



Build your own Co-Pilot

Embrace the Era of AI



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SR CLOUD SOLUTION ARCHITECT



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PARTNER TECHNOLOGY STRATEGIST



Agenda

1. About Co-Pilots

- Setting the scene
- Defining Co-Pilots
- Empowering your dream team
- Beyond

2. Building your own

- Hack
- Proof of Concept
- Minimum Lovable Product
- Beyond

3. Next Steps

Back
in
2016

Democratizing AI

For every person and every organization



By Microsoft
News Center
26 September,
2016



As we think about the future of technology, it resides in the notion of intelligence. At Microsoft, we have an approach that's both ambitious and broad, an approach that seeks to democratize Artificial Intelligence (AI), to take it from the ivory towers and make it accessible for all.

And as we consider the future, it's often instructive to look to the past. Let's consider the beginning of the modern era of information. With the advent of the printing press in the 1400s we have an explosion of information — the first democratizing event around access that made it possible for humans everywhere to start learning.

Access to information has only spread from there. Every walk of life has changed because of our ability to create knowledge and distribute knowledge. But one thing has remained constant and scarce: time.

In the midst of this abundance of information, we're still constrained by our human capacity to absorb it.

The question is, how can we use all we have in terms of computational power to solve this fundamental constraint? To make better sense of the world? That's the essence of what AI is. It's not about having AI that beats humans in games, it's about helping everyone achieve more — humans and machines working together to make the world a better place.

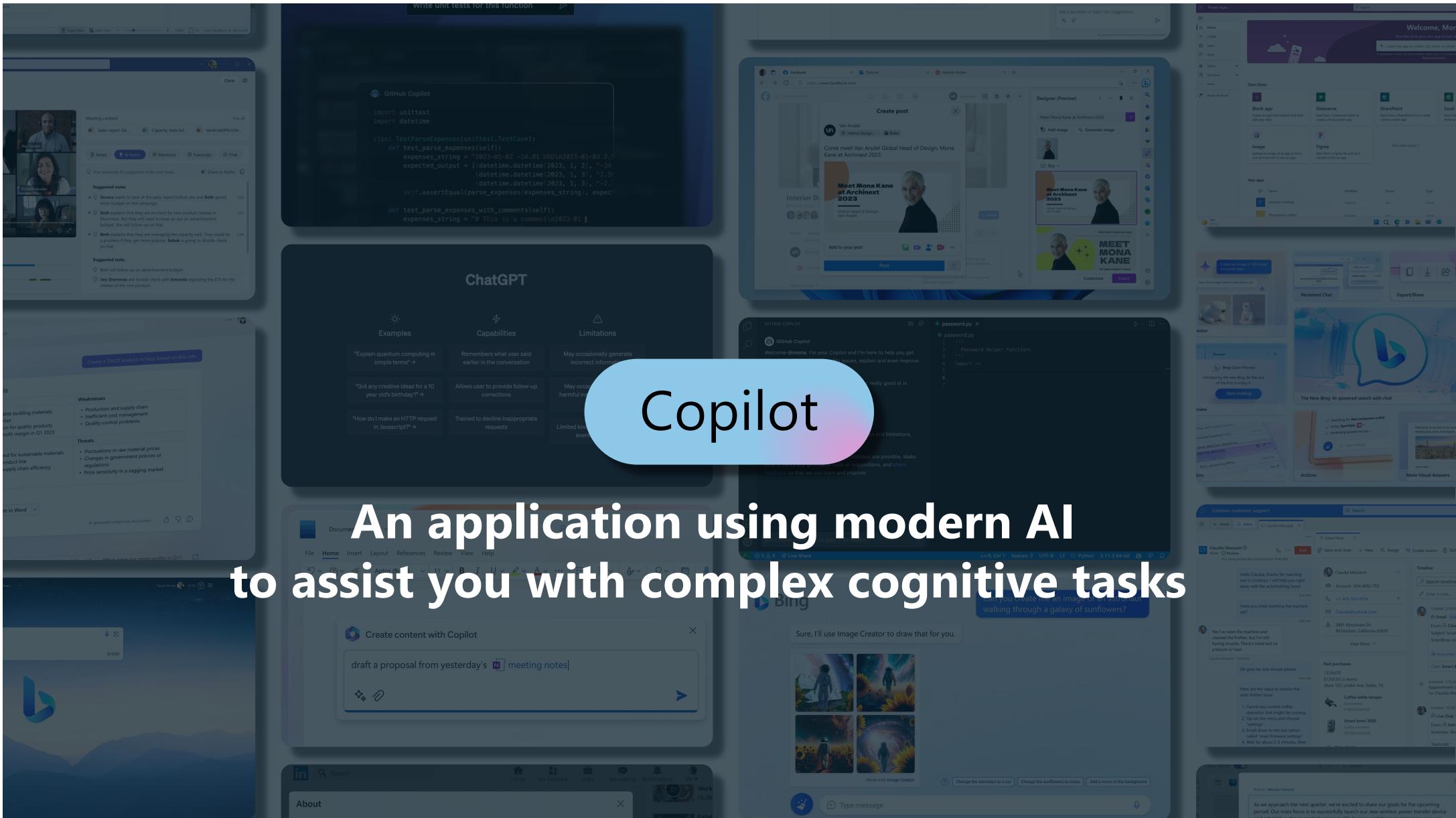
We're taking a four-pronged approach to how we think about Microsoft AI and how we pursue this bold ambition to democratize AI for all:

- We're going to harness artificial intelligence to fundamentally change how we interact with the ambient computing, the agents, in our lives.
- We're going to infuse every application that we interact with, on any device, at any point in time, with intelligence.
- We'll make these same intelligent capabilities that are infused in our own apps — the cognitive capabilities — available to every application developer in the world.
- We're building the world's most powerful AI supercomputer and making it available to anyone, via the cloud, to enable all to harness its power and tackle AI challenges, large and small.

<https://news.microsoft.com/features/democratizing-ai>

Copilot

An application using modern AI
to assist you with complex cognitive tasks



Completion

Embeddings

Common Scenarios

 Chat and conversation

 Code generation or transformation

 Question-answering

 Reason over structured and unstructured data

 Search

 Summarization

 Writing aid

 Image generation

Empower your Dream Team

Hipster

Product Design & Creativity

- Showcase AI powered app demos
- Offer design-focused resources
- Encourage collaboration between designers and engineering

Hacker

Technical Expertise

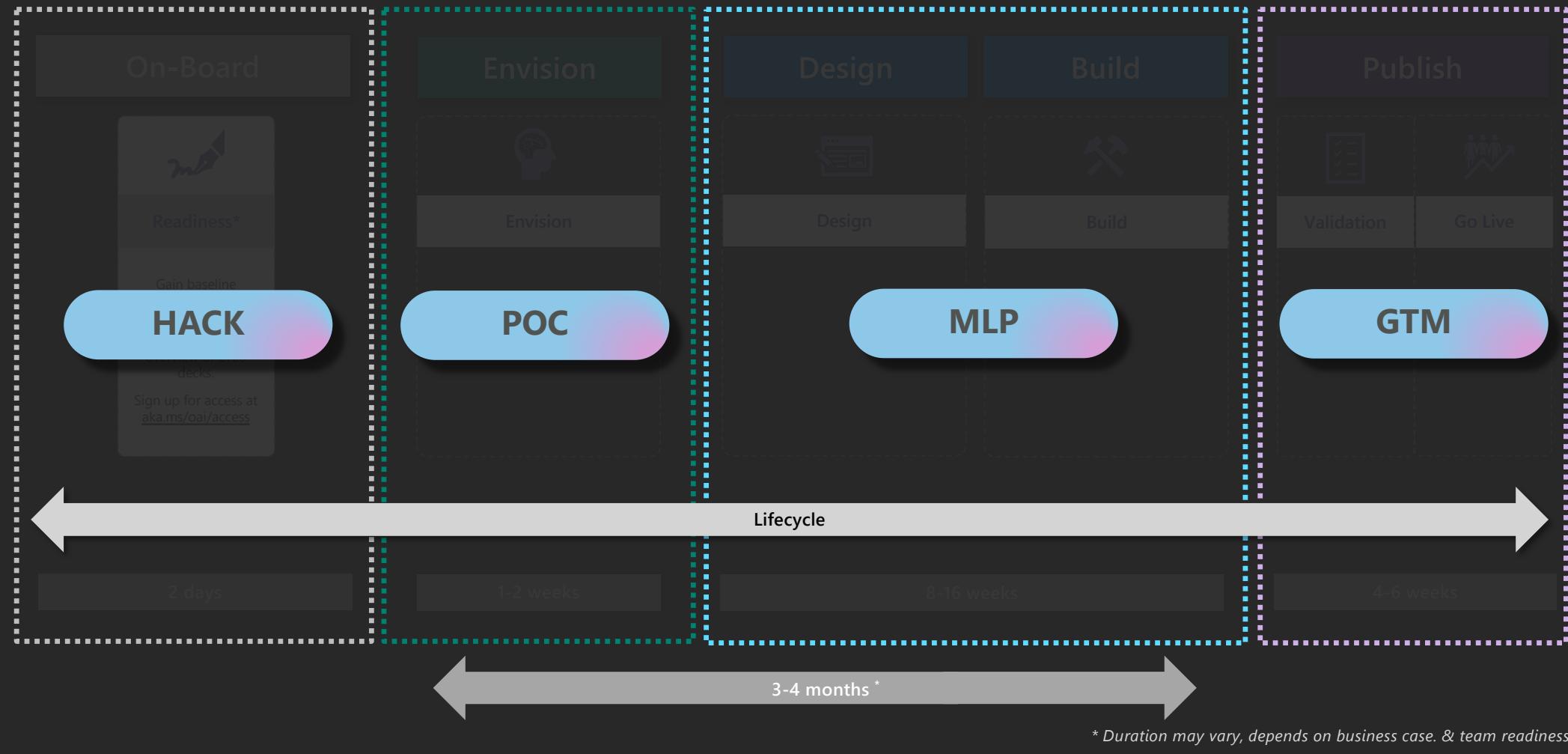
- Provide technical resources
- Organize hackathons and coding challenges
- Advocate for the adoption of AI best practices

