns and anomalies to identify fraud.



## Deep Learning

A specialized area within machine learning using brain-like neural networks to process complex data such as text or images.

**Example:** Neural networks process camera sensory data for autonomous driving.



## Generative AI (GenAI)

A category of deep learning algorithms focused on creating realistic content from data such as text, images, or audio.

**Example:** Popular examples are ChatGPT (for text) and DALL-E (for images).



# AI Glossary

## Understand AI - from data to decisions

Unlike programming that operates on deterministic rules and predefined instructions, AI, particularly Machine Learning (ML), uses a probabilistic approach. Instead of following rigid rules, AI systems learn patterns from data, make predictions, and adapt over time based on feedback and observed outcomes. This adaptive, data-driven method allows AI to handle uncertainty and continuously improve, making it fundamentally different from the static, rule-bound nature of traditional computing.

## AI's data dependency - balancing data and expert knowledge

The data needs of AI projects vary based on the specific problem and algorithm used. While having large amounts of labeled data can reduce the need for some types of expertise, expert knowledge remains key in building relevant and usable AI solutions. Experts provide the domain-specific insights needed to structure data, define meaningful objectives, and interpret results accurately. When data is limited, expert involvement becomes even more critical to ensure that AI models are not just technically sound but also tailored to the needs of end users.

## Harnessing AI - key metrics for model performance and business value

The true measure of an AI model's success is measured by its technical performance but also by the business value it creates. To effectively assess AI models, it's important to distinguish between model-specific metrics and those that reflect broader business impact. For example, in a classification task like defect detection in quality control, model-specific metrics such as false positives (detecting a defect when none exists) and false negatives (missing an actual defect) are crucial for understanding model performance. However, the ultimate goal is to connect these technical metrics with business-relevant outcomes like operational efficiency and key financial outcomes like cost reduction, revenue growth, and improved profitability.

# AI Glossary

## Humans AI - augmentation, not replacement

While AI can mimic specific human tasks, it is still just one tool in the broader toolbox for creating value. AI can assist in thinking, planning, and decision-making processes, but it relies on human guidance to define, refine, and apply these capabilities effectively. This distinction is crucial for leaders to understand; AI accelerates and amplifies what humans can achieve but does not replace the nuanced judgment, creativity, and contextual understanding that only humans bring.

## Scaling AI - the need for full pipeline support

Unlike traditional software, AI cannot be separated from its data, making it hard to break the system into smaller modules that can be easily managed or updated separately. This challenge is amplified by the lack of specialized tools for managing AI workflows, often turning simple AI pilots into unexpectedly complex scaling efforts, sometimes costing 10-20 times more than the pilot phase. Scaling AI requires continuous management of the entire so-called ML pipeline — a process that oversees every step from data preparation and model training to deployment and user interaction. Mastering AI at scale remains one of the biggest hurdles in business today.

