AZURE DAY

Build Intelligent Apps with Microsoft's Copilot stack & Azure OpenAI

Dave Rendon

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Hello 👋

Thank you for joining me today

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Learning Objectives

- You will learn how to leverage the Microsoft Copilot Stack to design and build AI-powered business applications that improve productivity and deliver highly personalized user experiences.

- Imparerai a sfruttare lo stack Microsoft Copilot per progettare e sviluppare applicazioni aziendali potenziate dall'IA, che migliorano la produttività e offrono esperienze utente altamente personalizzate.

Skills and Tools

- **Generative AI**: Understanding fundamentals and applications.
- **Azure OpenAI**: Deploying AI solutions using Azure OpenAI services.
- **Retrieval Augmented Generation (RAG) Patterns**: Improving AI models with RAG.
- **Semantic Kernel**: Using Semantic Kernel for AI-driven tasks.
- **Microsoft Copilot Stack**: Leveraging the Microsoft Copilot stack to build intelligent systems.

Build Intelligent Apps – How?

Large Language Models (LLMs) : AI models trained on vast amounts of text data to understand, generate, and interact using human-like language capabilities.

Azure Open AI: Provides REST API access to OpenAI's powerful language models including o1-preview, o1-mini, GPT-4o, GPT-4o mini, GPT-4 Turbo with Vision, GPT-4, GPT-3.5-Turbo, and Embeddings model series

Semantic Kernel: A framework that enables the integration of advanced language models and custom logic for building AI-driven applications with semantic understanding.

Azure AI Search : A cloud-based search service that provides advanced search capabilities, including full-text search, filtering, and AI-powered insights across various data sources.

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Agents

- Goal Setting and Tracking Agent
- Investment Portfolio Manager (Swarm)
- Expense tracking & Budgeting
- User preferences (Teachable Agent)
- Charitable Giving Advisor
- Retirement Planner (Group Agent)

Multi-agent Orchestrator

- AutoGen
- Semantic Kernel

Reasoning engines

- Azure OpenAI
- Azure AI OSS LLMs

Planning Reflection

- Assistants API
- TaskWeaver

Memory

- AI Search RaG/Vector DB
- CosmosDB Long Term Memory
- Redis Conversation cache
- Fabric Ent. Lakehouse

Runtimes

- ACA
- AKS
- App Service
- Functions

Security & Governance

- AI Content Safety Studio
- Defender for Cloud
- Entra MI, AD

Integration

- APIM
- Logic Apps
- Service Bus

LLMOps

- PromptFlow LLM Tracing + Eval
- Monitor AIOps

Workflow

- Azure Open AI and AI Search
- Configure and integrate a sample application with Azure Kubernetes Service (AKS).
- Utilize Azure AI Search
- Expose Azure OpenAI via API Management
- Leverage Semantic Kernel

Prerequisites

Azure OpenAI: oai-copilot
Models:
- CopilotCompletionModel
- CopilotEmbeddingModel

Azure Open AI endpoint/key:
- Key: b06214e1243c4181b0728158734057ca
- Endpoint: https://oai-copilot.openai.azure.com/

Azure AI Search URL: https://acs-copilot.search.windows.net
Azure AI Search Key: ETd97Me8EuW5brzBnEswvK0veHC9CQieM6pOos78BcAzSeBWFGc3

Cosmos DB name: cosmos-copilot
Cosmos URI: https://cosmos-copilot.documents.azure.com:443/
Cosmos Connection String

Storage account: stcopilot002
Endpoint: https://stcopilot002.blob.core.windows.net/

