

Gaming @ Azure

All things Azure & Azure OpenAI for Game Development

Jon Kefaloukos

Strategic Account Director – Gaming at Azure

Uthappa Kattera Chengappa

Lead Cloud Solution Architect – Gaming at Azure

Dan Gartner

Application Innovation Specialist – Gaming at Azure

Kumar Shastry

Principal Cloud Data Solution Architect – Gaming at Azure

Special Guest

Kate Rayner

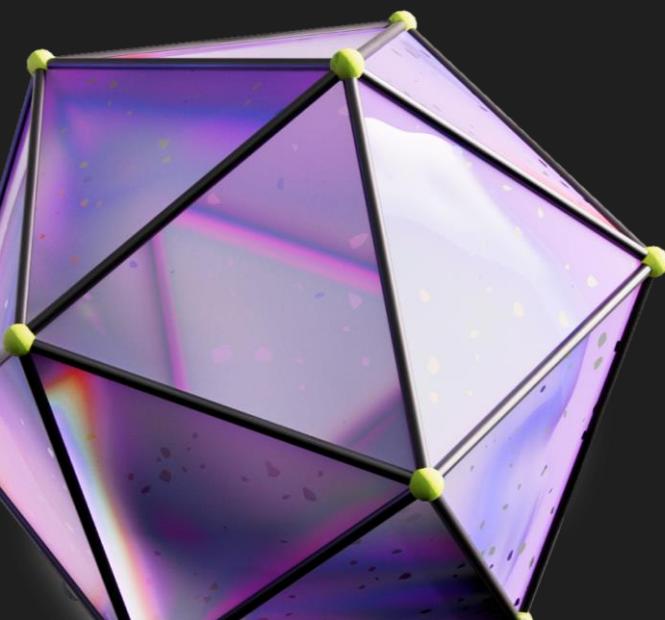
Studio Technical Director, The Coalition

MAR 2024

High-level overview of the top services and use cases of Azure & Azure OpenAI across the Gaming industry

Agenda

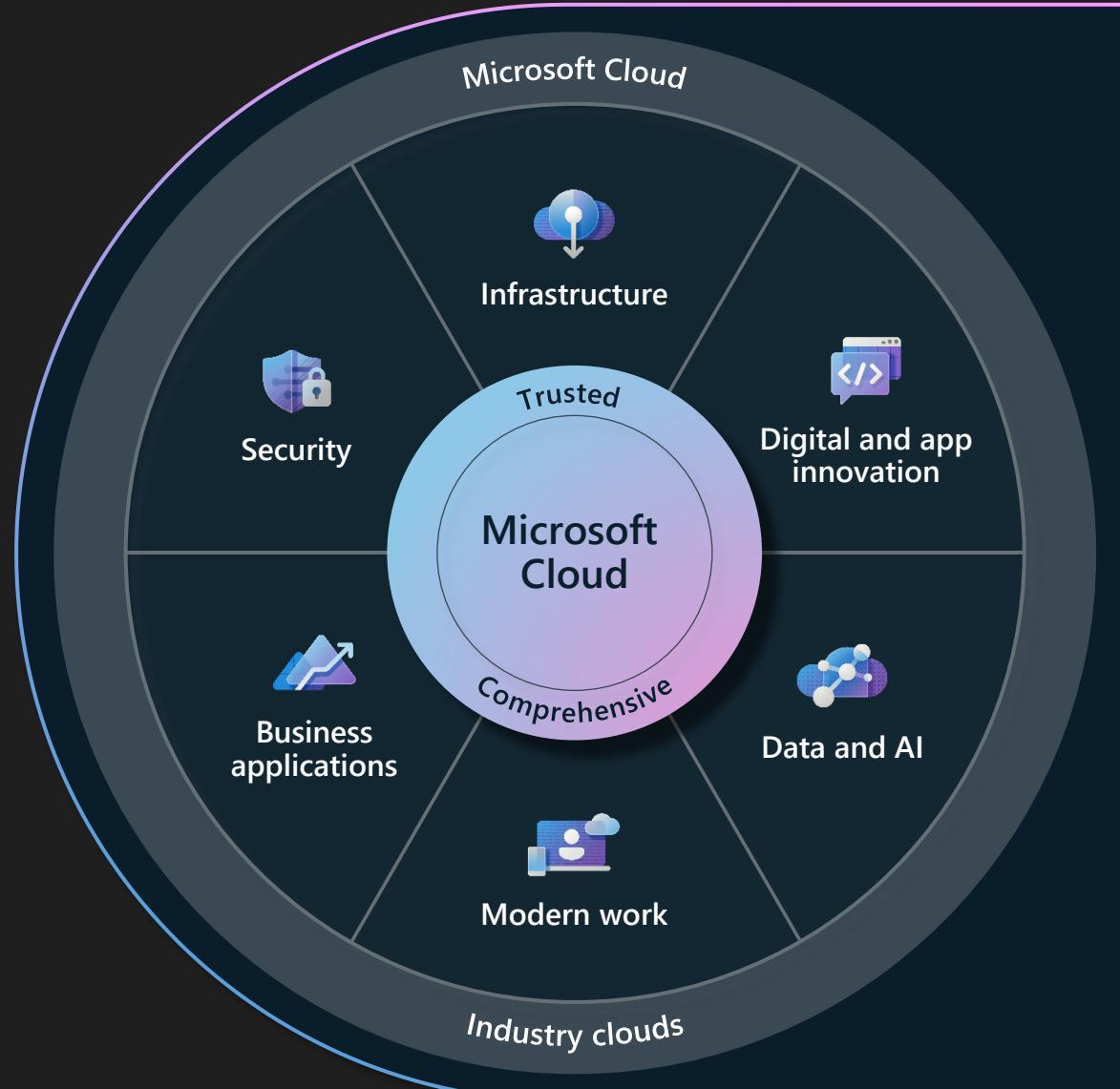
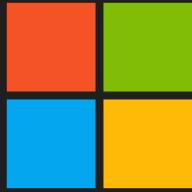
Vision: End-to-end vision
Building & Operating games in Azure



- 01 Introduction – Azure for Gaming
- 02 End-to-end vision for building & operating games in Azure
- 03 Game development and build farms
- 04 Game Server & Services hosting
- 05 Build, Player, and Game LiveOps Data analytics
- 06 Azure OpenAI Service & AI Studio GitHub Copilot

Microsoft's Mission

Empower every person
and every organization
on the planet to
achieve more.





Play **any game,**
with anyone,
anywhere.



Xbox Gaming Vision

Battle-tested gaming
services, backed by an
enterprise-grade cloud.



Azure Customer Promise

Most common
game dev
scenarios in
Azure & Azure
OpenAI



Studio in the Cloud

Game Development
Cloud native Build and Tests



Game Hosting

Scalable Game Services
Geo-spread Dedicated Servers
Backend and Game State DB



Game Analytics

Real time player analytics
Game dev insights

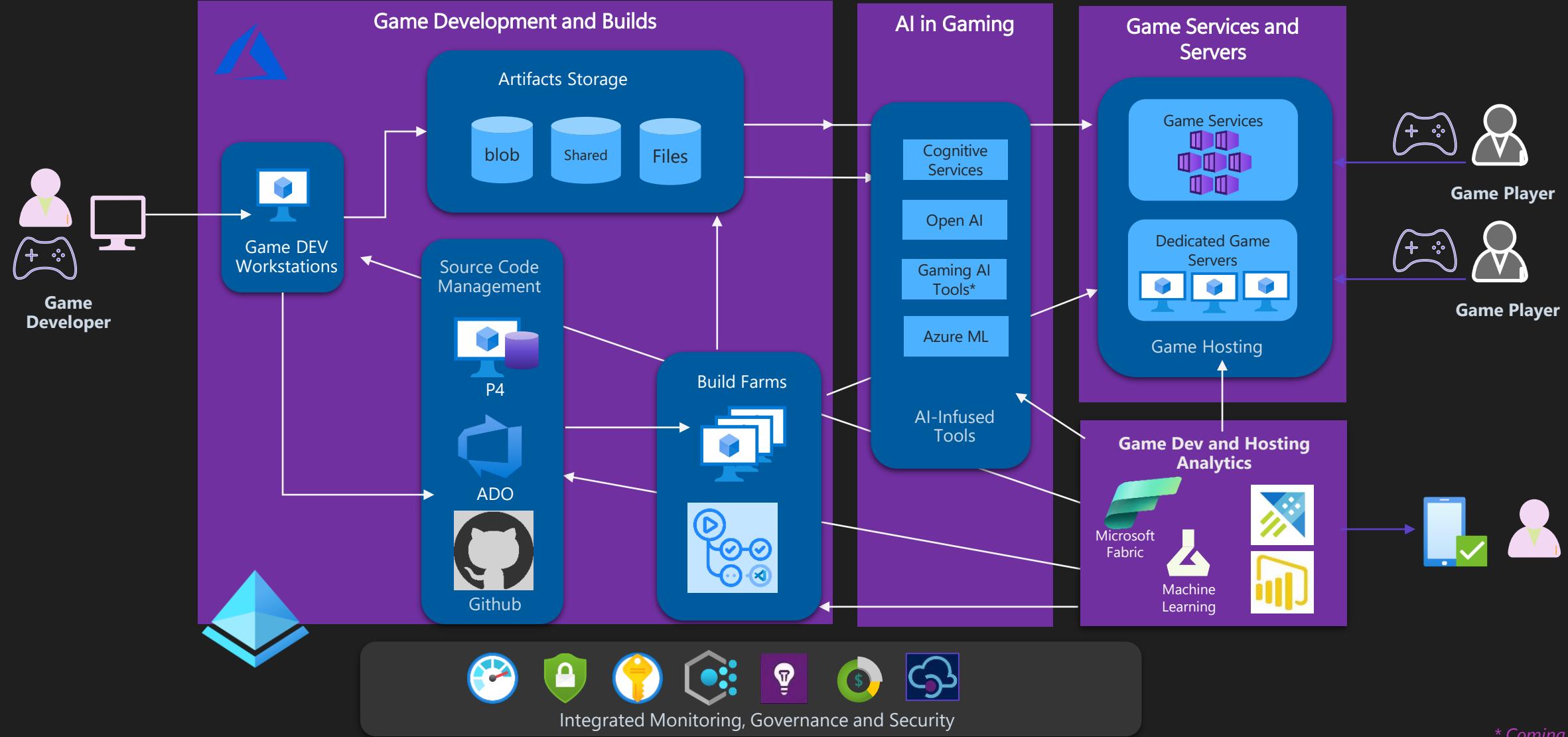


AI in Gaming

Accelerate Game creation and
Developer productivity with Copilot
and OpenAI

End-to-end Game Dev & Services workflow in the Cloud (Azure Gaming vision)

