



logic runner (agent) and AI

A "logic runner" is a component that executes defined business logic or processes, while an AI agent is a software entity that uses artificial intelligence to perceive, reason, and act to achieve a goal. When an AI agent is used as a "logic runner," it adds a layer of intelligent, adaptive decision-making to the process, which is fundamentally different from a traditional, static workflow.

Traditional logic runner vs. AI agent as a logic runner

Feature	Traditional Logic Runner (e.g., standard workflow)	AI Agent as a Logic Runner
Execution	Follows a predetermined, rigid, and sequential path.	Can dynamically plan and adapt its process based on the situation.
Decision-making	Relies on explicit, pre-defined rules, such as "if X, then do Y".	Uses a large language model (LLM) for reasoning to decide the next best action to achieve a goal.
Flexibility	Breaks down if it encounters an unprogrammed scenario.	Can handle complex, ambiguous, and unstructured problems by adapting to new information.
Intelligence	Not considered "intelligent" beyond its programmed rules.	Uses AI models for reasoning, learning, and planning.
Integration	Connects with other systems using a catalog of pre-built connectors.	Can use the same external tools and APIs as a traditional workflow, but can decide <i>when</i> and <i>how</i> to use them.

How an AI agent works as a logic runner

An AI agent transforms a static workflow into an intelligent, autonomous process through an iterative loop. One common pattern is the "Think → Act → Reflect" loop.

- Think:** The agent uses an LLM as its "brain" to process information, understand the overall goal, and reason about the best course of action.
- Act:** Based on its reasoning, the agent performs a specific task. This may involve using tools, like sending an email, querying a database, or integrating with another application via an API.
- Reflect:** The agent evaluates the outcome of its action. It learns from its experience, adapts its behavior, and decides on the next step. This closed loop allows for autonomous, multi-step problem-solving.

Example: Automated customer service

Consider the difference between a standard automation workflow and an AI-powered agent for handling customer inquiries.

- Standard workflow:** If a customer sends an email with the subject "Return," the workflow automatically sends a pre-written email with instructions for how to return an item. It follows a fixed, deterministic path. If the email is about a different topic, the workflow fails.
- AI agent workflow:** If a customer sends an email with the subject "My package is broken," the AI agent goes through a thinking and acting process.
 - Think:** The agent's LLM reasons that the customer is upset about a damaged product and the goal is to resolve the issue. It determines it needs to pull up the customer's order history and check the refund policy.
 - Act:** The agent uses external tools to look up the order and refund status. It drafts a personalized, empathetic email explaining the next steps.
 - Reflect:** After sending the email, the agent might log the interaction and note that a follow-up is needed, dynamically updating the case status.

Combining the two

Modern platforms like Azure Logic Apps are designed to combine the predictable nature of standard workflows with the intelligent, autonomous capabilities of AI agents. This allows developers to build hybrid processes where an AI agent can intelligently handle the complex, ambiguous parts of a task, while traditional, deterministic workflows manage the more straightforward, repeatable steps.

AI responses may include mistakes. [Learn more](#)

↪ What are the limitations of using AI agents as logic runners?

↪ Give more concrete examples of how an AI agent uses the Think-Act-Reflect loop in a business process

↪ Elaborate on how AI agents adapt behavior through feedback?

Logic Runner is a deterministic term

Yes, the term "logic runner" refers to a process that, by definition, is **deterministic** in its execution. It follows a set of predefined, rigid rules and steps, so that the same input will always produce the same output. This predictability is its core feature and a key differentiator from the non-deterministic nature of AI agents.

Deterministic nature of a traditional logic runner

The term "logic" in this context refers to a set of explicit, hard-coded rules and conditional statements, such as IF...THEN...ELSE clauses. A "runner" is the component that executes this logic.

- Predictable outcome:** Given the same initial state and inputs, a logic runner is guaranteed to follow the exact same path and produce the exact same result every time. For example, a standard workflow for approving an expense report will always follow the same sequence of checks and actions.
- No variability:** There is no randomness, learning, or adaptation involved in a traditional logic runner's process. If it encounters a scenario for which it was not explicitly programmed, it will likely fail or produce an unintended, but still predictable, error.
- Transparent and auditable:** The fixed path of a deterministic process makes it easy to debug and audit. Developers can clearly trace the exact sequence of events that led to a particular outcome.

The non-deterministic nature of AI agents

In contrast, an AI agent introduces **non-determinism**, leveraging a large language model (LLM) to perform reasoning and make decisions. While it operates within a framework, its exact actions are not fixed.

- Dynamic and adaptive:** An AI agent is not constrained to a single execution path. It can dynamically plan, re-plan, and choose which tools or functions to use based on its interpretation of the current context and its overall goal.
- Variable output:** For the same input, an AI agent may produce different outputs or take different paths, as its reasoning is based on a probabilistic model. This allows it to handle ambiguity and complex, unforeseen scenarios that would break a traditional logic runner.
- Less transparent:** The reasoning process of an AI agent's LLM is a "black box" that can be difficult to fully inspect, making its exact path less transparent and debugging more complex.