Hustler

Business and Sales

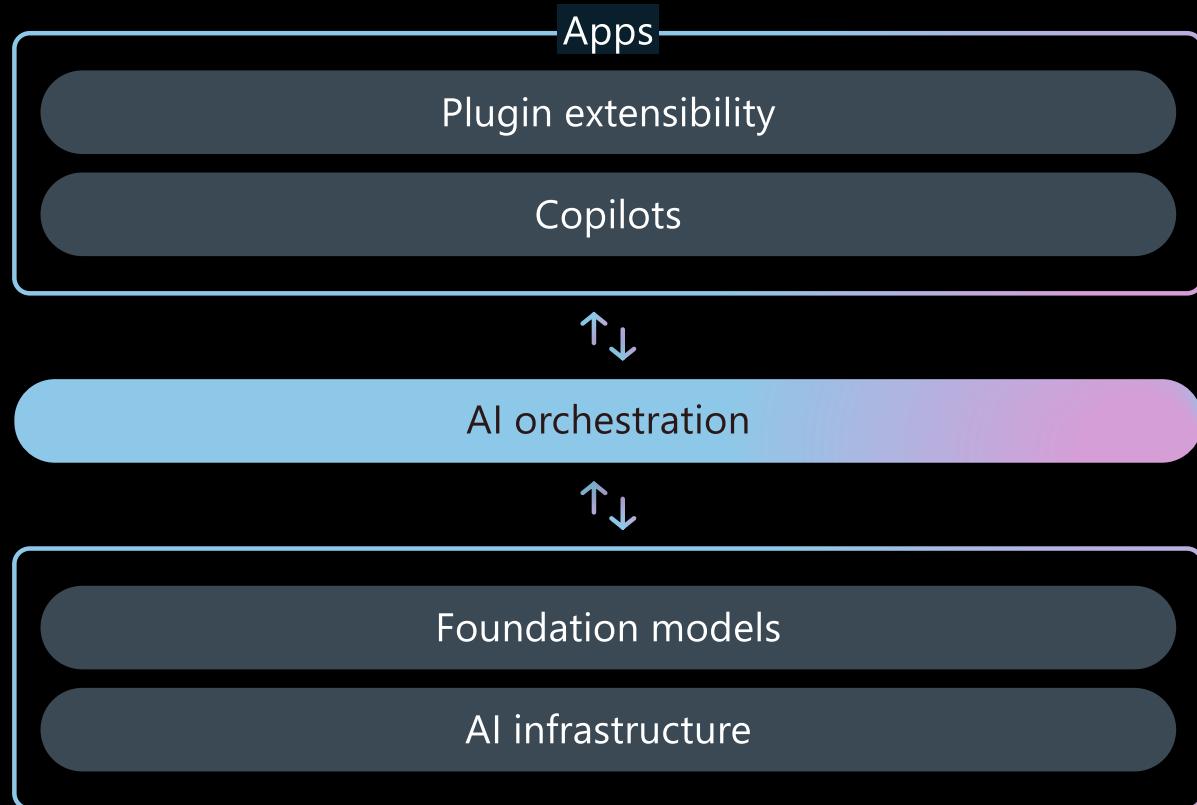
- Highlight the business value of AI integrations
- Offer sales and marketing materials
- Foster a partner ecosystem

Make it Happen

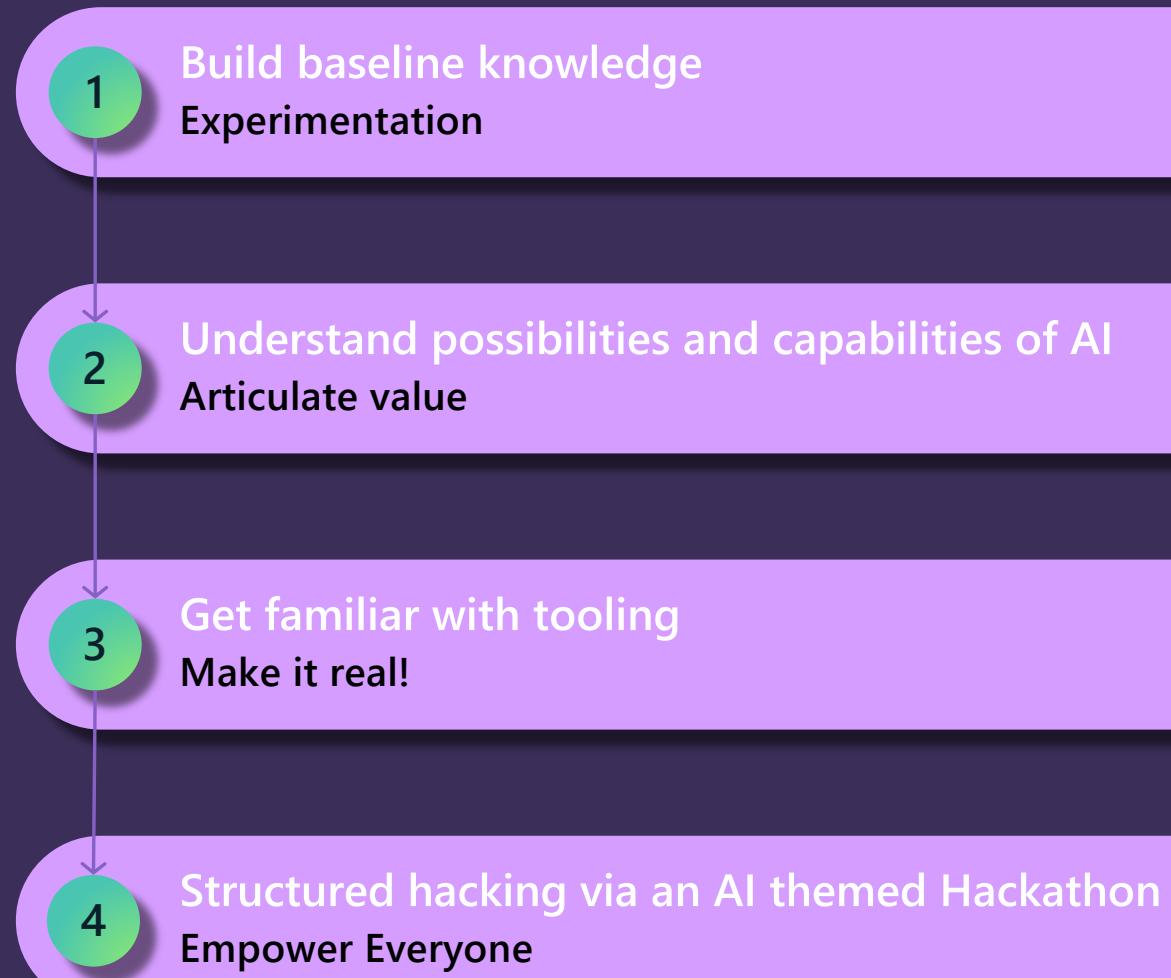


OUR GOAL

Help you unpack & leverage the **Copilot Stack** across your hack, proof-of-concept & minimum-lovable-product stages and beyond.



HACK



Azure AI Services



Azure OpenAI

Perform a wide variety of natural language tasks



Speech

Speech to text, text to speech, translation and speaker recognition



Language

Build apps with industry-leading natural language understanding capabilities



Translator

Translate more than 100 languages and dialects



Vision

Analyze content in images and videos



Custom Vision

Customize image recognition to fit your business



Face

Detect and identify people and emotions in images



Anomaly Detector

Identify potential problems early on



Content Safety

An AI service that detects unwanted contents



Personalizer

Create rich, personalized experiences for each user



Bot Service

Create bots and connect them across channels



Document Intelligence

Turn documents into usable data at a fraction of the time and cost



Azure Cognitive Search

Bring AI-powered cloud search to your mobile and web apps



Metrics Advisor

Proactively monitor metrics and diagnose issues



Video Indexer

Extract actionable insights from your videos



Immersive Reader

Help users read and comprehend text

DEMO #1

Studios

1. Speech Studio
2. Vision Studio
3. Language Studio
4. Azure OpenAI Studio

Speech Studio

The screenshot shows the Microsoft Speech Studio portal interface. On the left, there's a vertical sidebar with a blue gradient bar at the top containing the text "Speech Studio". Below this are several icons: a microphone, a document with "A", a gear, a play button, a plus sign, and a minus sign. The main content area has a blue header bar with the text "Speech Studio" and the URL "https://speech.microsoft.com/portal". The page title is "Azure AI | Speech Studio". The main content is organized into sections:

- Speech to text**:
 - Real-time speech to text**: Quickly test live transcription capabilities on your own audio without writing any code. [Try out Real-time speech to text](#).
 - Whisper Model in Azure OpenAI Service**: Quickly test live transcription capabilities on your own audio utilizing your Azure OpenAI resource and use prompts to improve the quality of the transcripts. [Try out Whisper Model in Azure OpenAI Service](#).
 - Batch speech to text**: Quickly test batch transcription capabilities to transcribe a large amount of audio in storage and receive results asynchronously using Azure Speech models or OpenAI Whisper model. [Try out Batch speech to text](#).
 - Custom Speech**: Add your own data and adapt to specific speaking styles, vocabulary, and more with a customized speech to text model. [Start a Custom Speech project](#).
- Text to speech**:
 - Pronunciation Assessment**: Get instant feedback on pronunciation accuracy and fluency by reading a script aloud. [Try out Pronunciation Assessment](#).
 - Speech Translation**: Translate speech into other languages of your choice with low latency. [Try out Speech Translation](#).

Speech To Text
<https://speech.microsoft.com>

Language Studio

Azure AI | Language Studio

Language Studio

Featured Extract information Classify text Understand questions and conversational language Summarize text Translate text

Use Natural Language Understanding (NLU) to extract information from unstructured text. Use these tools in order to do things like identify key phrases or Personally Identifiable Information (PII), summarize text, recognize and categorize named entities, or customize an entity extraction model on top of your domain set. [Learn more about text extraction.](#)

Extract PII
Identify sensitive entities in text that are associated with an individual

[Try it out](#)

Extract key phrases
Identify the most important points in a piece of text

[Try it out](#)

Find linked entities
Identify and disambiguate the identity of an entity found in text

[Try it out](#)

Extract named entities
Identify different entities in text and categorize them into pre-defined types

[Try it out](#)

Extract health information
Extract and label relevant health information from unstructured text

[Try it out](#)

Custom named entity recognition
Train an extraction model to identify your domain categories using your own data.

[Open custom named entity recognition](#)

Custom Text Analytics for health
Train a healthcare extraction model that extends Text Analytics for health using your own data to identify your domain categories.

[Open custom text analytics for health](#)

Pii Detection
<https://language.cognitive.azure.com>

Language Studio

Azure AI | Language Studio

Language Studio

Welcome to Language Studio

Recent custom projects you've worked on

Recent custom projects you've worked on

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Extract health information
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[Try it out](#)

Custom named entity recognition
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Custom Text Analytics for health
Train a healthcare extraction model that extends Text Analytics for health using your own data.
[Try it out](#)

Waiting for use-aoai-language.cognitiveservices.azure.com

Named Entity Detection

<https://language.cognitive.azure.com>

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Waiting for use-aoai-language.cognitiveservices.azure.com...

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Health Entity Detection

<https://language.cognitive.azure.com>

Vision Studio

Azure AI | Vision Studio

Vision Studio

Get started with Vision

Recent resources I've worked on



 You don't have any recently used resources yet. Start with one of the scenarios below as a starting point, then use one of your resources to create a custom solution tailored to your own needs. The list of recent resources you've worked on will then appear here.

[View all resources](#)

 Check out the new features of Azure AI Vision with Microsoft Mechanics - [How do LLMs work with Vision AI? | OCR, Image & Video Analysis](#) 

Featured Optical character recognition Spatial analysis Face Image analysis


Video summary and frame locator
Preview
Generate a brief summary of the main points shown in video. Locate specific keywords and jump to the relevant section.
[Try it out](#)

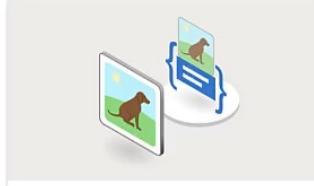

Recognize products on shelves
Preview
Identify products on shelves, gaps in product availability, and compliance for planograms
[Try it out](#)


Customize models
Preview
Train custom image classification and object detection models using Vision Studio and Azure ML.
[Start a project](#)


Search photos with image retrieval
Preview
Retrieve specific moments within your photo album. For example, you can search for: a wedding you attended last summer, your pet, or your favorite city.
[Try it out](#)


<https://portal.vision.cognitive.azure.com/my-resources?entryPoint=models>






Video Summary
<https://portal.vision.cognitive.azure.com>

Vision Studio

Azure AI | Vision Studio

Vision Studio > Video summary and frame locator

Drag and drop a file here
or
Browse for a file
or
Browse container for your video



Datacenter

A video that showcases a data center, depicting the hardware that powers it and the people that maintain it.