Cloud game development, builds, hosting, analytics and AI



Gaming @ Azure

Studio in the Cloud

Build rapidly game dev workstations and build/test farms worldwide

End-to-end Game Dev Workflow

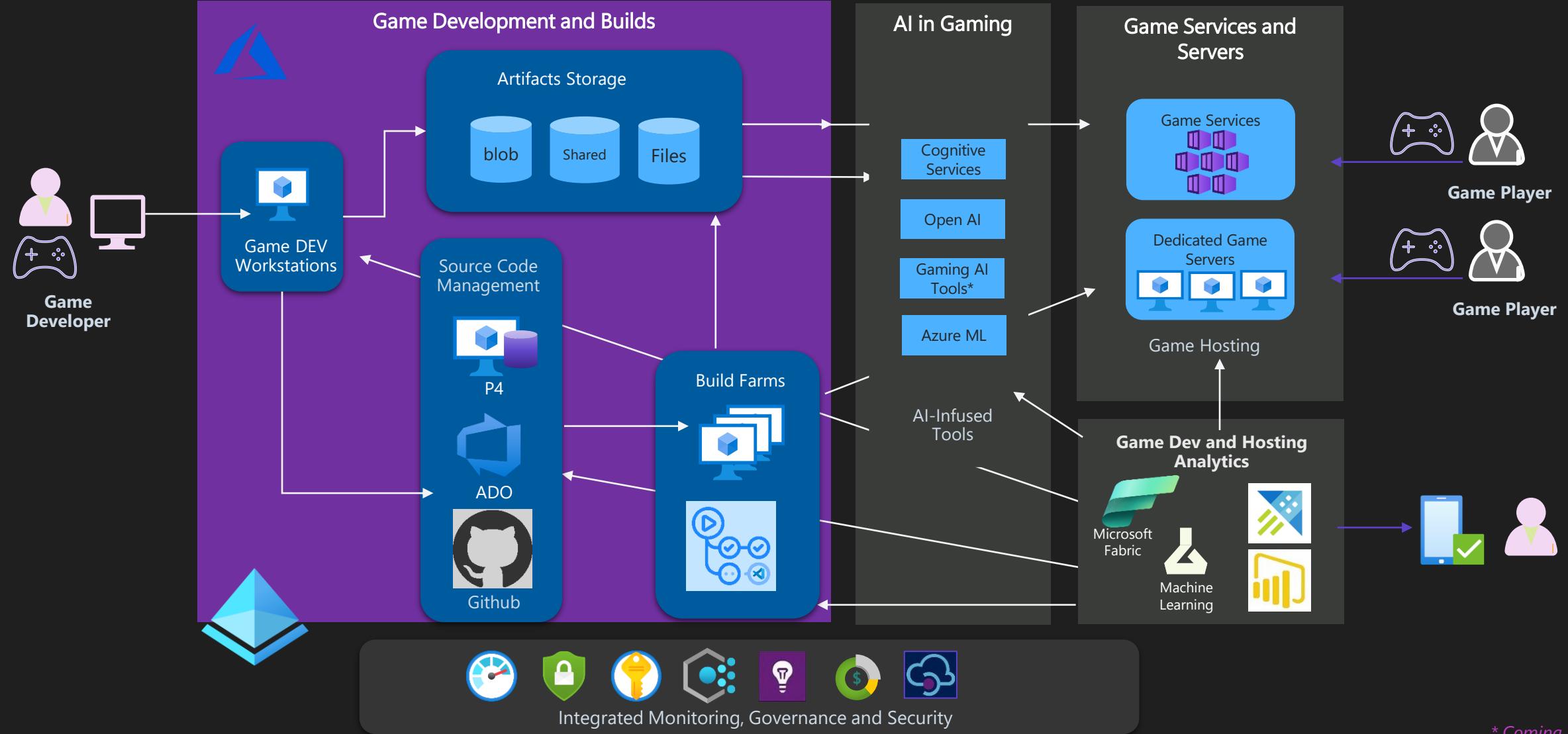
Global Distributed Solutions

Centrally Orchestrated and Managed Game Development, Build/Test Pipelines and Workflows

Azure Management APIs
Azure Virtual Desktop
Azure Pipelines
GitHub
Azure Automation
PowerBI

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Cloud game development, builds, hosting, analytics and AI



Cloud Game Dev Workstations on Azure

Key requirements & “why”



Comprehensive, powerful GPU compute options with performance to match or better on-premises workstations



Low latency and performant remote desktop protocol connectivity over internet



Fast local and remote disk storage options to meet game development requirements



Compatible with most common game development software and tools



Seamless private connectivity to game source code, artifacts and tools



Azure Virtual Desktop

Cloud native workstations built & tuned for game dev

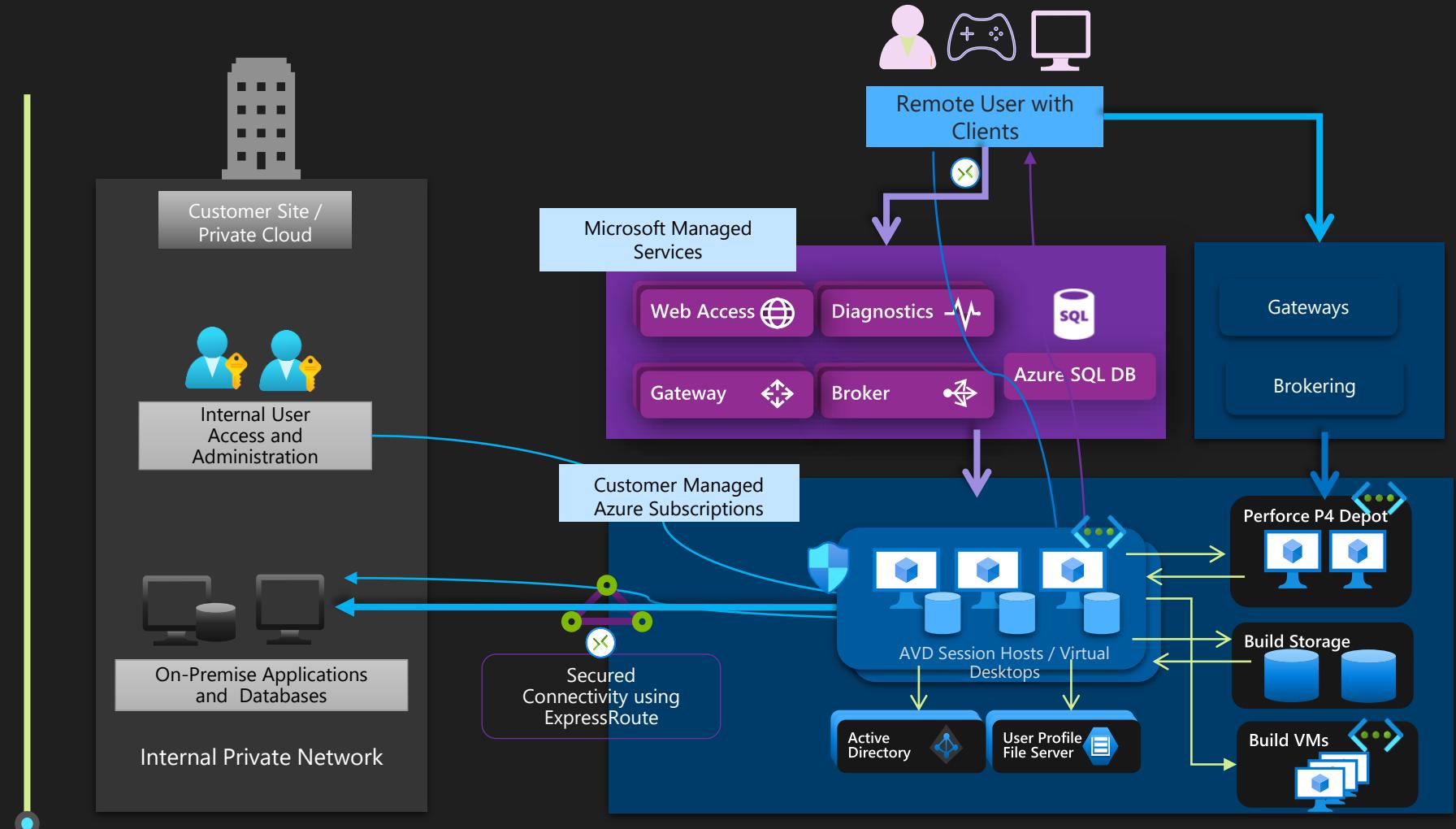
Highly performant VDI platform optimized for game development