APIM URL: https://springtoys-copilot-apim.azure-api.net

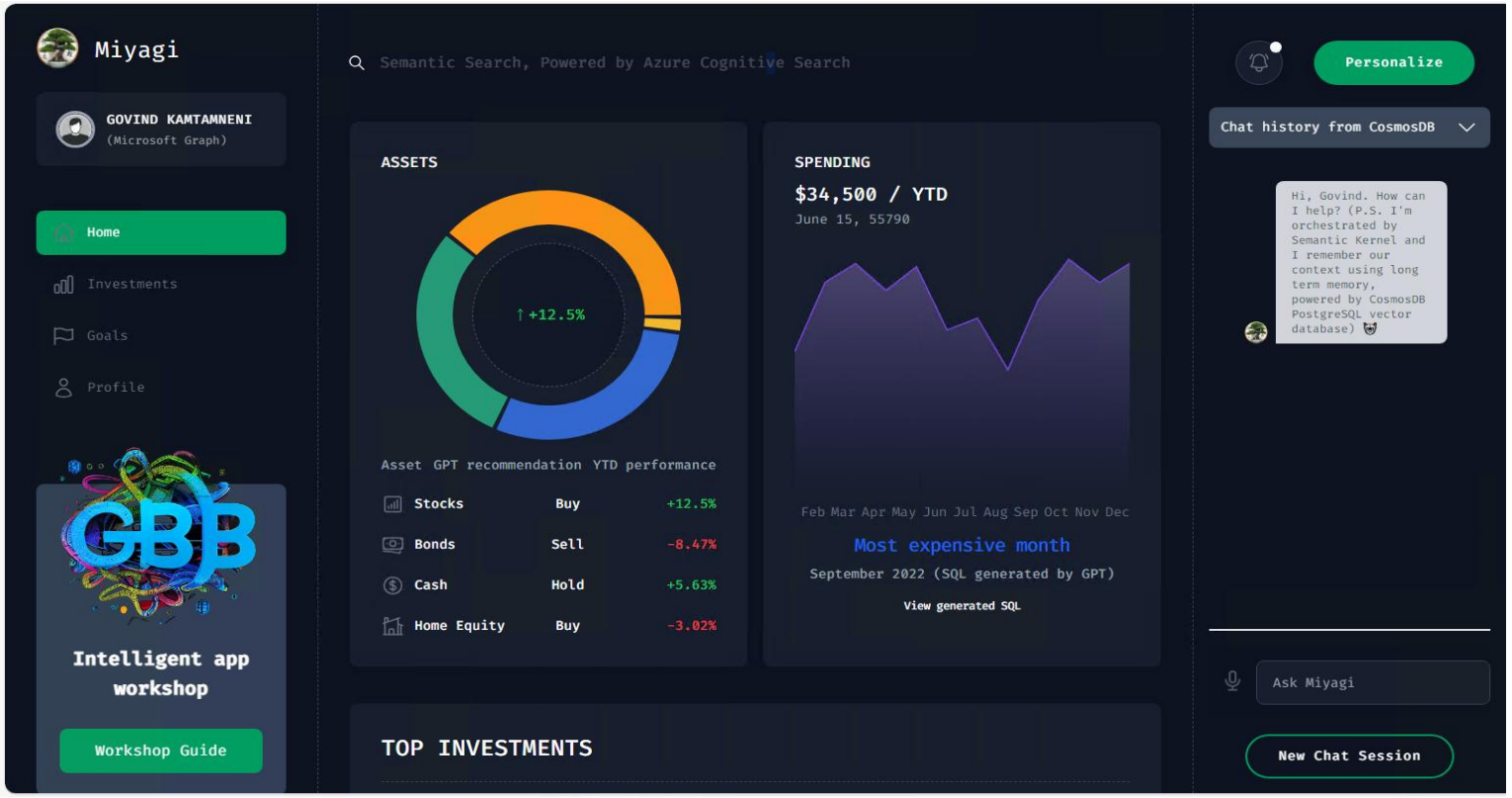
AOAI APIM Copilot Test: 2407b86ebf544028911c67068bf23609

Event Hub Shared Access Policy Connection string

Run the app locally

Project Miyagi leverages Microsoft's Copilot Stack to help you build and deploy smart apps.

