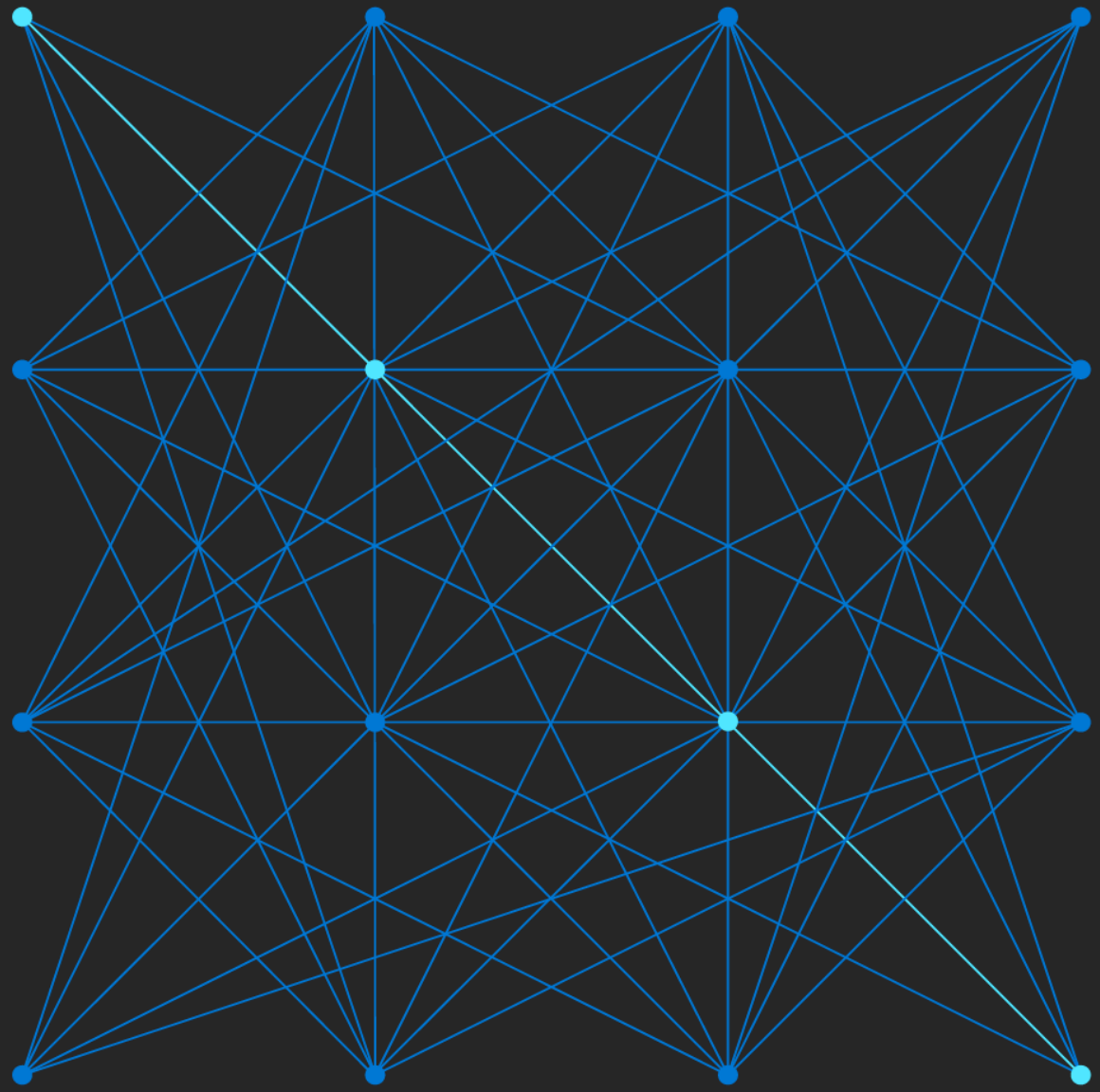
Microsoft Azure

Microsoft Cloud Native Summit

Welcome!

