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Agentic [automation](#) refers to automation powered by [AI agents](#) that can make decisions and take actions autonomously. Unlike traditional automation, which follows predefined rules and workflows, agentic AI can adapt, learn and optimize its behavior based on dynamic environments and goals.

Although we are now in the very early stages of agentic automation, and methodologies are quickly evolving, the field can be seen as a culmination of automation more broadly, and a giant leap toward realizing humankind's dream of human-augmenting automation, and even fully automated systems.

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The agentic difference

The art of getting machines to do things that humans would otherwise have to do has a long history that stretches back to ancient times. More recent milestones include the Industrial Revolution, electrification and computers, marking the field's advances over the last century.

The advent of artificial intelligence poses the next quantum leap for automation technologies for a number of reasons. Before AI, automation solutions typically had a very high initial cost, because rule-based systems do not have the dynamic [reasoning](#) ability that humans possess, and such systems require meticulous design. Non-agentic systems like traditional robotic process automation (RPA) perform well on structured, repetitive tasks because, lacking awareness, they operate in a linear, static way. Without the ability to reason, these systems tend to break down when change is applied to a given scenario. They aren't equipped to learn or adapt to new scenarios.

What's more, they can't handle complex, unstructured inputs because human language comprehension and production ability vastly exceeded the capabilities of traditional computer systems. Automated

systems must be controlled with static controls. If a user wants to change something, she needs to manually move a slider or check a box via some interface.

There was also the so-called “paradox of automation” to contend with, which states that the more efficient the automated system, the more important the human contribution of the operators. If something goes wrong in an automated system, the system might multiply the problem until a human comes along to fix it.

AI model automation, powered by advanced machine learning algorithms called large language models (LLMs), was a major improvement, but non-agentic AI systems are still reactive. They perform when instructed and follow narrowly defined prompts. For example, a forecasting model can predict a demand spike, but it can't reorder stock, notify sales teams or adjust delivery timelines without further prompting. Introducing new contexts might require expensive and time-consuming retraining or reconfiguration.

Benefits of agentic automation

The emergence of agentic process automation marks a major milestone for automation because agents can make real-time data-driven decisions and possess adaptability, drastically reducing the need for human intervention. Agents can break down business goals into actionable steps, prioritize them and execute them in a sequence that evolves based on real-time context, resulting in more intelligent automation across complex workflows.

Agentic AI technologies continuously adapt using feedback from the environment, incorporating real-time data and outcomes into a decision-making processes, improving performance over time and responding dynamically to unexpected disruptions.

While many non-agentic AI models struggle with unstructured data, like emails, documents or open-ended language, agentic systems excel through the use of **natural language processing** (NLP) and **generative AI** (genAI). This enables them to understand complex inputs, bringing their functionality much closer to human-like. And when agents aren't sure how to handle a given situation, they can use human-in-the-loop methodologies to obtain human validation.

Agents can work together in a multi-agent **AI orchestration**, where each agent specializes in a specific type of task. They can work across silos, integrating with apps, APIs and external systems to accomplish complex **automated workflows**.

How does agentic automation work?

At the core of agentic automation is its ability to combine several technologies to execute tasks that would've otherwise required human intervention. Not all agents possess all of these capabilities, and advanced automations will require several **AI agent types**. Below are the **components of AI agents**:

The first step is **Perception**. Agentic AI begins by collecting data from its environment through sensors, APIs, databases or user interactions. This step ensures the system has up-to-date information for data analysis and to act upon.

Then comes **Reasoning**. Once data is collected, the AI processes it to extract meaningful insights. Using NLP, computer vision or other AI capabilities, it interprets user queries, detects patterns and understands the broader context. This helps the AI determine what actions to take based on the situation.

With **Goal-setting**, the agent sets objectives based on predefined goals or user inputs. It then develops a strategy to achieve these goals, often using decision trees, reinforcement learning or other planning algorithms.

In **Decision-making**, the agent evaluates multiple possible actions and chooses the optimal one based on factors like efficiency, accuracy and predicted outcomes.

After selecting an action, the agent performs **Execution**, either by interacting with external systems (**APIs**, data, robots) or providing responses to users.

