Powering Agentic AI: Building Autonomous Data Foundations for 2026

Powering Agentic AI: Building Autonomous Data Foundations for 2026

Agentic AI represents a fundamental shift in how organizations use artificial intelligence. It moves beyond analysis to enable systems that can reason, act, and continuously adapt. In 2026, AI agents are becoming active participants in business operations, driving decisions, automating processes, and coordinating actions across complex environments. This evolution places unprecedented demands on data, requiring it to be real-time, trusted, contextual, and always available. Without a strong foundation, even the most advanced AI initiatives struggle to move from experimentation to meaningful impact.

Building autonomous data foundations is the key to unlocking the full potential of agentic AI. It requires unified access to structured and unstructured data, strong governance and security, semantic understanding, and architectures designed for speed and resilience. This Super Guide explores the strategies, technologies, and best practices organizations are using to create intelligent data environments that empower AI agents to operate with confidence, accuracy, and scale in 2026 and beyond.

# Powering Agentic AI: Building Autonomous Data Foundations for 2026

1. Agentic AI—State of the Industry

Agentic AI has advanced considerably into mainstream enterprises over the past year. In the year ahead, AI agents will continue to proliferate, delivering new capabilities, personalization, and productivity gains. Still, a mixed picture is emerging on the progress of agentic AI.

- **More than half of organizations are already well along with AI agents.** Seventeen percent of 300 executives surveyed by PwC have seen "full" adoption of AI agents throughout their companies, and 35% report "broad" adoption. Almost all, 88%, say their team or business function plans to increase AI-related budgets in the next 12 months due to agentic AI. ([PwC's AI Agent Survey](#), May 2025)

- **Still, production-grade agentic AI is a work in progress.** While 30% of organizations surveyed by Deloitte are exploring agentic options and 38% are piloting solutions, only 14% have solutions that are ready to be deployed and only 11% are actively using these systems in production. ("[The agentic reality check: Preparing for a silicon-based workforce](#)," Deloitte, December 2025)

- **AI agents are change agents.** Three-fourths of executives in the PwC survey 75% agree or strongly agree that AI agents will reshape the workplace more than the internet did. (PwC's AI Agent Survey)

AI AGENT ADOPTION

- Not yet started and no plans to do so 4%
- Don't know 2%
- Full adoption 17%
- Broad adoption 35%
- Limited adoption 27%
- Not currently using but exploring 15%
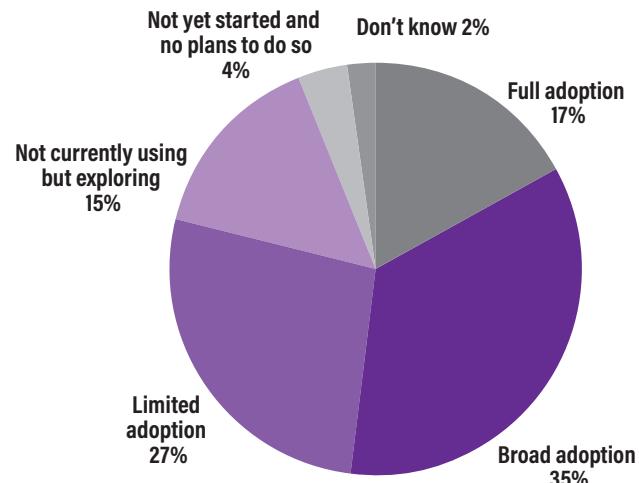
[Source: PwC's AI Agent Survey, May 2025]

2. Agentic AI—Top Trends, Challenges, and Opportunities

As agentic AI proliferates, numerous opportunities will emerge, particularly within data sites and across various industries. Challenges will also present themselves, especially when it comes to adapting AI agents to existing architectures and frameworks.

OPPORTUNITIES:

AI agents can manage the entire data lifecycle. AI agents can monitor data sourcing, cleanse data, and predict upcoming data requirements. AI agents will be able to direct data to appropriate storage systems and ultimately retire as specified.

In addition, agentic AI can be adapted for a range of industry needs, as shown in these examples:

- **In healthcare,** AI agents will play a role in ensuring more personalized and adaptive patient care.

- **In finance,** AI agents will monitor transactions to guard against fraud in real time and provide predictive services.