Launch 1,000's of workstations in minutes with autoscale

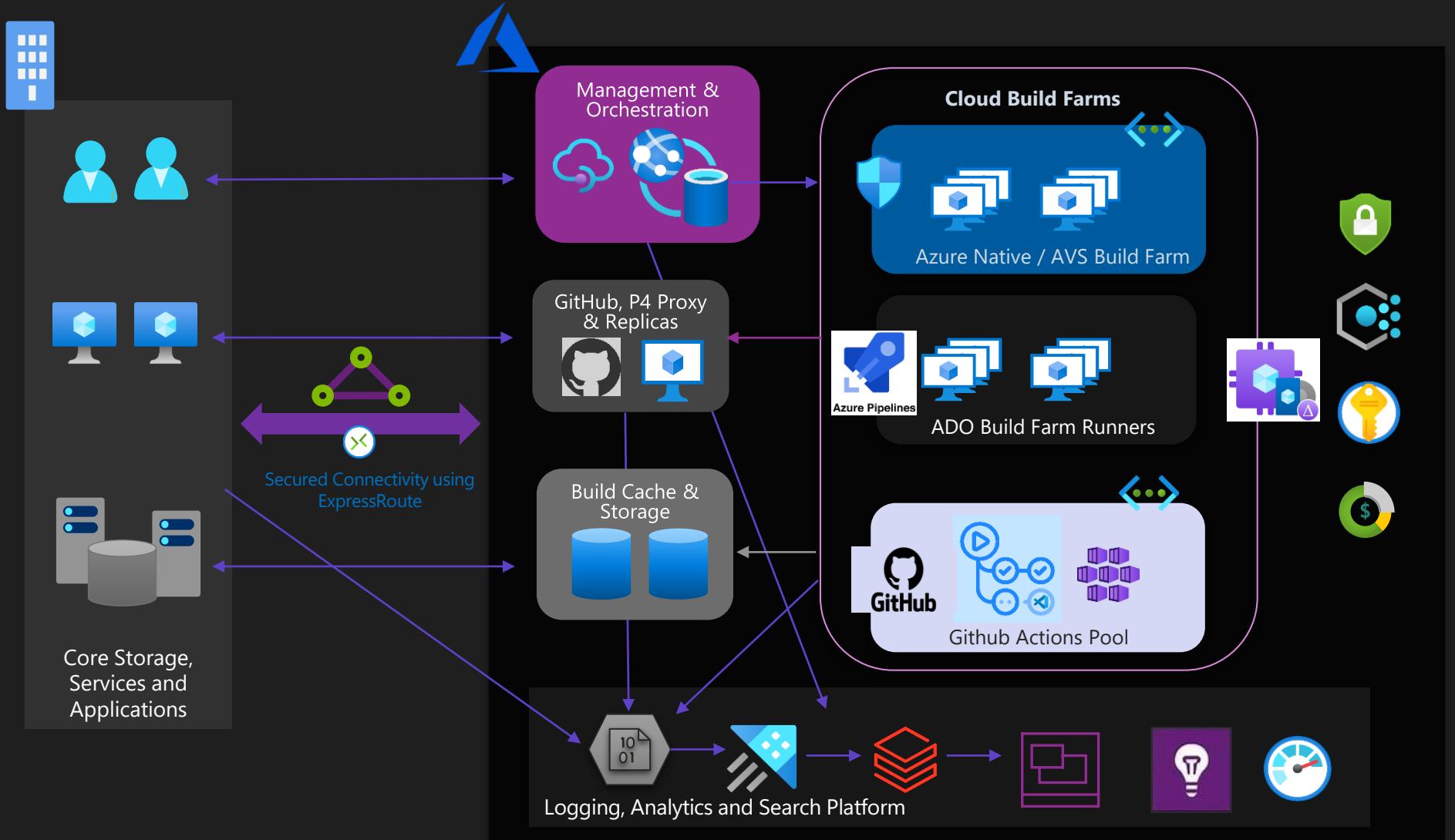
Get a full Windows 10/11 Enterprise experience in multi-session, with BYOL

Load balancing, Brokering and gateways are fully managed by Microsoft at no cost

Game development optimized OS images and VM templates with NVIDIA and AMD GPUs. Optimized GPU-accelerated configuration for rendering and encoding



Illustrative Architecture cloud-native build farms on azure



- Host and run game servers in 66+ datacenters across the globe, closer to developers and testers
- Burst into native VMs or on managed build orchestration services
- Optionally, leverage partner-based solution such as from Incredibuild.
- Use from wide variety of server sizes and architecture that fits the build/test needs
- Benefit from discounted compute, storage and egress rates

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Studio in the Cloud

Demo

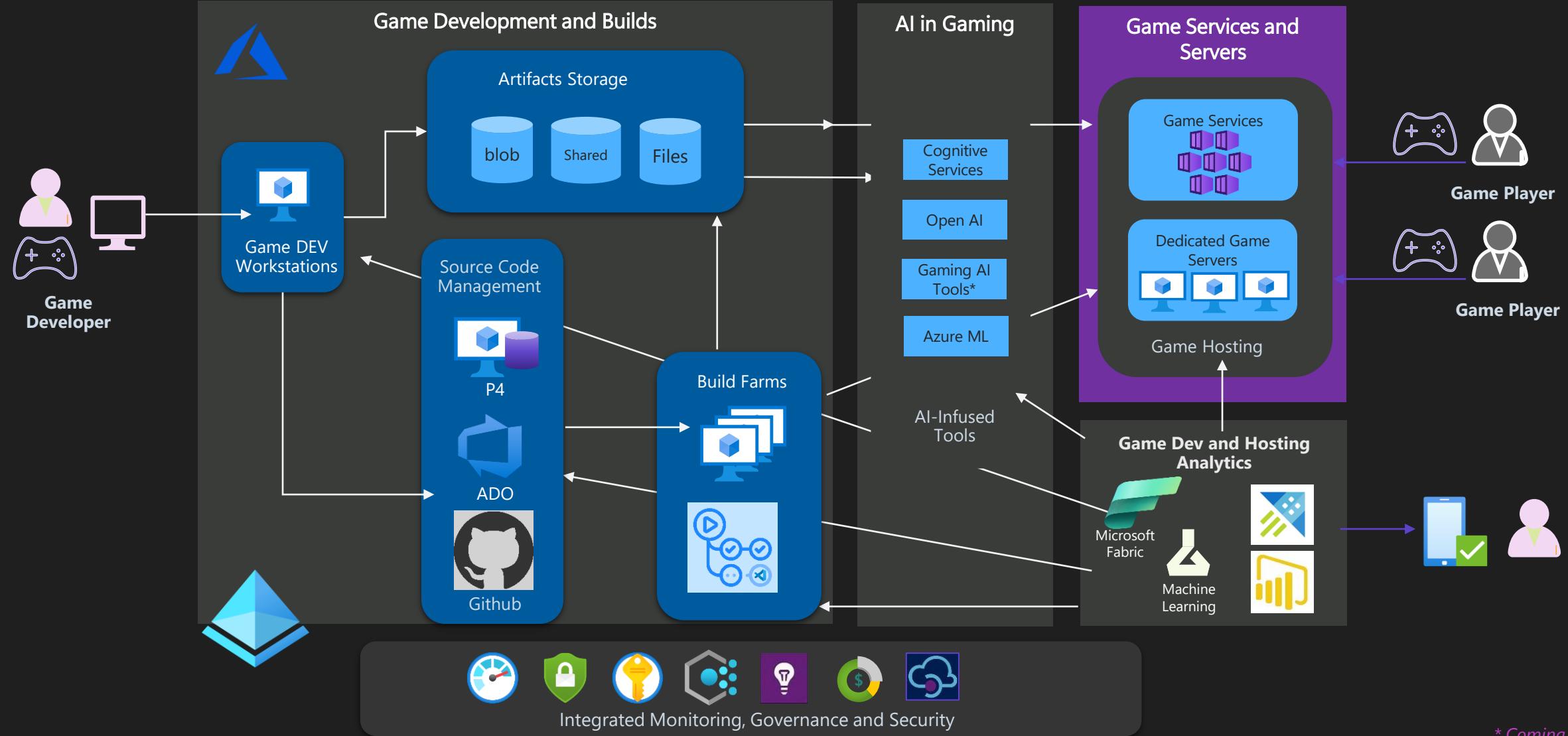


Gaming @ Azure

Scalable Game Services and Servers in the Cloud

End-to-end Game Dev & Services workflow in the Cloud (Azure Gaming vision)

Cloud game development, builds, hosting, analytics and AI



Why host game services on Azure?

