Agents : How They Power the Next Wave

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Generative AI Application Evolution

2022	2023	2024	2025
Spark	Foundation	Agentic	Interoperability
gpt-3.5	Chain of Thoughts	Tool Use	MCP
Prompt Engineering	Embeddings	Function Calling	A2A
	Vector Search	Muliti-model	Autonomous Apps
	RAG	Agent Framework	

What is an Agent ?

AI Agents are systems that enable Large Language Models(LLMs) to perform actions by extending their capabilities by giving LLMs access to tools and knowledge. - Microsoft

AI agents are software systems that use AI to pursue goals and complete tasks on behalf of users. They show reasoning, planning, and memory and have a level of autonomy to make decisions, learn, and adapt. - Google

LLMs

Enabled

Systems / Applications

Extended Capabilities

Tools / Knowledge
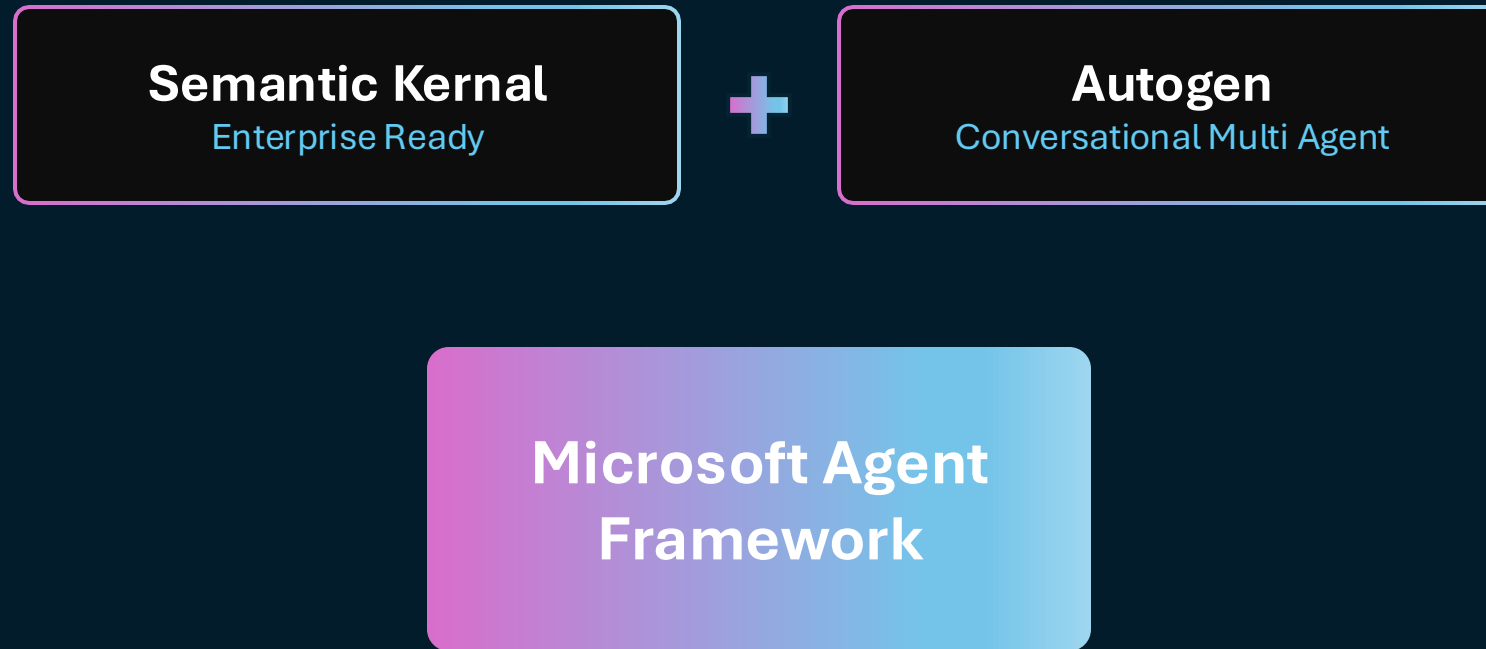
Perform Self Directed

Actions/Tasks

Towards

Goal

An artificial intelligence (AI) agent is a software program that can interact with its environment, collect data, and use that data to perform self-directed tasks that meet predetermined goals. - AWS

