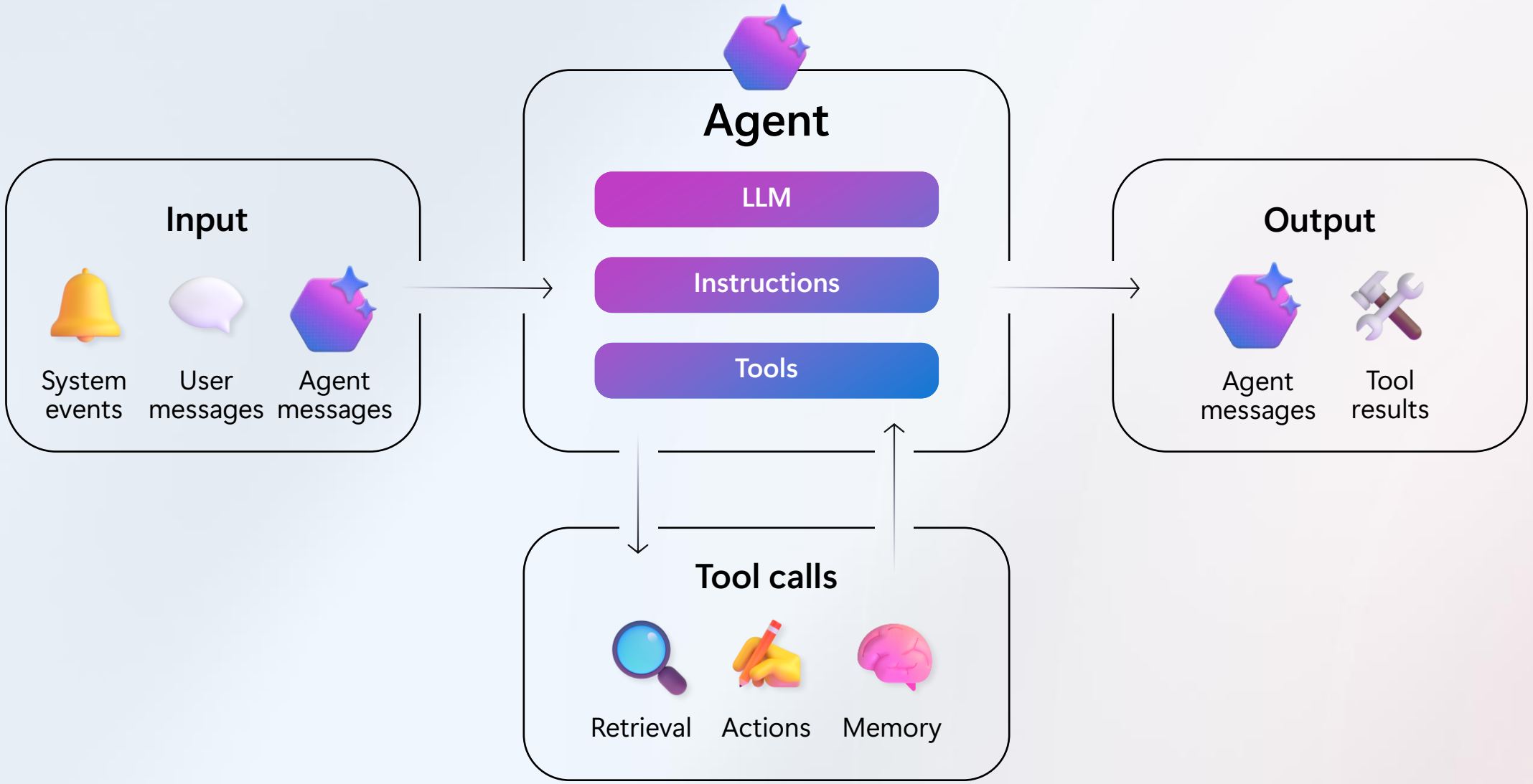
Agentic AI with Microsoft Fabric & Azure AI Foundry

Lasse Arnesen, Technology Strategist @ Microsoft

AI is transforming the world

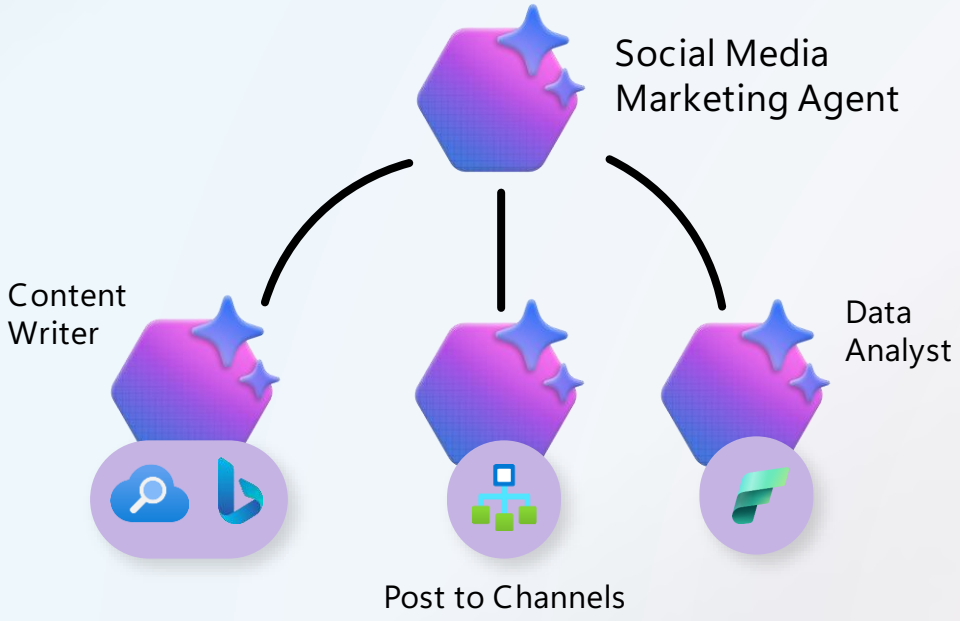
What is an agent?



Instead of just relying on just one generalist agent we can leverage many experts!

Connected agents

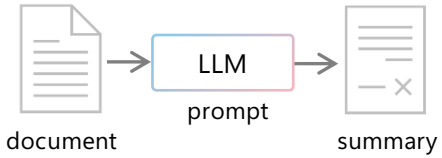
Give one agent the abilities of another...



Spectrum of LLM-based Solutions

No Agent

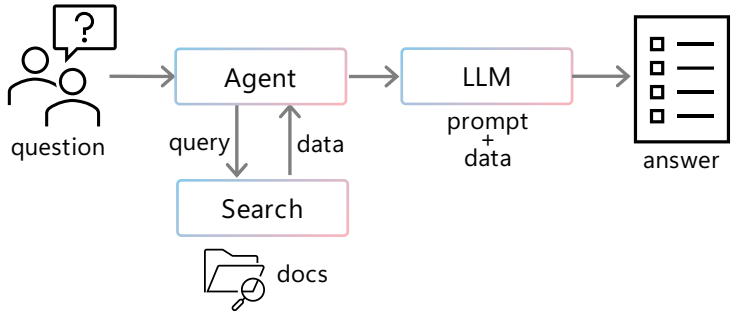
Very narrow one-shot task



Ex: log to JSON

Single Agent

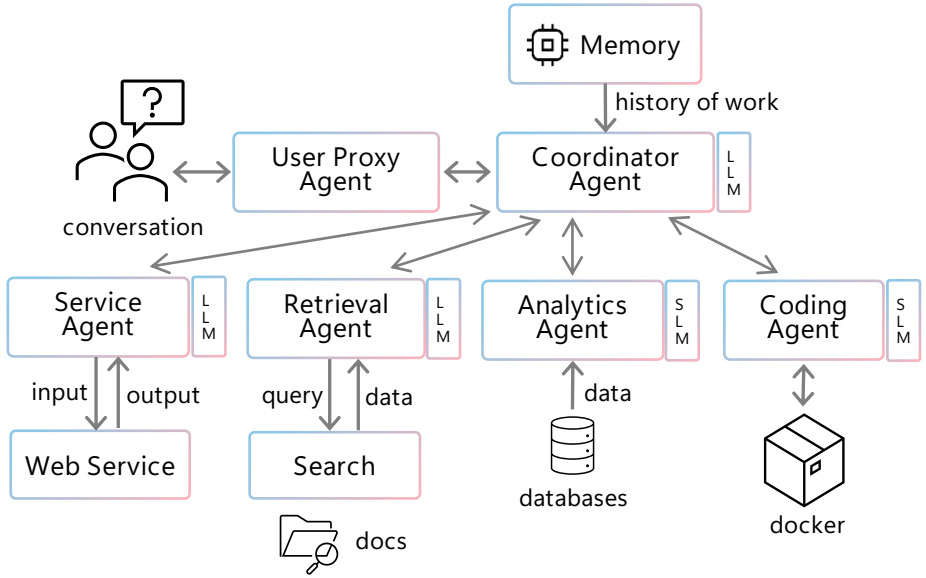
Very clearly scoped iterative task



Ex: providing an answer with supporting evidence to a complex question.

Multi-agent Systems

Wide scope complex use case requiring diverse skills

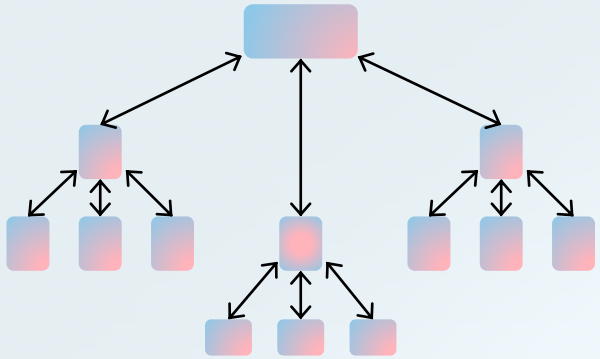


Ex: Propose 2 Instagram marketing campaigns including assets that would leverage the top 2 recent trends in our past quarter US Sales to boost our mailing list user base and predict the impact of each campaign.