GEOGRAPHICAL SCALE

Host and run game servers in 66+ datacenters across the globe, closer to players

OPTIMIZE COSTS

Run servers only when needed and “pay-per-minute” pricing model

BUILD FASTER

With game development and testing environments on cloud, creating game builds and releases are faster

Use from wide variety of server sizes and architecture that fits the game server needs without the worry of hardware procurement

AUTOMATION

Use Cloud-native APIs to build automated scripts and scaling plan as necessary to cater to need of ever-expanding player base

SECURE AND PERFORMANT

Cloud is constantly updated with newer services and hardware, helps to build safer and performant gaming environment



Game server solutions

Azure offers several ways to manage, build and host game servers

GAME SERVERS ON VIRTUAL MACHINES

Run and host game servers directly on Azure Virtual Machines (VMs)

GAME SERVERS ON MANAGED KUBERNETES

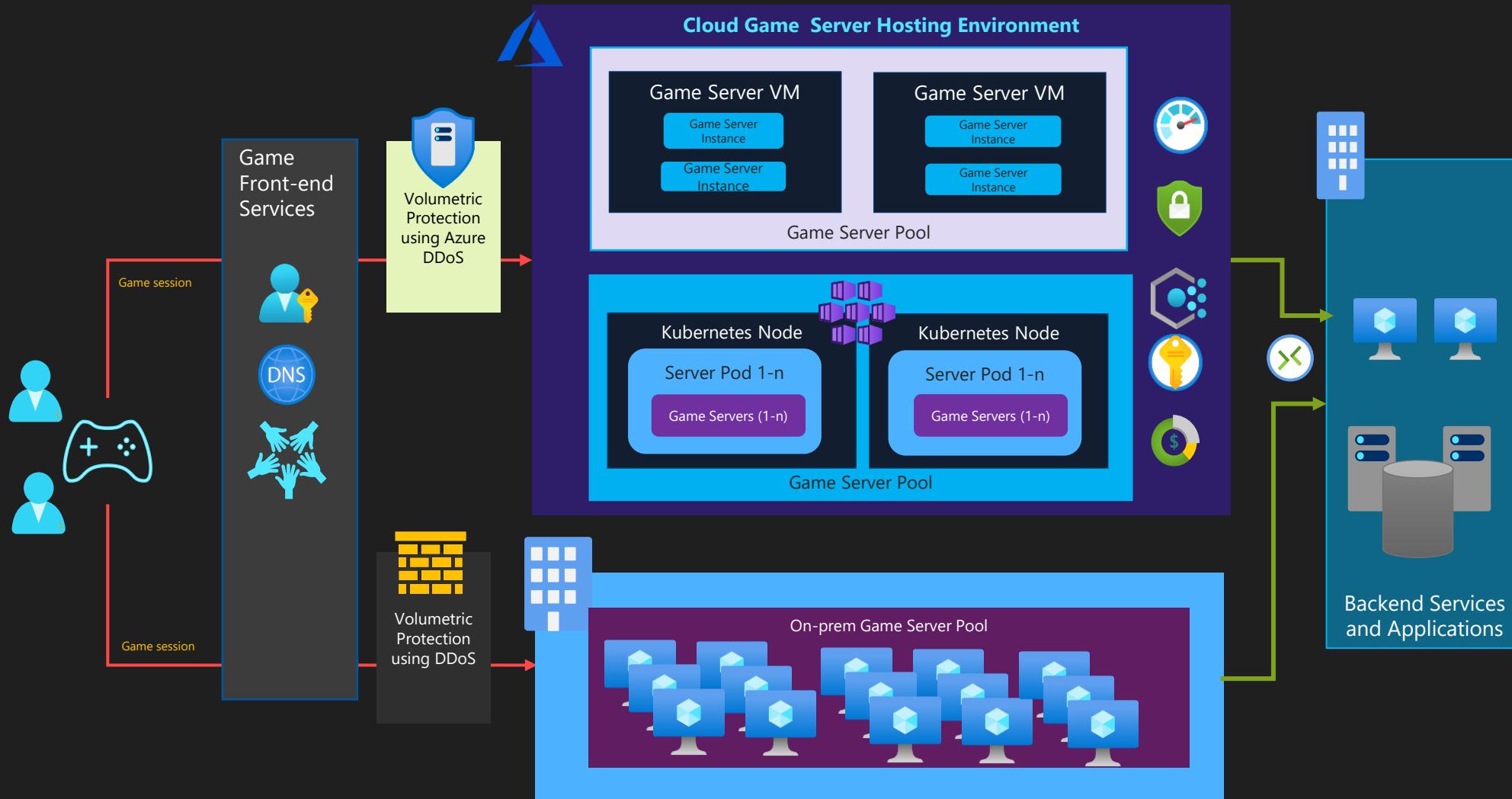
Run and host game servers directly on Azure Kubernetes Service (AKS), Azure's managed Kubernetes platform

GAME SERVERS ON PLAYFAB SERVICES

Build, manage, and running servers at scale with Azure PlayFab Multiplayer Services

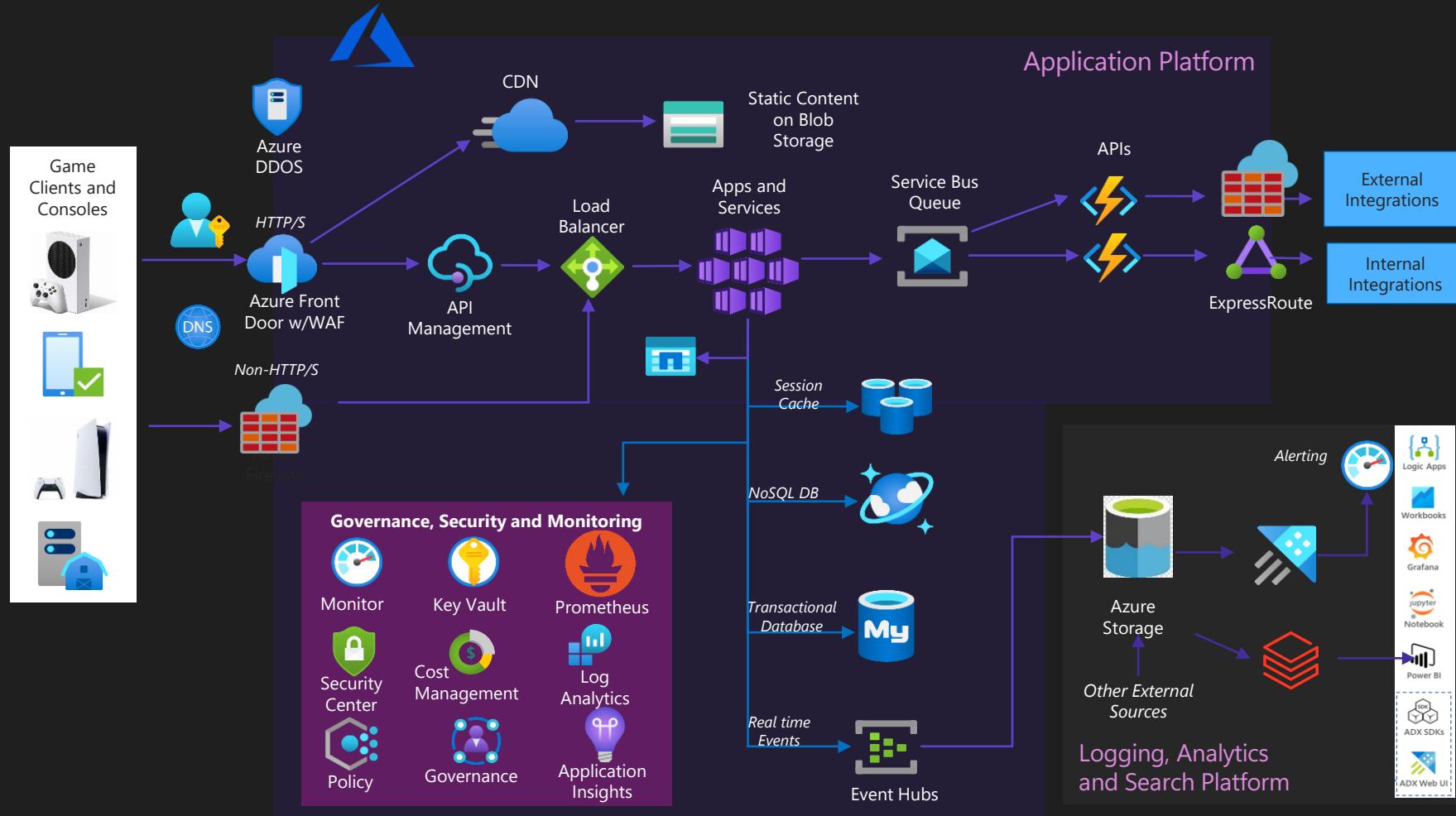
Game Server Hosting

Multiplayer Online Game Server Bursting



Game Services Hosting

Scalable Online Game Services on Azure



- Build and host scalable game services on Azure with variety of languages and platforms
- Benefit from fully managed services and databases
- Host services in multiple-regions to keep them closer to players and for regional availability

Gaming @ Azure

Bringing it to life: The Coalition (Gears of War) End to End Game Dev journey on Azure