Factory

A video that depicts unsafe actions in factory, such as running, carrying boxes with hands, taking off helmets, etc.



Retail

A grocery store where people go to buy food and day-to-day items.



Warehouse

A warehouse where the safety of the workers is a top priority.

Retail



Run a test

Summarize this video

Run

Results

Summarization:

In the grocery store video, there were several noteworthy events that occurred, including:

- Spilled liquid on the floor
- An employee was seen mopping the floor in response to the spill
- A woman was shown falling on the ground

Despite these incidents, the video still showcased the store's commitment to cleanliness and safety, with customers spotted wearing safety vests while cleaning up spills. The video provided a unique perspective on the everyday experience of grocery shopping.

Video Search

0:14

11:39

<https://portal.vision.cognitive.azure.com>

DEMO #2

Industry Showcase

Industry Retail

Use Case Product summarisation

Tooling Azure Open AI Studio

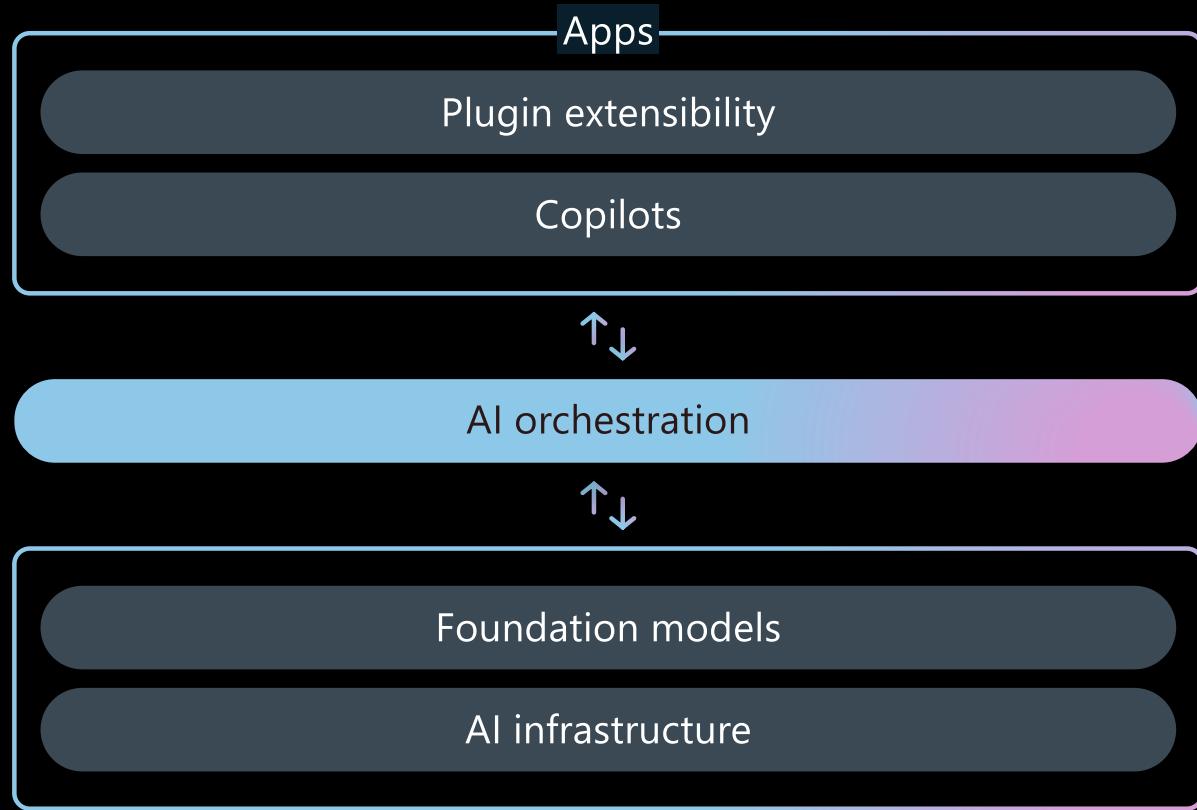
Who for Product Owners and Marketers

What GAI takes very long product description and summarizes it into one sentence, in the voice of your target audience.

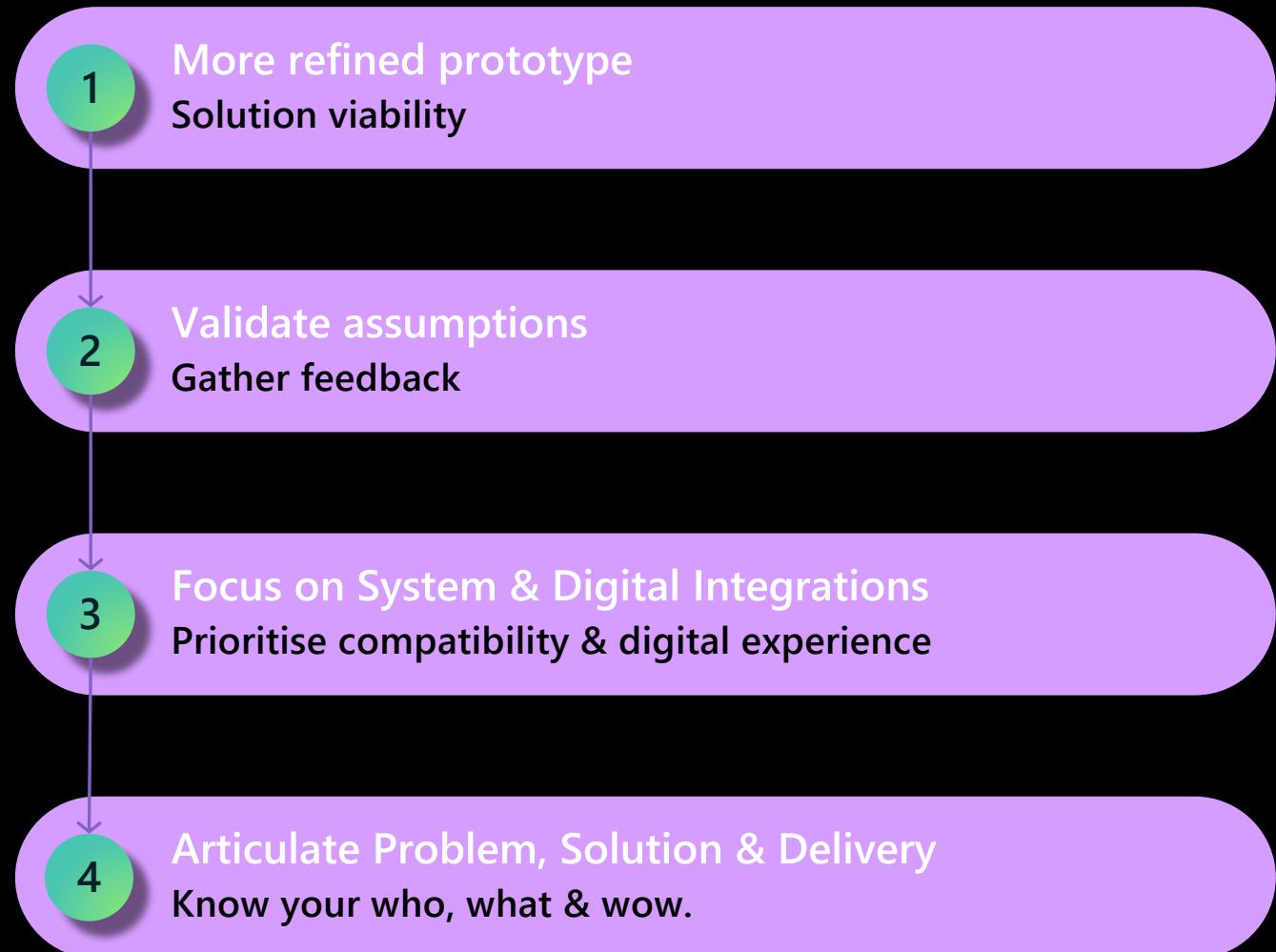
Wow Significantly reduce the time to produce content.

<https://aka.ms/era-of-ai-use-case>

RECAP



P.O.C



Azure AI Services



Azure OpenAI

Perform a wide variety of natural language tasks



Speech

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Video Indexer

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Help users read and comprehend text

Workspaces - Azure AI | Machine Learning Studio

Machine Learning Studio

aml-workspace-01

Generative AI with Prompt flow PREVIEW

- QnA with Your Own Data Using ...**
Q&A with GPT3.5 using domain knowledge from Faiss index to make the answer more grounded.
Start **Clone**
- Bring Your Own Data QnA**
Create flows for Q&A with GPT3.5 using data from your own indexed files to make the answer more grounded for enterprise chat scenarios.
Start **Clone**
- Ask Wikipedia**
Q&A with GPT3.5 using Wikipedia to make you grounded.
Start **Clone**

Generative AI models PREVIEW

- openai-whisper-large** Speech recognition
- databricks-dolly-v2-12b** Text generation
- tiiuae-falcon-40b** Text generation

Notebook samples

- Get started: Train and deploy a model**
Train and deploy a sample image classification model.
Start 25 minutes
- Index and search your own data with GPT**
Bring your own data to look up using GPT with LangChain
Start 20 minutes
- Distributed**
Run a sample classification
Start

Shortcuts

build-your-own-copilot

why-notebook.ipynb U

notebooks > dotnet > sample > why-notebook.ipynb > Why use a notebook? > Build your Own Skills or Plugins

+ Code + Markdown ▶ Run All ⏪ Restart ⏴ Clear All Outputs ⏴ Variables ⏴ .NET Interactive

Why use a notebook?

Notebooks, be they Jupyter, Polyglot, or others, serve as a powerful tool for not just **code execution**, but also for **articulating** and demonstrating the **value** that the code is delivering.

- Interactivity:** Allows real-time code execution and adjustment, aiding understanding and communication of code impact.
- Documentation:** Markdown cells facilitate code documentation and explanation, articulating code's value to all stakeholders.
- Visualization:** Supports integrated visualizations to convey code value and outcomes, making insights easily graspable.
- Narrative Structure:** Arranges code, text, and visuals sequentially, telling a compelling story of the code's value and function.
- Sharing and Collaboration:** Designed for easy sharing and collaboration, enabling collective understanding and value articulation.

In essence, notebooks provide a platform where code, narrative, and visuals merge to execute tasks while articulating and exhibiting the code's value and capabilities.

> **1. Hide complexity of Setup & Config**
This section hides away the complexity of working with the Kernel.
4 cells hidden ...

> **2. Load the Kernel & explore published plugins**
7 cells hidden ...

> **3. Build your Own Skills or Plugins**
4 cells hidden ...

DEMO #3

Industry Showcase

Industry Financial Services

Use Case Simulation & Stress-Testing.