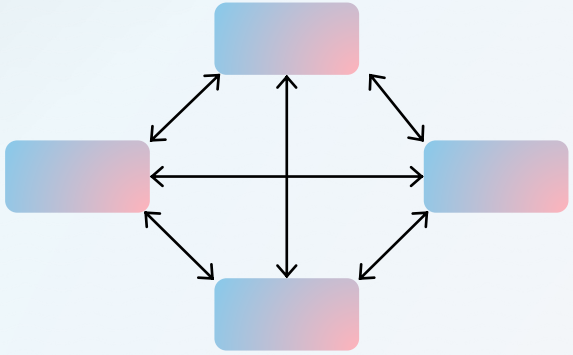
VALUE

Multi-Agent Orchestration Patterns

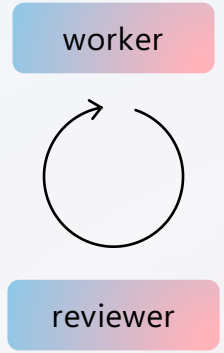
Hierarchical



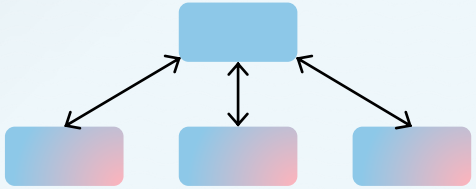
Network



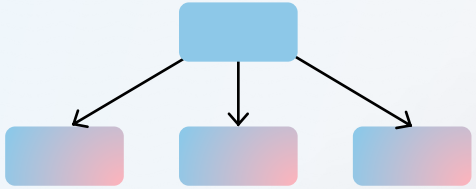
Maker-Checker



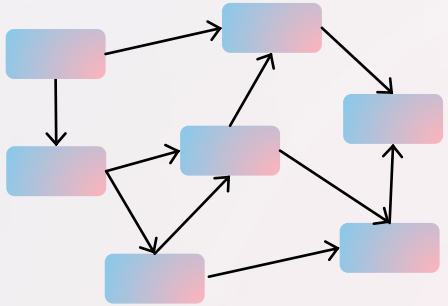
Supervisor



Hand-Off



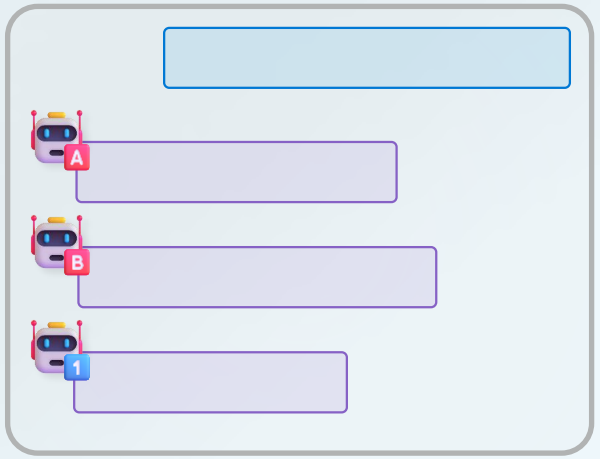
Custom



Multi-agent

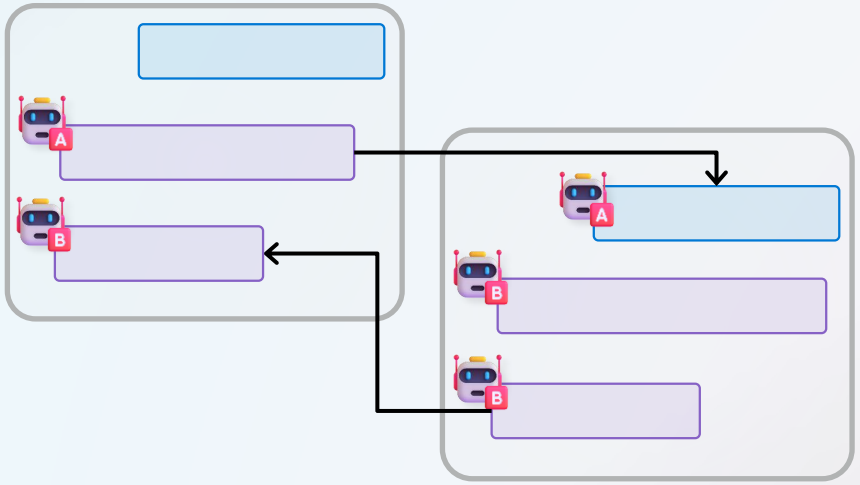
Customers have three choices…

1. Single thread shared across all agents



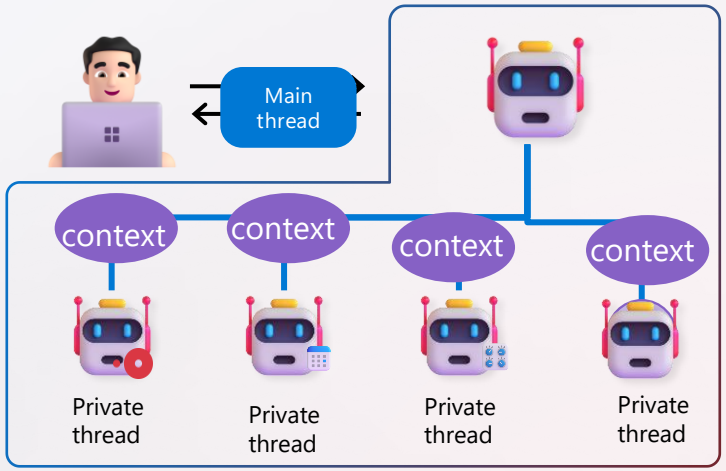
Pros: agents see all context
Cons: noisy and easily hit context windows

2. Private threads for workstreams



Pros: focused conversations
Cons: difficult to pass data back

3. One main conversation thread with context passed for sub-agents



AI-powered experiences in Fabric

Gen AI accelerates your data journey

Copilot accelerated experiences

Generally available

Chat with your data experiences

Public Preview

Build data agents for custom AI solutions

Public Preview

Copilot in Power BI

Unlock the full potential of your data

52%

Copilot users completed tasks faster

36%

Copilot users completed tasks more accurately

90%

Copilot users surveyed were likely to continue to adopt

SOURCE: Based randomized control trial conducted with n=209 users by Microsoft Corporation in October 2024 that measured four common metrics associated with the consumption experience of Copilot in Power BI, in Microsoft Fabric and compared it to users that did not use copilot.Qualitative sentiment gathered upon task completion. Actual results may vary.

Copilot and AI enabled across all paid SKUs

Available now

Copilot and AI experiences on F2+

Customers on F2+ can now access Copilot in Fabric, data agents, AI functions

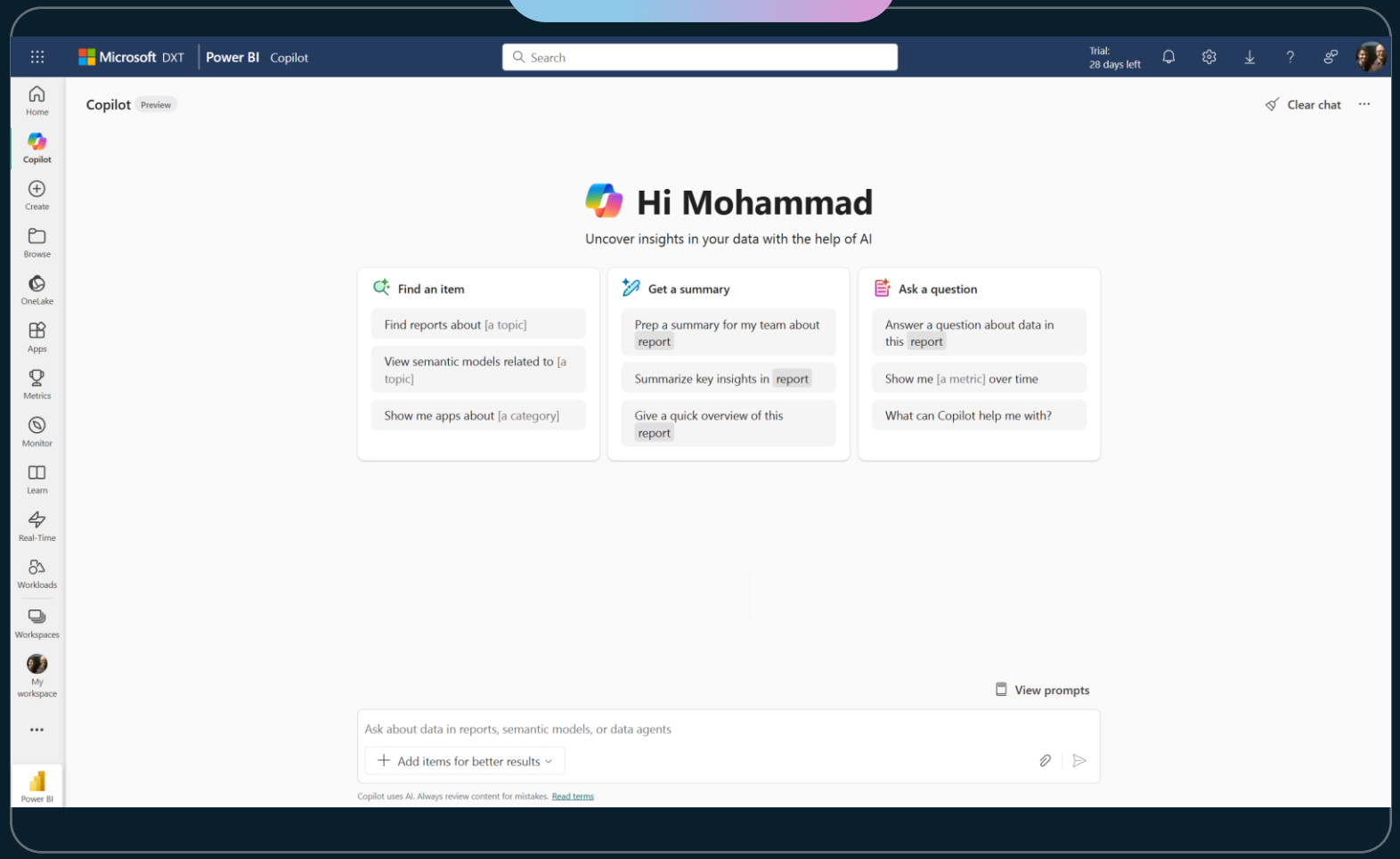
F64+ SKU requirement for Copilot and AI capabilities removed

Try it today

Chat with your data in Copilot in Power BI

A new full-screen Copilot experience that enables chat across all your Power BI data

Public Preview



Find, summarize, and analyze data across multiple reports, semantic models, apps, and data agents

Business users in Power BI can now chat with data agents without switching context

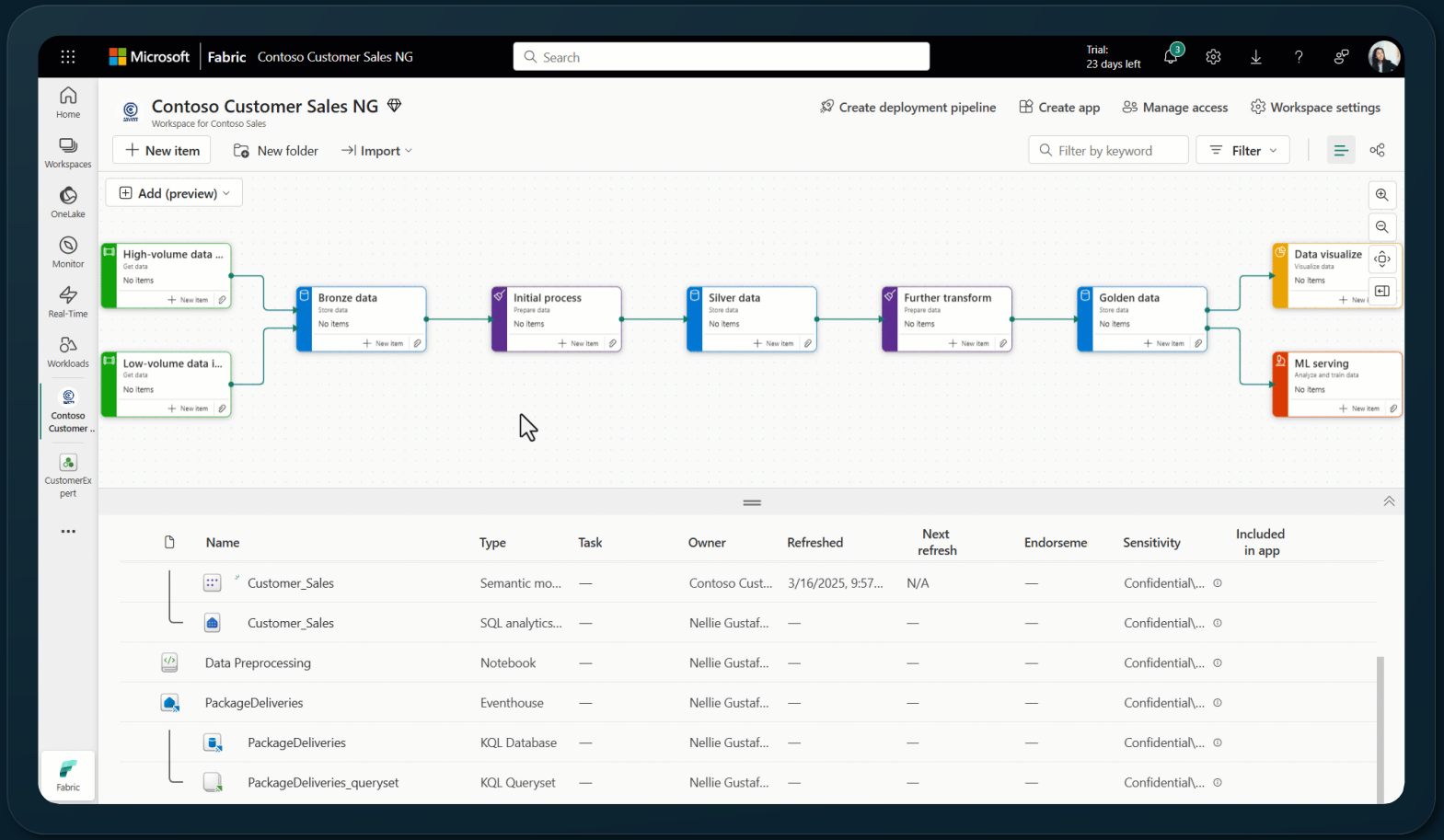
Lays foundation for upcoming integration of the Power BI agent with M365 Copilot Chat