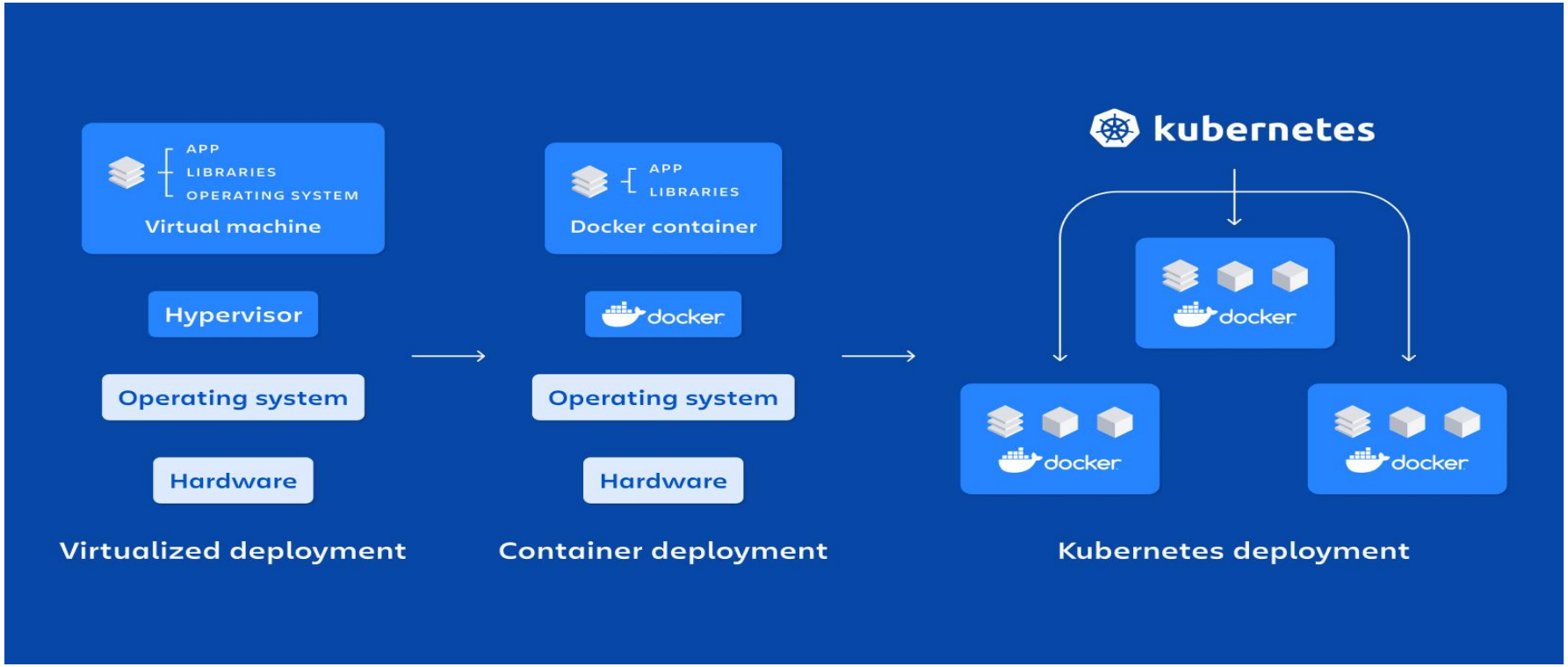
- Miyagui UI
- Recommendation service



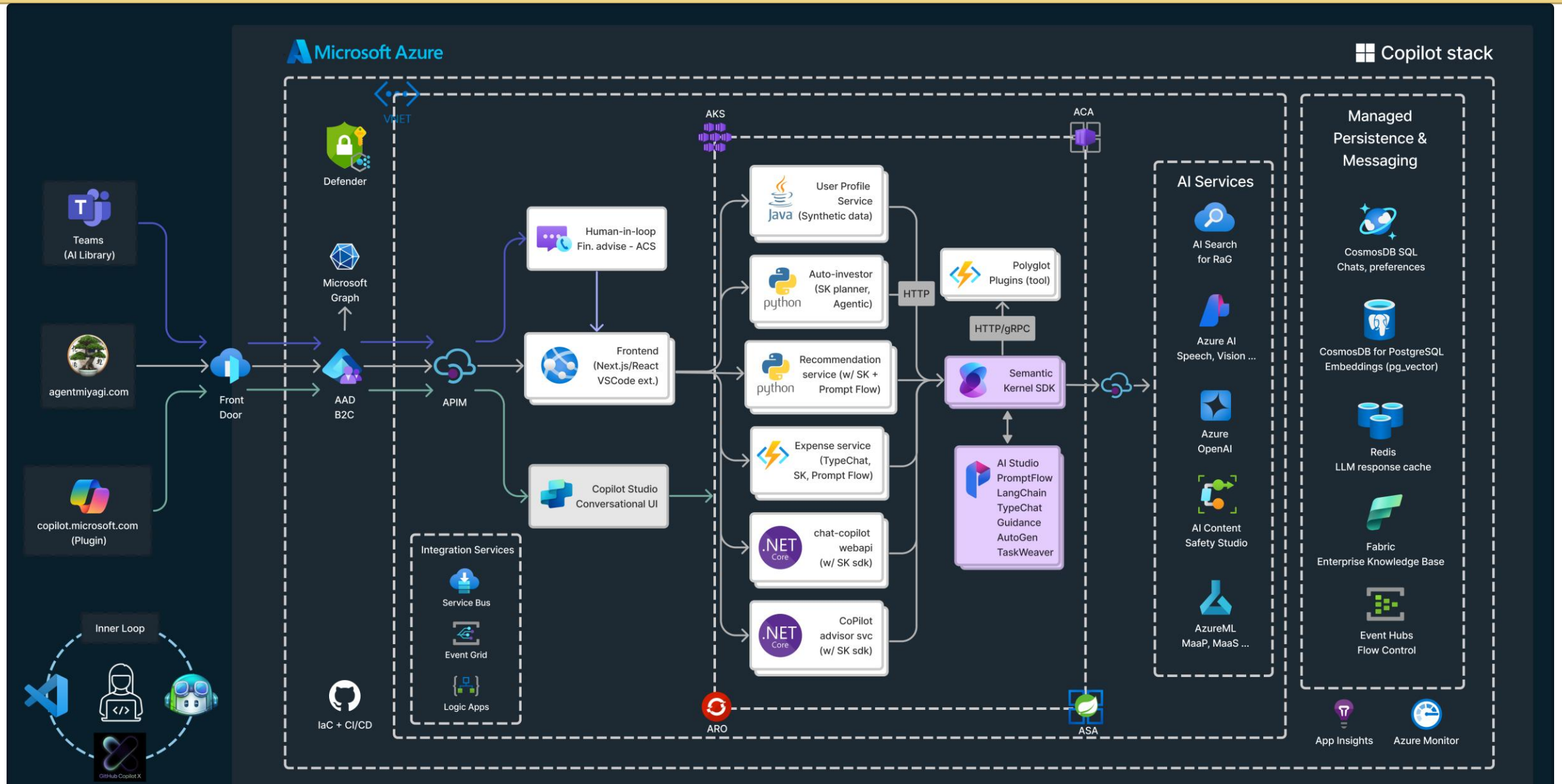
Containerizing the application

Containerizing Miyagi UI and Recommendation service to Azure Kubernetes Service (AKS):

1. Package these applications into Docker containers
2. Deploying them on AKS for scalable, managed orchestration and efficient operation.