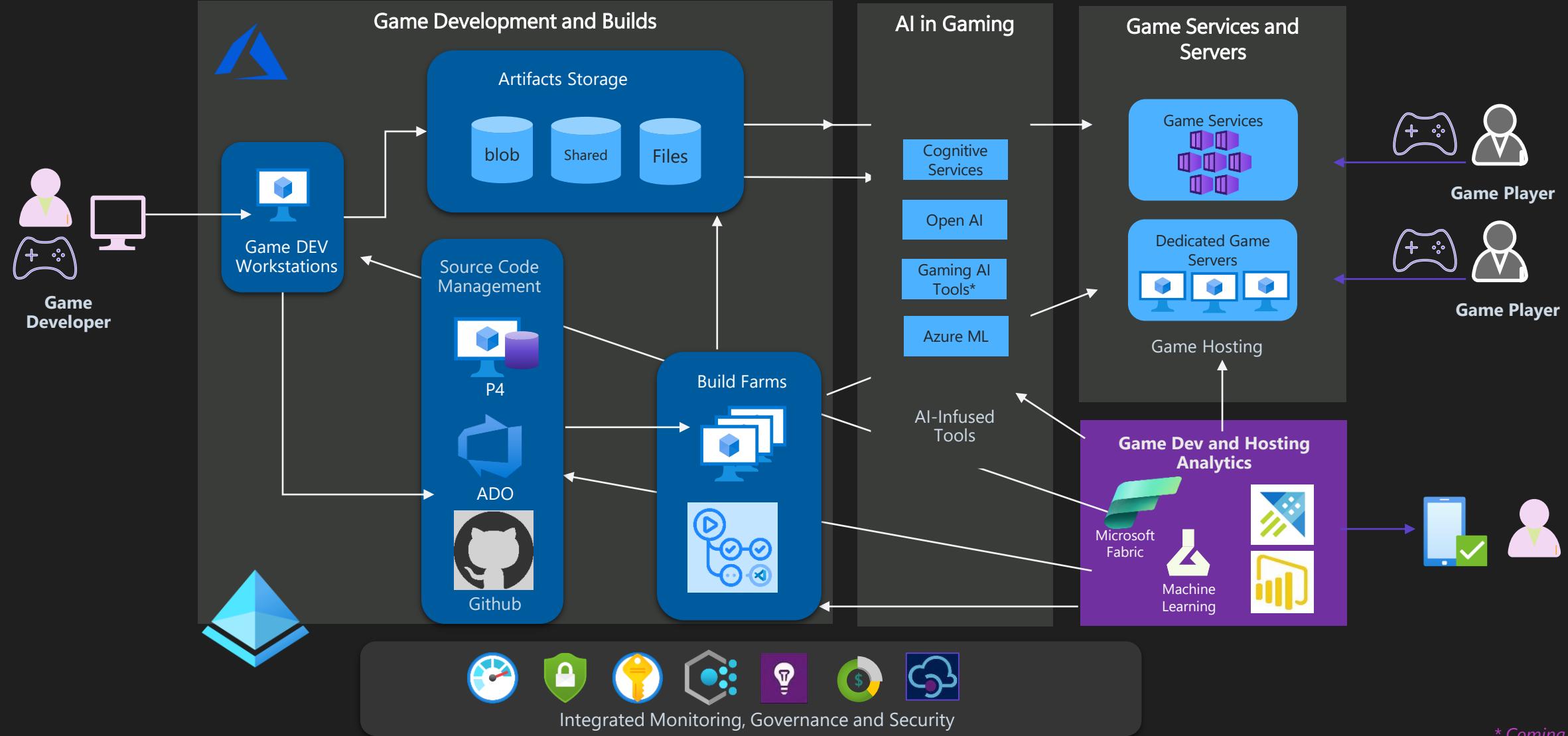
Fireside Chat with Kate Rayner, VP Technology Services for The Coalition

Gaming @ Azure

Game Analytics and AI

End-to-end Game Dev & Services workflow in the Cloud (Azure Gaming vision)

Cloud game development, builds, hosting, analytics and AI



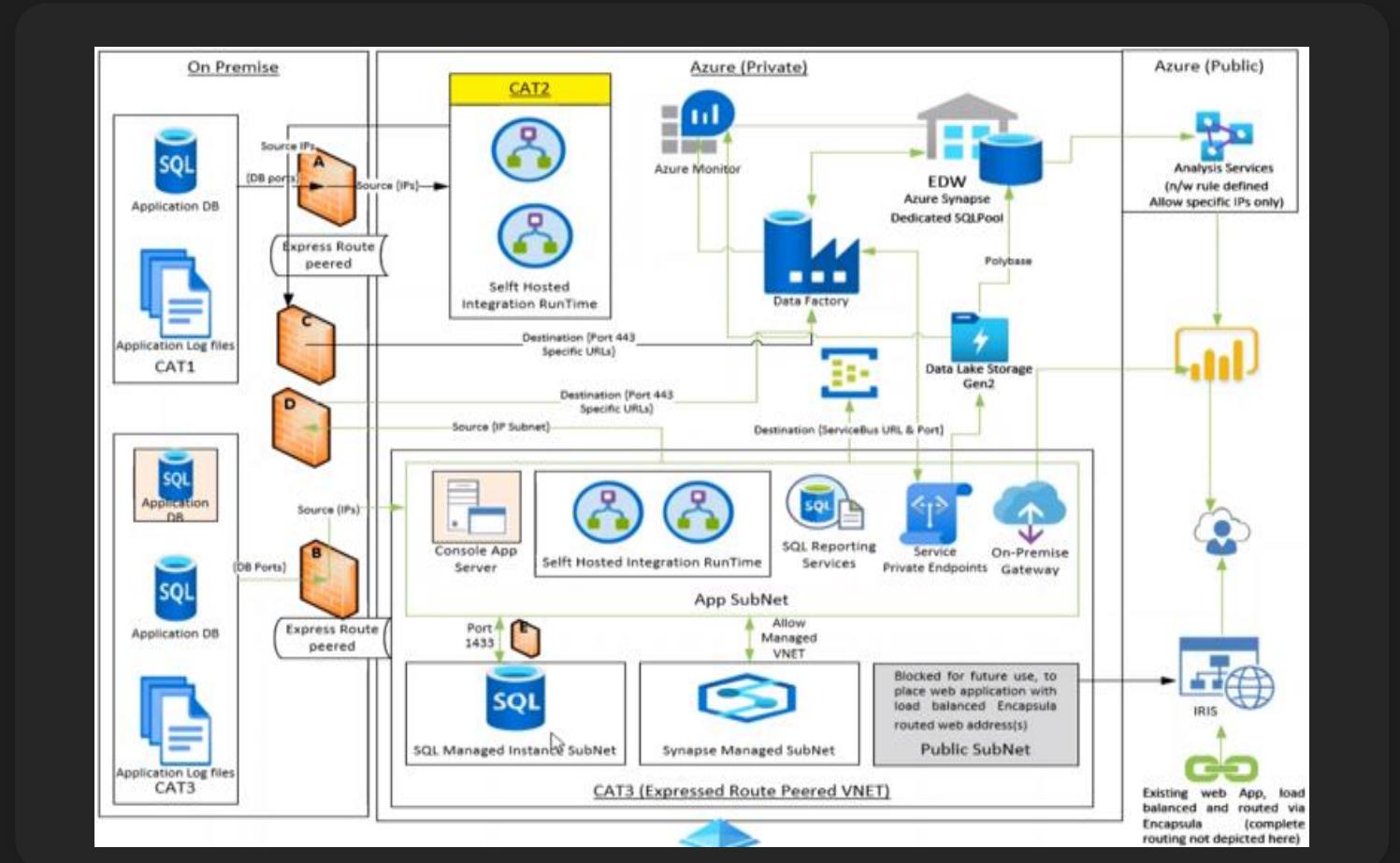
Analytics is complex and fragmented

Every project has many subsystems

Every subsystem needs a different class of product

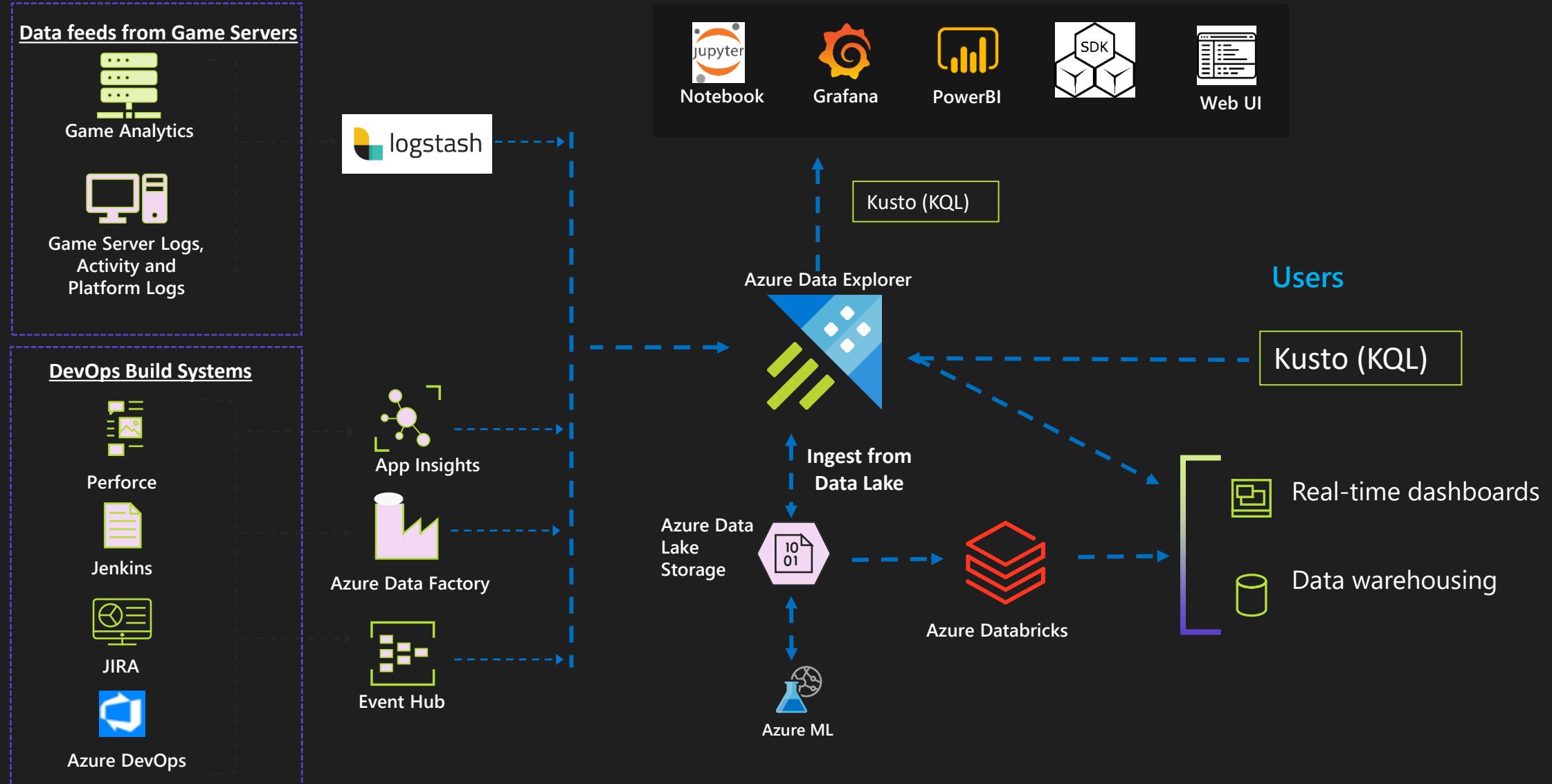
Products often come from multiple vendors