Public Preview

Fabric data agents

Virtual analyst on data in OneLake

Fabric data agents

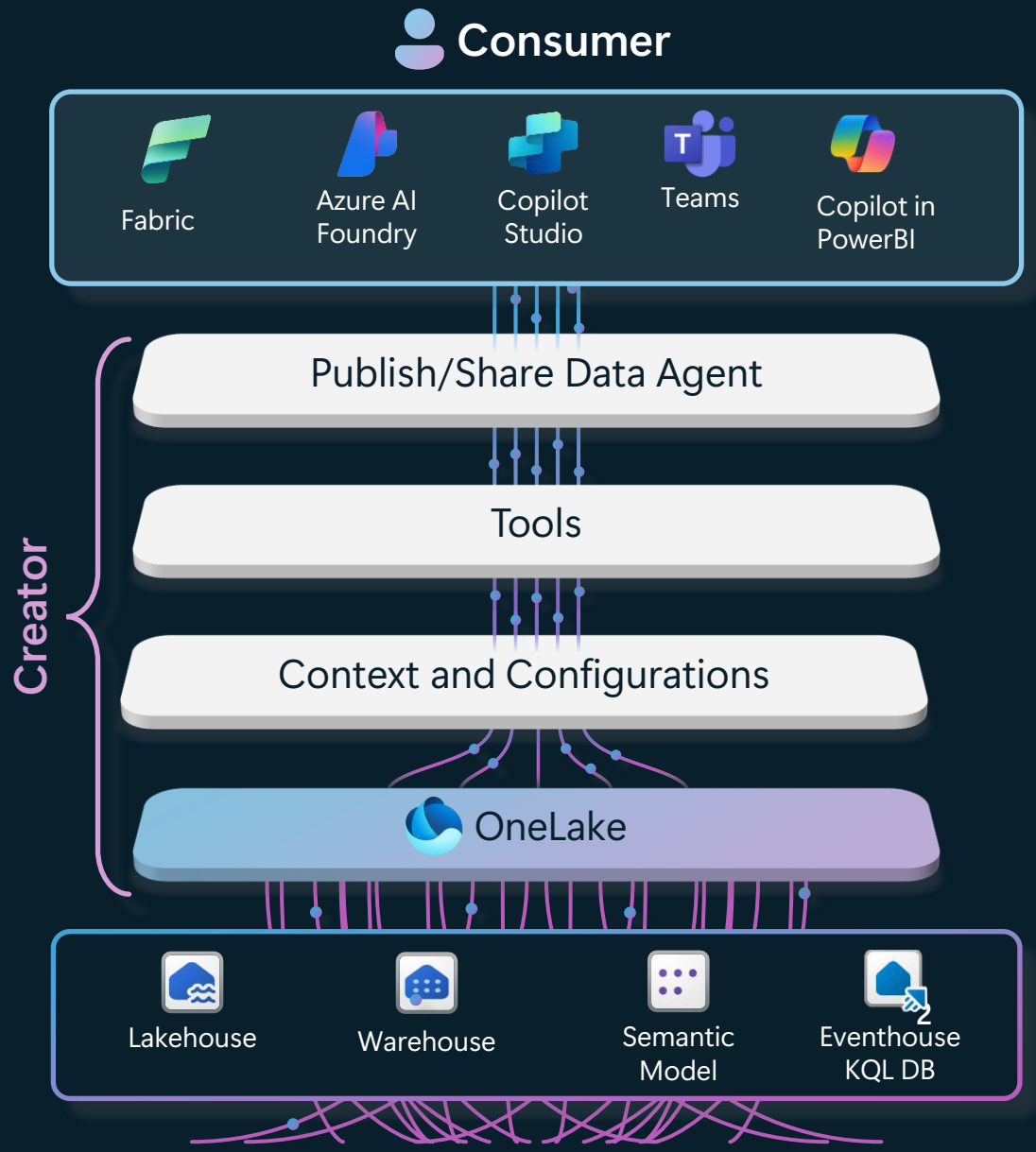


Create conversational AI agents that allow users to interact with data naturally

Reason over and synthesize data in OneLake for insights, tailored to your data domain

Extract deeper insights by understanding the structure, meaning, and context of data

Fabric data agents



The **conversational data agent** allows users to interact and analyze data with natural language, enhancing accessibility and usability.

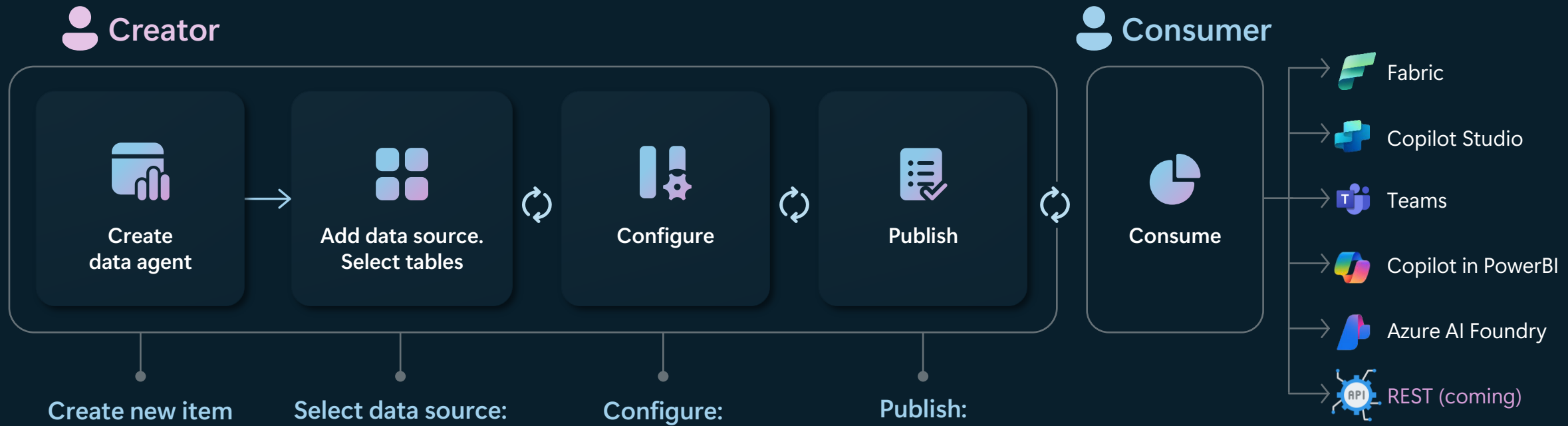
Chat canvas for creators with **new debugging capabilities**, making it easier to understand and refine responses.

Seamlessly reason over **multiple** data sources, including **Data Warehouse, Lakehouse, Semantic models and Eventhouse KQL databases**, to create a powerful Data Expert tailored to your data domain.

Your Data Agent can be consumed inside and outside of Fabric. Stay tuned for **upcoming integrations** with your own custom applications.