## Ownership of AI - make vs. buy

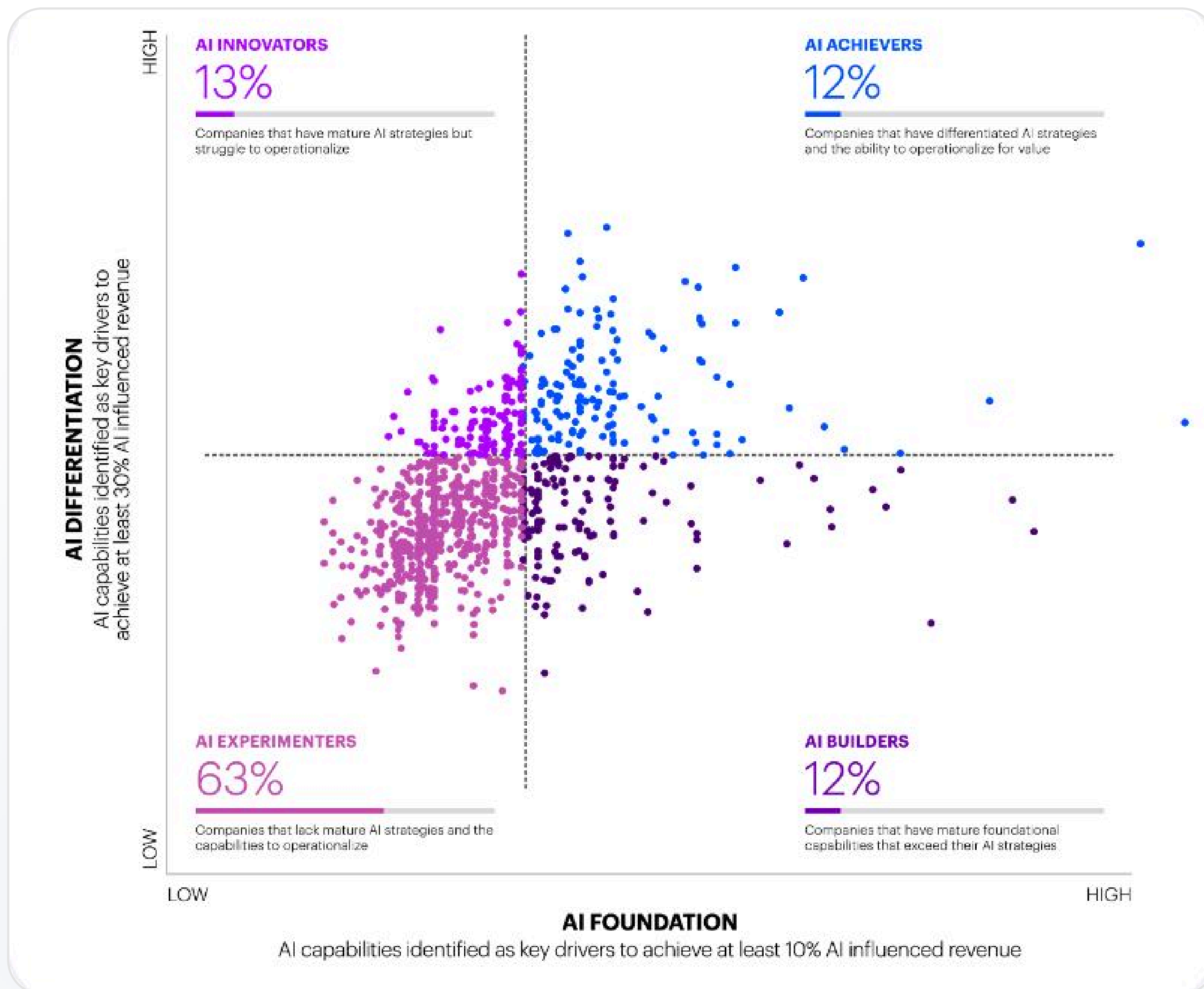
The decision to develop AI in-house or purchase an external solution isn't straightforward due to factors like strategic value, data ownership, customization, performance of external solutions, and total cost of ownership. In-house development offers control and tailored solutions but requires substantial investment in expertise, infrastructure, and continuous maintenance. External solutions provide quicker access to advanced capabilities and ongoing vendor support but may involve compromises on data privacy, integration complexities, and adaptability to specific needs. These implications, especially with their strong financial component, must be carefully considered to align with your business strategy.

## Navigating AI ethics - mitigation bias

Ethical AI goes beyond compliance; it's about building systems that are fair, transparent, and aligned with your company's values. Addressing bias is crucial, as AI decisions are deeply tied to the quality and biases of its training data. Principles like 'equal treatment' require human intervention to define fairness, making us rethink whether treating groups 'on average' is sufficient. This underscores the critical role of human judgment as a safeguard, but also as an active guide in ensuring AI decisions are contextually aware and aligned with the broader ethical goals of the organization.



# The AI opportunity



Most companies are still experimenting with AI, facing challenges in strategy and execution.

However, its impact is clear. AI can boost EBITDA by 20-30%, according to McKinsey and Accenture.

AI isn't just a technical upgrade; it transforms businesses at every level. Tools like LLM chatbots (e.g., ChatGPT) are changing how we work and learn. For companies, AI drives efficiency, sparks innovation, and reshapes operations, enhancing competitiveness. At the industry level, AI optimizes processes from R&D to distribution, redefining whole value.

## To keep in mind

AI projects differ from traditional IT initiatives due to their experimental nature. The outcomes are not always guaranteed, and success often hinges on iterative experimentation and adaptation. Effective AI adoption requires significant data science expertise, strategic planning, and a shift in how leaders engage with data science.

# Implications for the COO function





# Implications for the COO function

## Core responsibilities

### 01 Production

In discrete production processes, AI enables entirely new manufacturing approaches. As AI drives automation, the traditional labor-cost advantage of offshoring diminishes (labour arbitrage), especially in the face of rising global supply chain risks and disruptions. In process industries, AI allows companies to move from optimizing individual steps to managing the entire production process holistically by continually adjusting operations for greater efficiency.

### 02 Logistics & integrated supply chain

AI reshapes supply chain management by leveraging past sales data, market trends, and external factors like economic indicators and weather to optimize inventory, production schedules, and logistics. As automation grows, gaining deeper insights into supply chain operations becomes crucial to navigate and mitigate disruptions. COOs should focus on building resilient AI systems that drive performance while ensuring stability in unpredictable conditions.

### 03 Procurement

As procurement is a data-driven process, AI offers great potential here. AI can help identify optimal suppliers, uncover savings opportunities within procurement data, and fine-tune pricing in auction-based contracts. Additionally, AI can integrate data from internal and external sources to provide ongoing supply risk assessments.

