



eBook

# Master Agentic AI with AI-Powered Data Management

**Where data  
& AI come to** 



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# Introduction

**Not long ago, the idea of artificial intelligence (AI) systems driving end-to-end operations without human intervention seemed futuristic. But today, it is possible to completely deploy AI to automate complex, multistep operations.**

This opens up unprecedented possibilities and transformation opportunities across all parts of business, such as sales, service, marketing and commerce. For instance, Gartner® “predicts that 80% of common customer service issues will be resolved autonomously without human intervention by 2029.”<sup>1</sup>

AI has continued to evolve from predictive to prescriptive to generative. However, AI’s evolution from static, task-based automation into dynamic, autonomous, goal-oriented decision-making agentic systems has captured boardrooms’ attention globally.

## In this eBook, we outline:

- The pivotal role of **data management** in successfully deploying agentic AI
- How companies can reimagine data management with AI agents
- Why AI agent engineering capabilities are key to unlocking transformative enterprise value

Twenty five percent of enterprises are expected to deploy AI agents in 2025, growing to 50% by 2027.<sup>2</sup> However, organizations' readiness to implement agentic AI is critical for unlocking the next phase of value with this paradigm shift.

<sup>1</sup> <https://www.gartner.com/en/newsroom/press-releases/2025-03-05-gartner-predicts-agentic-ai-will-autonomously-resolve-80-percent-of-common-customer-service-issues-without-human-intervention-by-20290>

<sup>2</sup> <https://www.deloitte.com/global/en/about/press-room/deloitte-globals-2025-predictions-report.html>

# From Concept to Reality: Enablers of AI Agents

AI can now shape complex business operations from end to end with minimal manual intervention. Let us consider a modern manufacturing setup. Today, AI can:

- Be deployed to identify if a material on the shop floor is running low
- Check its inventory status and raise a flag if material is not in stock or with the regular supplier
- Search for and place an order from alternative suppliers and complete the fulfillment documentation
- Reconfigure factory floor and production schedules to meet established goals

<sup>2</sup> <https://iccwbo.org/news-publications/policies-reports/icc-pulse-survey-2025-business-reactions-to-new-u-s-tariffs/#top>





# From Concept to Reality: Enablers of AI Agents (Continued)

Several technological factors have played a pivotal role in accelerating the development and adoption of agentic AI over the past couple of years.



**Large-language models (LLMs) and democratization of AI:**

The ability of LLMs and generative AI to interpret and process natural language has enabled users with varying technical expertise to interact with AI systems for creative problem-solving and sophisticated decision-making.



**Access to vast, diverse data sets:** The availability of comprehensive data sets and their readiness for training data has significantly improved the accuracy, predictability and explainability of AI models.



**Support for modern data and AI architecture:** Modern architectures have allowed for the seamless integration and processing of diverse data from disparate sources, providing the scalability, flexibility and latency required for operationalizing AI.



**Modernization to the cloud:** Cloud platforms have supplemented AI growth by allowing companies to rapidly scale computational demands without incurring massive upfront capital expenditures.

In addition, the need to optimize costs, build a competitive edge in addressing critical customer use cases and address the pressures to create responsible AI solutions that augment human productivity have provided further impetus for organizations to adopt AI.

With the technology foundations now available, leading organizations want to implement purpose-driven agentic AI into their operations and realize its strategic value in driving growth and innovation.

Let us look at what agentic AI is and why it matters.

# Agentic AI: The Next Frontier for AI Innovation

**Agentic AI refers to advanced autonomous AI systems with goal-oriented intelligence that deliver human-like decision-making capabilities. These systems combine the creative problem-solving abilities of LLMs and automation with purpose-driven decision-making and autonomous execution.**

Connecting agentic AI with external tools, applications and functionalities can help automate complex, multistep, dynamic tasks towards a desired outcome with minimal human intervention. One can think of agentic AI as an orchestrator operating on top of other software applications or 'agents', with each agent performing a specific subtask. The agentic AI framework facilitates interactions between these agents, coordinates their actions and enables them to adapt according to context.