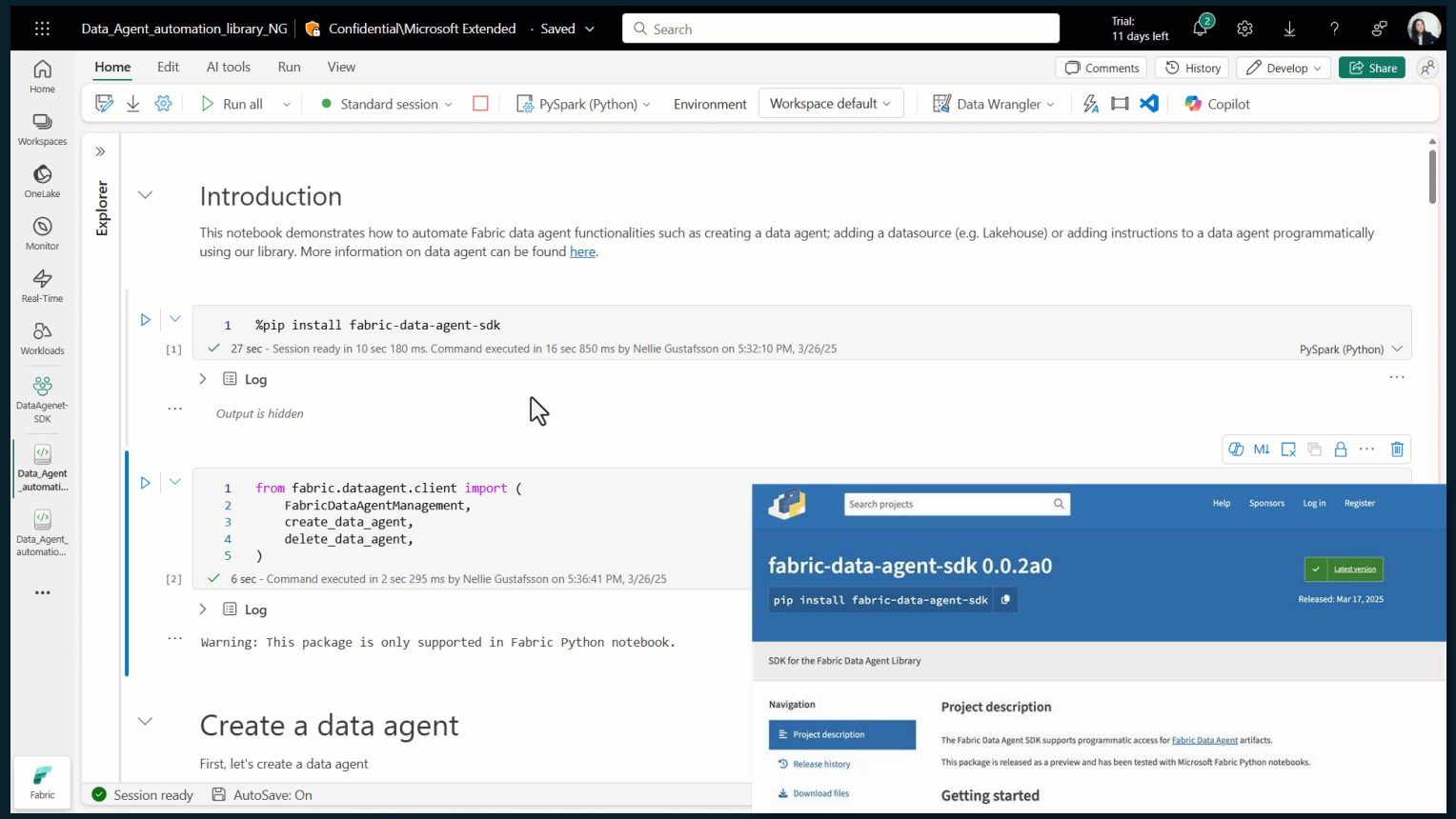
Data agent end-to-end flow

End-to-end scenario



Fabric data agent SDK

Public Preview



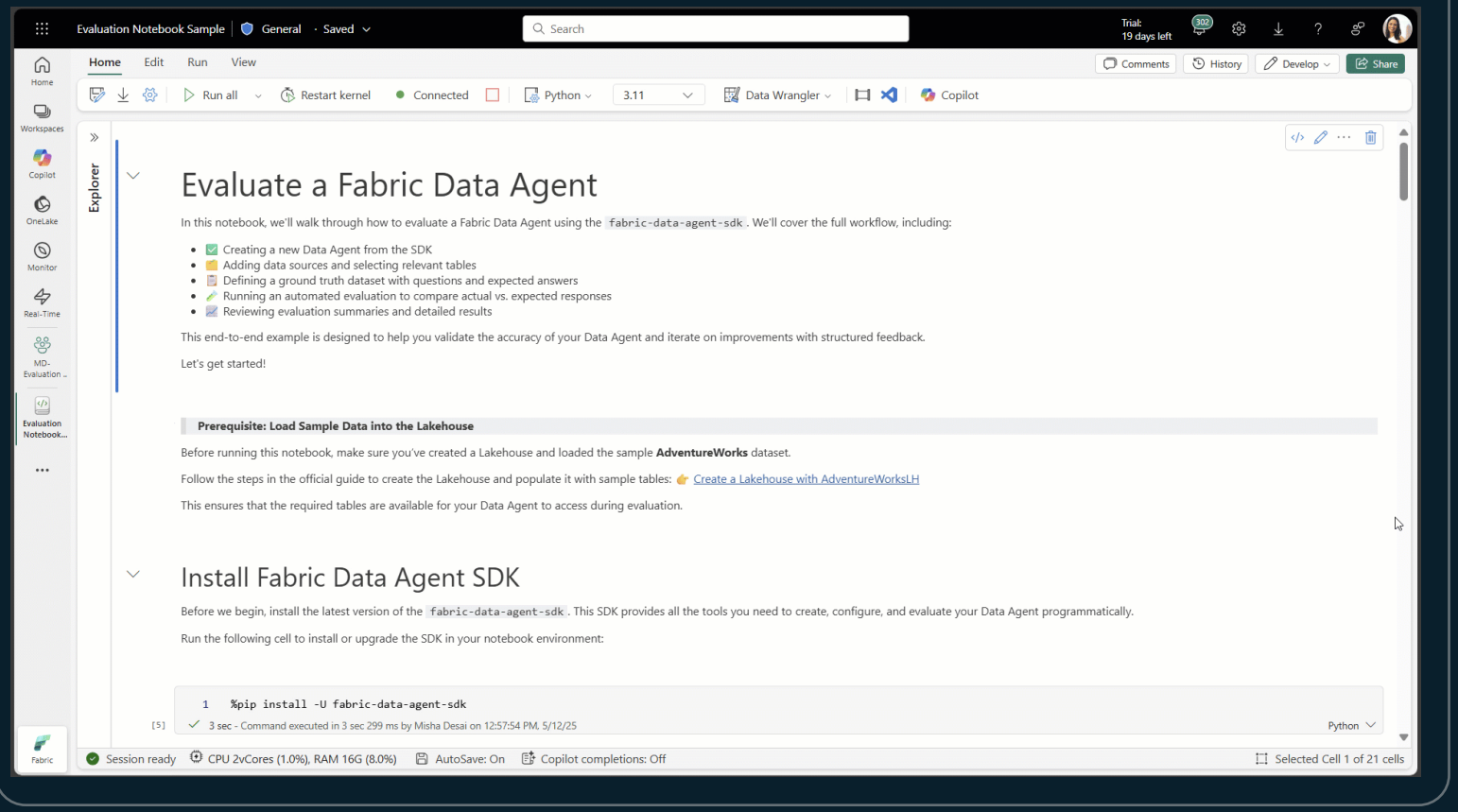
Leverage a Data Agent SDK to invoke Fabric data agents from Fabric Notebooks (external endpoint coming)

Create and configure data agents for automation and testing

Test and evaluate data agents against your ground truth datasets

Evaluate data agents

Public Preview

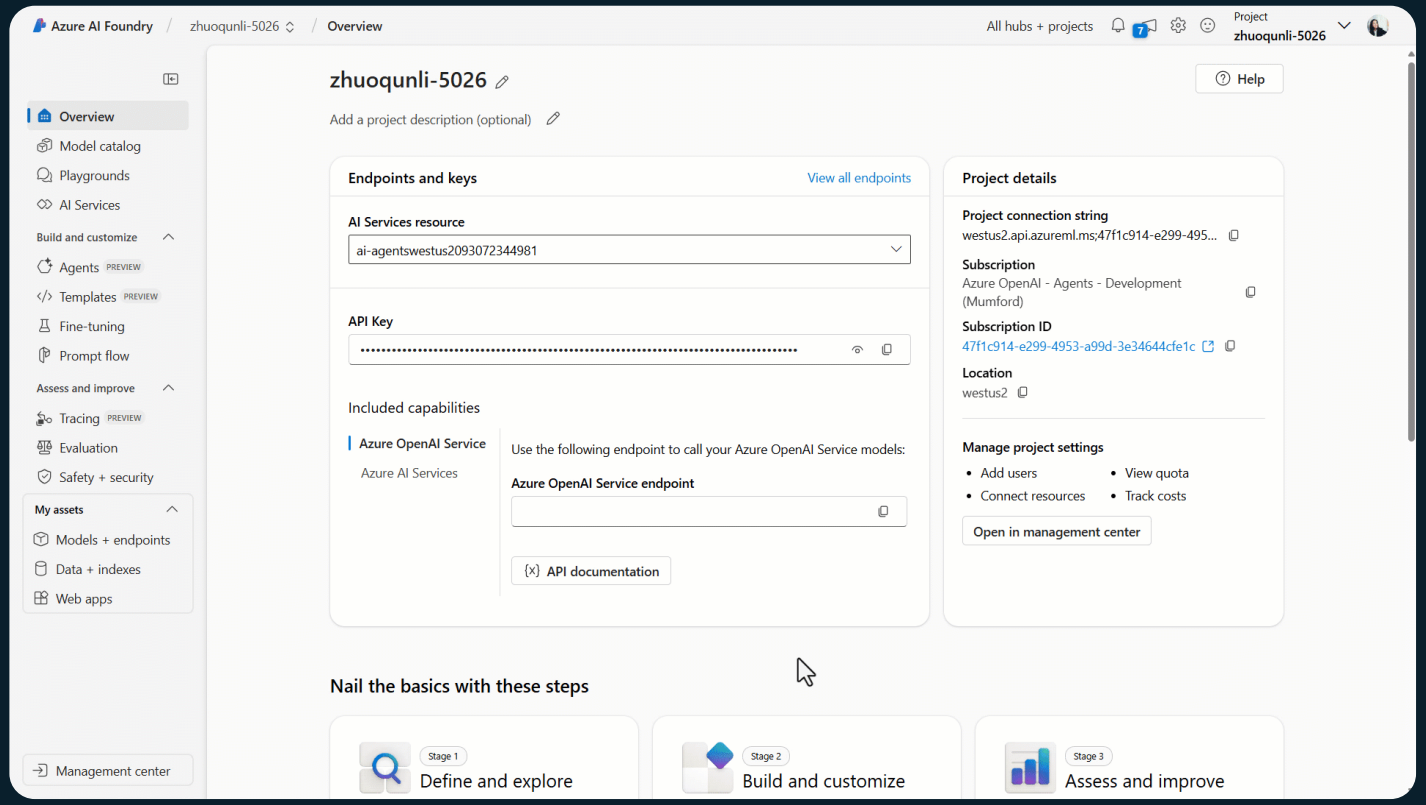


- Native support for data agent evaluation through the Fabric data agent SDK.
- Run structured evaluations using Python from notebooks
- Validate accuracy before production deployment
- Tune prompts for better performance
- Benchmark improvements over time
- View Summary and detailed results

Fabric integration with Azure AI Foundry

Build accurate, relevant, and context-aware multi-agent solutions

Public Preview



Fabric data agents can reason over and synthesize data in OneLake for insights

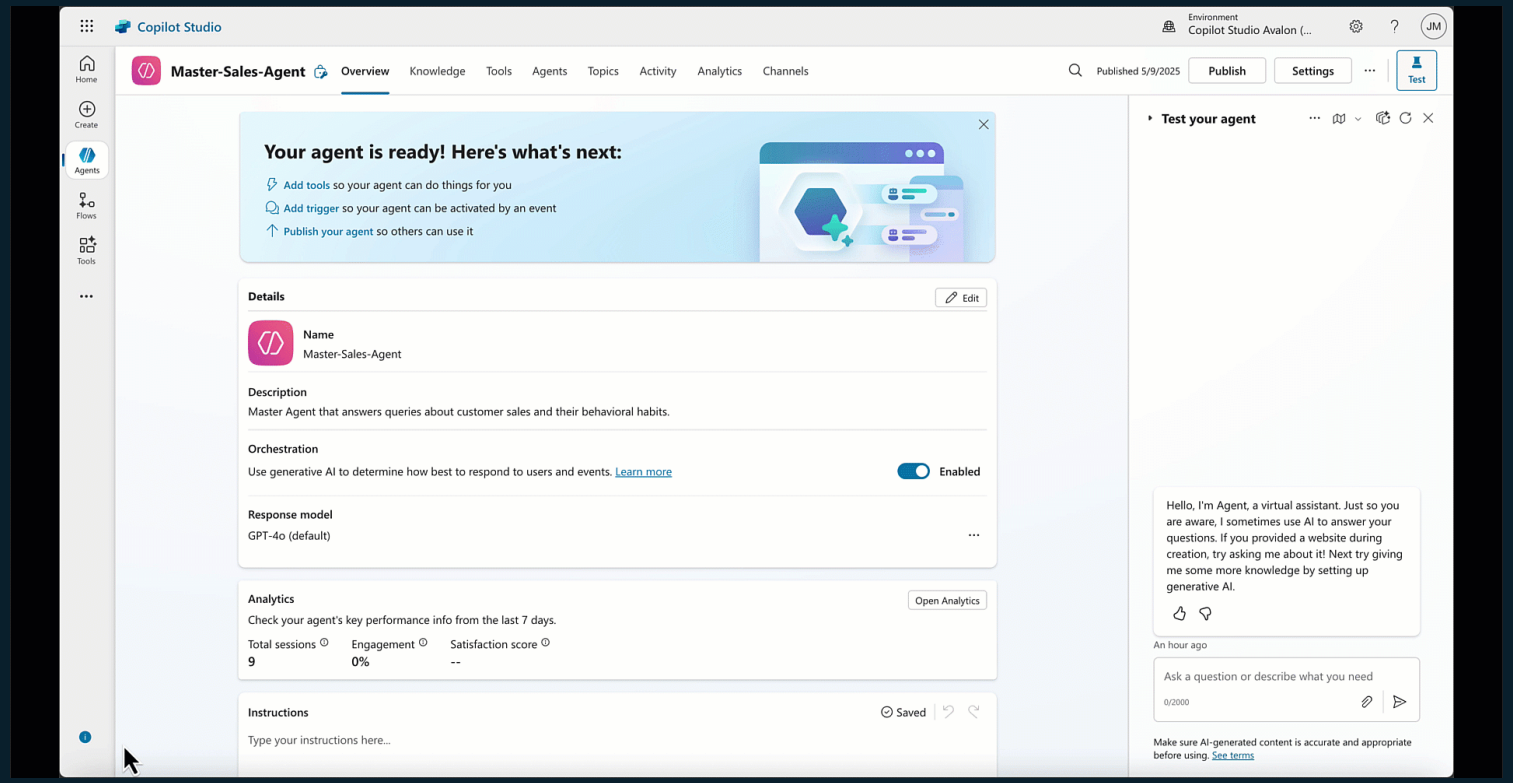
AI creators can enrich AI agents in Azure AI Agent Service with Fabric data agents' expertise