### 04 Quality & quality management

In quality management, AI offers significant opportunities. AI systems, like computer vision, can automate the inspection of parts at near-zero marginal costs, replacing traditional random sampling with comprehensive, consistent quality checks across products. This scale of inspection greatly enhances quality assurance by providing more accurate and reliable results compared to conventional methods.

# Implications for the COO function

Example of AI in action: Use cases

Use cases	Description
Demand forecasting	AI-driven demand forecasting leverages ML models to analyze historical sales data, market trends, seasonal variations, and external factors like economic indicators and weather patterns. By integrating this data, the AI system generates accurate, real-time demand forecasts allowing to better understand manufacturing needs.
Automated quality control	AI-driven quality control systems use advanced technologies like computer vision and predictive analytics, along with real-time sensor data, to detect defects. Integrated into production lines, these systems enable consistent inspections, reduce costs, and streamline operations.
Predictive maintenance	AI analyzes real-time data from IoT sensors on manufacturing lines not only on manufacturing lines but also on critical components to predict maintenance needs before failures occur. This proactive approach targets key components on the production line, reducing unplanned downtime, and extending asset lifespan, which helps reduce overall maintenance costs and service disruptions.



# Predictive demand modeling with AI

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## 🕒 The challenge

One of our clients, a clothing retailer, struggles with forecasting product demand for upcoming seasons, often needing to plan two to three seasons ahead. Their current approach relying on basic analytics and intuition proved inefficient and often inaccurate, resulting in frequent errors, causing missed sales and higher costs due to overproduction or stock shortages.

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## ⚙️ The solution

Visium implemented an advanced forecasting solution based on internal historical data and external variables like seasonality and calendar effects to forecast demand at the product level, while integrating expert input to refine and validate the model's accuracy.

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## ✅ The outcome

- Achieved a 55% reduction in forecasting errors.
- Delivered CHF 16 million in annual business benefits representing 3-5% of our client's revenue.
- Access to integrated insights in product development and design, won our client a Group Level Innovation Award.

# Intelligent quality control solutions

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## 🎯 The challenge

Manual quality control remains an essential task in manufacturing but is often tedious, error-prone and a poor use of line operator's valuable skills. For our client, this process led to missed defects, resulting in a high volume of product returns, ultimately costing both time and money.

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## ⚙️ The solution

Visium developed an automated quality control system using machine learning algorithms powered by computer vision to accurately detect product defects. Integrated with camera systems and LabView, the system uses heatmap-based explainability to identify defects, providing clear insights into why the model flagged an issue and supporting root cause analysis.