Agentic AI's capabilities to perceive context, rationalize decisions, learn from interactions and collaborate across applications allow it to act independently and purposefully. It promises to alter how we interact with technology and transform how organizations operate.



# Predictive/Prescriptive AI vs Generative AI vs Agentic AI

While they are part of the same continuum of evolution, there are some key differences between predictive/prescriptive AI, generative AI and agentic AI:

Feature	Predictive/ Prescriptive AI	Generative AI	Agentic AI
Task Focus	Typically task-specific and rule-based.	Focuses on creativity and content creation.	Focuses on autonomy, adaptability and strategic actions.
Interactivity	Limited interaction or predefined responses.	Capable of creating interactive or dynamic content.	Engages in complex interactions and dynamic decision-making.
Adaptability	Limited, often requires retraining for new tasks.	Adaptable in generating varied outputs.	Highly adaptable to changing environments and tasks.
Autonomy	Typically requires human input or oversight.	Can autonomously generate content within predefined parameters.	Operates independently with minimal human intervention.
Goal Orientation	Often lacks strategic goal orientation.	Primarily creative, lacks strategic goals.	Driven by strategic goals and can prioritize tasks accordingly.
Use Cases	Automating repetitive tasks and data analysis.	Content creation, art, media, design.	Autonomous systems, strategic decision-making and adaptive operations.

# Pushing the Art of the Possible with Agentic AI

Generative AI delivered substantial productivity gains for enterprises by automating content creation, accelerating creative processes, streamlining workflows and augmenting human effort with co-pilots. However, agentic AI is poised to serve a multiplier effect by advancing beyond content generation to enabling autonomous decision-making and strategic operations.

Agentic AI promises to unlock new possibilities with AI advancements:

- **Autonomy** – These systems can operate with minimal human intervention. They can review their work, learn from it and operate autonomously without continuous oversight.
- **Complex Problem Solving** – Agentic AI can perform complex, interrelated actions as part of a single request. Unlike rule-based workflow automation, agentic AI systems can accommodate non-linear workflows with various possible outcomes.
- **Adaptability** - Agentic AI can perform complex, interrelated actions as part of a single request. Unlike rule-based workflow automation, agentic AI systems can accommodate non-linear workflows with various possible outcomes.
- **Scalability** – The modularity of agentic AI architecture and its ease of deployment allow for integrating large amounts of diverse data and processes from various sources, supporting scalability as complexity grows.
- **Communication** – AI orchestration allows agentic AI systems to collaborate across a broader digital ecosystem. Coordinating operations across other agents and humans through natural language, machine learning or other interfaces makes it easy to align towards common goals.



While the opportunity with agentic AI is massive, it faces a familiar challenge: data.



# Key Challenges Data Leaders Need to Solve for Effective Agentic AI

Similar to AI and generative AI, the performance of agentic AI systems also depends on high-quality data to make trustworthy decisions. They require training on large amounts of reliable and accurate data sets.

Agentic AI's autonomous decisions and multistep actions amplify risks from inaccurate data. Its complex algorithms hinder tracing incorrect decisions to specific data issues and some actions may be irreversible.

Organizations can succeed when agentic AI models are trained and operated with the highest-quality data. However, managing and optimizing data to meet the dynamic needs of agentic AI with legacy technology is challenging, especially when dealing with large volumes of diverse and high-sensitivity data.

**Here are five challenges data leaders can expect in their journey to agentic AI success:**

**1. Data Integration:** For AI agents to mimic human intelligence, they need to be trained to use data as grounded in reality as possible. This requires agentic AI to be able to gather data from a large number of data sources. 41% of data leaders already struggled with 1,000+ sources and 79% expected that number to increase in 2024.<sup>3</sup>

Supporting AI agents with real-time **data integration** requires connectivity and complex transformation capabilities to harmonize disparate sources. AI Agents may also need to access new datasets quickly for emerging goals. Organizations need agility in data management to handle

the dynamic needs of agentic AI, making data integration a key challenge in AI transformation.