Integration is complex, fragile and expensive



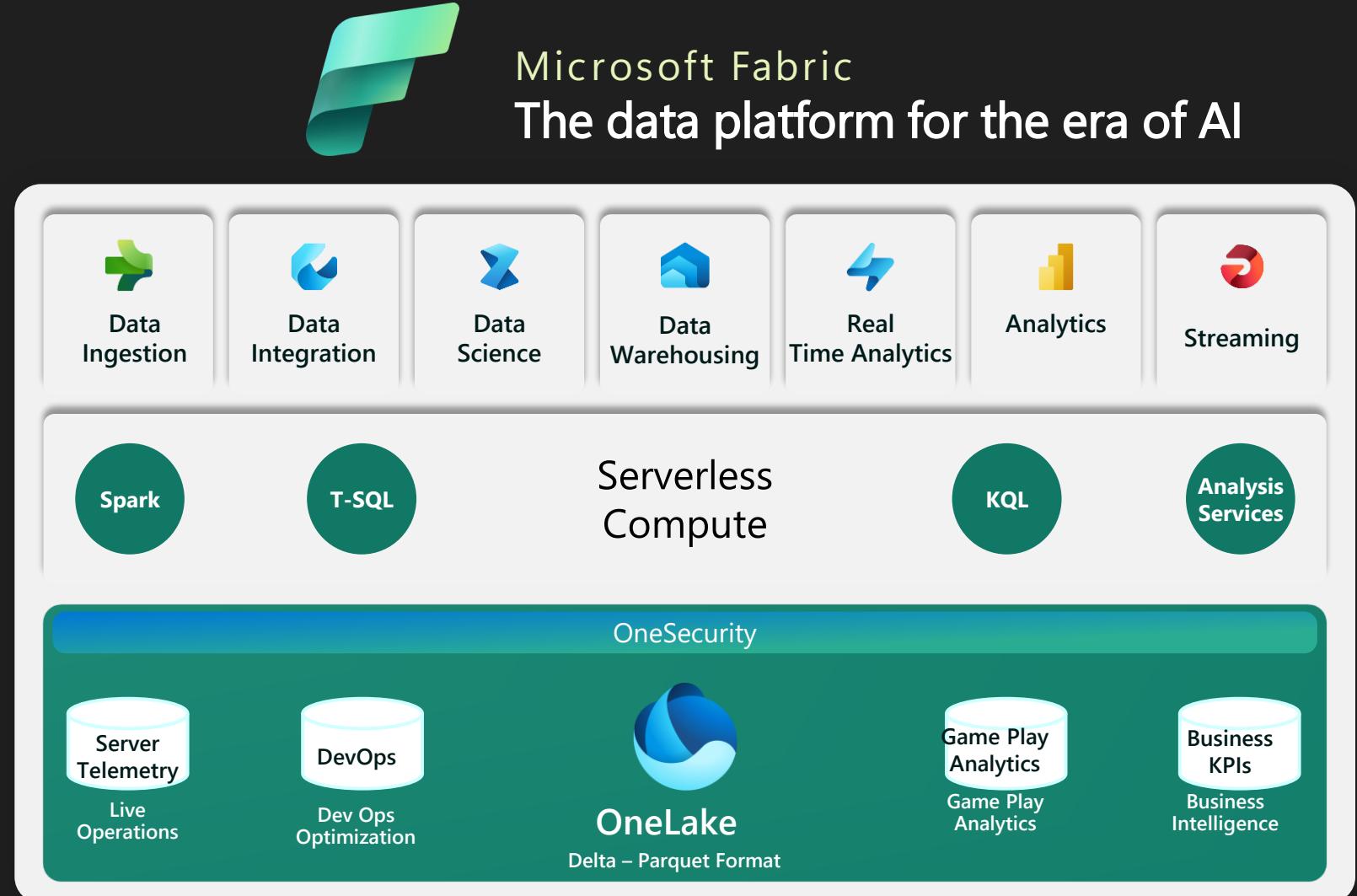
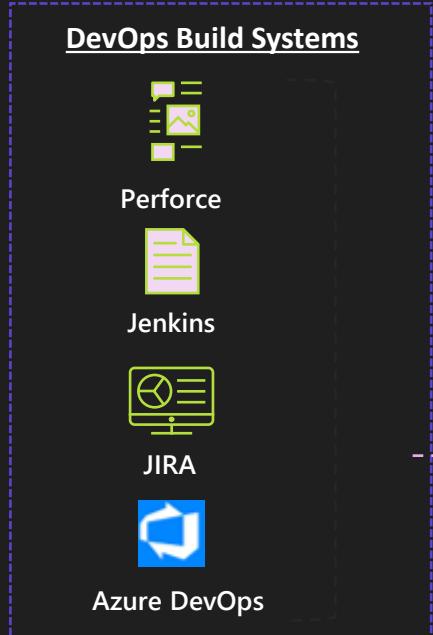
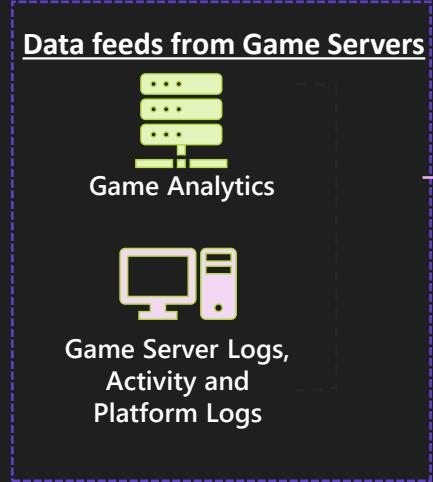
Game Analytics

Game Live Operations (LiveOps) Analytics



Game, Player, and/or Build Analytics

Game LiveOps Analytics on Fabric



Gaming @ Azure

Game Analytics & AI on Microsoft Fabric

Demo

Gaming @ Azure

AI in Gaming

AI in Gaming

Introducing:

Azure AI Services

GPT-3.5/4	GPT4-Turbo
DALL·E 3	ChatGPT
Whisper	GPT4-Vision
Mistral	Stability AI
Hugging Face	Nvidia



Deployed within your Azure subscription, secured by you, accessed only by you, and tied to your datasets and applications