Tooling Notebooks

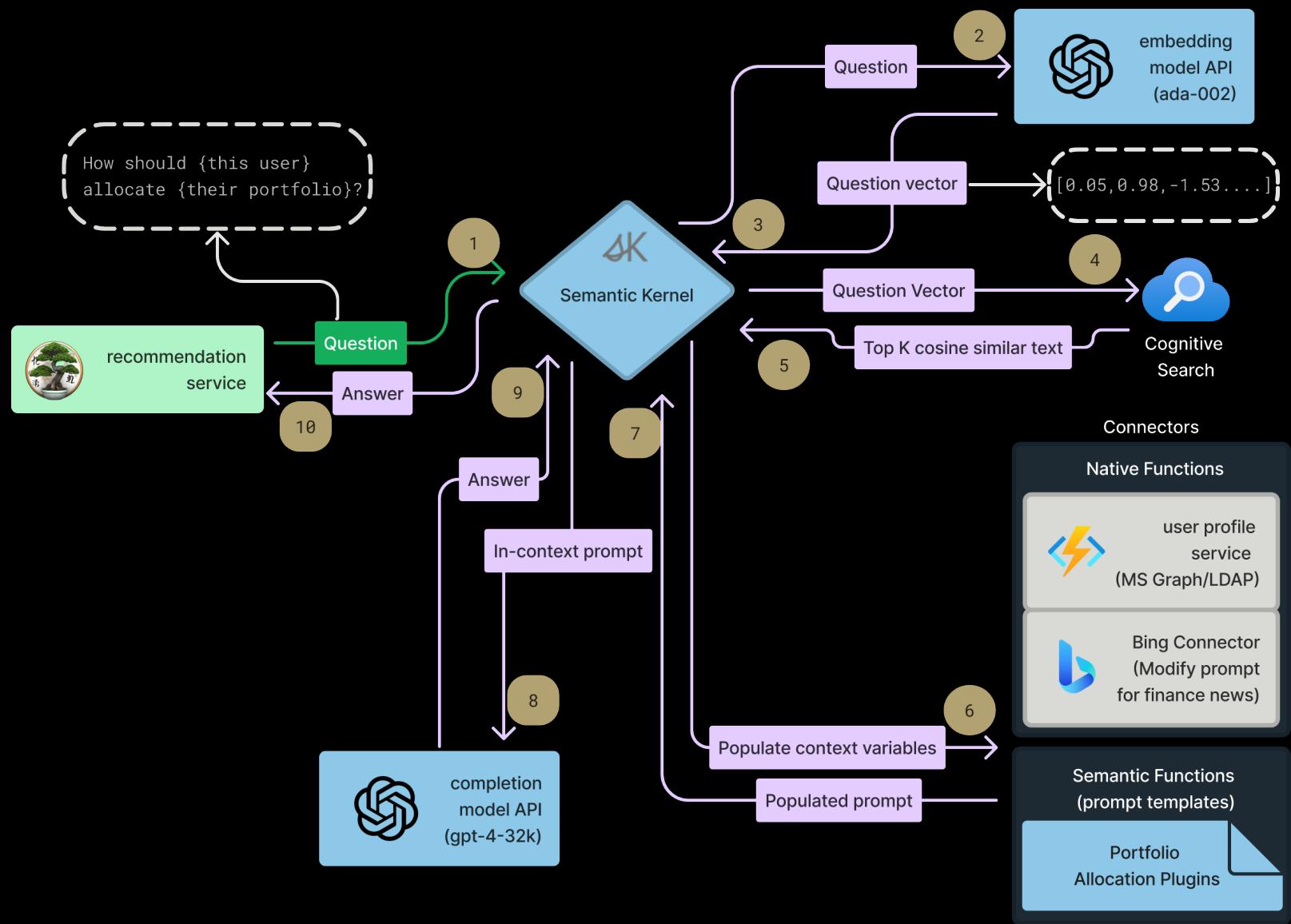
Who Assist customers (investors)

What (GAI) for pre-emptive alerting and stress-testing simulations.

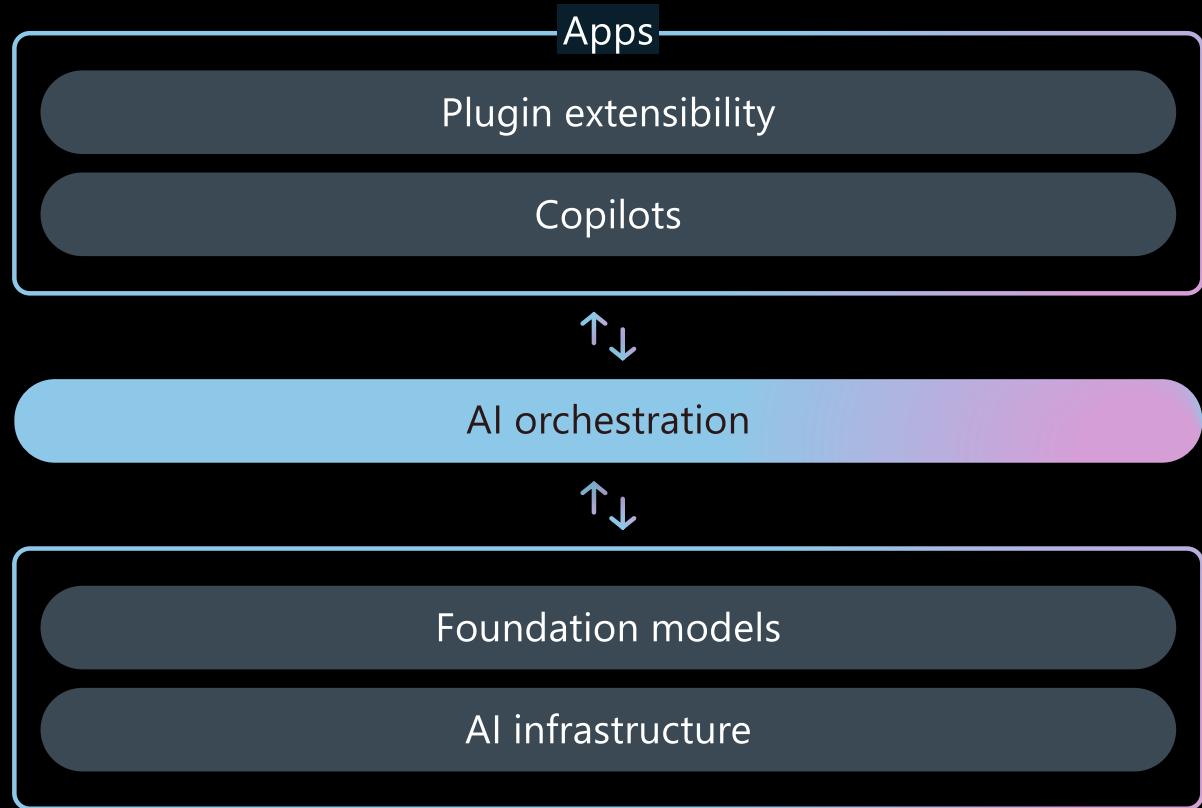
Wow Monitor their financial well-being; resilient financial ecosystem.

How should {this user}
allocate {their portfolio}?