**2. Data Quality Management:** When we consider that AI agents are designed to work autonomously, make decisions on behalf of humans and trigger multistep workflows, the dependence on accurate, complete and reliable data becomes amplified. Dipping data quality standards anywhere along the data and AI value chain can lead to flawed decisions and actions.

According to Salesforce, over half (56%) of developers say their data quality and accuracy aren't sufficient to develop and implement agentic AI successfully.<sup>4</sup>

Maintaining data consistency and accuracy across large, fast pipelines complicates **data quality** management in systems like agentic AI. Continuous learning from data makes monitoring vital to prevent reinforcing errors.

<sup>3</sup>CDO Insights 2024: Charting a Course to AI Readiness

<sup>4</sup><https://www.salesforce.com/news/stories/agentic-ai-developer-future-sentiment/>

# Key Challenges Data Leaders Need to Solve for Effective Agentic AI (Continued)

**3. Data and AI Governance:** The productivity benefits of AI agents come with increased governance challenges. Their autonomy in data gathering, processing and action heightens risks related to traditional, predictive and generative AI. Ensuring AI agents access a governed data foundation, understand context and maintain integrity demands advanced governance throughout the data and AI lifecycle.

Policymakers emphasize strong regulations for agentic AI and seek policies that promote safe, ethical use. Informatica's CDO Insights 2025 revealed that 93% of organizations find regulations hinder AI progress.

Agentic AI requires adaptable **governance** frameworks to meet evolving legal standards and requirements.

**4. Data Privacy and Security:** AI agents operate with a high level of autonomy. This means they can access many different systems within the ecosystem. Managing access to regulate what the AI agents can interact with becomes challenging and increases the risk of privacy and security exposure.

Maintaining compliance with regulations like the General Data Protection Regulation (GDPR), the California Consumer Privacy Act (CCPA) and the European Union (EU) AI Act in data-sensitive industries adds hurdles to deploying AI agents. It involves meeting data protection requirements across diverse datasets, navigating sovereignty laws and ensuring all autonomous AI actions are transparent, auditable and compliant.

Gartner predicts that "by 2028, 25% of enterprise breaches will be traced back to AI agent abuse, from both external and malicious internal actors."<sup>5</sup>

Agentic AI's expanded connectivity to diverse data sources and platforms increases breach risks and vulnerabilities, complicating scalable data protection.

**5. AI Transparency and Explainability:** Agentic AI systems use advanced algorithms in complex environments, often functioning as "black boxes" with limited transparency. This opacity raises questions about the origin, trustworthiness and reliability of their decisions and data.

Nearly one-third of AI users still do not trust AI-generated responses and identify increased transparency in AI decision-making processes as a clear area of improvement.<sup>6</sup>

Lack of transparency in AI operations hinders bias monitoring, risking discrimination, errors and misuse by AI agents, which can erode trust.

<sup>5</sup><https://www.gartner.com/en/newsroom/press-releases/2024-10-22-gartner-unveils-top-predictions-for-it-organizations-and-users-in-2025-and-beyond>

<sup>6</sup><https://www.pega.com/about/news/press-releases/workers-embrace-agentic-ai-despite-concerns-about-trust-and-reliability>

# Agentic AI Demands Agent-Driven Data Management

**While the need to implement agentic AI is pressing, companies must move beyond legacy data management and embrace an agile, responsive and AI-driven approach to combat the amplified data risks associated with AI agents.**

Organizations using manual tools struggle with the volume, variety and speed of AI data, lacking agility for expanding AI across systems, which is vital for agentic AI. Bottlenecks and delays in accessing reliable data hinder agentic AI's design and operations.