AI agents are the new digital workforce, working for and with us. They represent the next evolution in artificial intelligence, transitioning from simple automation to autonomous systems capable of managing complex workflows. - Nvidia

Agentic Frameworks by Microsoft

Semantic Kernal
Enterprise Ready

+

Autogen
Conversational Multi Agent

Microsoft Agent Framework

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Microsoft Agent Framework

Microsoft's long-term direction for building **production-grade AI agents** and it's designed to be the Azure-native

Agents

Workflows

Multi-agent collaboration

Memory systems
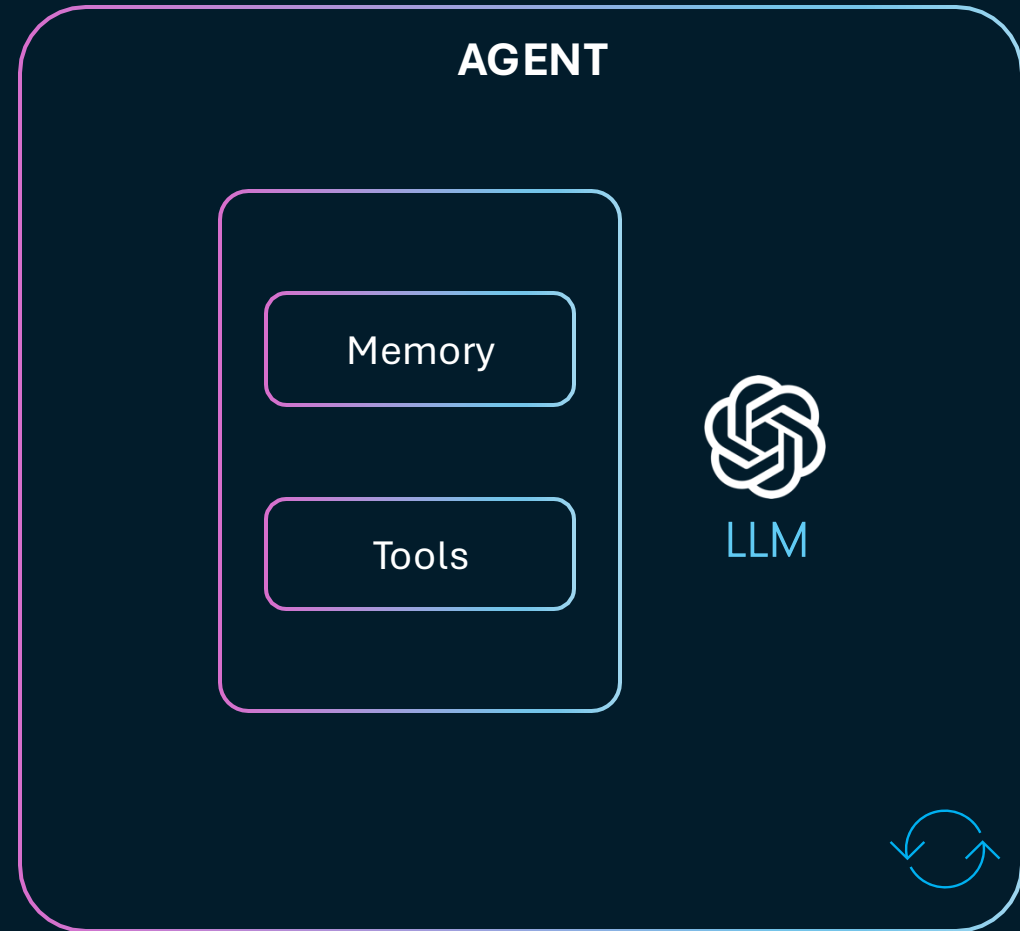
Tool orchestration

State management

Safety + observability

Microsoft Agent Framework: Primary Categories

AI AGENT
autonomous, LLM-driven
decision-makers

Individual agents that use LLMs to process user inputs, call tools and MCP servers to perform actions, and generate responses. Agents support model providers including Azure OpenAI, OpenAI, and Azure AI

AGENT

Memory

Tools

LLM

Microsoft Agent Framework: AI Agent

Req/Resp

Simple but powerful request and response model that supports both synchronous responses and token-by-token streaming output.

