AI Agents

From automating repetitive tasks to revolutionizing complex workflows, AI agents are redefining productivity and innovation for the businesses of tomorrow.

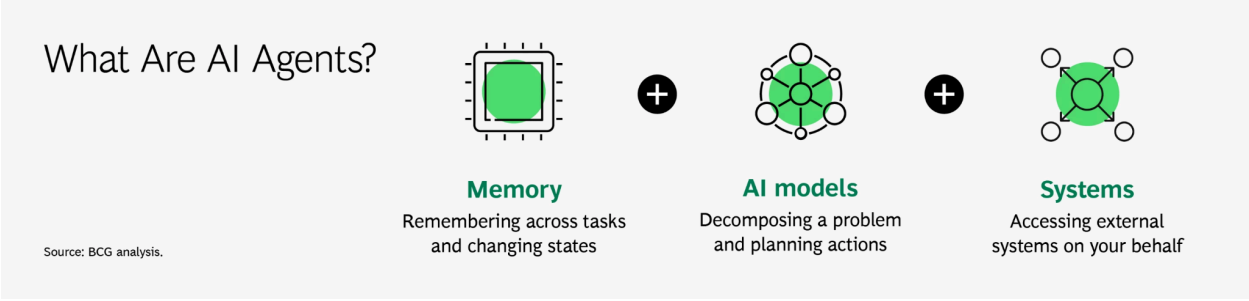
Imagine a teammate that works tirelessly, learns continuously, and adapts to your needs. That’s the promise of AI agents. With the ability to observe, plan, and act autonomously, AI agents open a new chapter of end-to-end transformation across industries—streamlining processes, driving data insights, and augmenting human potential like never before.

What Are AI Agents?

Put simply, AI agents are artificial intelligence that use tools to accomplish goals. AI agents have the ability to remember across tasks and changing states; they can use one or more AI models to complete tasks; and they can decide when to access internal or external systems on a user's behalf. This enables AI agents to make decisions and take actions autonomously with minimal human oversight.

For example, a consumer goods company wanted to optimize its global marketing campaigns using an AI agent to transform processes. A project that once required six analysts per week now required a single employee working with an agent, delivering results in under an hour. Here's how it works:

- **AI agent gathers data**: On a weekly basis, the agent autonomously gathers and joins marketing data via connected data pipelines.
- **AI agent analyzes performance**: The agent performs contextual analysis on the data to understand campaign performance metrics and compare against expectations, receiving business context from an operator when necessary.
- **AI agent offers recommendations**: The agent writes a standardized report that proposes optimizations. An operator stress tests and refines the AI agent's recommendations as needed.
- **AI agent updates platforms**: When given human approval, the agent updates media buying platforms with the recommendations.

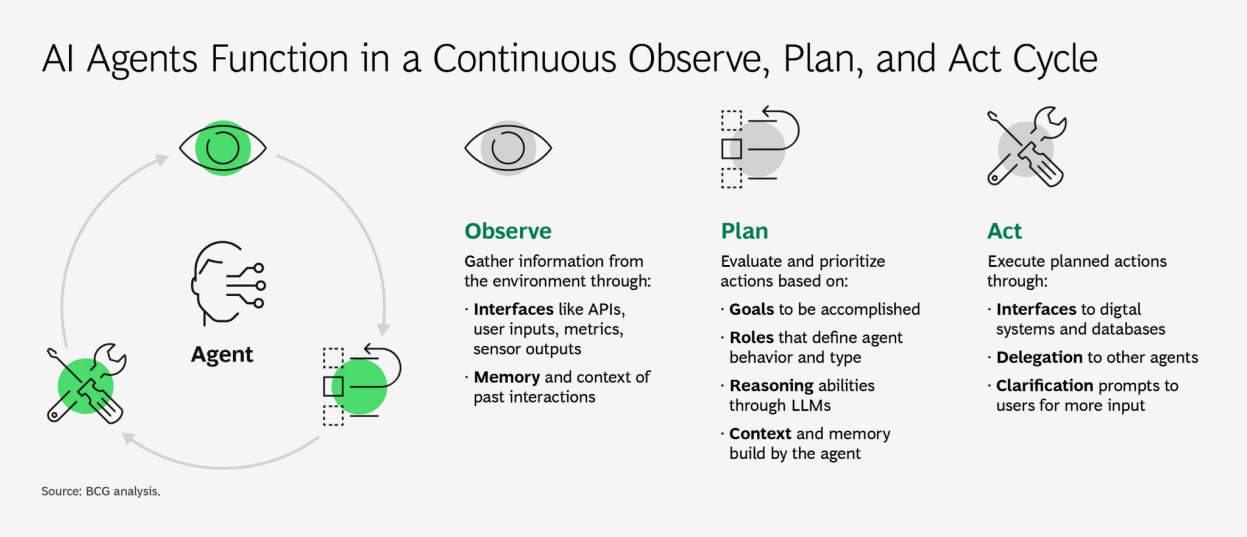


How Do AI Agents Work?