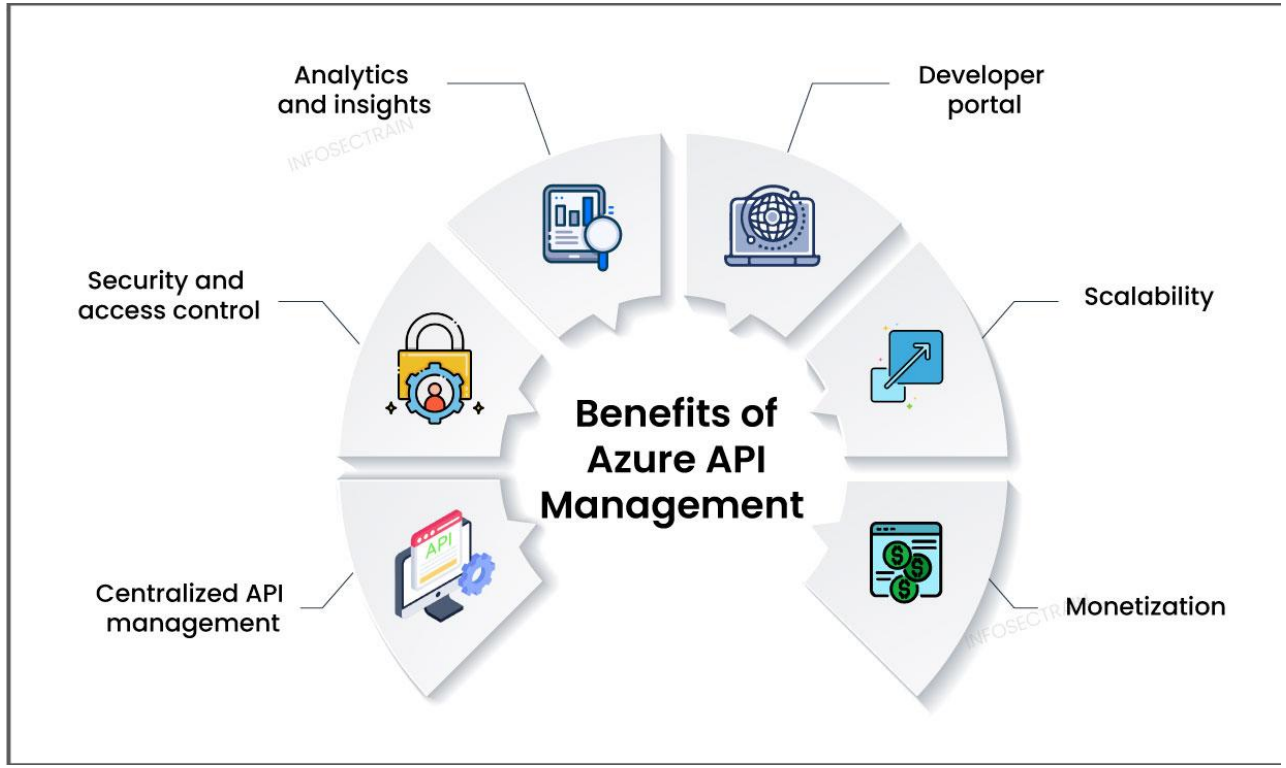
Architecture



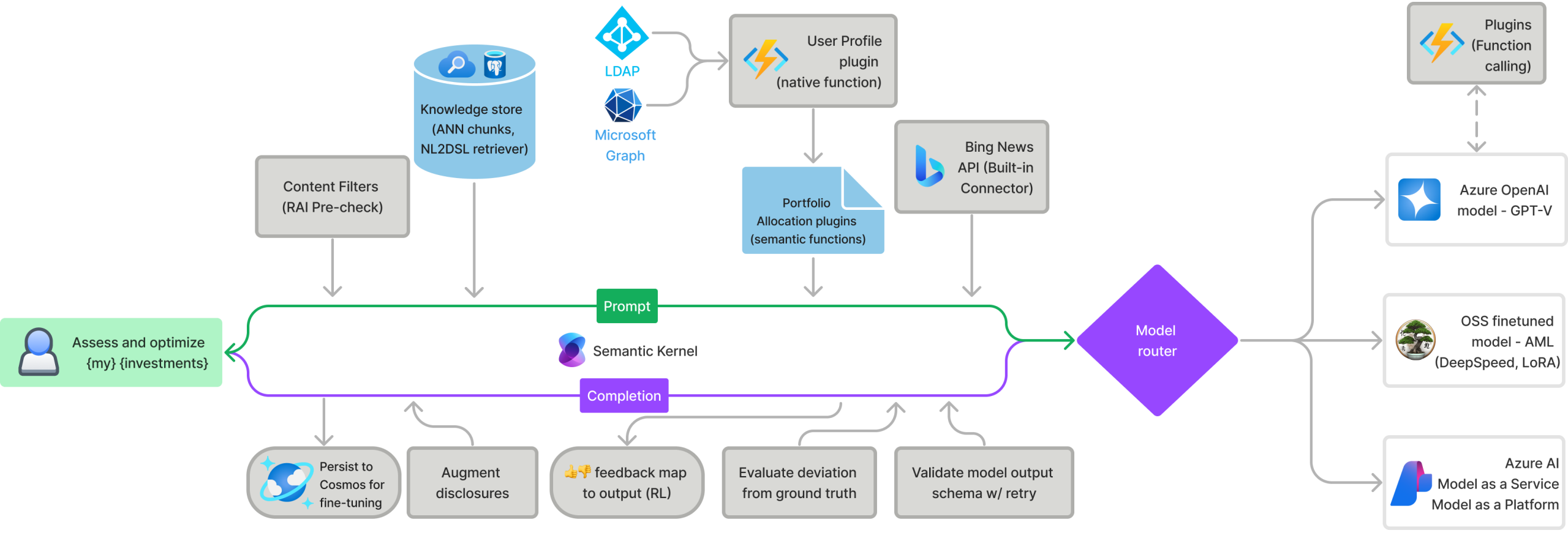
Expose OpenAI using APIM

Key features of Azure API Management:

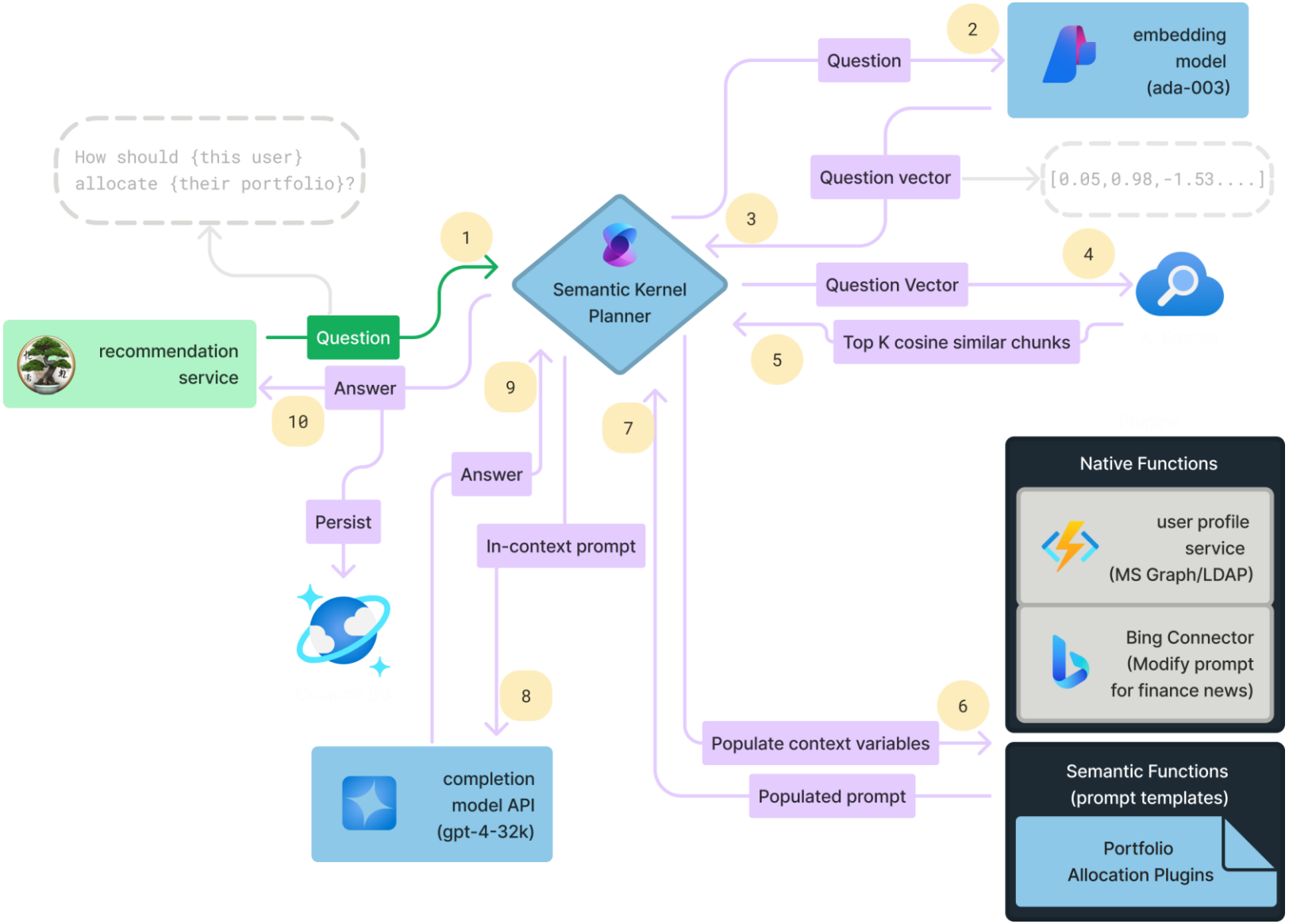
- API Gateway
- Developer Portal
- API Lifecycle Management
- Security and Access Control
- Monitoring and Analytics
- Rate Limiting and Throttling



