

Microsoft Agent Framework (MAF)

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1. Introduction

Large Language Models (LLMs) have transformed software development by enabling natural language understanding and generation. Traditional AI assistants are highly effective at answering questions and generating content but remain largely reactive in nature.

Modern enterprises require AI systems capable of making decisions, coordinating actions, interacting with external services, and executing complex workflows autonomously. This need has led to the emergence of Agentic AI, where intelligent agents pursue goals rather than simply responding to prompts.

Microsoft has progressively evolved its AI ecosystem to support this vision through Semantic Kernel, AutoGen, and Microsoft Agent Framework (MAF).

2. What is Agentic AI?

Agentic AI refers to intelligent systems capable of independently pursuing objectives through reasoning, planning, memory retention, and tool utilization.

Unlike traditional chatbots that focus on response generation, agentic systems focus on achieving outcomes by performing actions and coordinating multiple tasks.

Key Characteristics

- Goal-Oriented Execution
- Autonomous Decision Making
- Tool and API Integration

- Persistent Memory
- Multi-Step Task Execution
- Multi-Agent Collaboration

3. Evolution of Microsoft's Agent Ecosystem

Microsoft's journey toward Agentic AI can be viewed in three major phases.

Phase	Technology	Purpose
1	Semantic Kernel	AI orchestration
2	AutoGen	Multi-agent collaboration
3	Microsoft Agent Framework	Enterprise-grade agent systems

- Semantic Kernel
 - Semantic Kernel introduced orchestration capabilities that connected LLMs with plugins, memory, and external services. It provided developers with a structured method to integrate AI capabilities into applications.
- AutoGen
 - AutoGen expanded these capabilities through collaborative intelligence, enabling multiple specialized agents to communicate and solve tasks together through distributed reasoning.
- Microsoft Agent Framework
 - Microsoft Agent Framework combines orchestration, workflows, memory management, governance, and observability into a unified platform designed for enterprise-scale agentic systems.

4. Microsoft Agent Framework Architecture

Microsoft Agent Framework provides a layered architecture for building enterprise-grade AI systems. A user request flows into the MAF orchestration platform, which coordinates specialized agents (Planner, Search, and Data agents) that connect to external APIs and enterprise systems. A shared memory layer manages context, history, and state, while a workflow engine handles planning, routing, and orchestration. Security and governance (authentication, authorization, compliance, audit trails), a human-in-the-loop path (approval, feedback, manual intervention), and

observability and monitoring (logs, metrics, traces) wrap the platform before a final response is returned.

5. Semantic Kernel vs Microsoft Agent Framework

Feature	Semantic Kernel	Microsoft Agent Framework
Focus	AI Orchestration	Agent Systems
Agents	Limited	Native
Multi-Agent	Basic	Advanced
Workflows	Simple	Enterprise-Grade
Governance	Limited	Comprehensive
Observability	Basic	Extensive
Production Readiness	Moderate	High

Semantic Kernel established the foundation for AI orchestration, while Microsoft Agent Framework extends these capabilities through native support for multi-agent collaboration, workflow automation, governance, and enterprise deployment.

6. Conclusion

The evolution from Semantic Kernel to AutoGen and ultimately Microsoft Agent Framework reflects Microsoft's vision for enterprise Agentic AI. Semantic Kernel introduced orchestration, AutoGen enabled collaborative intelligence, and MAF unified these concepts into a production-ready framework.

As organizations increasingly adopt autonomous systems, agentic architectures will become a fundamental design pattern for enterprise automation. Microsoft Agent Framework provides the necessary capabilities to build secure, scalable, and intelligent applications that can reason, collaborate, and execute complex workflows with minimal human intervention.