Memory

Memory gives agents continuity. Instead of responding stateless like a traditional LLM call, agents can store and retrieve episodic, semantic, and long-term knowledge.
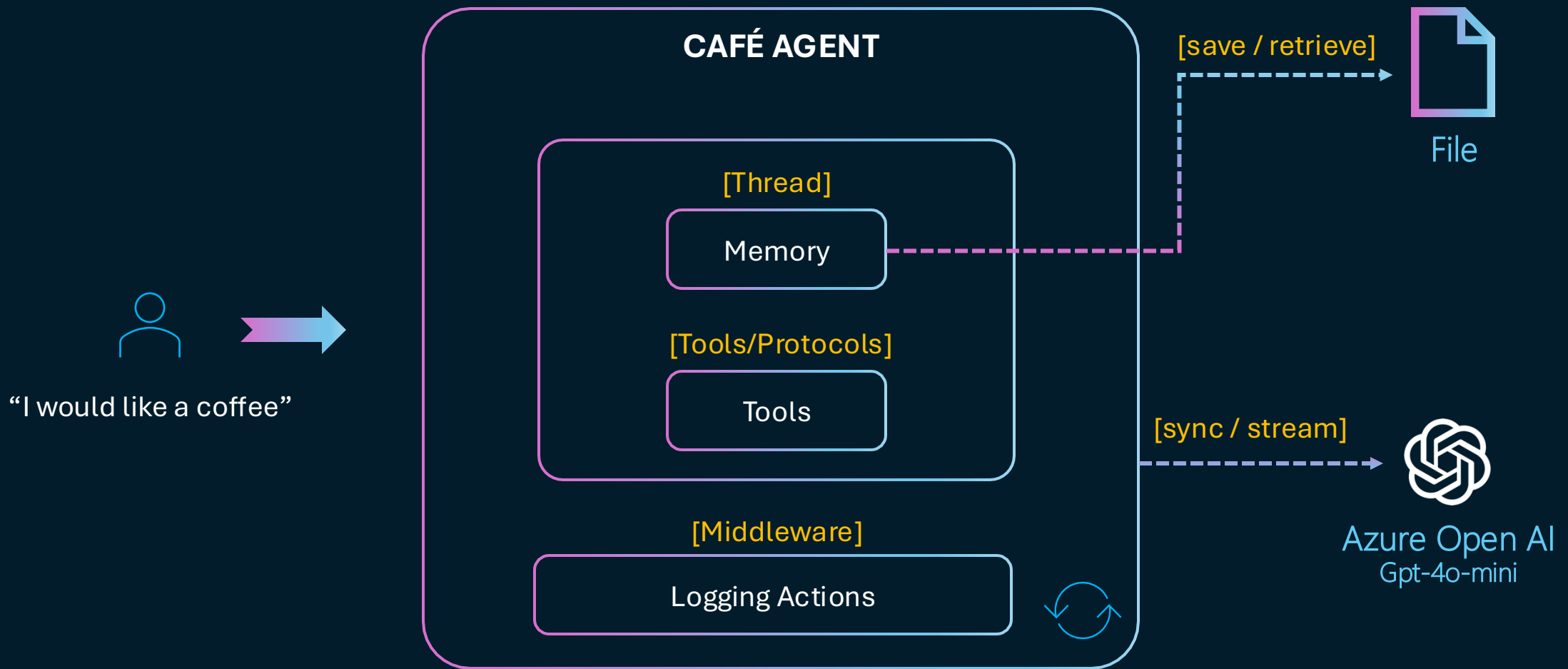
Tools/Protocols

Tools are strongly-typed methods that agents can call to accomplish real tasks, query a database, call an API, send an email, run a search, generate a report, or delegate work to another workflow or agent.