- **In manufacturing,** AI agents can take on predicting equipment issues and bottlenecks in production schedules.

CHALLENGES:

Agentic AI is still a relatively new technology, and a work in progress. As adoption grows, so will demands for scalability, quality, and measurable ROI. The year ahead means moving from the experimental or proof of concept phase to actual production.

- **We're still in the learning stages of agentic AI.** While 80% of chief data officers say they've started to develop a diverse range of datasets to train AI agents, 79% say they're still early in the process of defining how to scale and govern them. ("The 2025 CDO Study: The AI multiplier effect," IBM Institute for Business Value, October 2025)

- **Anticipate experimentation and a high rate of failure.** More than 40% of agentic AI projects will be canceled by the end of 2027, according to Gartner. Initiatives will fail due to escalating costs, unclear business value, or inadequate risk controls, (Gartner, June 2025)

- **Data is a potential issue with agentic AI.** Only 26% of CDOs are confident their data is ready for AI agents. (The 2025 CDO study, IBM)

- **Many organizations struggle to use their data to power AI.** CDOs agree that the top data barriers they face on this front
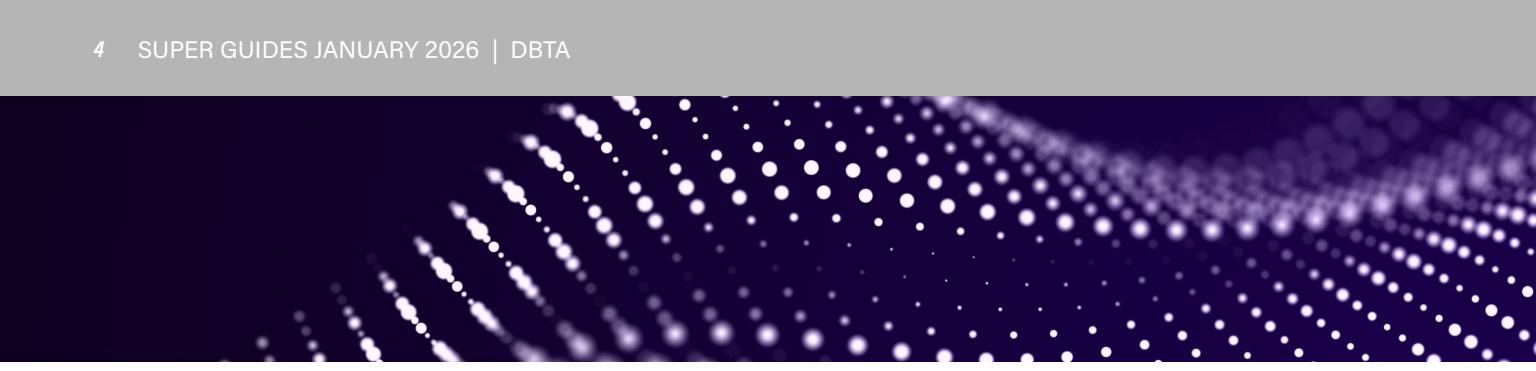
are accessibility, completeness, integrity, accuracy, and consistency. Fortunately, AI agents can help address these challenges—if organizations unleash AI on an optimized data estate. ("The 2025 CDO Study: The AI multiplier effect," IBM Institute for Business Value, October 2025)

- **Legacy systems may slow down agentic AI efforts.** Many existing enterprise systems aren't designed for real-time capabilities. They also create bottlenecks as they need to

be accessed by APIs and conventional data pipelines. (Deloitte, 2025)

- **Agentic AI accelerates a shift in data movement.** A total of 81% of CDOs now say they bring AI to data rather than centralizing data for AI. (The 2025 CDO study, IBM)

- **Agentic AI requires more responsible approaches.** AI agents are more likely to perpetuate and scale biases, errors, or gaps in underlying datasets. (The 2025 CDO study, IBM)

3. Agentic AI—Views from the Experts

"The shift from analytics to autonomous decision-making is forcing enterprises to rethink data management. Agentic AI requires a trusted data foundation built on real-time access, shared semantics, and strong governance across all sources. Without trust at the data layer, even the most advanced agents struggle to scale real business value."