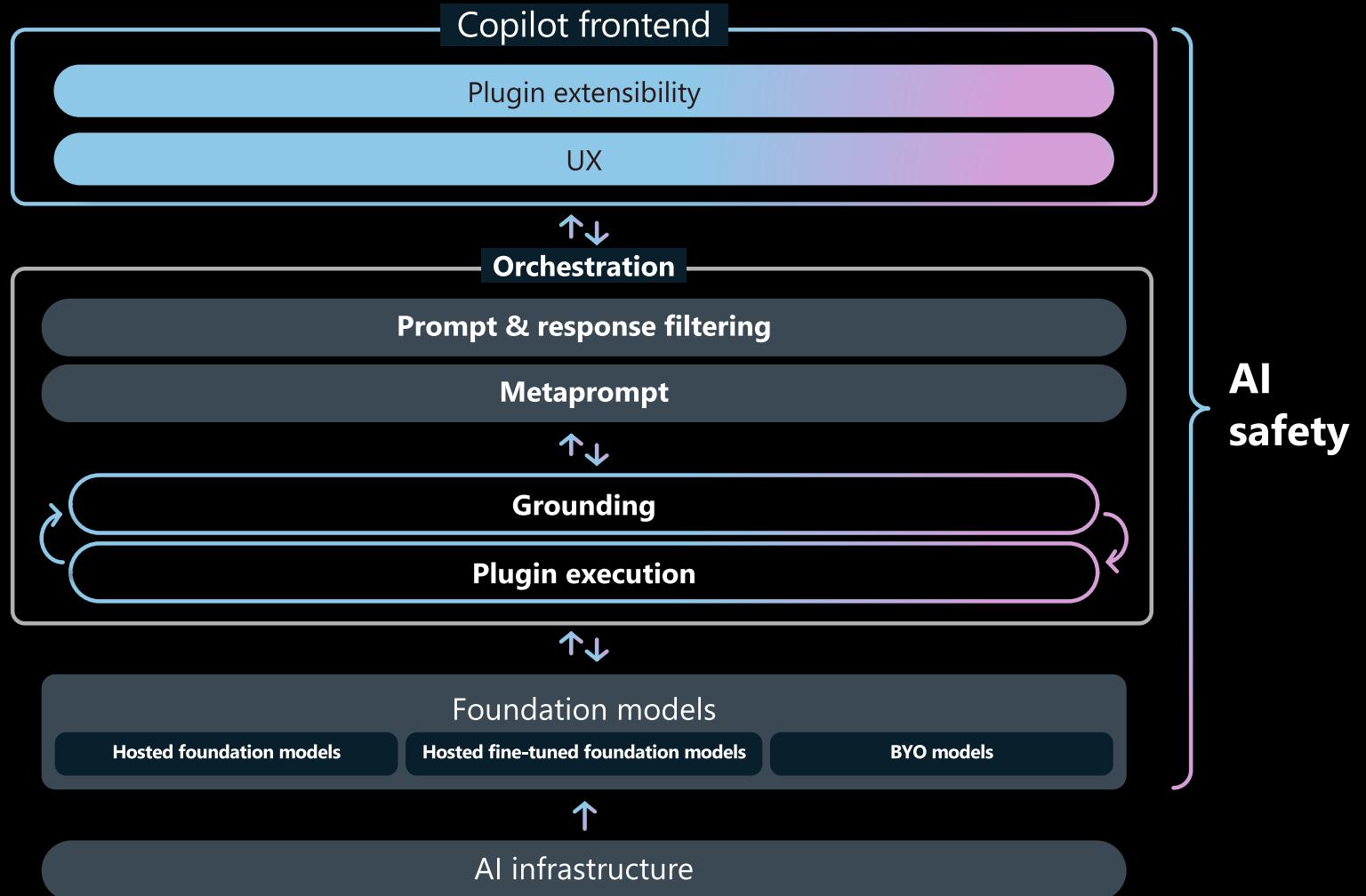
<https://aka.ms/era-of-ai-use-case>



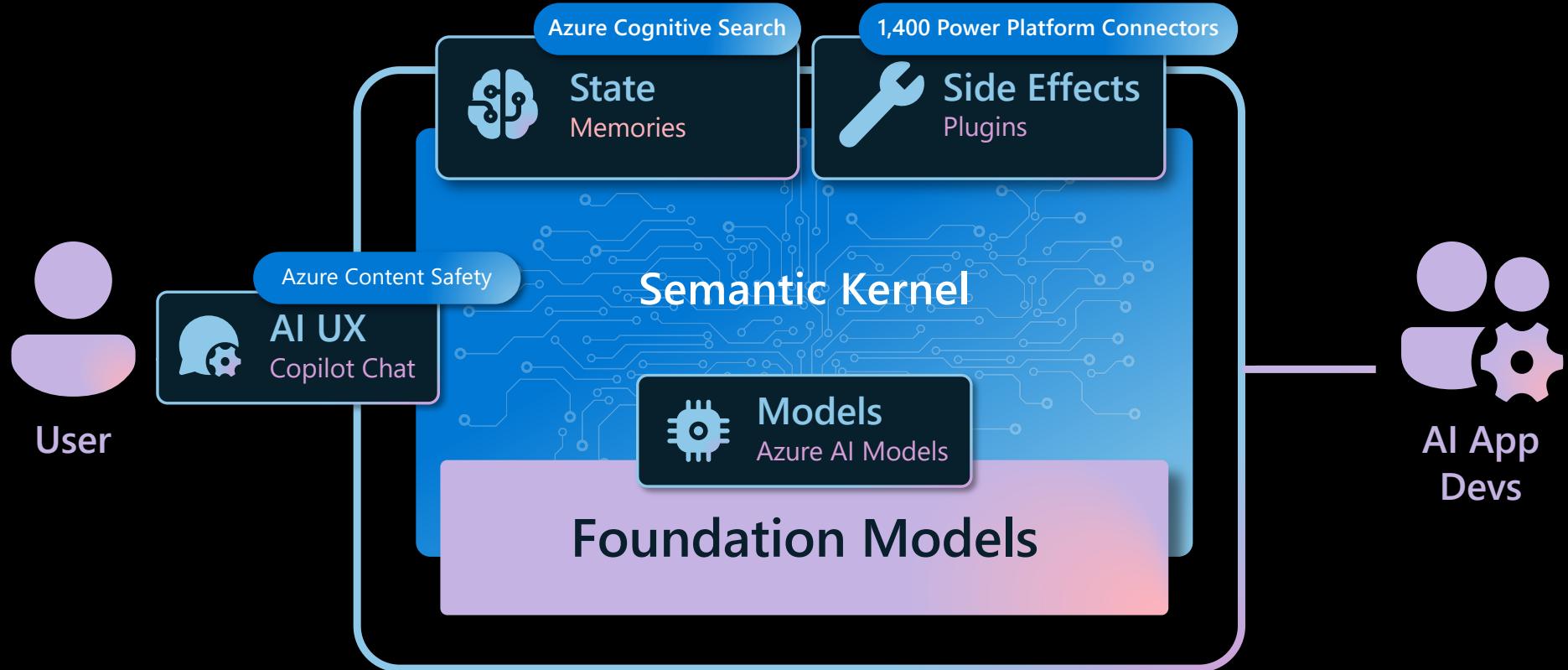
RECAP



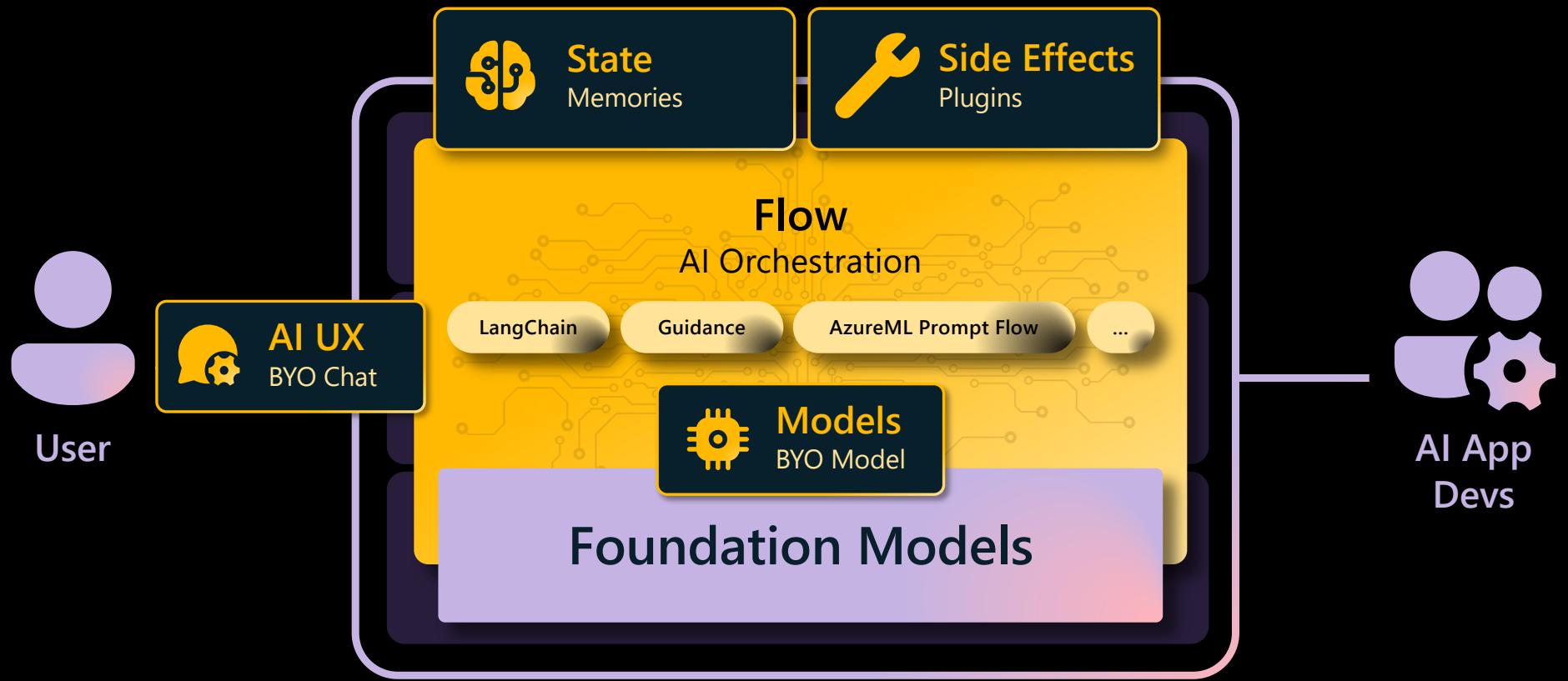
RECAP



We've made it easier for AI App Devs to get going.



And Semantic Kernel isn't the only game in town.



DEMO #4

Industry Showcase

Industry Manufacturing

Use Case Assist technicians through conversational on the job support

Tooling Prompt Flow in Azure ML Studio

Who Technicians and field workers.

What Technicians can use natural language to get the right procedure to repair a physical asset.

Wow Significantly reduce the time for technicians to be able to repair 1000's of physical assets.

<https://aka.ms/era-of-ai-use-case>

Azure ML Studio

Azure AI | Machine Learning Studio

All workspaces

Home Model catalog PREVIEW

Authoring

- Notebooks
- Automated ML
- Designer
- Prompt flow PREVIEW

Assets

- Data
- Jobs
- Components
- Pipelines
- Environments
- Models
- Endpoints

Manage

- Compute
- Monitoring PREVIEW
- Data Labeling
- Linked Services

mf-aml-workspace

Generative AI with Prompt flow

PREVIEW ...

 QnA with Your Own Data Using ...
Q&A with GPT3.5 using domain knowledge from Faiss index to make the answer more grounded
[Start](#) [Clone](#)

 Bring Your Own Data QnA
Create flows for Q&A with GPT3.5 using data from your own indexed files to make the answer more grounded for enterprise chat scenarios.
[Start](#) [Clone](#)

 Ask Wikipedia
Q&A with GPT3.5 using information from Wikipedia to make your answers more grounded.
[Start](#) [Clone](#)

 Chat with Wikipedia
ChatGPT-based chatbot that leverages Wikipedia data to ground the responses.
[Start](#) [Clone](#)

Generative AI models

PREVIEW ...

 openai-whisper-large Speech recognition

 databricks-dolly-v2-12b Text generation

 tiuae-falcon-40b Text generation

 gpt-4-32k Chat completions

[View all < >](#)

Notebook samples

... [View all < >](#)

 Get started: Train and deploy a model
Train and deploy a sample image classification model.
[Start](#) 25 minutes

 Index and search your own data with GPT
Bring your own data to look up using GPT with LangChain.
[Start](#) 20 minutes

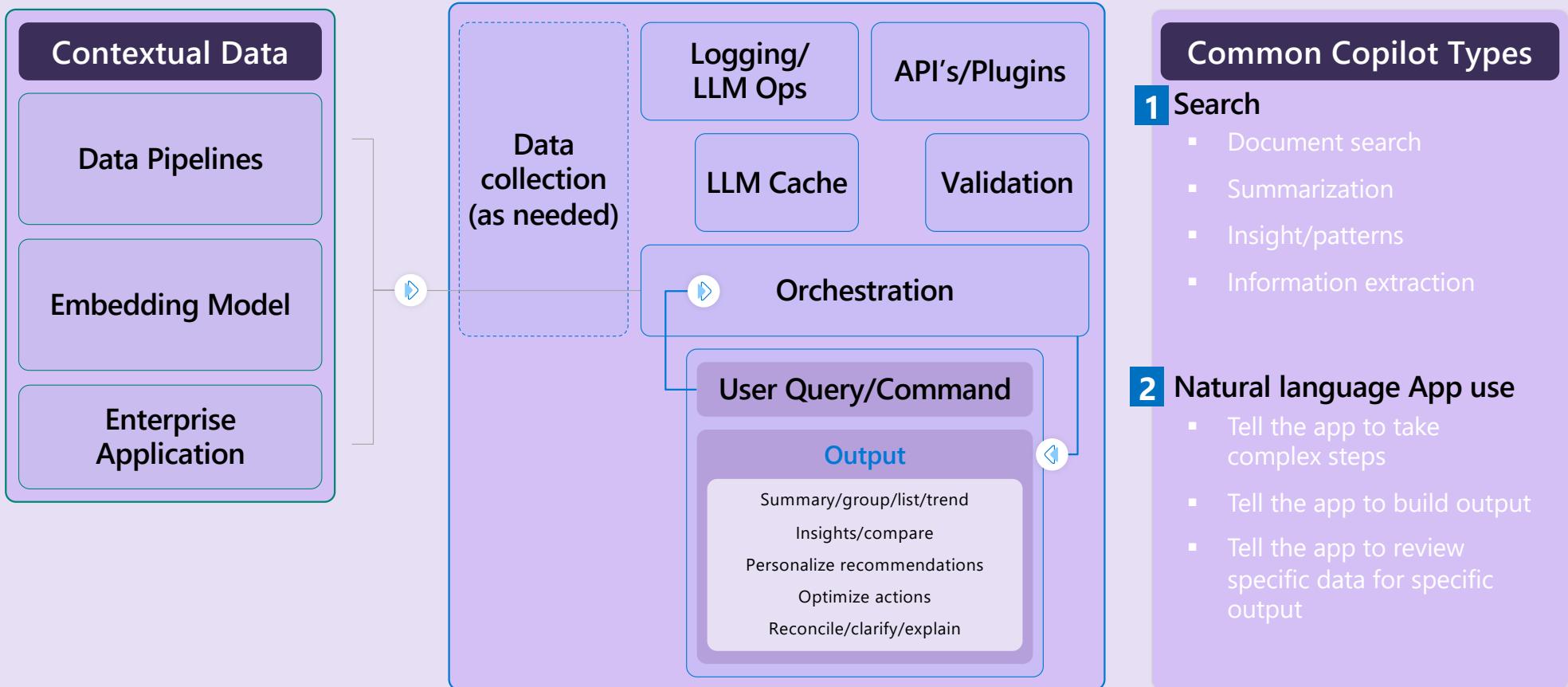
 Distributed GPU training
Run a sample multi-GPU image classification experiment.
[Start](#) 30 minutes

 Automate with Pipelines
Create a production pipeline for a credit default prediction sample.
[Start](#) 35 minutes