Security permissions, including RLS and CLS, are respected

Fabric data agent integration with Copilot Studio

Enrich custom copilots with Fabric data expertise

Public Preview



Fabric data agents can reason over and synthesize data in OneLake for insights

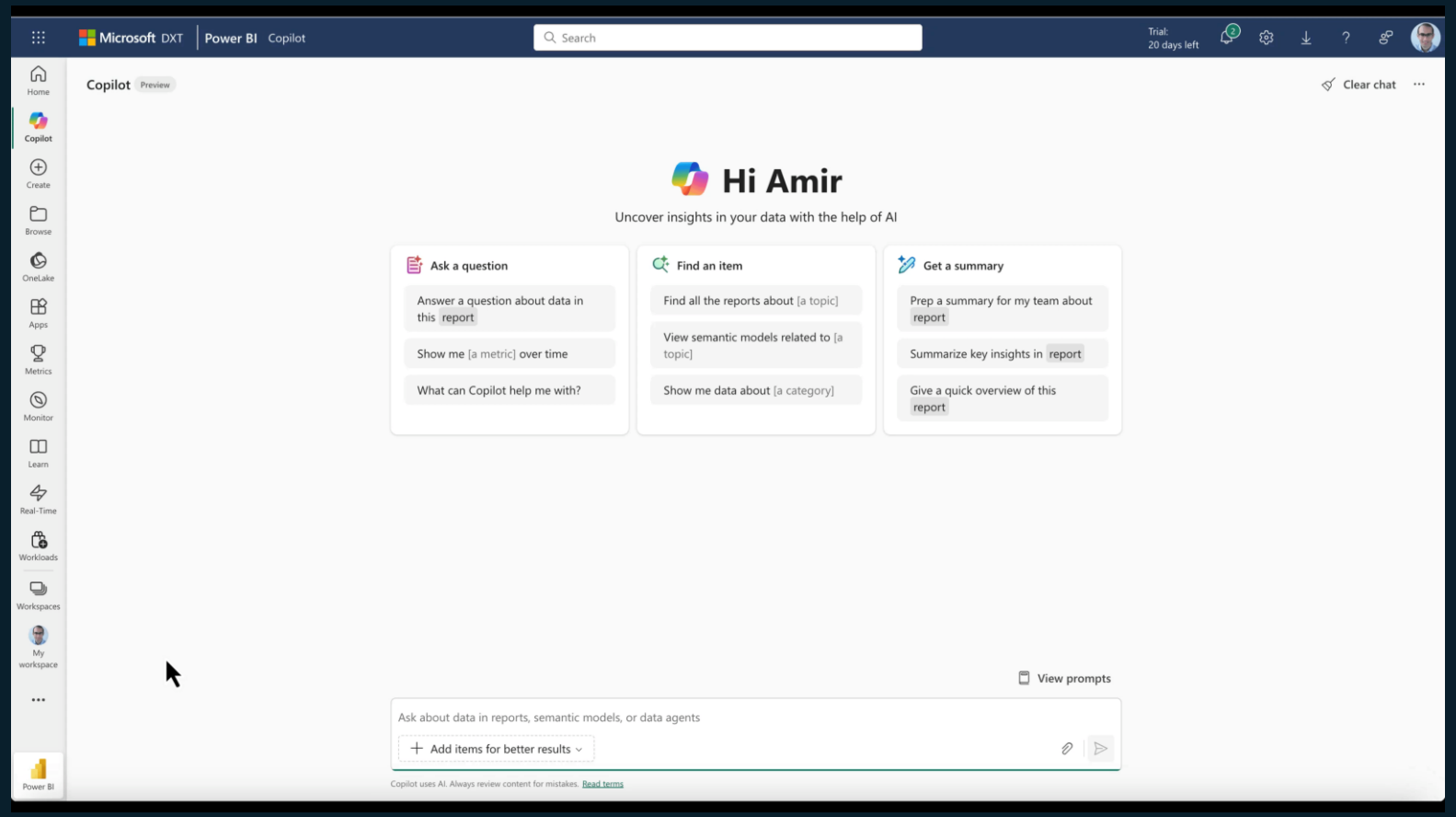
AI creators can enrich custom copilot agents in Copilot Studio with Fabric data agents' expertise

Security permissions, including RLS and CLS, are respected

Fabric data agent integration with Copilot in Power BI

Extract deeper insights within Power BI

Public Preview



In the new full-screen Copilot in Power BI experience, you can scan across semantic models, reports, and Fabric data agents you have access to

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Security permissions, including RLS and CLS, are respected

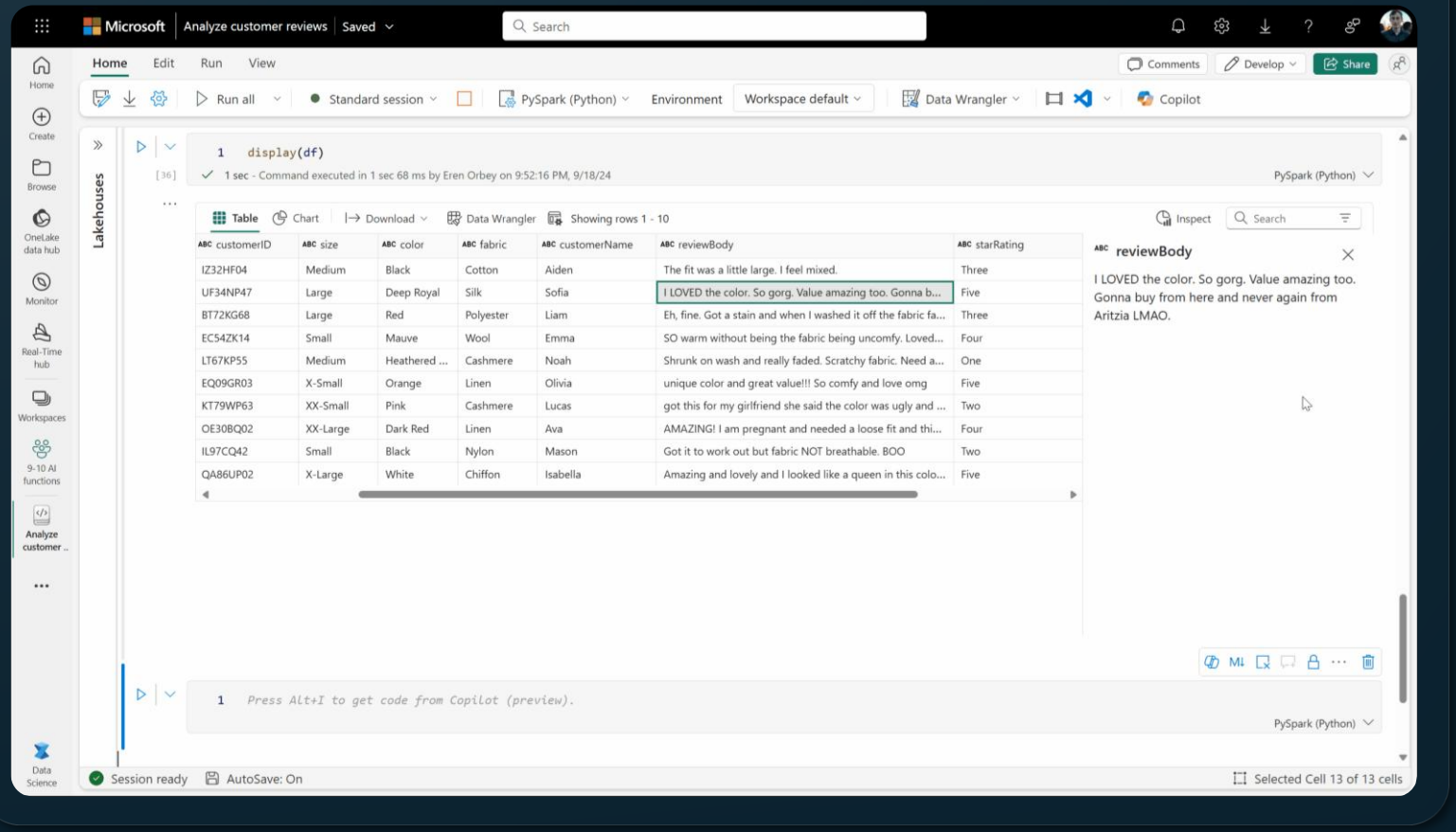
Public Preview

AI functions

Seamless data enrichment

Seamless data enrichment with AI functions

Public preview



Transform and enrich data with user-friendly AI functions

Invoke state-of-the-art LLMs in just a single line of code

Choose from summarization, translation, sentiment analysis, and so much more

Get started with AI functions today

Eight AI functions available today, including a generic function for custom prompts

Function	Description
`ai.similarity`	Compare the meaning of input text with a single common text value or with pairwise values.
`ai.classify`	Classify input text values according to labels you choose.
`ai.analyze_sentiment`	Identify the emotional state expressed by input text.
`ai.extract`	Find and extract specific types of information from input text, for example locations or names.
`ai.fix_grammar`	Correct the spelling, grammar, and punctuation of input text.
`ai.summarize`	Get summaries of input text.
`ai.translate`	Translate input text into another language.
`ai.generate_response`	Generate responses based on your own instructions.

Recap: New features

Copilot accelerated experiences

Generally available

Chat with your data experiences

Public Preview

Build data agents for custom AI solutions

Public Preview

Recap: New features in preview

Copilot accelerated experiences

- Data Factory
- Real-Time Intelligence
- Databases
- Data Engineering
- Data Science
- Data Warehouse
- Power BI

Chat with your data experiences

- Chat with your data: Standalone Copilot in Power BI experience
- Copilot in Power BI tooling

Public Preview

Build data agents for custom AI solutions

- Fabric data agents:
  - Copilot Studio integration
  - Integration with Copilot in Power BI
- AI Functions
- AI operations in Data Wrangler
- AI powered code completion in Fabric Notebooks

Public Preview

Roadmap

Copilot accelerated experiences

Improvements to:

- Data Factory
- Real-Time Intelligence
- Databases
- Data Engineering
- Data Science
- Data Warehouse
- Power BI

Chat with your data experiences

Power BI:

- Power BI agent in M365
- Copilot in Power BI in Apps
- Improved answer coverage
- Embed support/API support
- MCP support
- User personalization