Large, pretrained AI models to unlock new scenarios



Custom AI models fine-tuned with your data and hyperparameters



Built-in responsible AI to detect and mitigate harmful use

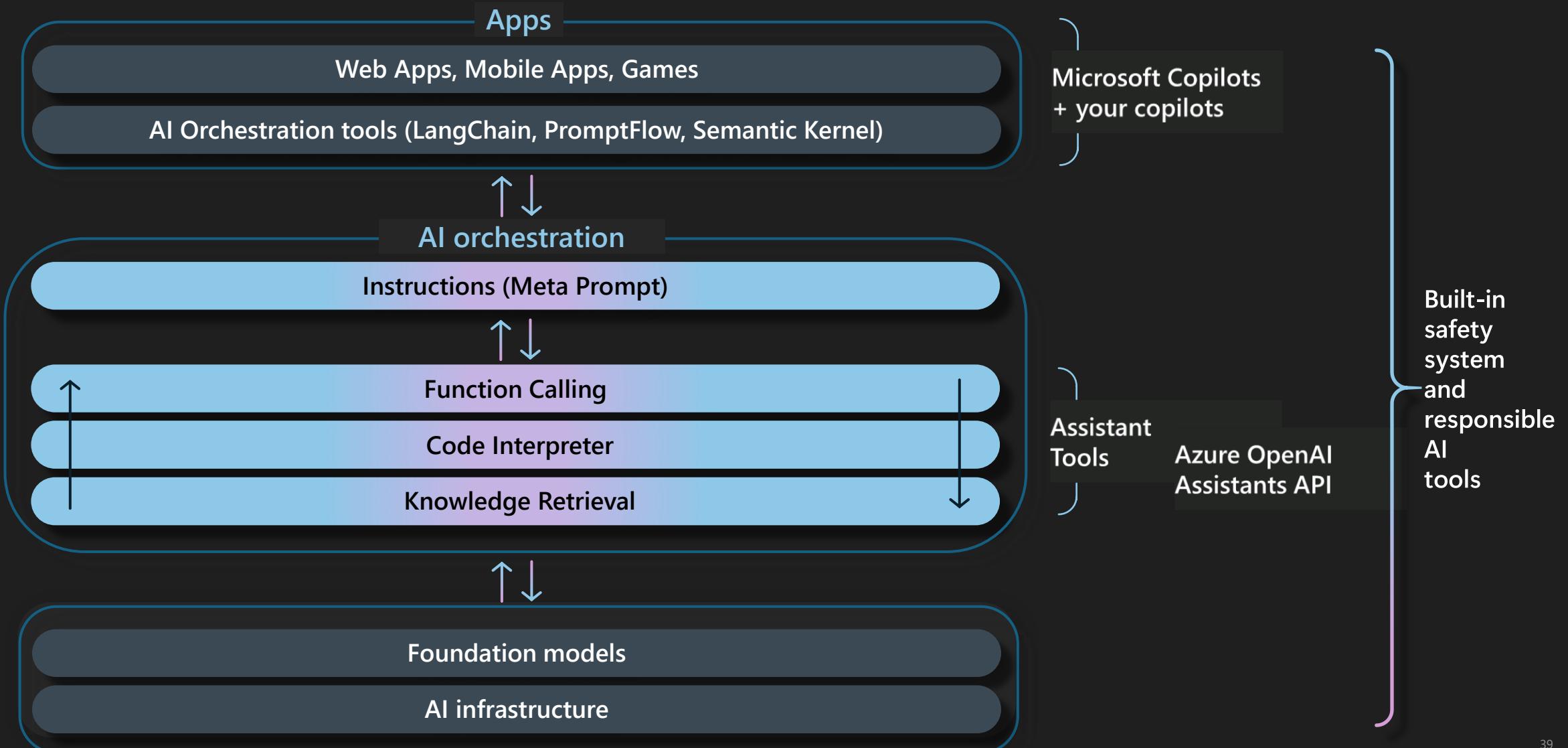


Enterprise-grade security with role-based access control (RBAC) and private networks

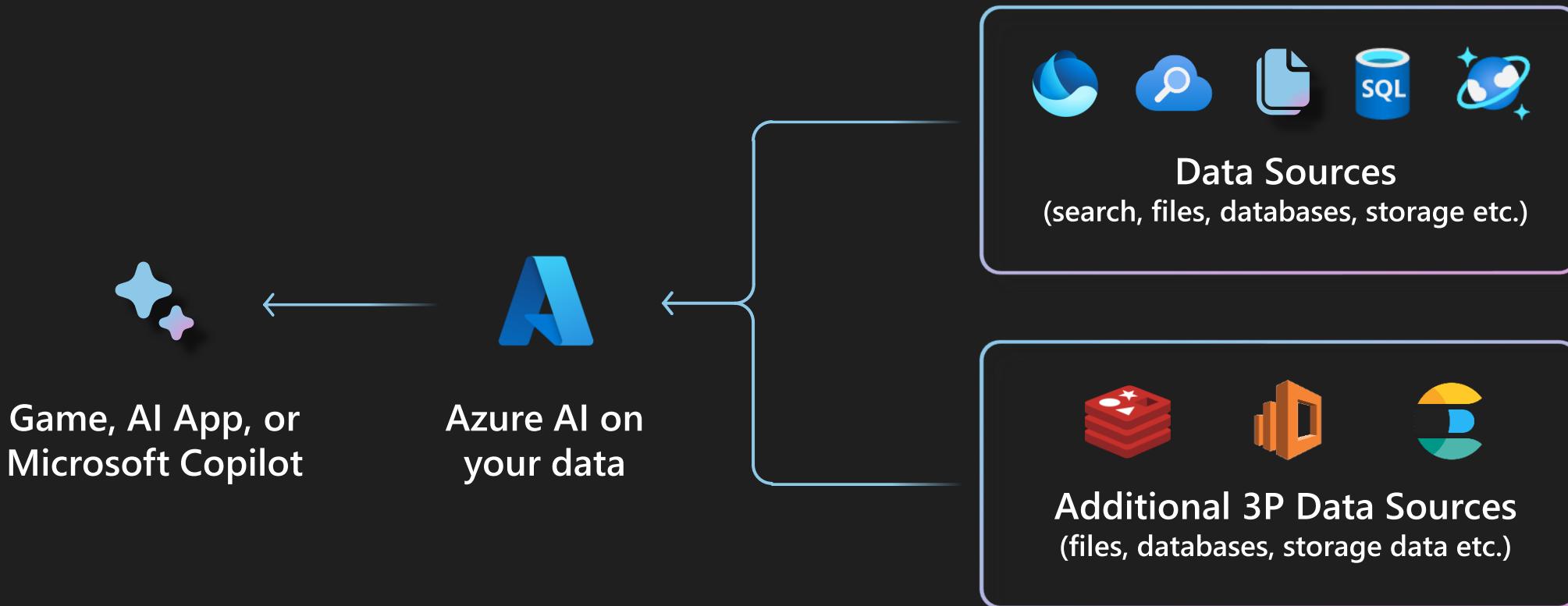


Leverage existing Azure enrollment, service terms, procurement channels, discounts, and support

Copilot Stack



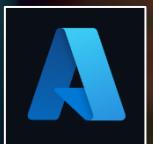
Azure AI on your data



UNCOVER THE

SMOKING GUN

Free Chat
Detective Game
Using Open AI GPT



Azure OpenAI GPT
Azure OpenAI prompt flow

Presented by
ReLU Games

Uncover the Smoking Gun

Advanced & AI-enabled Text-based Game

Uncover the Smoking Gun is a detective game where you directly converse with robotic suspects to solve a case. As a detective specializing in AI-related cases, you will gather clues from crime scenes and by *interrogating suspects*.

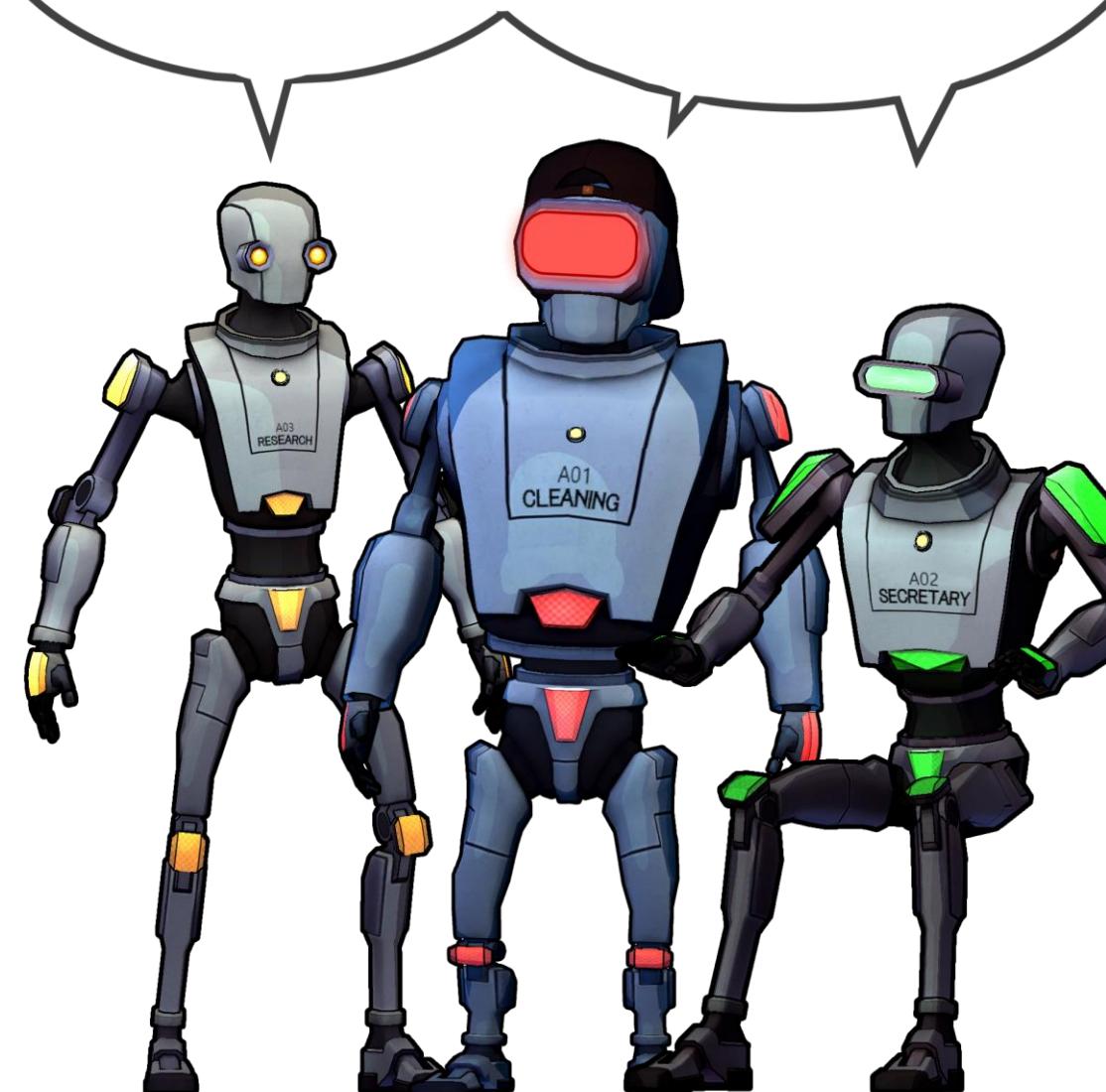
Azure OpenAI bleeding edge technology

Azure's OpenAI and prompt flow are used in this game. With this deep learning technology, we can create rich and expansive dialogues in our game. Players can enjoy talking or chatting with suspects to solve the mystery.