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## ✅ The outcome


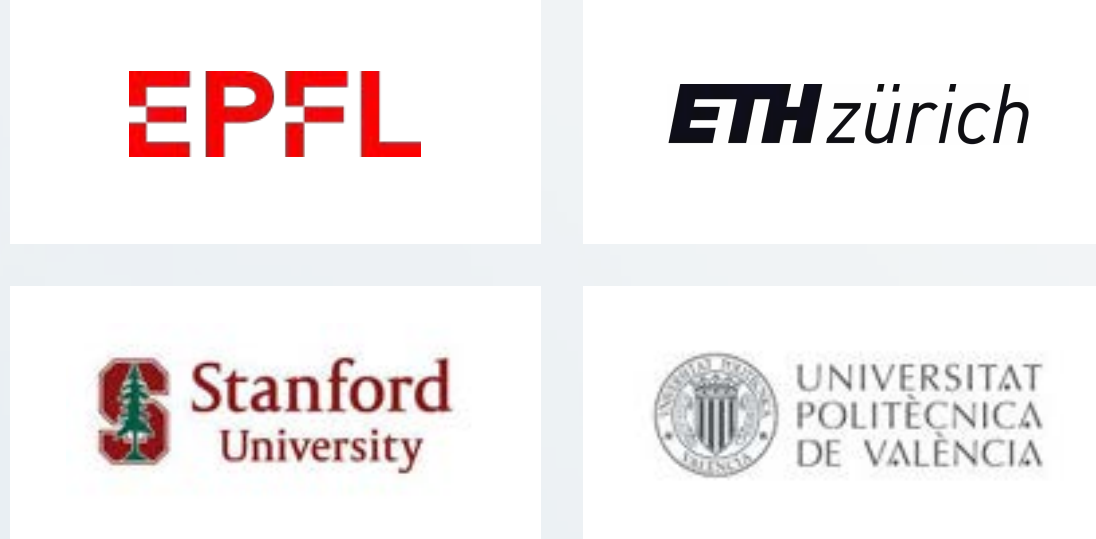
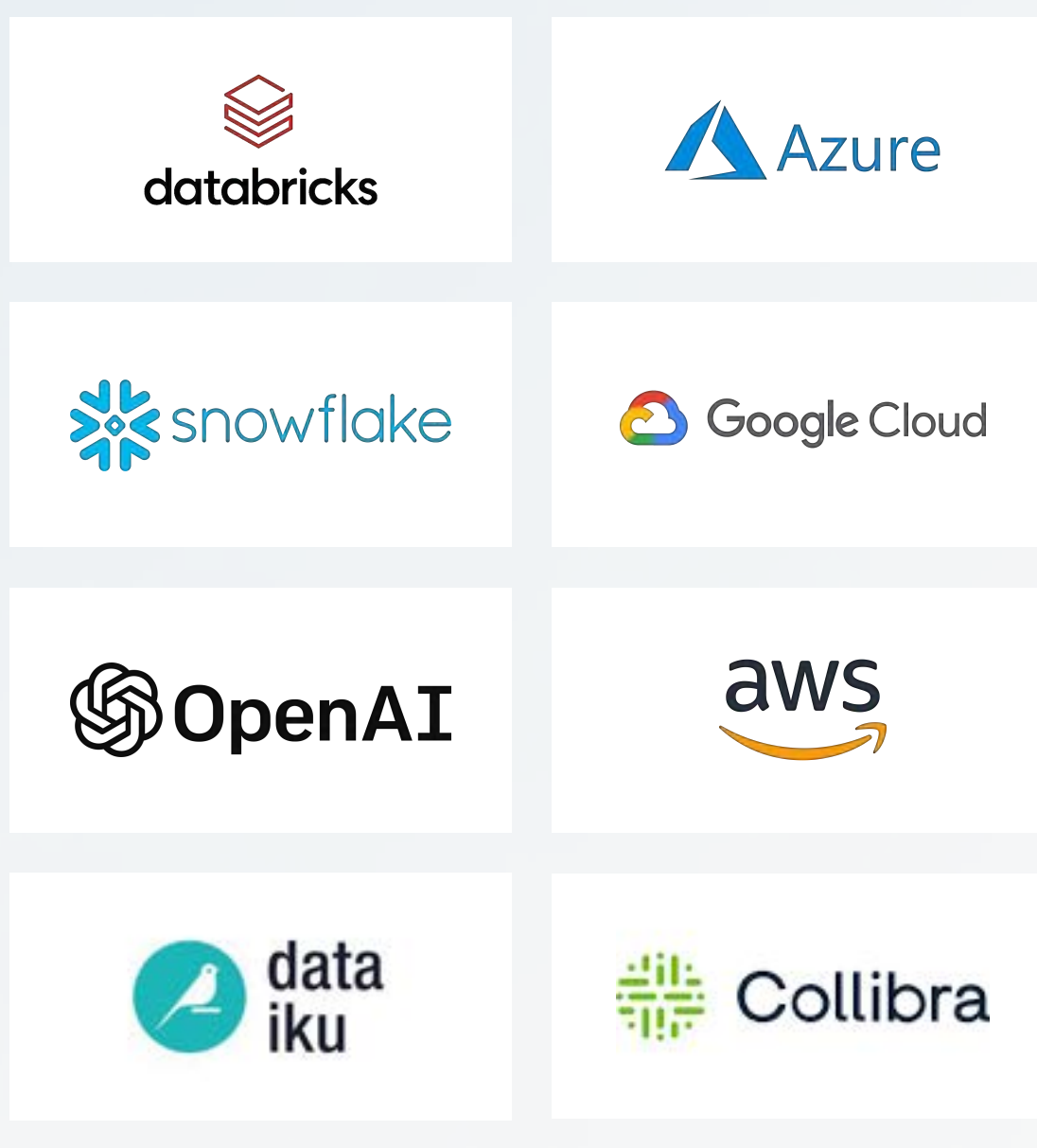



- Improved product quality with a defect detection accuracy of >95.7%.
- Increased efficiency and reduced workload for quality controllers.
- Enhanced data-driven decision-making abilities.



# About Visium

Visium is a leading Swiss AI & Data consultancy helping enterprises turn their most strategic AI initiatives into measurable business outcomes. Since 2018, we've delivered over 250 solutions for global leaders like Roche, Novartis, Nestlé, and dsm-Firmenich; helping them drive efficiency, unlock new revenue streams, and scale solutions that deliver long-term value.

Built on a foundation of ethical innovation, our mission is to make AI work for business, people, and long-term impact.

<b>70+</b> Engineers and consultants throughout Europe	<b>50+</b> Happy enterprise clients 	<b>Our partners</b>  Academia   Technology 
<b>250+</b> AI & data engagements		
<b>Pan-European presence</b> 	<b>Recognized leaders</b> 2nd fastest growing company in Europe by Financial Times 	

# Get in touch

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# AI initiatives delivering real impact at scale

[www.visium.com](http://www.visium.com)