Middleware

Middleware in the Agent Framework provides a powerful way to intercept, modify, and enhance agent interactions at various stages of execution.
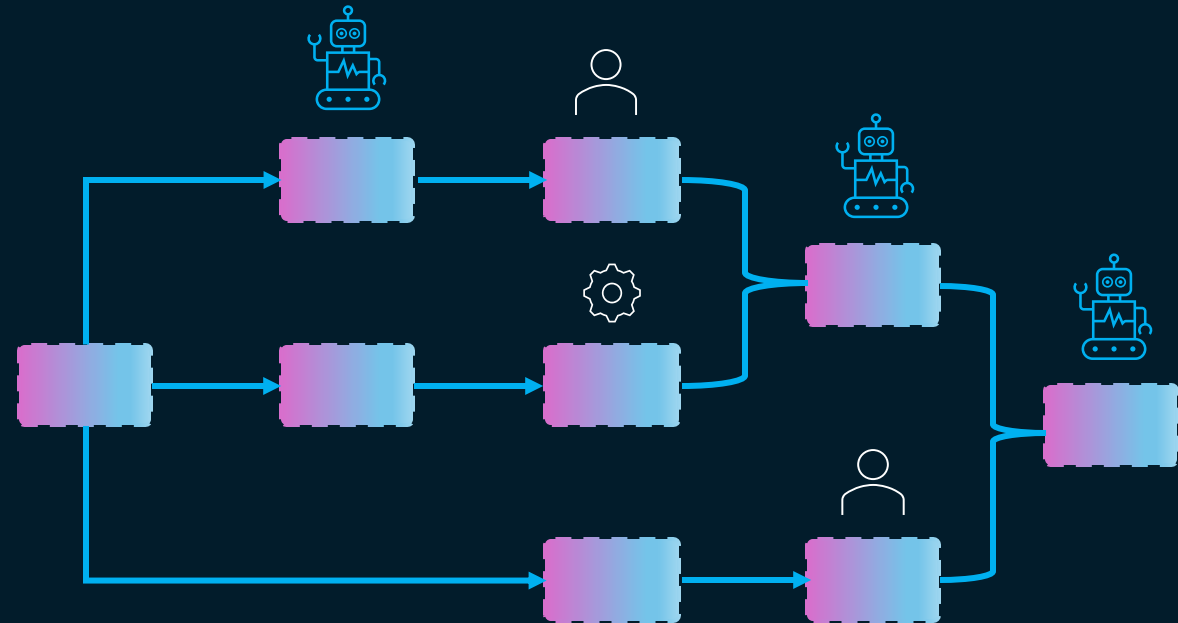
Microsoft Agent Framework: AI Agent

CAFÉ AGENT

[Thread]

Memory

[Tools/Protocols]

Tools

[Middleware]

Logging Actions

[save / retrieve]

File

[sync / stream]

Azure Open AI
Gpt-4o-mini

"I would like a coffee"

Microsoft Agent Framework: Primary Categories

WORKFLOWS
deterministic, step-based pipelines

Graph-based workflows that connect multiple agents and functions to perform complex, multi-step tasks.

Workflows support type-based routing, nesting, checkpointing, and request/response patterns for human-in-the-loop scenarios.

Microsoft Agent Framework: Workflows

Executors

Executors are the fundamental building blocks that process messages in a workflow. They are autonomous processing units that receive typed messages, perform operations, and can produce output messages or events.