The spectrum of AI and determinism

The relationship between AI and determinism is not binary but rather a spectrum.

- Hybrid approaches:** Modern applications often combine the two by using deterministic workflows for stable, predictable tasks (like formatting data) and introducing AI agents for complex, non-deterministic tasks (like interpreting user intent).
- Controlled autonomy:** Developers can build "guardrails" around AI agents to constrain their behavior, such as by providing them with a predefined set of tools and a structured output format. This adds predictability to the agent's actions without sacrificing its adaptability.

AI responses may include mistakes. [Learn more](#)

↪ What are some drawbacks of using deterministic logic runners?

↪ What are some strategies for building guardrails around AI agents?

↪ How are AI agents debugged and monitored given their non-deterministic nature?

what company uses deterministic logic runners

The use of deterministic logic runners is widespread across virtually every industry, particularly in applications where predictability, consistency, and compliance are non-negotiable. Many large enterprises use these systems for their mission-critical business processes.

Rather than being a single product, "deterministic logic runner" is a conceptual term that refers to the predictable execution of workflows. It is implemented through various software solutions, including:

- Business Process Management (BPM) software
- Workflow automation tools
- Enterprise Service Buses (ESBs)

Major companies using deterministic workflows

Below are examples of major companies across different sectors that use deterministic logic runners in their operations:

Financial services

- JPMorgan Chase:** Uses deterministic systems for regulatory compliance and financial reporting. Its workflows ensure strict adherence to financial laws, with AI layers used for fraud detection and document review.
- Wells Fargo:** Like many large banks, Wells Fargo uses deterministic workflows for processing loans, managing customer accounts, and handling compliance checks.
- American Express:** Relies on deterministic logic for millions of daily transactions, ensuring each one is processed accurately and according to predefined rules.
- Truist:** Uses deterministic platforms like Azure Logic Apps for cloud operations management.

Retail and e-commerce

- Walmart:** Combines deterministic supply chain execution—such as inventory management and logistics—with AI-driven systems for demand forecasting.
- Dominos:** Manages its order and delivery processes using deterministic logic to ensure consistent order fulfillment and reliable service.
- Unilever:** Uses deterministic quality control procedures on its manufacturing production lines to ensure product consistency and safety.

Technology and software

- Microsoft:** Offers deterministic platforms like **Azure Logic Apps**, which is used by a vast number of companies, including **General Motors** and **Toyota Motors**, for integrating data and automating cloud workflows.
- IBM:** Provides its **IBM Business Automation Workflow** platform, a tool used for running deterministic processes.
- Salesforce (including MuleSoft):** The Anypoint Platform from MuleSoft is used by many Fortune 500 companies, such as **Walmart** and **MasterCard**, for deterministic data integration and workflow execution.

- ServiceNow:** As a leader in IT Service Management (ITSM), ServiceNow uses deterministic workflows for managing IT support tickets, change requests, and other standardized IT processes.

Healthcare

- Mayo Clinic:** Maintains strict, deterministic treatment protocols to ensure patient safety and regulatory compliance. It also leverages AI for less structured tasks, like interpreting unstructured data.
- OSF HealthCare:** Uses platforms like Azure Logic Apps for reliable and consistent process automation within their hospital system.

Manufacturing

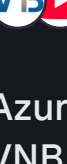
- Siemens:** Employs deterministic systems for its manufacturing processes, including predictive maintenance, where rules-based logic triggers actions when sensor data indicates a potential issue.
- General Motors and Ford Motor Company:** Rely on deterministic workflows for their large-scale manufacturing operations, supply chain management, and IT processes.

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↪ What are some open-source deterministic workflow engines?

↪ What are the limitations of relying solely on deterministic logic runners?

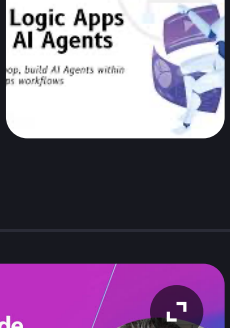
↪ Provide specific examples of how these companies use BPM or workflow automation software

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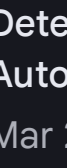
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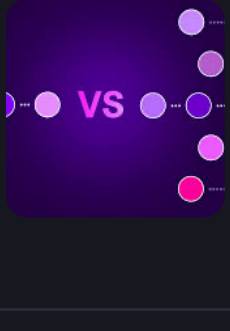
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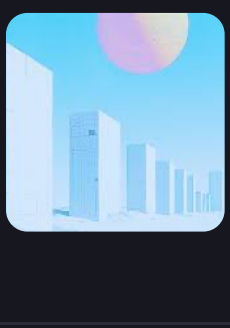
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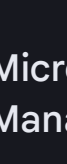


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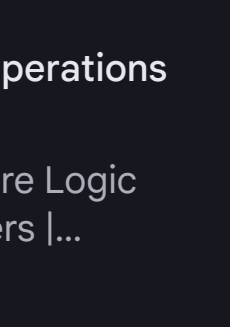
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