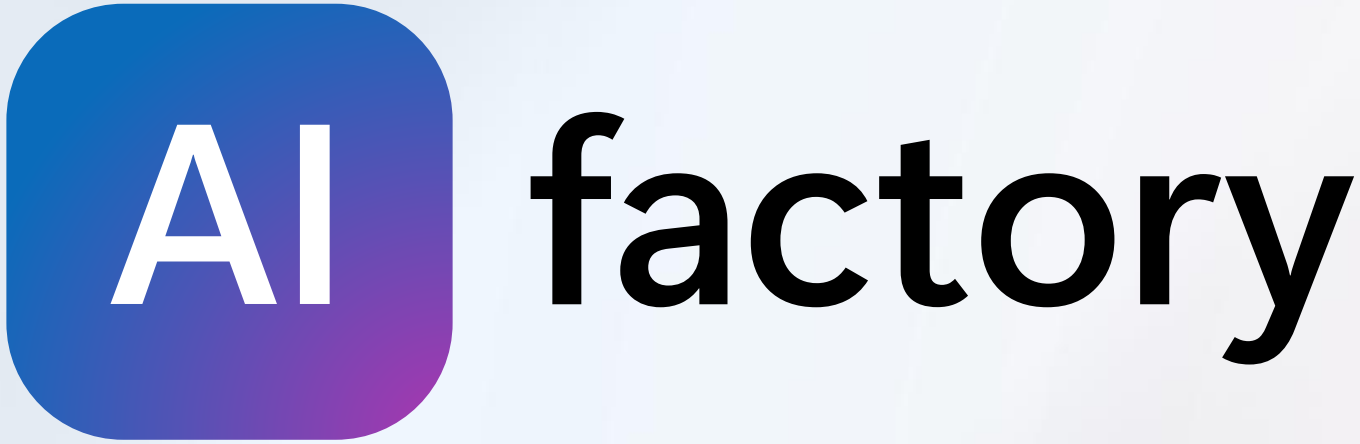
Build data agents for custom AI solutions

Fabric data agents:

- Unstructured data
- Mirrored databases
- REST endpoint (MCP)
- CI/CD (Git) support
- Observability

AI functions

- AI functions in SQL
- AI functions in Data Wrangler


AI
factory

Azure AI Foundry Agent Service

Generally available

Multi-agent workflows

Open and interoperable tooling

Trust and enterprise security

AI.Azure.com

Azure AI Foundry

New Evaluators

Quality

NEW Document Retrieval

Groundedness

Relevance

Coherence

Fluency

Similarity

NLP Metrics (e.g., F1 Score)