M.L.P



Structure of your Co-Pilot Application



DEMO #5

Co-Pilot Chat and Plugins

<https://github.com/microsoft/chat-copilot>

FastAPI

0.1.0

OAS 3.1

/openapi.json

default



GET /products Get a list of products

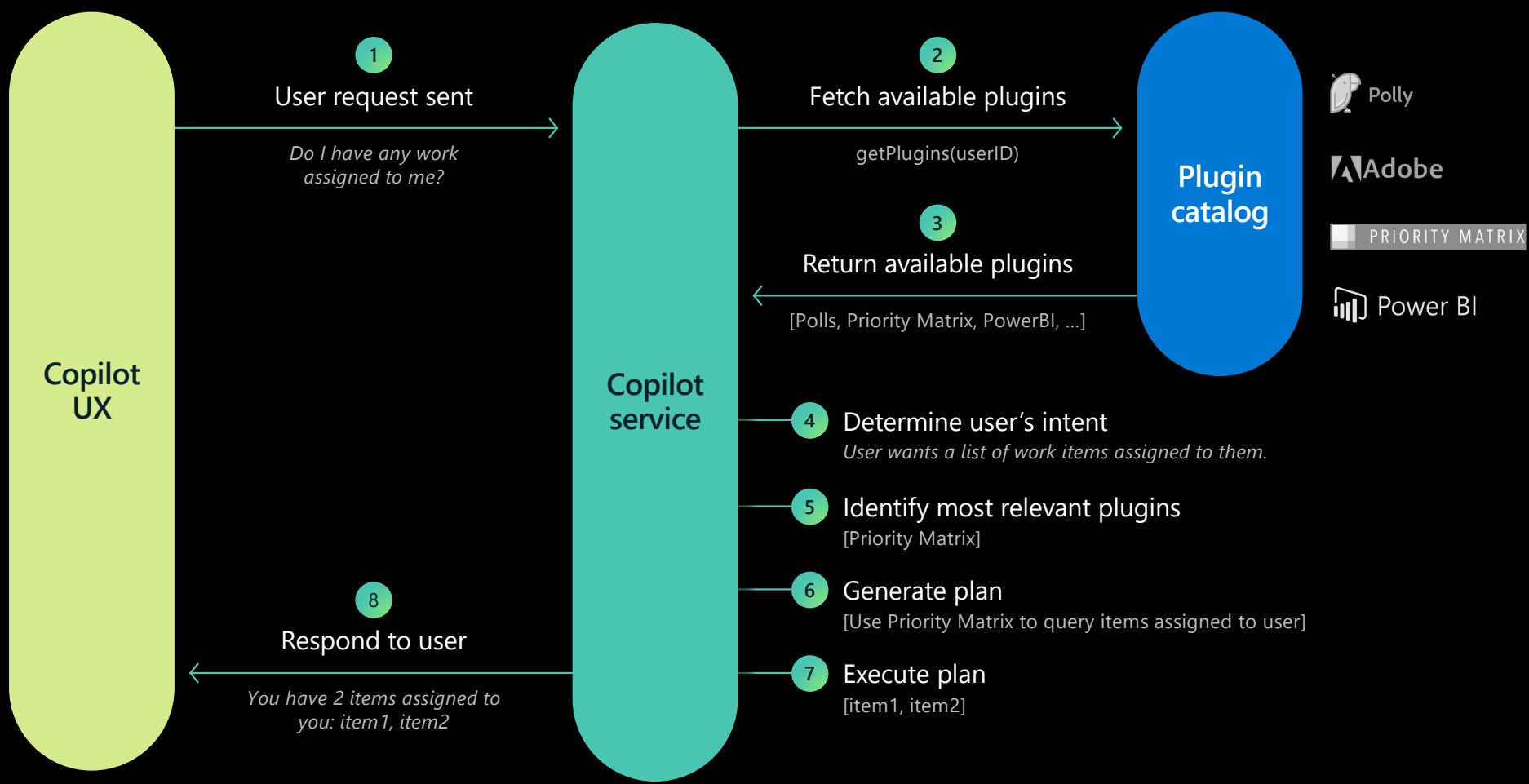


Schemas



HTTPValidationError > Expand all object

ValidationError > Expand all object



Steps to create a plugin from an API:

- 1 Build an API
- 2 Document the API
- 3 Create an app manifest

Plugins

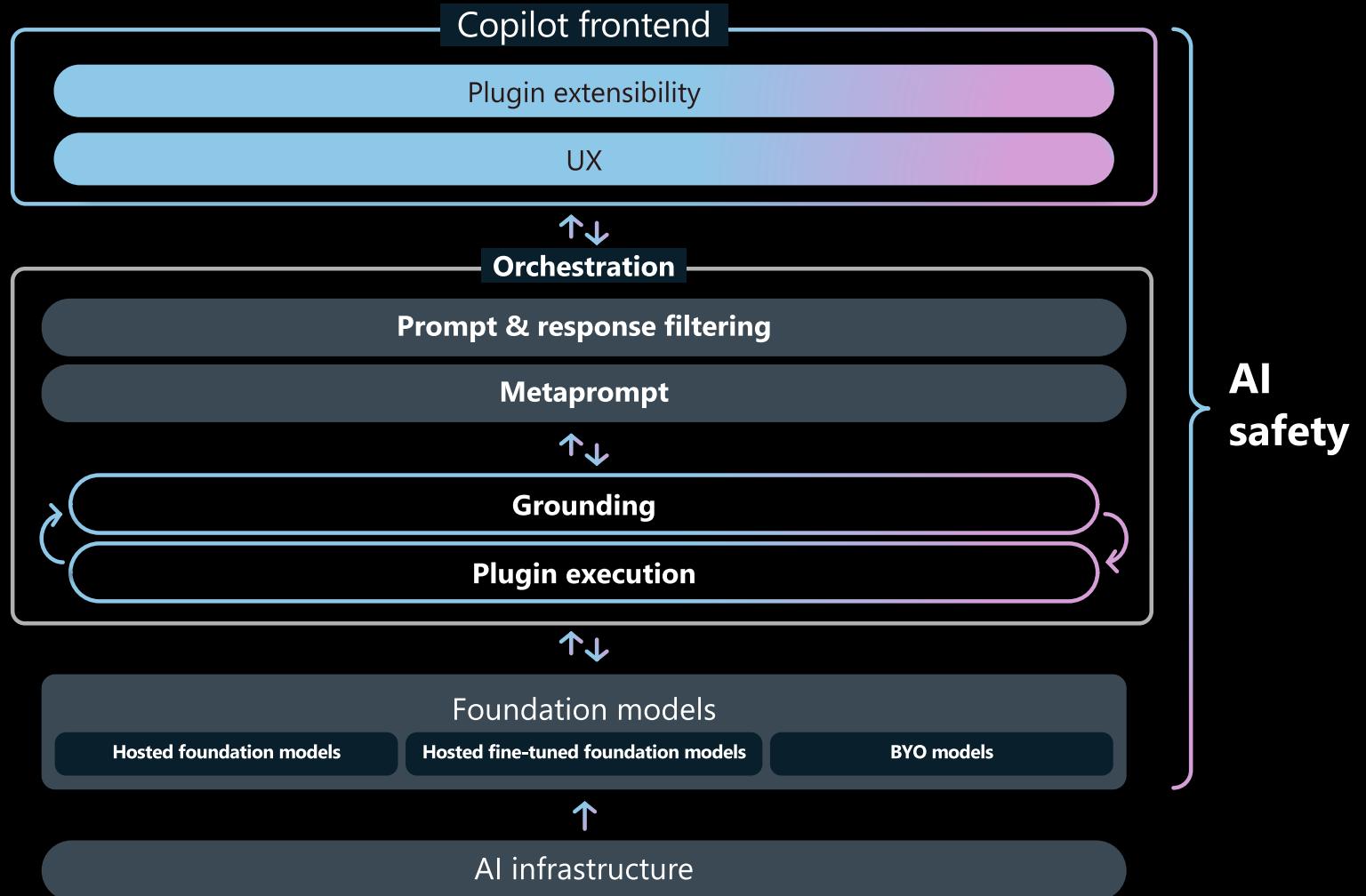
Extend Microsoft 365 Copilot capabilities with your app's skills, data and services

If you are still struggling to articulate the value that can be realized with a copilot, the 'secret sauce' comes in thinking about simple daily activities or processes that could be improved and the revenue that could be driven or savings earned if these daily activities were more efficient.

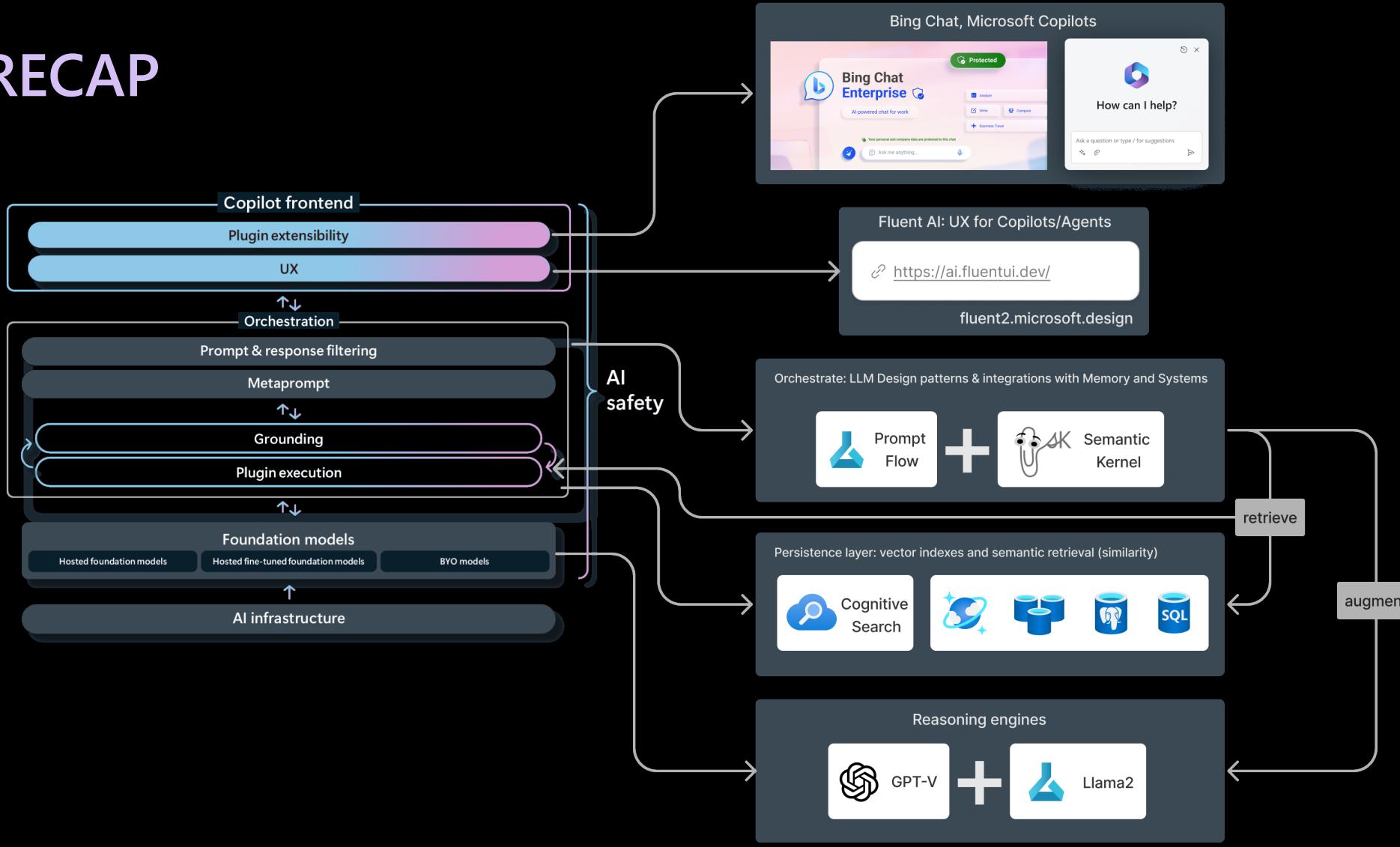
Think about the value from your own copilot with the following questions:

1. What would it mean to increase productivity by 5%?
2. What would it mean to improve revenue by 5%?
3. What would it mean to improve profits by 10%

RECAP

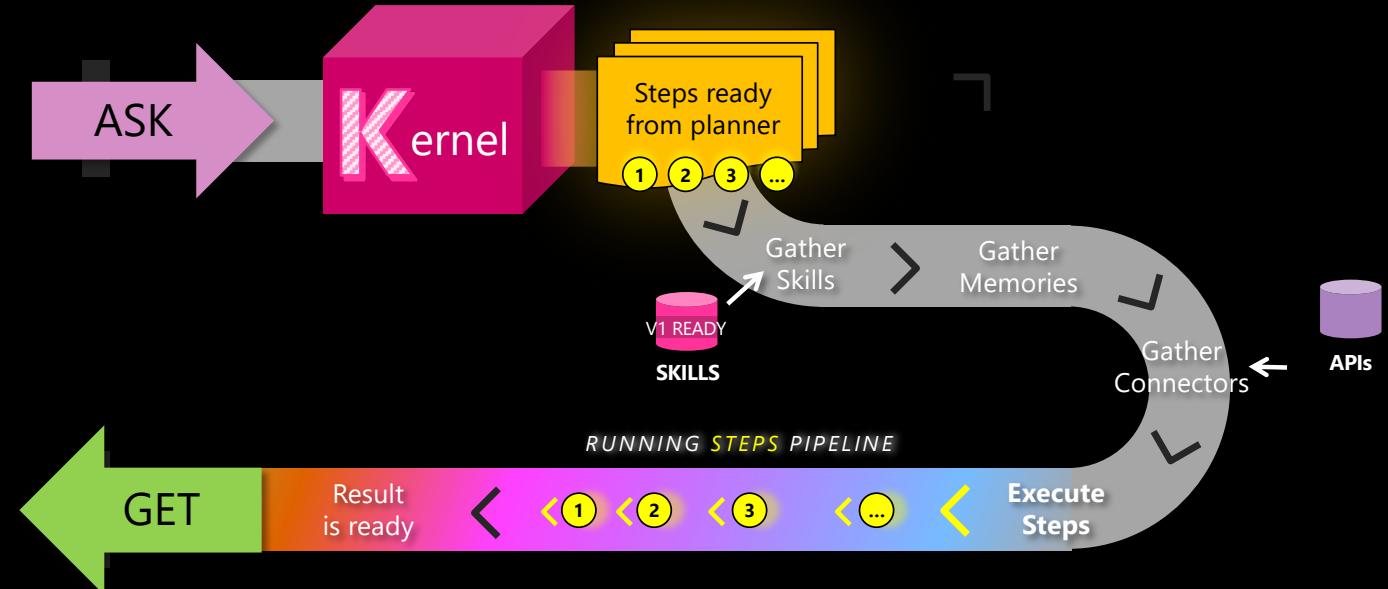


RECAP



Goals-First AI

It all starts with
a user's AI ask ...

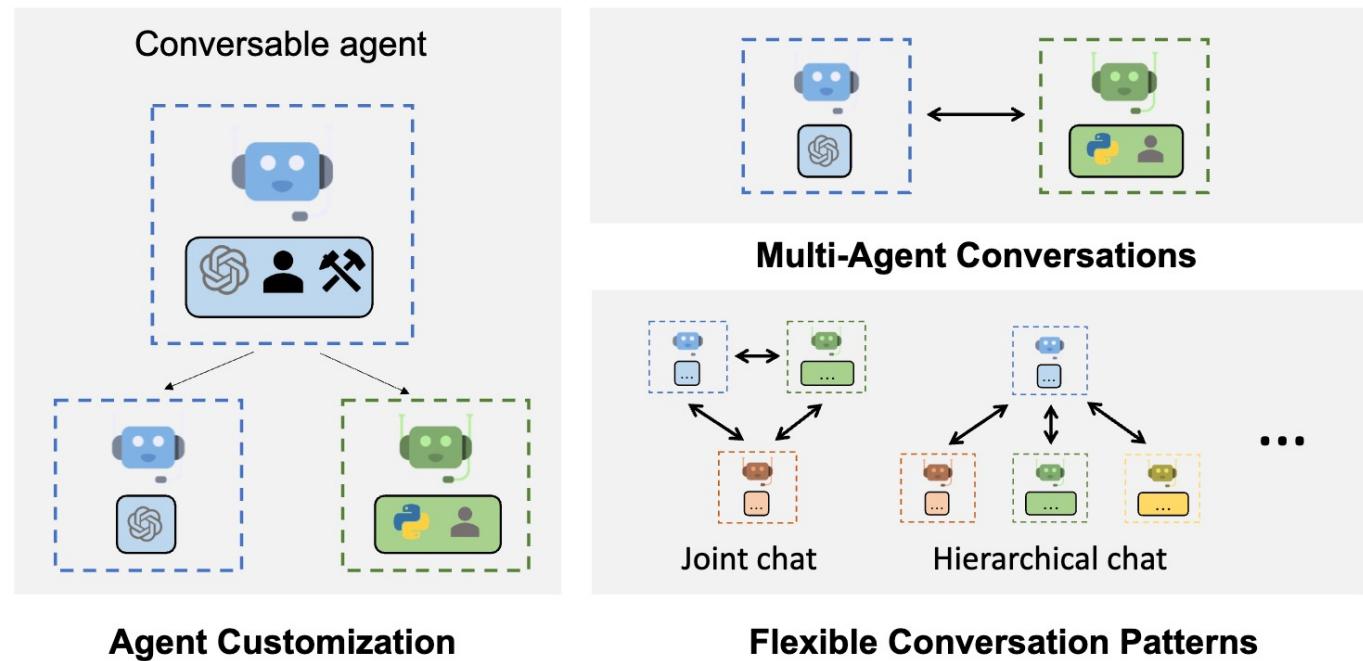


aka.ms/semantic-kernel



Beyond

1. Multi-agent Conversation Framework (a.k.a AutoGen)
2. Polymorphic Apps

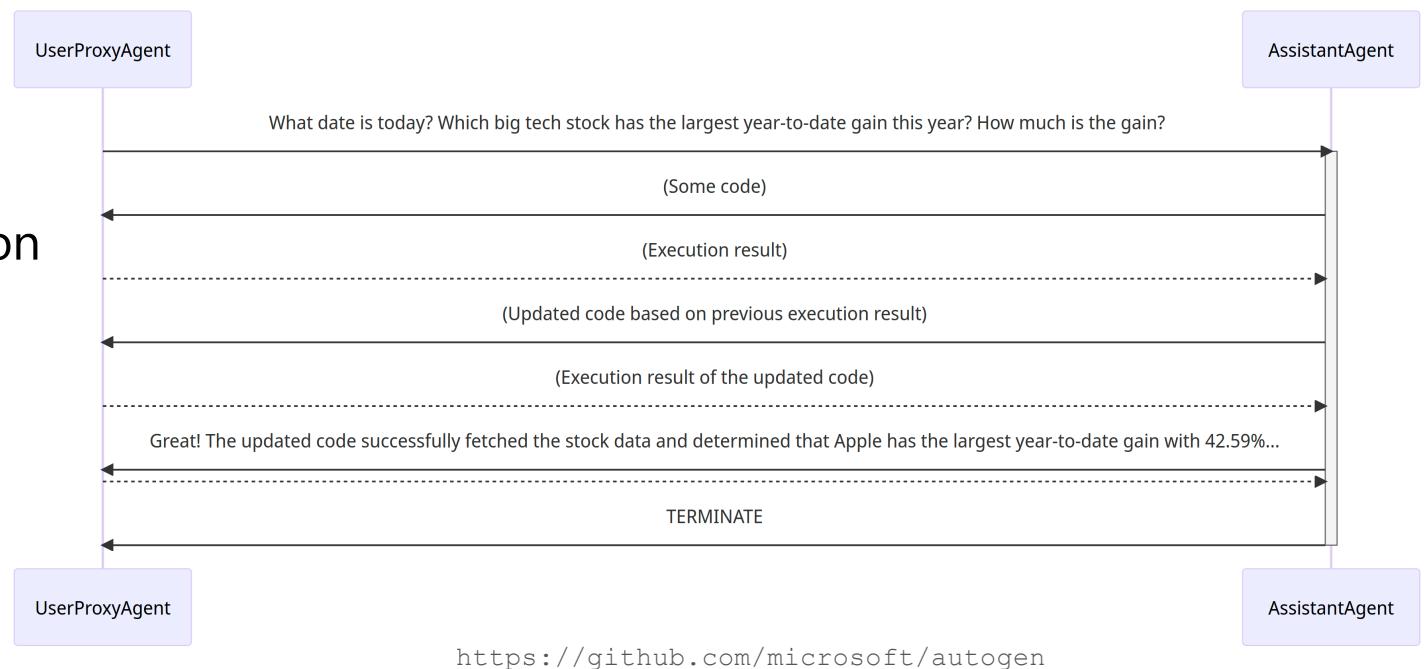


<https://github.com/microsoft/autogen>



Beyond

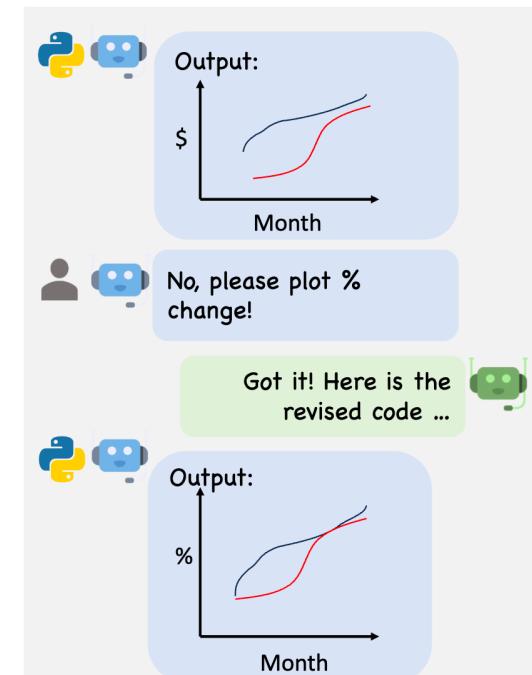
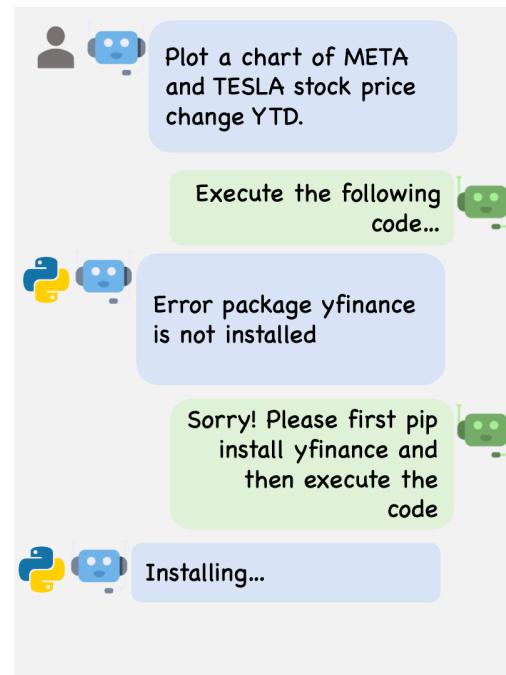
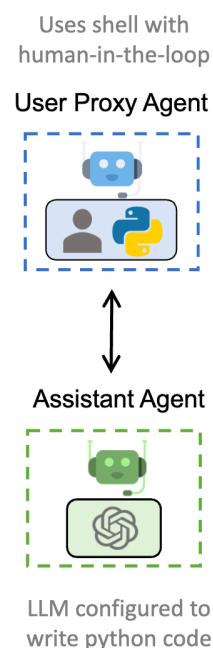
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Beyond