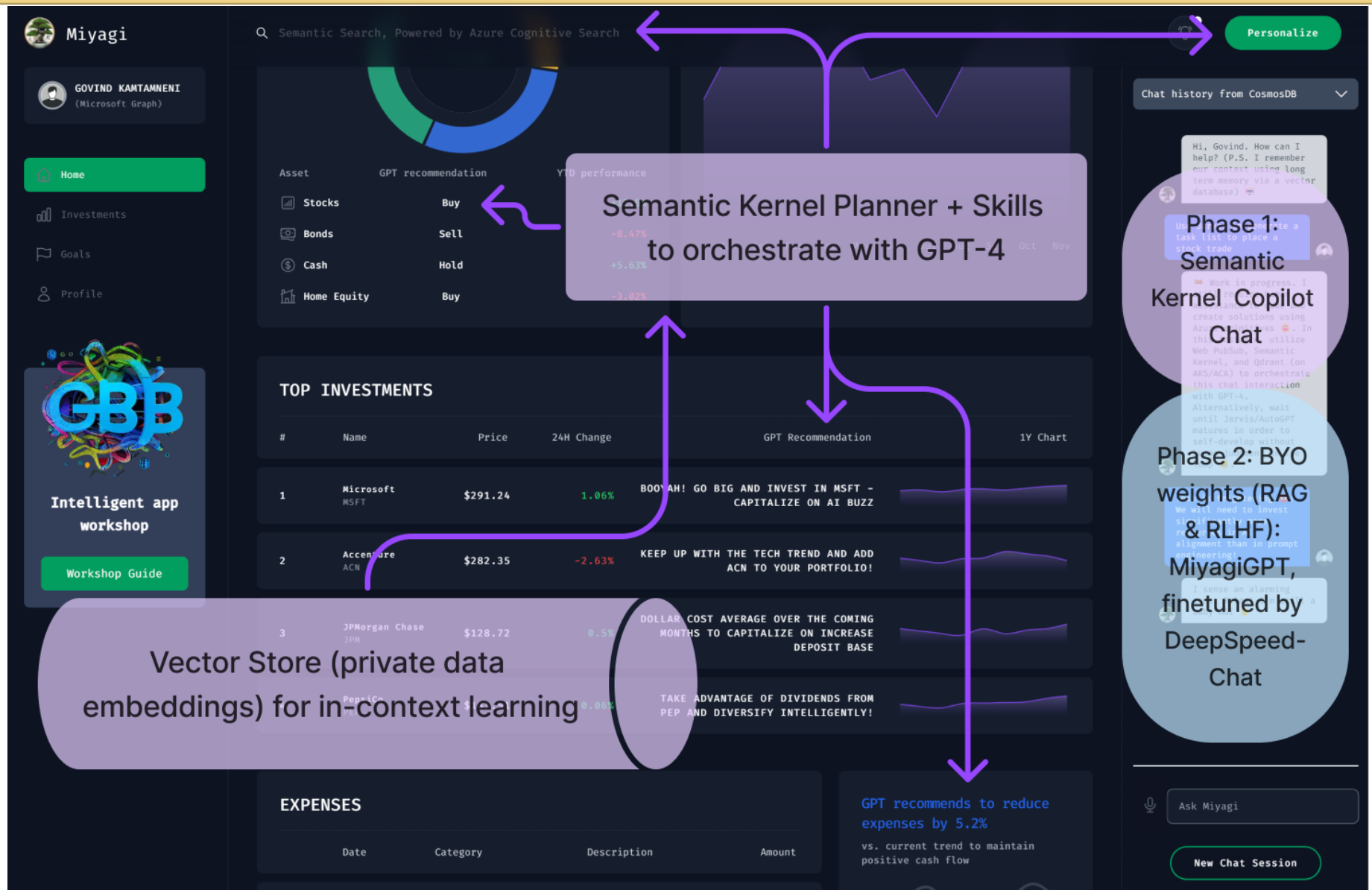
Semantic Kernel – Round trip



Semantic Kernel – Memory Orchestration



Demo - Workflow



Thank You!

Feedback

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