Edges

Edges define how messages flow between executors with optional conditions. They represent the connections in the workflow graph and determine the data flow paths.
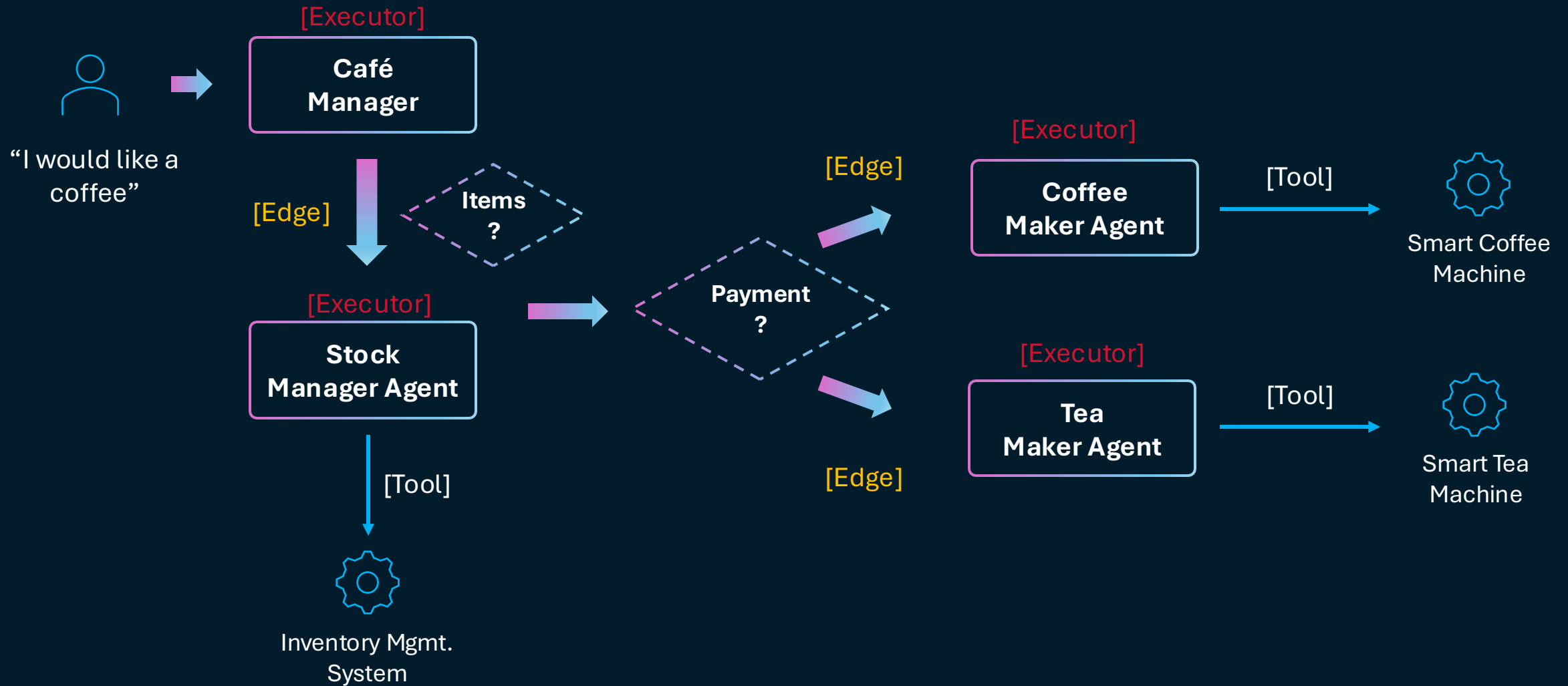
Workflows

A Workflow ties everything together and manages execution. It's the orchestrator that coordinates executor execution, message routing, and event streaming.

Events

There are built-in events that provide observability into the workflow execution.

Microsoft Agent Resources: Workflows

"I would like a coffee"

[Executor]
Café Manager

[Edge]

[Items ?]

[Executor]
Stock Manager Agent

[Tool]

Inventory Mgmt. System

[Edge]

Payment ?

[Edge]

[Executor]
Coffee Maker Agent

[Tool]

Smart Coffee Machine

[Edge]

[Executor]
Tea Maker Agent

[Tool]

Smart Tea Machine

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Explore More: Microsoft Agent Framework

Microsoft Learn: Microsoft Agent Framework
https://learn.microsoft.com/en-us/agent-framework/overview/agent-framework-overview

GitHub: Microsoft Agent Framework Samples
https://github.com/microsoft/Agent-Framework-Samples.git

AI in C# (Microsoft Agent Framework) by Rasmus Wulff
https://youtube.com/playlist?list=PLhGl0l5La4sYXjYOBv7h9I7x6qNuW34Cx&si=ZVK3f4NUD3rfBGpA

What is Next

2026/2027

→

Stable Agentic Eco System

Multimodal Real-Time Agents

Agent Communicate Across Platform

- -

Digital Workforce Emerges

Traditional Apps to Intent Driven Apps

Trust, audit, explainability

Q & A

Thank You

Let's Connect

Appreciate Your Feedback