From there, the AI **Learns** by evaluating the outcome and gathering feedback to improve future decisions. Through **reinforcement learning** or **self-supervised learning**, the agent refines its strategies over time, making it more effective in handling similar tasks in the future.

Agentic automation use cases

Agents can be used across virtually any industry, but here are some common areas where they are an emerging automation tool.

Finance

In financial operations, AI-driven systems can handle tasks like invoice processing, fraud detection, financial reporting and compliance monitoring. For example, agentic AI can extract data from invoices, validate it against purchase orders and initiate approval workflows in accounts payable.

AI systems also help with risk prevention. By analyzing vast amounts of transaction data in real-time, agentic AI can detect unusual patterns or anomalies that may indicate fraud. These systems can flag suspicious transactions for further investigation, providing extra security.

In investment management, agentic AI can process market data, assess trends and execute trades at optimal times, all with minimal human intervention. AI-powered tools can even assist in portfolio management by analyzing clients' risk profiles or recommending tailored investment strategies.

Healthcare

In healthcare, automation platforms can coordinate a wide range of administrative workflows such as patient data intake, insurance eligibility checks, appointment scheduling and billing processes. These systems reduce manual effort and speed up routine, burdensome tasks.

They can also interpret unstructured clinical notes using NLP, extracting key medical insights, or flag anomalies for medical staff to review, improving diagnostic accuracy and patient safety.

Compliance is another realm where agentic systems excel, where they can help with complex regulatory requirements by ensuring proper documentation and audit trails.

These platforms also help in care coordination, facilitating communication between departments, sending reminders and other patient-centered care initiatives.

Supply chain optimization

In [supply chain management](#), agentic systems can continuously monitor real-time data across multiple domains, from inventory levels to shipping logistics to vendor performance metrics, with the goal of proactively identifying potential disruptions before they escalate. When agents detect anomalies or delays, they can autonomously reroute ships or adjust procurement strategies based on up-to-the-minute supply chain information to maintain the flow of production.

Human resources

From parsing resumes to scheduling interviews and provisioning accounts, agentic AI can coordinate the entire onboarding process by orchestrating multiple systems. Before a new job listing is written or an open position has even been identified, an agent can analyze data sources like historical hiring trends, employee turnover rates, business growth projections and workforce demographics. Once a comprehensive hiring strategy is developed, an agent can get to work contributing to the creation of job descriptions, screening resumes and even performing interviews and negotiating contracts. Once an employee is hired, onboarding can be largely automated via chatbot.

Customer experience

Agentic automation can enhance customer experiences with faster, more accurate and personalized interactions. A common use case is the customer support [chatbot](#). These have existed for a while, but with agentic AI, they can do so much more. Imagine a scenario where a customer contacts a company's support center with an issue, such as difficulty processing a return. Traditionally, this might have involved long wait times, back-and-forth communication and multiple transfers between agents. Agentic automation, dramatically streamlines the process.

IT support

Agentic bots can triage IT tickets, run diagnostics, reset passwords and escalate issues. Agentic bots can analyze incoming IT support tickets, determine priority level and categorize issues based on the context. By reviewing system logs, network statuses and user-reported symptoms, these bots can run diagnostics to pinpoint potential problems such as software conflicts or network issues.

In the event of a forgotten password or system access problem, bots can autonomously reset passwords or help troubleshoot. For more complex issues that require specialized knowledge or human oversight, bots can escalate tickets to support personnel, providing context and diagnostics. By continuously learning from past interactions, agentic bots can refine their problem-solving abilities, reducing response times and enabling IT teams to focus on higher-level, more complex tasks.

Getting started with agentic automation

Agents are the next frontier for digital transformation in business operations, and the ecosystem is expanding and evolving quickly. There are many popular [AI agent frameworks](#) available, depending on business needs, each with its own specialties and limitations that are able to handle a variety of business processes and other initiatives requiring advanced AI capabilities. These provide the building blocks for developing, deploying and managing AI agents, with built-in features and functions that help streamline and speed up the process. [Langchain](#) and [crewAI](#) are two popular frameworks.