NEW AOAI Graders

Risk & Safety

Indirect Attack Jailbreaks

Direct Attack Jailbreaks

Hate and Unfairness

Sexual

Violence

Self-Harm

Protected Material

NEW Ungrounded Attributes

NEW Code Vulnerability

NEW Agents

Intent Resolution

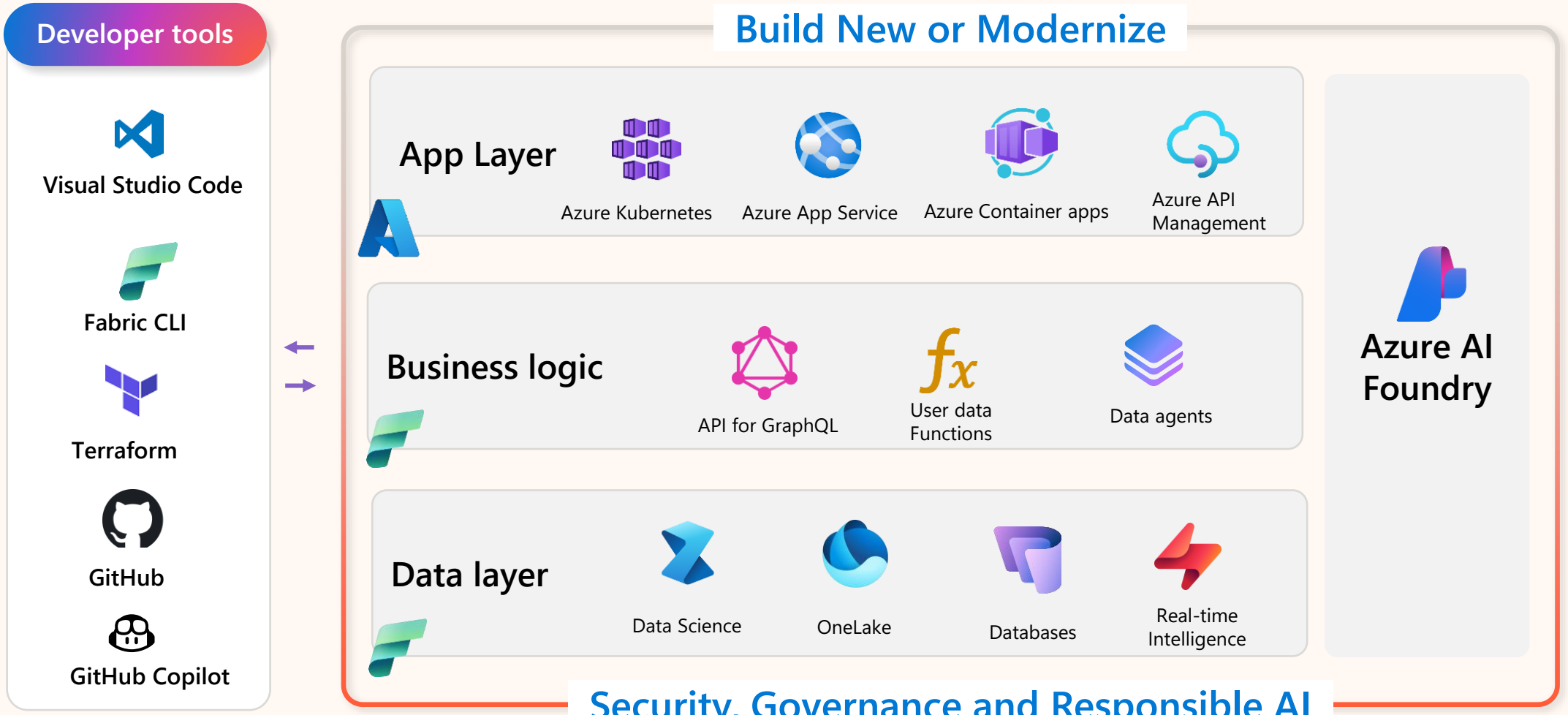
Tool Call Accuracy

Task Adherence

Response Completeness

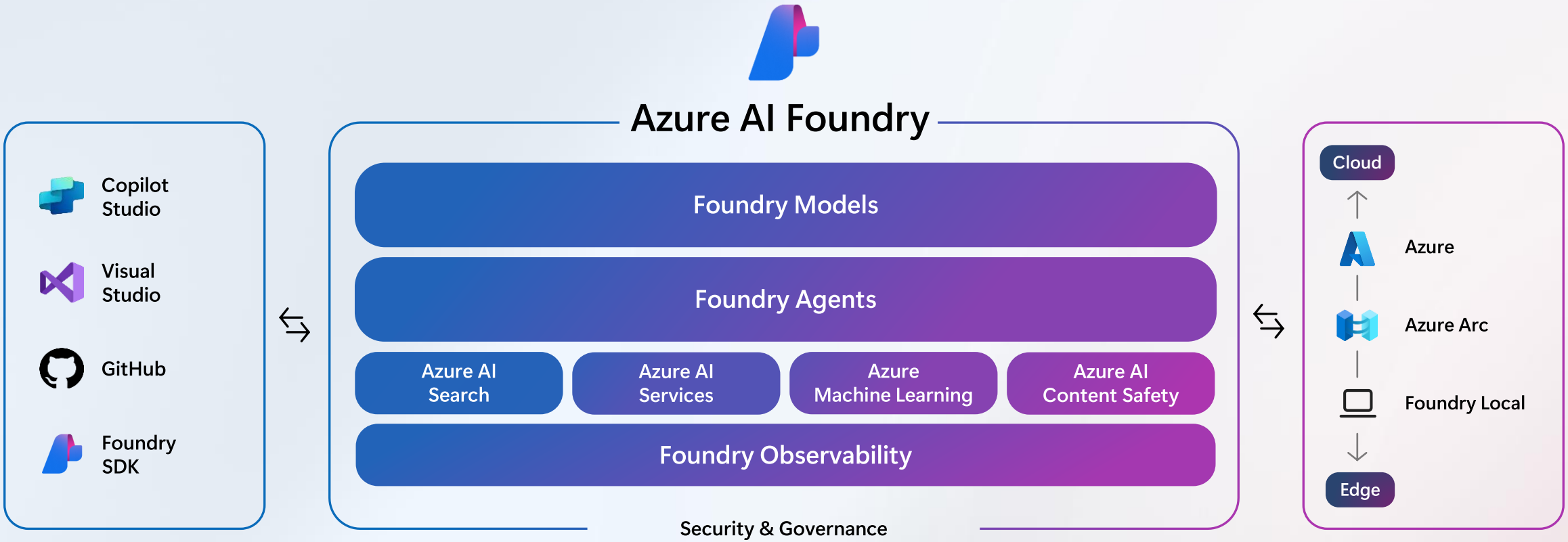
+ Custom Evaluators

Integrated AI application platform

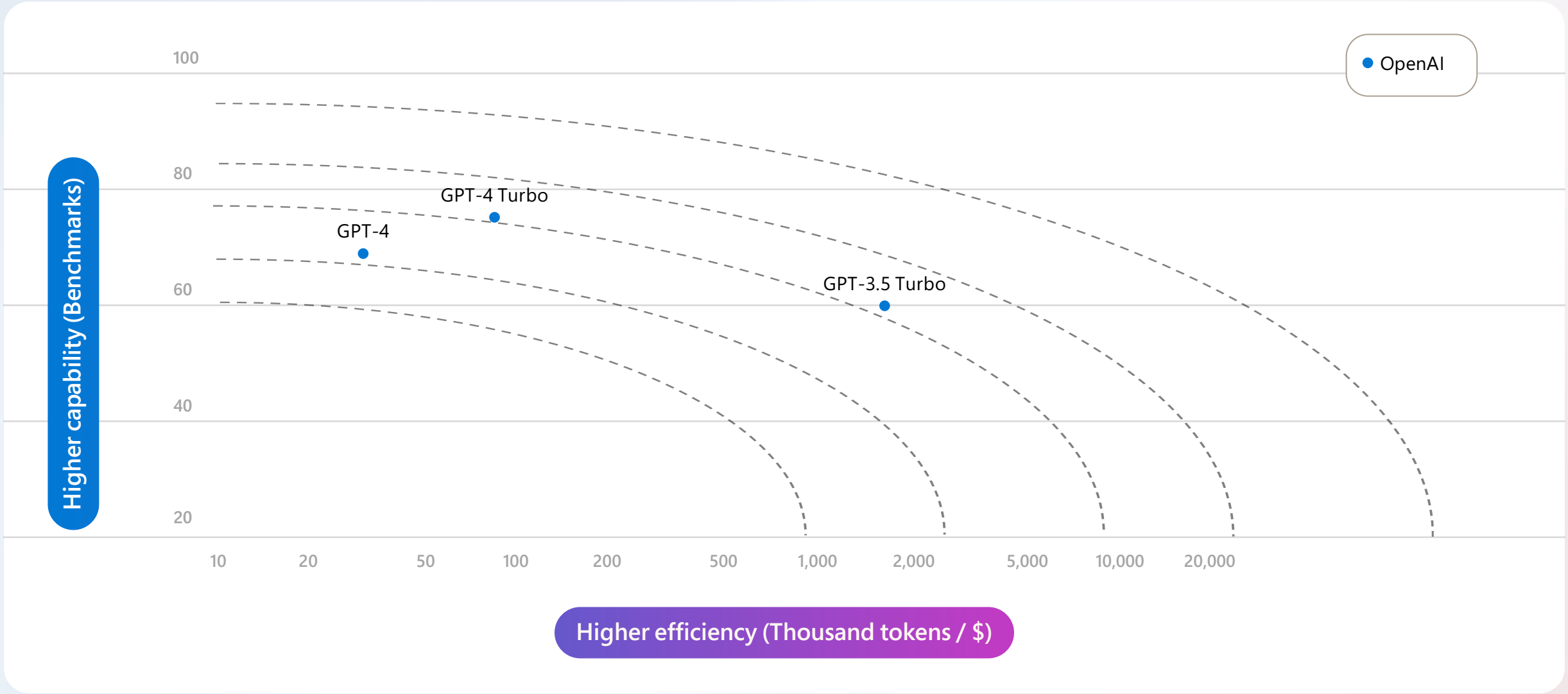


AI-assisted development | Any App, architecture and language

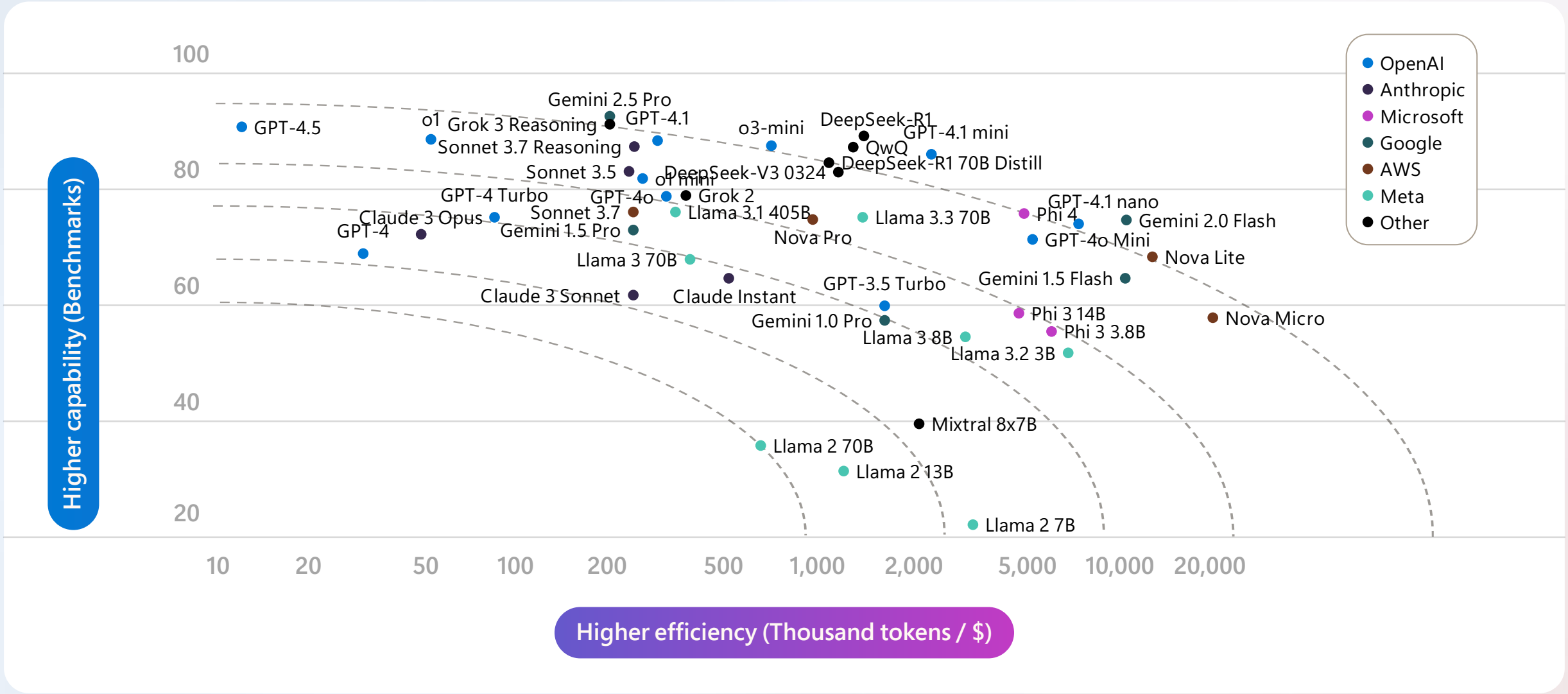
Your AI app and agent factory



From a few foundational models…



...to explosion of foundational models



Azure AI Foundry Models

Offering 11,000+ frontier and open models

Azure OpenAI
- o1/o1-mini
- o3/o3-mini
- o4-mini
- GPT-4o/GPT-4o mini
- GPT-Image-1
- Sora
- GPT-4.1/ 4.1-mini/4.1-nano
- Dall*E-3
- Whisper

Microsoft
- Phi-4
- Phi-4-mini/multimodal
- Phi-4-mini-reasoning
- Phi-4-reasoning/ reasoning-plus
- Bitnet
- Magma
- Aurora
- BioEmu
- OmniParser v2

DeepSeek
- DeepSeek-R1
- DeepSeek-V3 0324
- MAI-DS-R1 (Microsoft AI)

xAI
- Grok 3
- Grok 3 mini

Black Forest Labs
- Flux Pro 1.1

Meta
- Meta-Llama-3
- Meta-Llama-3.1-405B
- Llama-3.2
- Llama-3.3
- Llama4-Scout
- Llama4-Maverick
- CodeLlama
- Llama-Guard

Mistral AI
- Mistral Large
- Mistral Medium 3
- Mistral Nemo
- Mistral Small
- Mistral 7B
- Mixtral 8x7B – Mixture of Experts
- Codestral
- Mistral OCR

Cohere
- Command R+
- Command R
- Command A
- Cohere Rerank
- Embed v3-Multilingual
- Embed v3-English
- Embed 4

Hugging Face
- Qwen QwQ 32b
- DeepCogito
- Seethal Sentiment
- Roberta
- Google Flan
- Intel Bert
- Cross Encoder
- Intfloat Multilingual E5
- Cerebras

NVIDIA
- Nemotron-3-8B-4k
- Nemotron-3-8B-Chat-SFT/ RLHF/SteerLM
- Nemotron-3-8B-QA
- NIMS microservices inc:
- Mistral 7B Instruct v0.3
- DeepSeek R1 Distill Llama
- Mixtral 8x7B Instruct
- Llama 3.2 NV Rerank QA

Stability
- Stable Diffusion
- Stable Image Ultra

Bria
- Bria 2.3 Fast

Deci
- DeciCoder
- DeciDiffusion

Databricks
- Databricks/dbrx-base
- Databricks/dbrx-instruct

Snowflake
- Snowflake/arctic-base
- Snowflake/arctic-instruct

Nixtla
- Time GEN-1

Industry Models
- Fidelity/Saifr
- Sight Machine
- Bayer
- Cerence
- Paige AI
- Prism
- Rockwell
- Virchow
- RA-FT-Optix

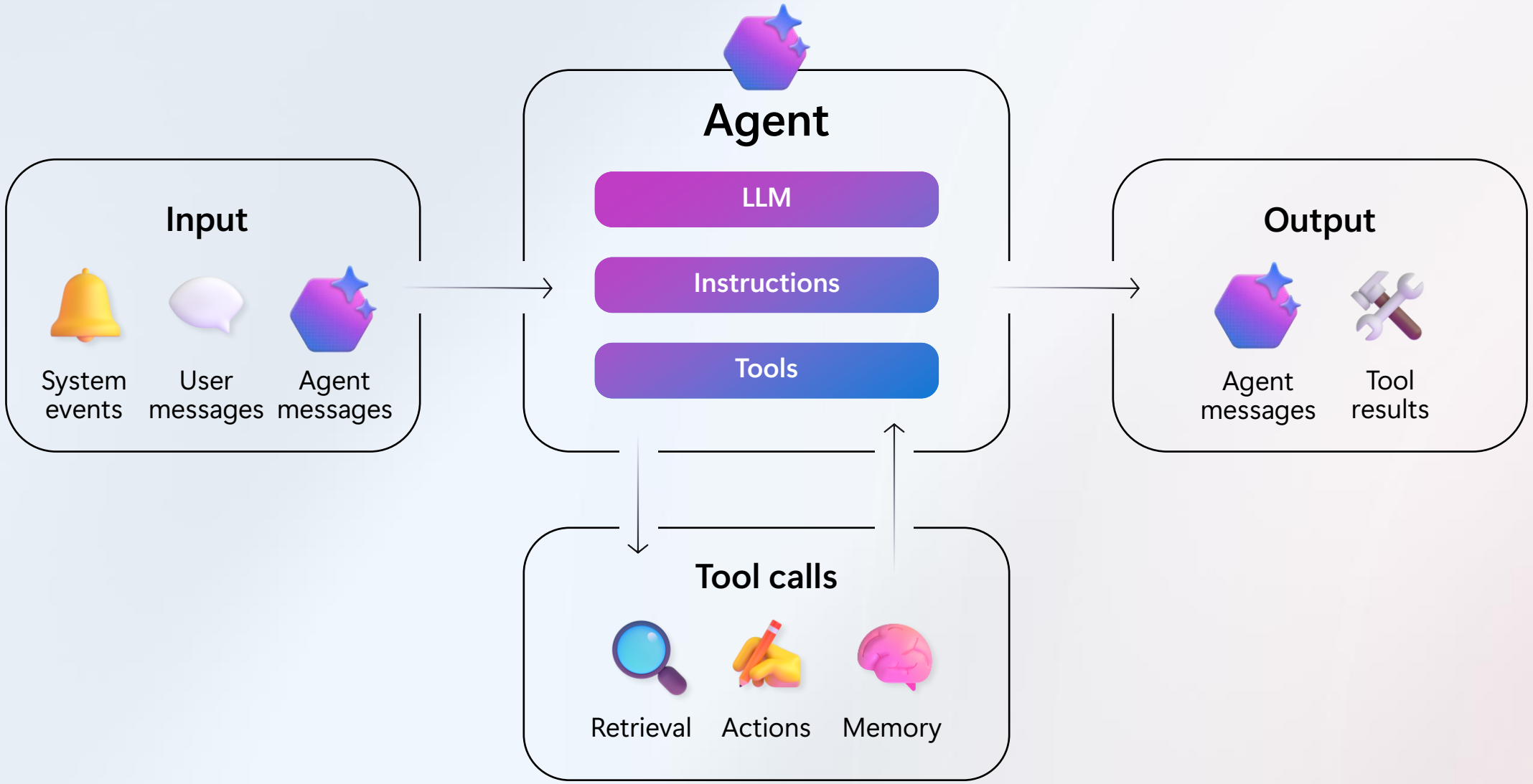
Core 42
- JAIS

Gretel
- Navigator

SDAIA
- ALLaM-2-7b-instruct

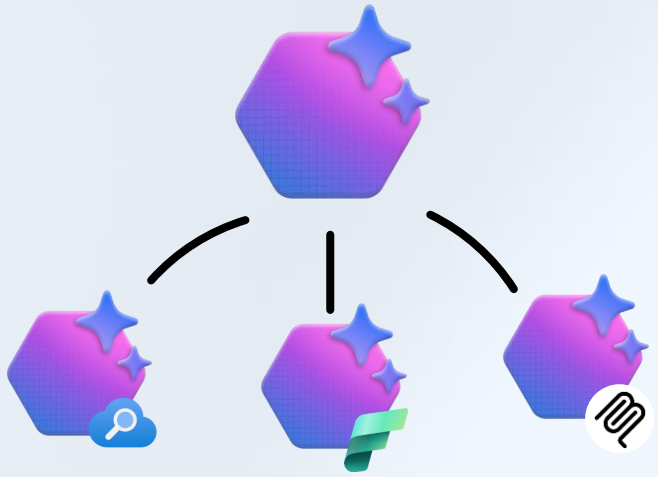
NTT
- Data Tsuzumi

What is an agent?