—Kevin Bohan, Director product marketing, Denodo

Powering Agentic AI with a Trusted Data Foundation

denodo

Kevin Bohan
Director of Product Marketing

What happens when AI systems are no longer just answering questions, but making decisions and acting on their own? Can you trust them to act on the right data, at the right time, and within the right guardrails? And more importantly, is your data foundation ready to support that level of autonomy?

As organizations move from experimenting with AI to deploying agentic systems in production, many discover that the real challenge isn't model sophistication, it's data readiness. Early pilots often stall when agents encounter fragmented data landscapes, delayed access to operational systems, or inconsistent business context. When AI systems lack a clear, unified understanding of the enterprise, confidence erodes and business value remains elusive.

Latency is a common obstacle. Traditional data pipelines introduce delays that prevent agents from seeing current conditions, forcing autonomous systems to reason over stale information. Fragmentation compounds the problem, with data spread across clouds, applications, and platforms that were never designed to work together. Even when data is accessible, inconsistent definitions and semantics can cause agents to misinterpret meaning, leading to poor decisions or unexpected outcomes.

> *Early pilots often stall when agents encounter fragmented data landscapes, delayed access to operational systems, or inconsistent business context.*

Governance concerns quickly follow. As agents gain autonomy, they interact more deeply with sensitive data and operational systems. Organizations must ensure that AI actions remain compliant with data protection, privacy, and industry regulations. Without strong governance, explainability, and access controls, agentic AI introduces new operational and regulatory risks that can slow adoption or halt initiatives altogether.

Denodo addresses these challenges through a logical approach to data management that is purpose-built for agentic AI. Instead of copying and consolidating data, Denodo connects to data where it already lives, delivering real-time access across operational and analytical systems. This allows AI agents to reason and act based on current reality, not yesterday's snapshot.

> *Denodo provides a universal semantic layer that aligns business meaning across distributed data sources. AI agents interact with consistent definitions, relationships, and rules, regardless of where the data originates.*

Equally important is context. Denodo provides a universal semantic layer that aligns business meaning across distributed data sources. AI agents interact with consistent definitions, relationships, and rules, regardless of where the data originates. This shared understanding enables more accurate reasoning and reduces the risk of unintended or inconsistent behavior.

Gvernance is enforced at query time, not after the fact. Denodo applies centralized security, policy enforcement, and lineage across all data interactions, ensuring that every AI decision is explainable, auditable, and compliant by design. This combination of live access, semantic consistency, and built-in governance creates the trust foundation agentic AI requires to scale safely.

The business impact is measurable. Organizations using Denodo's logical approach have reported 75% less effort for data engineering, driven by no-code integration and reusable data products. They have also achieved a 77% reduction in governance costs through centralized metadata management and consistent policy enforcement. These gains free teams to focus on innovation rather than integration.

As agentic AI becomes central to how organizations operate, trust in data becomes the deciding factor for success. To learn more about how Denodo is helping organizations build trusted, scalable foundations for agentic AI, visit www.denodo.com. ■

DENODO
www.denodo.com

ACTION CHECKLIST

Building Autonomous Data Foundations

AI cannot be truly autonomous without a data foundation that's just as smart. To meet this need, forward-looking data teams are establishing autonomous data foundations, which are both powered by artificial intelligence and form the basis of support for AI—particularly today's generation of agentic AI systems. Here's how to power agentic AI through autonomous data foundations.

ARCHITECT AN AUTONOMOUS DATA SYSTEM

- **Solidify your goals.** The goal of an autonomous data foundation is to minimize, if not eliminate, human intervention in the transfer of data between sources and AI agents. The autonomous data foundation needs to be a unified architectural construct serves to bring together siloed data environments.

- **Look to modern, hybrid architectures when building autonomous data foundations for agentic AI, combining lakehouses, data mesh, data fabric, knowledge graph and GraphRAG techniques, and federated data platforms.** In these architectures, organizations should prioritize a semantic and metadata-driven layer that unifies integration, governance, and access across data sources. To support agentic AI at scale, this layer should incorporate retrieval-augmented generation (RAG), augmented knowledge graphs, and ML-driven automation to enable reliable, context-aware autonomy..

- **Employ a metadata layer.** A metadata layer, built on semantics, organizes data and defines relationships between data points that are essential to the performance of AI agents.