Companies need an agent-driven approach to data management that navigates the challenges identified in the previous section and helps keep AI agents aligned with their intended purpose and value.



# Transforming Data Management with AI Agents

**Agent-driven data management allows AI systems to be more adaptive and responsive. It involves AI-powered agents that autonomously handle complex data tasks over long periods with minimal human oversight.**

Once the desired outcomes of data management are defined, AI agents can be trained to plan, prioritize, make decisions and execute required tasks using various tools and solutions.

This approach simplifies complex workflows, reduces reliance on scarce skilled professionals, minimizes errors and accelerates processes through automation.

Let us consider using AI agents in data management for a retail chain to optimize the supply chain. Intelligent agents can autonomously manage data pipelines, seamlessly integrating data from diverse sources on inventory, sales and supplier information. As the data gets gathered, the AI agents can trigger data quality checks on incoming data and execute cleansing and standardization if necessary. AI agents can further retrieve additional automatically categorized data sets from governed repositories and deliver them to AI models for generating predictions and forecasts of inventory requirements.

Agent-driven data management in the above example can enable the retailer to rapidly respond to market demands and optimize stock levels by minimizing manual intervention and accelerating data processing workflows.





# Accelerate AI-Readiness with Agent-Driven Data Management

**The first step towards your AI goals is to take control of your data, build trust and make it AI-ready. The scope and scale of managing, governing and securing data is overwhelming and impractical without AI-augmented data management capabilities.**

Organizations can deploy specialized AI agents to focus on individual components of the data lifecycle and manage different facets of data management with precision and expertise.

Below are a few categories of AI agents that organizations must prioritize to increase the efficiency, reliability and AI-readiness of their data management operations:



**Artifact Generation Agents** – These agents automatically create data artifacts like mappings, rules, glossaries, reports, pipelines and datasets, supporting data management, analysis and transformation. Automating this process reduces reliance on scarce technical resources and speeds up value delivery. They can learn business context from similar artifacts and standardize outputs to quickly onboard new and incremental use cases.

These agents enhance data governance and improve collaboration across teams by producing accurate, consistent, well-documented artifacts. They simplify data preparation and reporting to enable faster insights, empowering business users and analysts to make timely, informed decisions.



**Troubleshooting or Remediation Agents:** These agents identify, diagnose and fix data issues like inconsistencies, anomalies, pipeline failures and system errors. Troubleshooting with legacy methods is reactive, time-consuming and manual, making it challenging to handle modern data enterprise scale and complexity.

Agent-driven troubleshooting monitors systems for data irregularities, observes data over time to spot patterns and automates root cause detection. These agents can connect with tools to suggest and implement fixes, offering explainability and traceability.

Proactively resolving data issues prevents costly errors and minimizes data pipeline downtime, ensuring continuous access to reliable, accurate data — the key to informed decision-making.

# Accelerate AI-Readiness with Agent-Driven Data Management (Continued)



**Deep Research Agents:** These agents are capable of complex, multi-step exploratory problem-solving and research. They can perform advanced analysis, pattern recognition, predictive modeling and generate insights from complex or large-scale datasets.

Deep research agents can reference multiple sources, uncover relationships and synthesize detailed insights. Their research orientation is powered by their ability to extract information, reason based on context and add to their memory system.

These features aid exploratory data management by helping users identify unknown data aspects. Discovery is difficult in siloed, complex data environments. Deep research agents operate across multiple data repositories to find, integrate and make assets available for analysis with compliance. Automating data exploration speeds up the discovery of patterns, trends and anomalies, enabling organizations to gain new insights and enhance AI readiness.



**Orchestration Agents:** These agents are focused on ensuring smooth operation and execution of complex multi-step data management processes. They are trained to autonomously orchestrate workflows and processes for pipeline execution, testing, task scheduling, API management, data quality and compliance monitoring and more.