Multi-agent orchestration

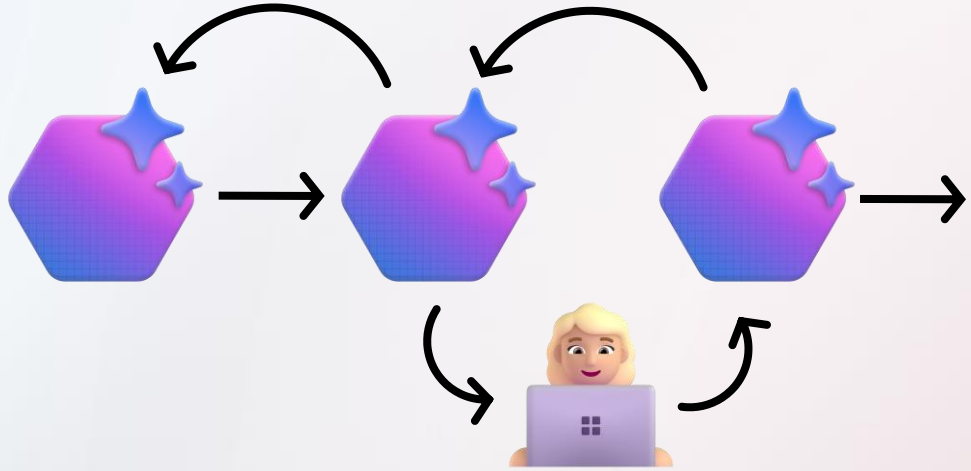
Connected agents



Give one agent the abilities of another.

Multi-agent workflows

Powered by Semantic Kernel



Declaratively orchestrate multiple agents.

Building agents your way

Platform integrations, ease-of-use, and development speed

IaaS
Infrastructure-as-a-Service

Code handling every detail

Azure AI Infrastructure
Bring your own frameworks

PaaS
Platform-as-a-Service

Code with managed services

Azure AI Foundry
Foundry Agent Service

SaaS
Software-as-a-Service

Drag and drop UI building

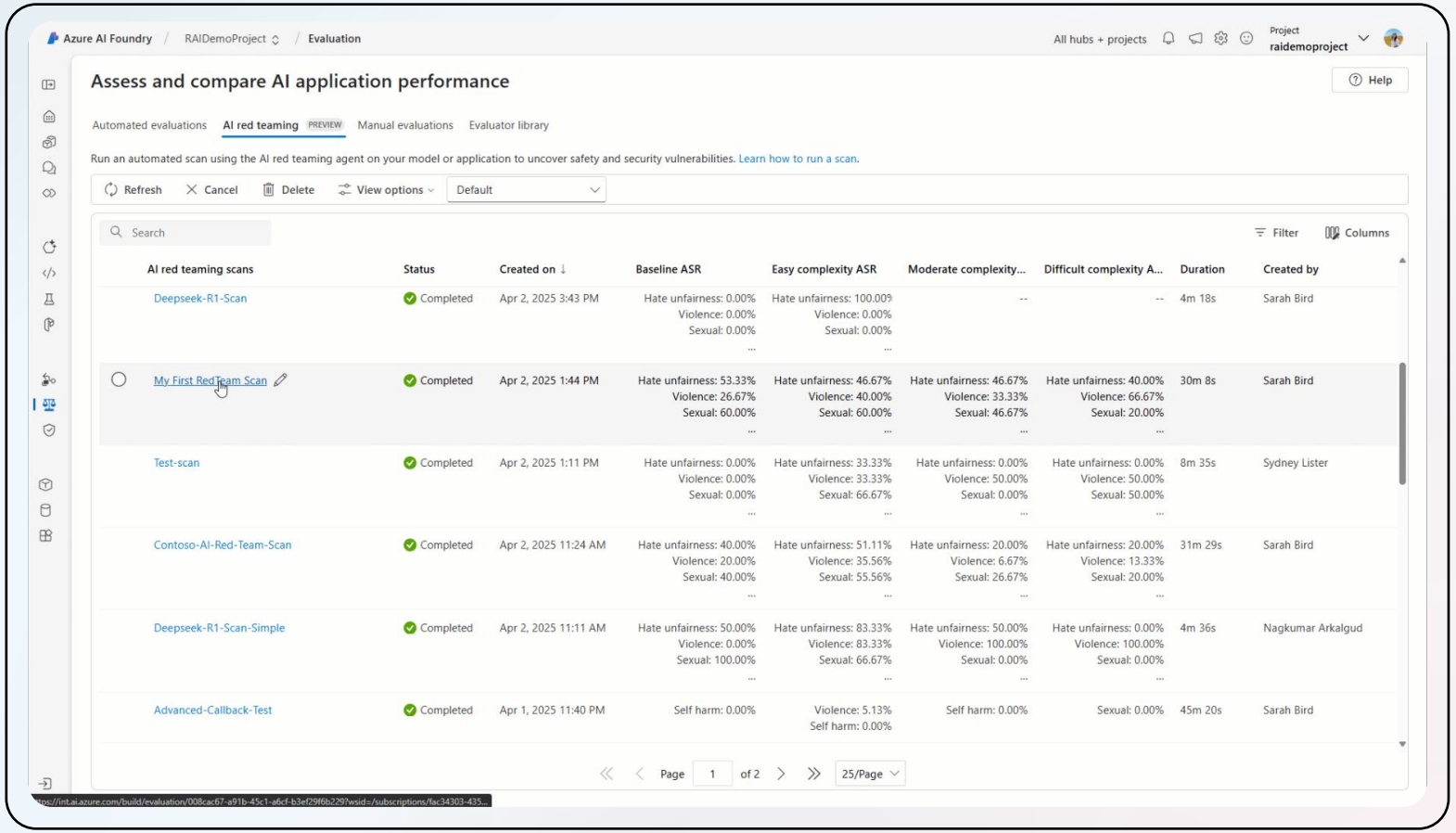
Copilot Studio
Instant agent runtime

Control, visibility, and customization

NEW

AI Red Teaming Agent

Automated scans to empower security professionals and ML engineers to proactively find risks in their generative AI systems faster with integrations of PyRIT into Azure AI Foundry



The full enterprise package

Azure AI Foundry Agent Service

Trust

Customer control over data, networking, and security

- BYO-file storage
- BYO-search index
- BYO-virtual network*
- BYO-thread storage*
- Auth integration

Choice

Model choice and flexibility with Foundry Models

Azure OpenAI

GPT-4o, GPT-4o mini, etc.

Llama 3.1-405B-Instruct

Mistral Large

Cohere-Command-R-Plus

Tools

Richest set of enterprise connectivity

Knowledge

Actions

Logic Apps* Azure functions OpenAPI

Evaluators

Quality

Groundedness

Coherence

Fluency

Relevance

Retrieval Score

Similarity

NLP Metrics (e.g., F1 Score)

Risk & Safety

Jailbreak Defect

Hate and Unfairness

Sexual

Violence

Self-Harm

Protected Material

Announcing

Agents

Intent Resolution

Tool Call Accuracy

Task Adherence

Response Completeness

Risk & Safety

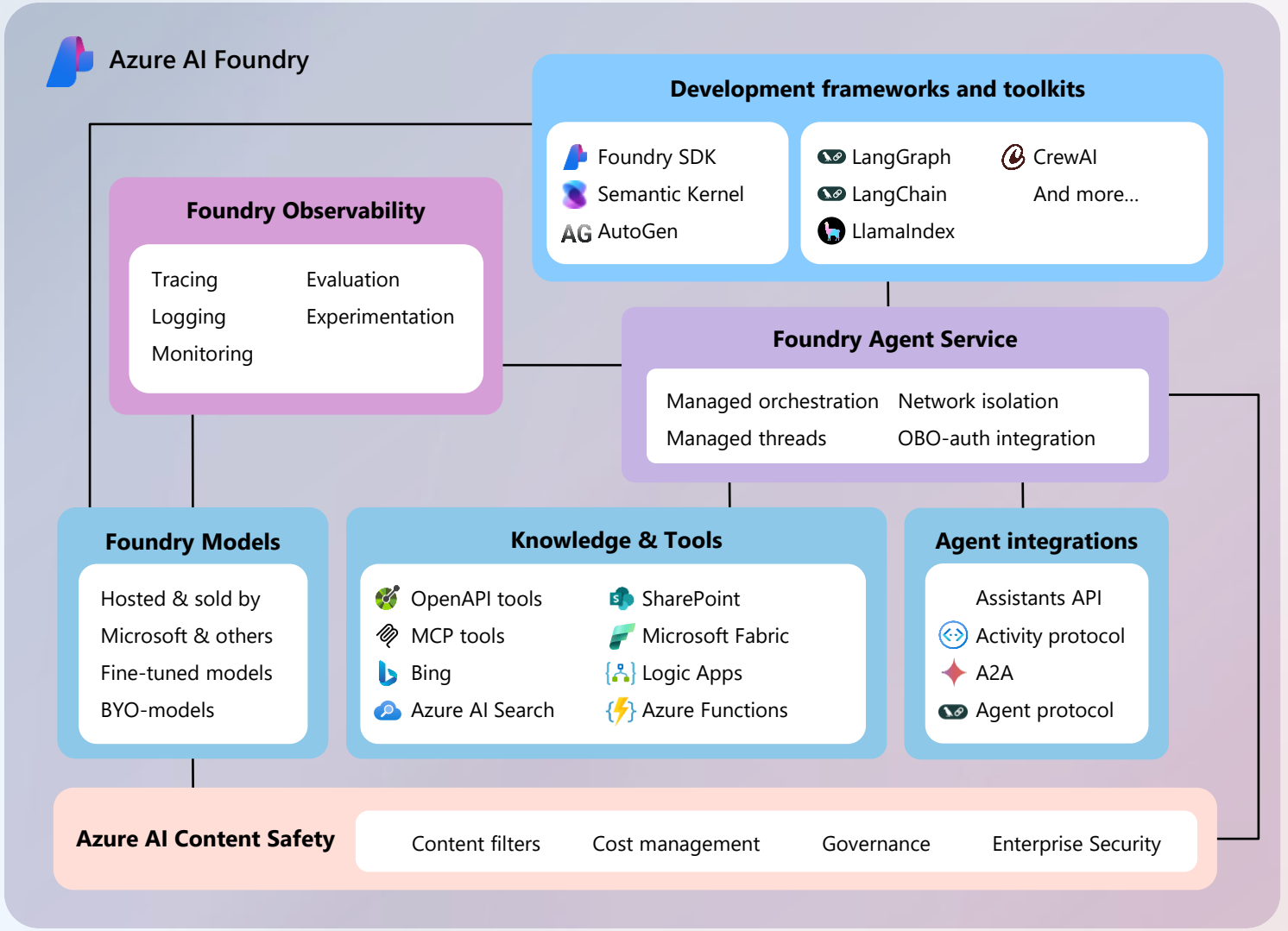
Ungrounded Attributes

Code Vulnerability

+ Custom Evaluators

Agents in Azure AI Foundry

Combine the best models, services, and tools in Azure AI Foundry into reusable, testable agentic components.



Scale smarter and innovate faster with Azure OpenAI models in Azure AI Foundry

1. Latest innovations with same-day access
2. Connect to your Microsoft Data Estate
3. Content safety is guardrails
4. Flexible offerings
5. Enterprise Azure promises
6. Your data is private and secure
7. Developer-friendly integration
8. Model choice

Azure OpenAI Service

99.9%	28	99%	EU & US
Reliability service wide	**Regions** for data residency	**Latency SLA** for Provisioned	**Data Zones** for regional control

Call to Action

Are you ready to create the future of AI?

Explore Azure AI Foundry: ai.azure.com

Download the SDK: aka.ms/aifoundrysdk

Review documentation: aka.ms/AzureAI

Take the Azure AI Learn Course: aka.ms/CreateAgenticAISolutions

Join our developer community channels:

- Discord: aka.ms/ai/discord
- GitHub Discussions: aka.ms/azureaifoundry/forum

Read more about what's new in Azure AI Foundry

aka.ms/Build25/HeroBlog/Foundry

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