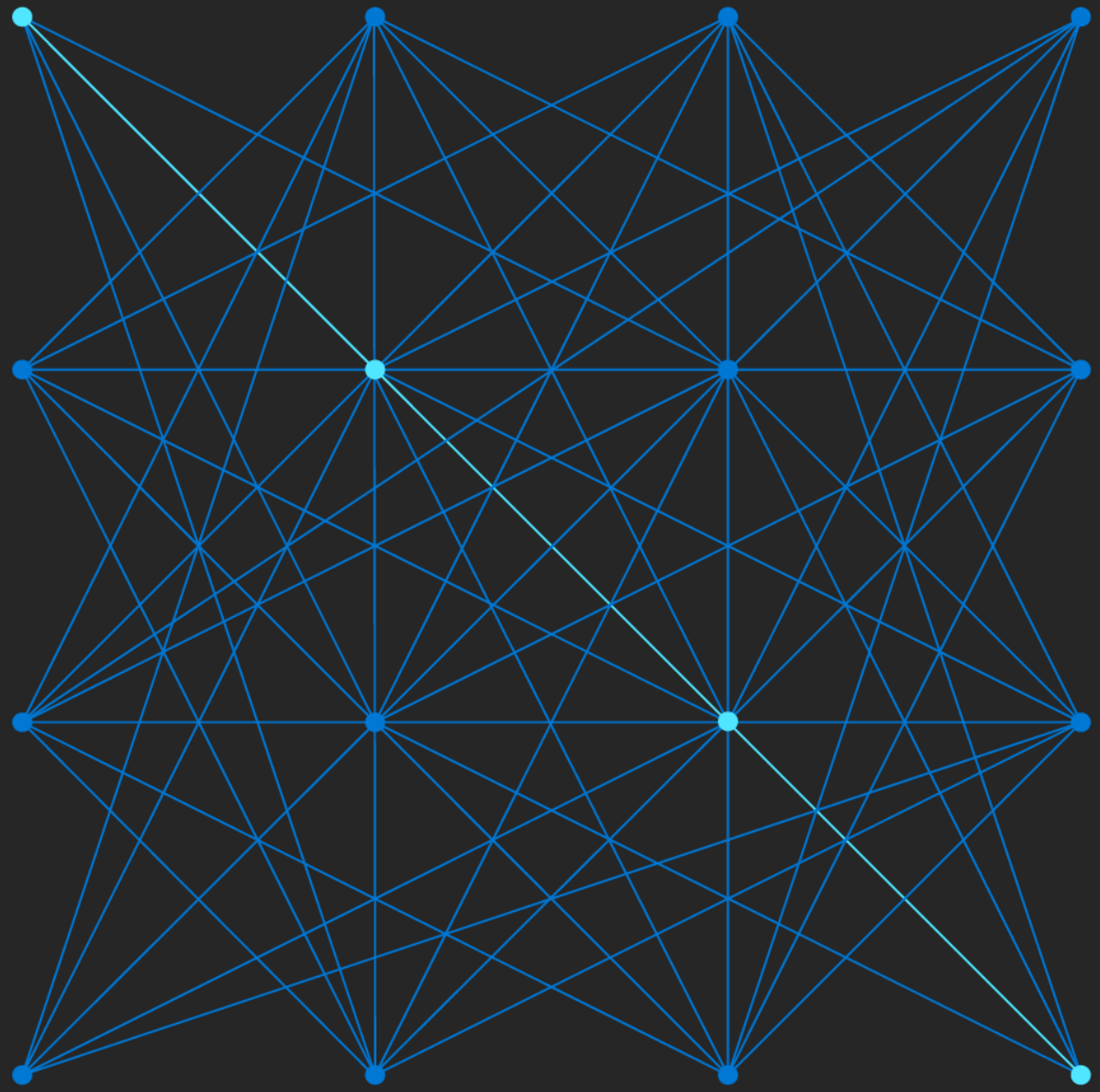
Get comfortable and enjoy ☺



Microsoft Azure

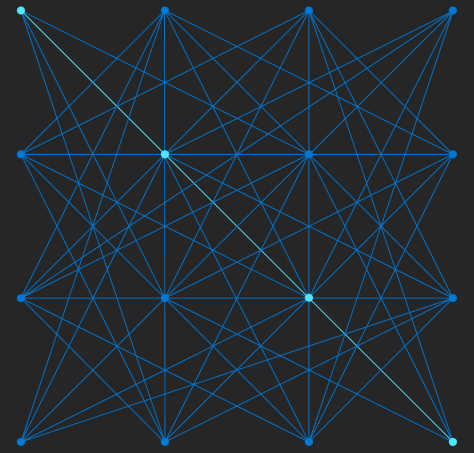
Welcome + Introduction

Andres Prieto
Digital & Application Innovation Lead
Microsoft Western Europe



Microsoft Azure

Our Digital & Application Innovation Vision



Modernize existing applications

Build new intelligent cloud-native applications

Scale through Fusion Teams

Standardize with DevOps

74%

Reduction in app development cost[1]

4–5x

Higher revenue growth[2]

55%

Higher innovation[2]

1. *The Total Economic Impact of Power Apps by Forrester Consulting, March 2020*
2. *Organizations with Developer Velocity in the top quartile | McKinsey & Company: Driving business outcomes through Developer Velocity 2020 and McKinsey Developer Velocity Survey, Expert Interview*

Microsoft Azure

Developer Velocity

Unleash the full potential of your developer teams and boost business performance

Companies with top Developer Velocity Index (DVI) outperform the market[3]

4–5x higher revenue growth

55% higher innovation[4]

Best-in-class tools are the #1 driver of business performance[3]

+65% more innovative

47% developer satisfaction and retention rates

4x business impact

Public cloud adoption is key for Developer Velocity for non-software companies[3]