- **Decentralize data ownership.** An autonomous data architecture that supports data fabric means data can be originated and managed close to its sources.

- Harness AI Agents For Continuous Data Quality, Enrichment, And Discovery

- **Put quality first.** Data quality is essential to trust in and growth of agentic AI systems. It needs to be reinforced at all stages of the process.

- **Employ AI for AI.** AI itself can be deployed to build this foundation and ensure data quality. AI agents can ensure that data is updated and deduplicated.

OPERATIONALIZE REAL-TIME INTELLIGENCE

- **Turn to streaming.** Latency is a showstopper for agentic AI systems, which are expected to react quickly to application calls. Data streaming from trusted sources needs to be delivered to agentic AI systems in a matter of seconds in many cases.

- **Adopt new variations of "xOps" tools and approaches.** Along with the more established approaches such as MLOps, DataOps, and DevOps, new methodologies including GenAIOps (Generative AI operations), formulated to guide bringing generative and agentic AI into production.

- The GenAIOps Framework was created by the Centre for GenAIOps, to serve as "a holistic, end-to-end model that unites three foundational pillars of responsible Generative AI adoption: *why* you act, *how* you deliver, and *what* technologies to use."

- AgentOps (Agent Operations) enables the management and delivery of autonomous AI agents throughout their lifecycle.

- **Beef up data pipelines.** Enabling the data flow from sources through the autonomous data foundation requires a structured data supply chain. Such real-time observability and analysis that assures data is pertinent to the tasks at hand.
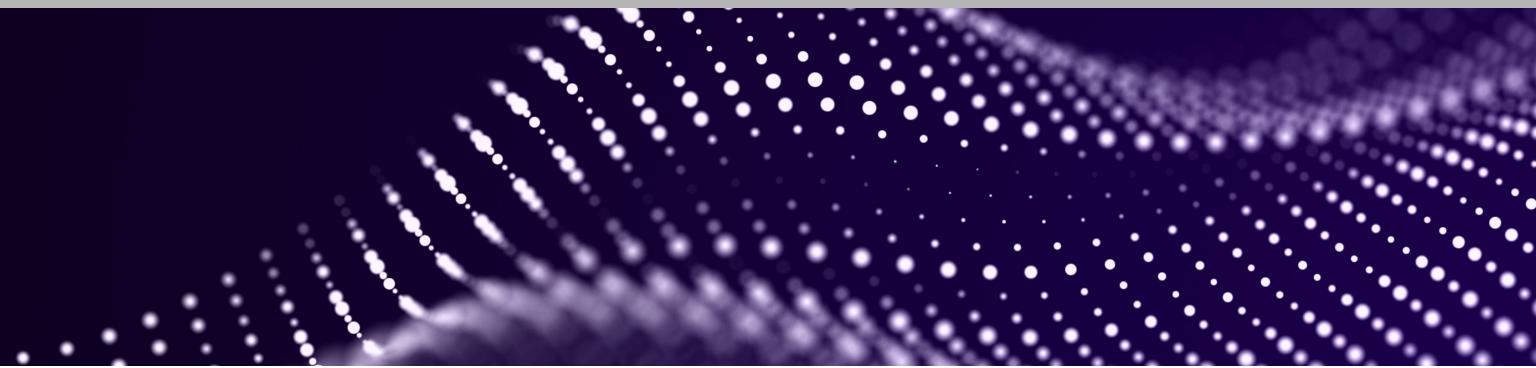
**FUTURE-PROOF YOUR DATA PLATFORM
FOR THE AGENTIC ERA**

- **Provide continuous training and education.**
  Both data professionals and employees are moving into a new era, with new roles—not just maintaining or overseeing the nuts-and-bolts of an agentic AI environment but assuring that agents are continuously improved to fit the evolving needs of the business, with the latest and most relevant data.

- **Pursue a holistic approach to data and AI.**
  The success of agentic AI doesn't just stem from technical proficiency in transferring data from sources to the agents. A holistic approach requires agility, involvement of the business in the governance of data and AI, along with building a real-time enterprise that responds to all customer or internal requirements.

Additional Resources

- How Denodo Enables an Enterprise Data Fabric for the Age of AI
  https://www.denodo.com/en/document/whitepaper/how-denodo-enables-enterprise-data-fabric-age-ai

SPONSORS

denodo