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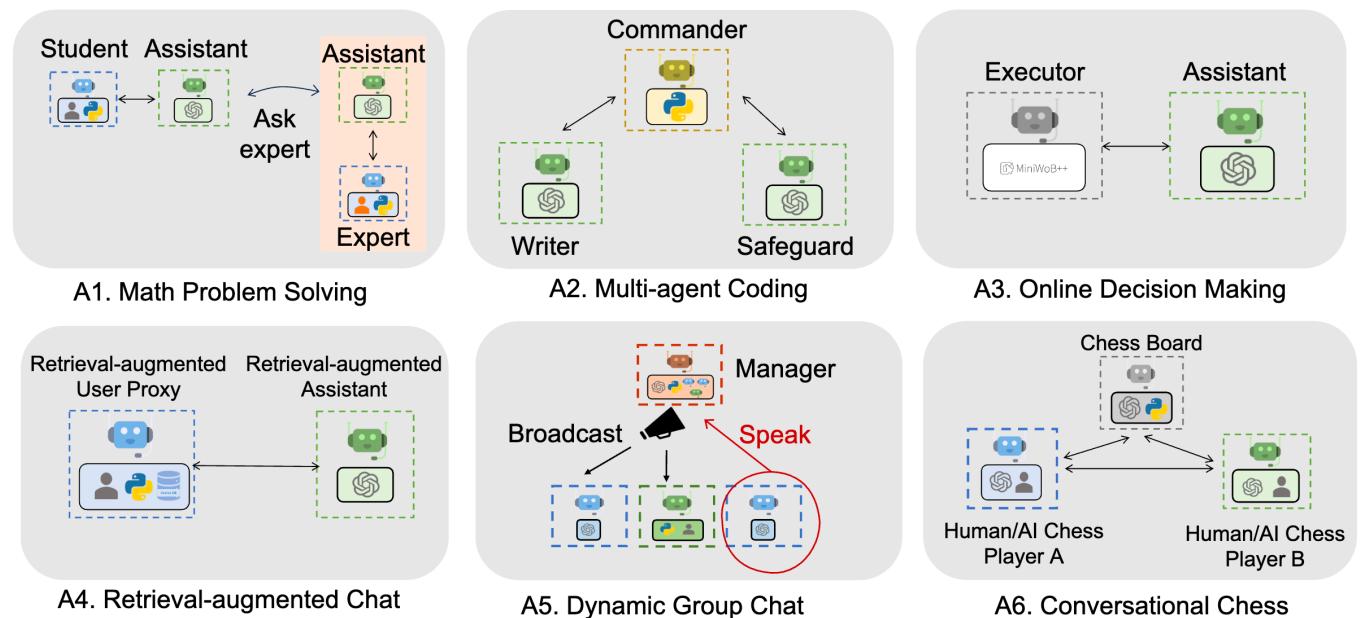


<https://github.com/microsoft/autogen>



Beyond

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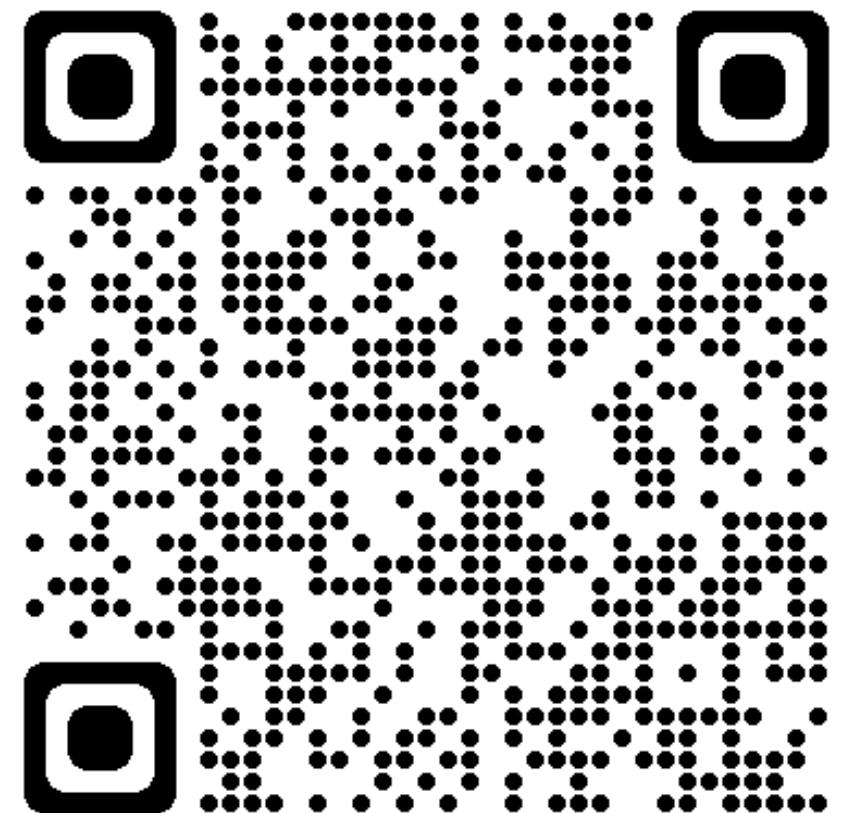


<https://github.com/microsoft/autogen>



<https://aka.ms/era-of-ai-byoc>

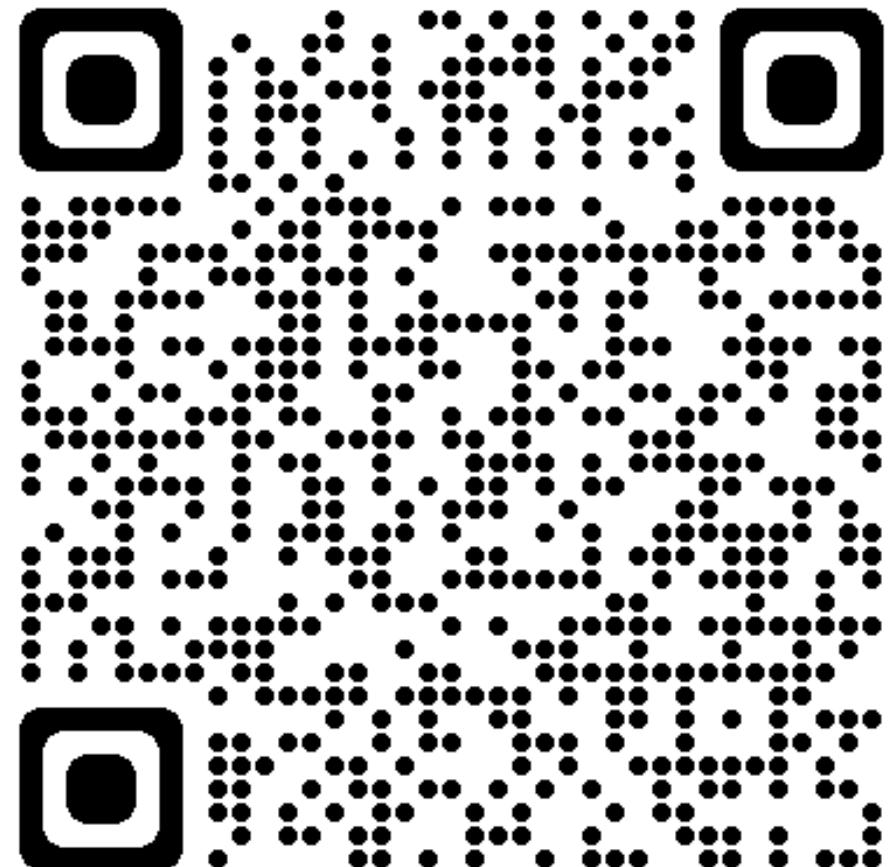
**Build Your Own Co-pilot
toolkit**





AI Hackathon Starter Kit

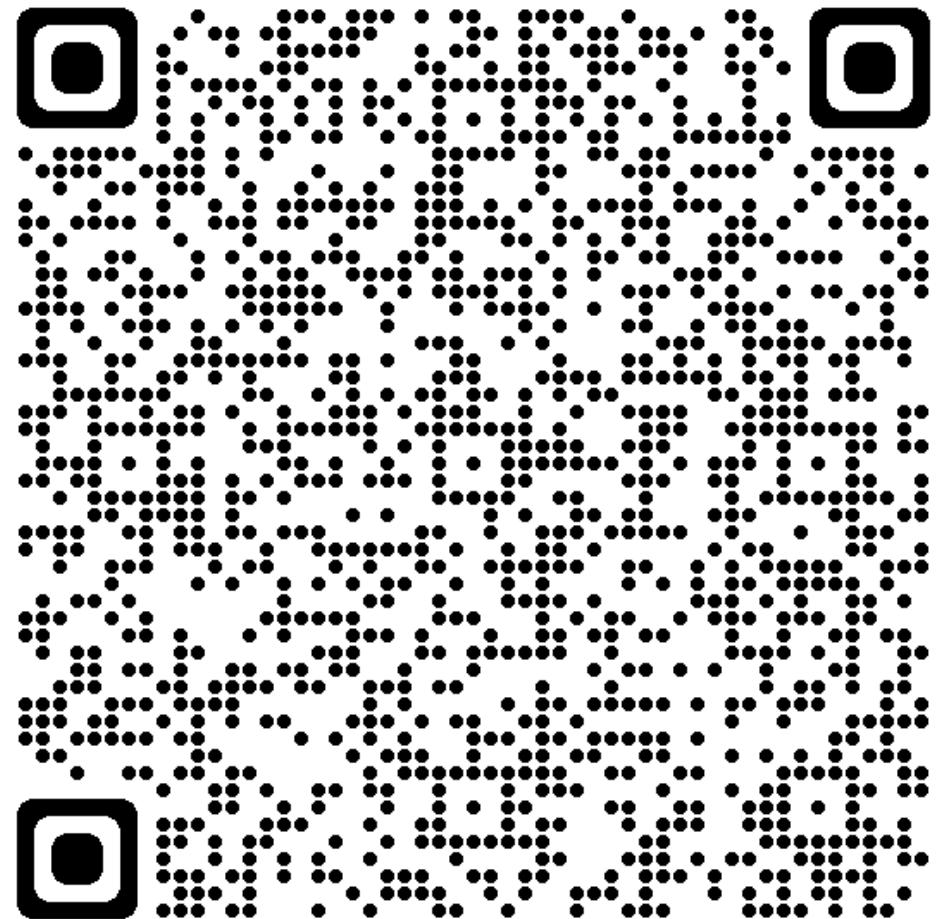
<https://aka.ms/ai-hackathon-starter-kit>





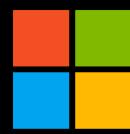
Era of AI Feedback

<https://aka.ms/era-of-ai-feedback>





Thank you



Microsoft AI