These goal-oriented agents can coordinate, schedule and automate data workflows across systems, enabling companies to manage the entire data lifecycle from ingestion to delivery. This minimizes human intervention and ensures reliable, timely data for AI projects.

# Beyond Standard Data Management Agents: Engineering Custom AI Agents

**Agent-driven data management is inevitable. However, agents need to be specialized and context-aware to deliver the promised transformational outcomes. This makes the capabilities to build orchestrate, deploy and operationalize enterprise-grade agents, collectively called AI Agent Engineering, critical for scaling agent architectures.**

With AI agent engineering capabilities, companies can create intelligent, connected agents trained with clean business data, immersed in the business context and working seamlessly with their other applications and systems. All this is possible when the AI agent engineering capabilities ensure the following:



**A Foundation for Trustworthy Agents:** To minimize hallucinations and bias, a robust AI agent engineering system must incorporate access to diverse, high-quality and context-rich AI-ready data. It should ideally provide a unified metadata foundation that ensures agent reasoning is transparent and explainable. Additionally, it must support robust design, development and testing practices that uphold strict privacy and security standards while enabling continuous improvement in accuracy and reliability.



**Seamless Integration and Collaboration:** To unlock the full potential of AI agents, the system must ensure effortless connectivity across diverse applications and platforms, enabling agents to operate in harmony as a unified team. It should provide real-time access to relevant data and include intuitive mechanisms for discovering organizing and orchestrating verified agents. Such seamless integration supports sophisticated multi-agent workflows and automates complex multistep processes without manual intervention.



**Comprehensive Governance and Lifecycle Management:** Ensuring AI agents' safe, secure and compliant operation at scale requires rigorous governance and lifecycle management capabilities. The system must offer robust tools for inventorying, monitoring and controlling agents and their associated data throughout their lifecycle. It should adeptly handle evolving regulatory demands, mitigate risks tied to agent behavior and uphold authoritative oversight to maintain operational integrity.

# How Informatica Can Help

Informatica is a market leader and an evangelist for using AI in data management. Informatica's **Intelligent Data Management Cloud™ (IDMC)** platform is designed to help enterprises overcome the challenges of scaling AI with AI-powered data management.

**CLAIRE®**, Informatica's metadata-powered AI engine, can provide intelligent automation across all IDMC services, including **data integration, cataloging, governance, quality, master data management (MDM)** and **access management**.

Informatica is making the next leap by evolving CLAIRE and combining it with the generative AI capabilities of CLAIRE GPT to build autonomous AI agents capable of managing end-to-end data management goals.

Recently **announced CLAIRE® Agents** offer Informatica customers a suite of autonomous digital assistants designed to augment enterprise data management with AI.

Informatica has also launched a new AI Agent Engineering service to help companies build, connect and manage multi-agent AI systems. The service will enable companies to develop and deploy AI agent-driven business applications quickly, securely and at scale.

To find out more about the latest innovations in agentic data and AI management and how you can leverage the next frontier of AI, **contact Informatica.**





# About Us

Informatica (NYSE: INFA), a leader in AI-powered enterprise cloud data management, helps businesses unlock the full value of their data and AI. As data grows in complexity and volume, Informatica's Intelligent Data Management Cloud™ delivers a complete, end-to-end platform with a suite of industry-leading, integrated solutions to connect, manage and unify data across any cloud, hybrid or multi-cloud environment. Powered by CLAIRE® AI, Informatica's platform integrates natively with all major cloud providers, data warehouses and analytics tools – giving organizations the freedom of choice, avoiding vendor lock-in and delivering better ROI by enabling access to governed data, simplifying operations and scaling with confidence.

Trusted by about 5,000 customers in nearly 100 countries – including over 80 of the Fortune 100 – Informatica is the backbone of platform-agnostic, cloud data-driven transformation.

**Informatica. Where data and AI come to life.™**

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