AI agents observe their environment, leverage large language models for planning, and access connected systems to take action and accomplish goals.

- **Observe**: AI agents constantly collect and process information from their environment including user interactions, key performance metrics, or sensor data. They can retain memory across conversations, which provides ongoing context across multi-step plans and operations.
- **Plan**: Using language models, AI agents autonomously evaluate and prioritize actions based on their understanding of the problem to be addressed, goals to be accomplished, context, and memory.
- **Act:** AI agents leverage interfaces with enterprise systems, tools, and data sources to perform tasks. Tasks are governed by the plan delivered by a large language model or small language model. To execute tasks, the AI agent may access enterprise services (such as HR systems, order management systems, or CRMs), delegate actions to other AI agents, or ask the user for clarification. These intelligent software agents have the ability to detect errors, fix them, and learn through multi-step plans and internal checks.

This observe-plan-act cycle is self-reinforcing because AI agent tools continuously analyze how the world has changed based on past interactions and learn how to be more efficient and effective over time.



What Are the Components of an AI Agent?

AI agents vary in implementation but tend to have five components:

- **Agent-centric interfaces**, including the protocols and APIs used to connect agents to users, databases, sensors, and other systems, allowing intelligent software agents to observe their environment.
- A **memory module** includes both short-term memory for recent events and immediate context as well as a long-term memory for factual knowledge, concepts, details of past conversations, and knowledge of how past tasks were performed.
- A **profile module** defines the agent's attributes, such as its role, goals, and behavioral patterns.
- A **planning module**, which typically uses an LLM or SLM, takes observations from the environment, including memory and the agent's profile, to assemble appropriate plans for an agent to take.
- An **action module** comprises the APIs and system integrations that define the universe of actions available to the AI agent.

What Do AI Agents Do?

AI agents represent a new era in artificial intelligence, far surpassing traditional software. Unlike static tools, these intelligent software agents act as autonomous, decision-making entities. They analyze data, plan tasks, take action, and continuously adapt—often in real time. Here's what makes them so powerful:

- AI agents don't just respond to instructions—they have initiative. They engage with their environment, learning and adapting as they go. AI agents continually collect information from a variety of sources. They use memory and specialized tools to understand what's happening in their environment and to keep track of important details.
- AI agents decide on the best course of action by considering goals, roles, and constraints. They can update their plans in real time as things change, making them more adaptable to process change and edge cases than techniques like robotic process automation.
- AI agents get things done by using connected systems and collaborating with other intelligent agents.
- AI agents are designed to be active participants in workflows. They're not just tools—they're capable, high-performing teammates that bring real value to the teams they support.

What Are the Types of AI Agents?

AI agents vary in complexity, from simple coding assistants to complex networks that can automate processes that require teams of people today. Using coding as

an example, we can see the different levels of sophistication that can be achieved with various types of intelligent agents:

- At the simplest level, a coding copilot can generate code when prompted by a developer.
- A more advanced intelligent agent could automatically ingest the existing code base and customize its output appropriately. This agent could even produce output without being asked by automatically producing code that passes a unit test once a developer writes that test.
- Still more advanced AI agents could not only develop code but also compile and run the application in a test environment.
- Future AI agents may take this a step further and deploy tested applications to production environments via automated pipelines upon human approval. This would effectively allow anyone, using plain language, to create and deploy entire applications.

How Do You Use AI Agents?

Strong AI agent performance comes from closely mimicking the processes that humans follow. This is because LLMs, the core planning component of modern agents, are able to “inherit” human cognition—they are trained on a large body of human output and hence can solve problems that are similar to what people can solve.

Like LLMs, virtual agents in AI perform well on problems that can be broken down into component parts. They need small, well-defined tasks. They need relevant context. And they perform even better when tight feedback loops are in place so errors can be corrected upon iteration.

AI agents deliver business value in three main areas:

- **Automation of standardized business processes**: AI agents can handle repetitive tasks with accuracy and speed, reducing human error and enabling employees to focus on higher-value work.
- **Collaboration with humans**: Acting as intelligent collaborators, virtual agents in AI enhance human teams by providing actionable insights, supporting decision-making, and executing tasks that augment human expertise.
- **Uncovering data insights**: In data-rich environments, AI agents analyze and synthesize information at a scale no human team could match, identifying patterns and delivering insights that drive strategic decisions.