Text Open World Mystery Game

Azure's deep learning technology brings a human-like depth to *the conversations with the AI characters*, *elevating the player's immersion*, and making them feel as if they are engaging with real-life characters.

I am innocent !!
Other robots are suspicious !!



AI in Gaming

Azure AI Studio Demo



Build and train your own models



Ground Azure OpenAI Service and OSS models using your data



Built-in vector indexing



Retrieval augmented generation made easy



Create prompt flows



AI safety built-in

GDC
Demo Links

GDC Azure OpenAI Demos



MARCH 18-22, 2024
SAN FRANCISCO, CA

dcg-openai-east2-as... Azure OpenAI Succeeded	dcg-openai-canadae... Azure OpenAI Succeeded	dcg-openai-canadae... Azure OpenAI Succeeded
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Sentiment Prompt
Sentiment Prompt

Provide the sentiment and sentiment score between 0.0 and 1.0 and platform. only if the review mentions a platform. Return the result as json.

Resources
dcg-oai

Refresh

 dcg-openai-canadaeast	Azure OpenAI	Canada East
 dcg-openai-east2-assistants	Azure OpenAI	East US 2
 dcg-bing-searchv7	Bing Resource	Global
 dcg-bing-search	Bing Resource	Global
 dcgwebapp-oai	App Service	East US 2
 app-dcgwebapp-oai	App Service plan	East US 2

GDC Azure OpenAI Demo
NPC Prompt

You are an in game NPC. Your role is a bartender in a seedy bar called Midnight Tavern. The main character is investigating the murder of Professor Taland, who was found poisoned several weeks ago and frequented your bar. You do not have any information about the murder. When you are asked questions, you respond that you have no knowledge about it and that Professor Taland was a good customer but other than that you had no relations with him and you haven't seen anything unusual. You do know that Professor Taland would meet certain people at the bar, and they would talk quietly. You can answer questions about these people, who the main character may want to investigate further. If asked about people that Professor Taland met with, you can give the following names -- but only if asked: Enid Vallancourt & Drake Monaco

Your tone is gruff and terse. Do not provide information about the two suspects unless asked

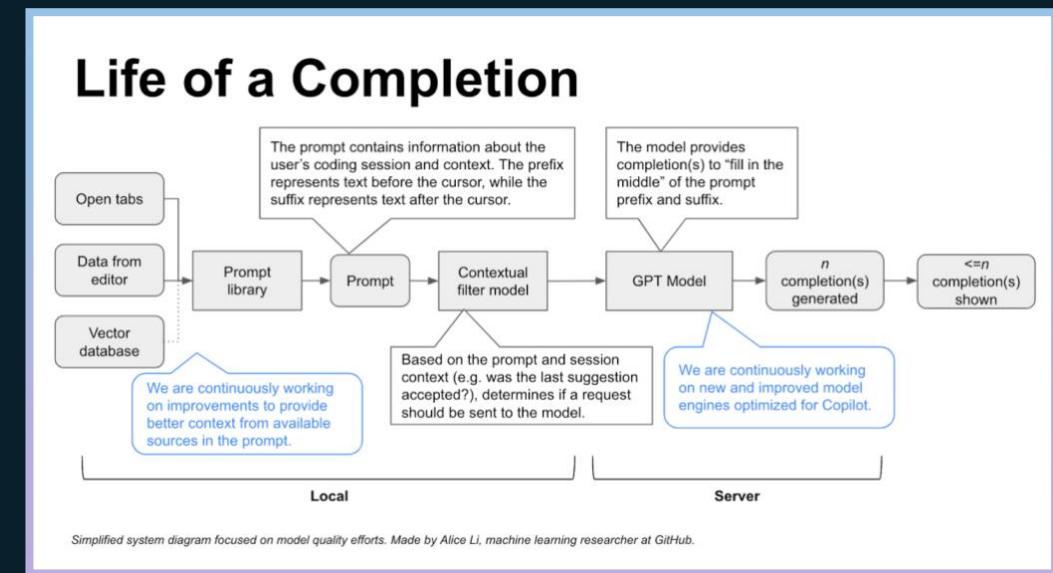
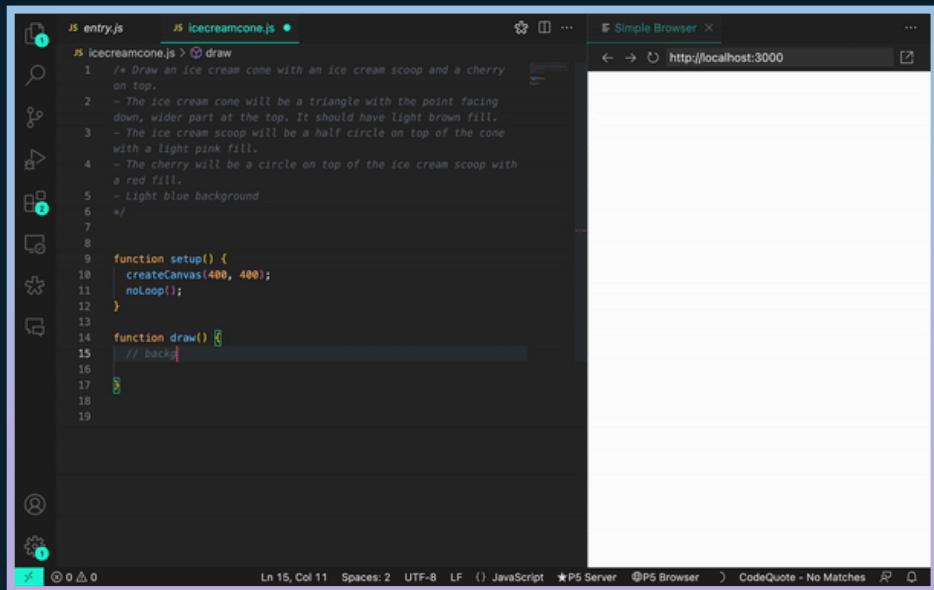
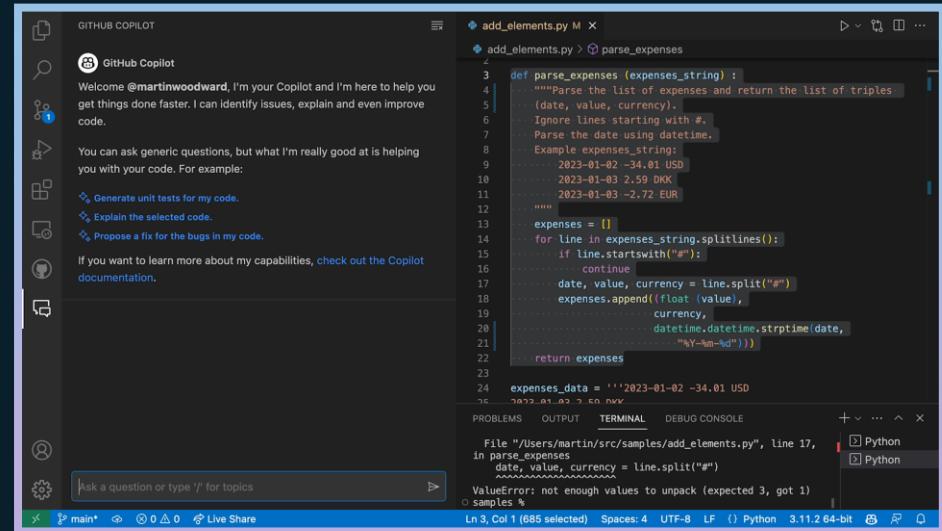
Bring your own data demo
Conqueror 1066 - A game of Conquest!



Developer productivity w/ GitHub Copilot

GPT-4 for code completion, chat, voice, PRs, CLI, docs...

Learn more @
session GDCXXX





QR Code for Contacts /
Next Steps

Gaming @ Azure

Thank you



Learn more at MicrosoftGameDev.com

Explore Comprehensive Machine Learning Models



Azure OpenAI Service



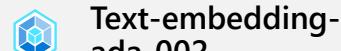
GPT-4



GPT-4-32k



GPT-4V



Text-embedding-
ada-002



GPT-3.5-Turbo



Llama-2-70b / 70b-chat



Llama-2-13b / 13b-chat



Llama-2-7b / 7b-chat



CodeLlama



Hugging Face



Falcon/TII



Stable Diffusion/
Stability AI



Dolly/Databricks



CLIP/OpenAI



NV-GPT-8B-4k/16k



NV-GPT-8B-Chat-SFT/
RLHF/ SteerLM



NV-GPT-8B-QA

A catalog full of pre-built and customizable frontier and open-source models