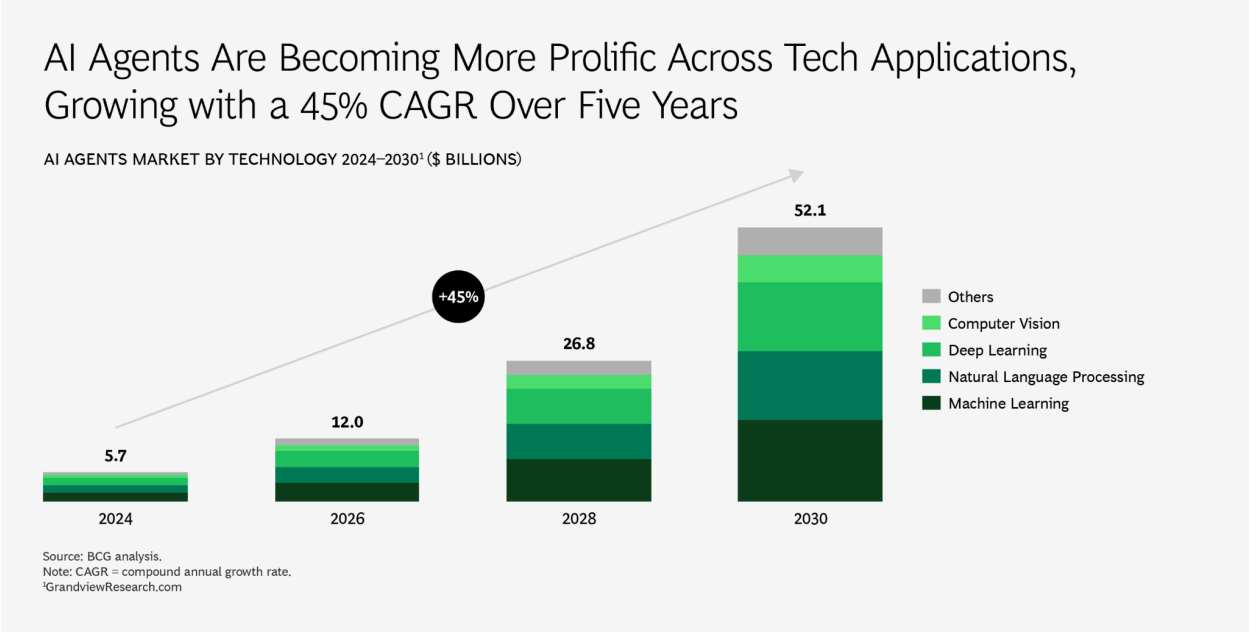
How Are Businesses Using AI Agents Today?

AI agents are fast becoming common across industries. Early adopters have already unlocked value from these intelligent software agents in multiple functions, including marketing and sales, customer service, R&D, and data and technology. But this is just the tip of the iceberg. Here are a few business cases for AI agents that companies are exploring today:

- **Marketing**: A leading consumer packaged goods company used intelligent agents to create blog posts, reducing costs by 95% and improving speed by 50x (publishing new blog posts in a single day as opposed to four weeks).
- **Customer service**: A leading global bank used AI virtual agents to interface with customers, reducing costs by 10x.
- **Research and development**: A biopharma company used AI agents for lead generation, reducing cycle time by 25% and gaining 35% in time efficiency for drafting clinical study reports.
- **Data and technology**: An IT department used AI agents to modernize its legacy technologies, increasing productivity by up to 40%.

Are AI Agents the Future?

AI agents are gaining traction quickly across an array of business applications—and the market for AI agents is expected to grow at a 45% CAGR over the next five years.



As AI agents become commonplace—and they will—humans will work closely with them as teammates. AI agents will be onboarded, just like human workers, to learn roles and responsibilities, access relevant company data and business context, integrate into workflows, and support the humans' responsibilities.

Complex disciplines, such as software development, customer service, and business analytics, that previously required large teams of people will now become much smaller teams of humans working alongside many types of AI agents. As a result, organizations will scale faster since AI agents can replicate quickly, and companies will not be as dependent on hiring to grow.

By building AI agents, companies will also unlock new business models and accelerate productivity. AI agents will be able to automate and manage tasks, freeing up workers to be more creative. Similarly, AI agents will speed up labor- and time-intensive processes, enabling workers to be more productive.

Supervising virtual AI agents will become a core teaming skill, to ensure agents achieve their objectives and uphold standards of privacy, fairness, and ethical use. The more AI agents proliferate, the greater the need to manage them by employees—and this puts a premium on training employees in responsible AI at every level of the organization.