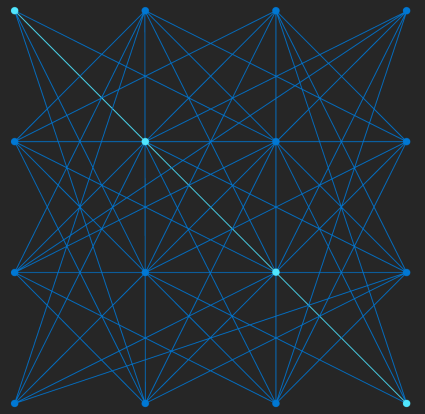
+33% more innovative

Companies that empower developers with low-code platforms score higher on innovation[3]

1. *Forrester Wave for Public Cloud Development and Infrastructure Platforms, and, Public Cloud Development Platforms, Q1 2020*
2. *Forrester Wave for Low-Code Development Platforms, 2019*
3. *McKinsey & Company, Developer Velocity: How software excellence fuels business performance, 2020*
4. *McKinsey & Company, Developer Velocity: How software excellence fuels business performance, 2020, Measured by level of adoption of new technologies and ability to innovate faster and beat competition through innovation-led growth*

Microsoft Azure

Agenda



09h30 – 09h40 - Welcome & Introduction - **Andres Prieto**

09h40 – 10h10 - AKS Must Know (AKS 101) – **Rita Silveira da Costa**

10h10 – 10h40 - Hybrid World with Containers: Azure-enabled Arc – **Maria Jordan, Pamir Erdem**

10h40 – 10h45 - *Break*

10h45 – 11h30 - A glimpse of what's next: KEDA, DAPR, Azure Container App, Arc-enabled Azure application services - **Roy de Milde**

11h30 – 11h35 - *Break*

11h35 – 12h35 - Infuse AI into your applications: Speech, Language, Vision and OpenAI - **Xiaopeng Li, Francesco Tumiatti, Gabrielle Davelaar**

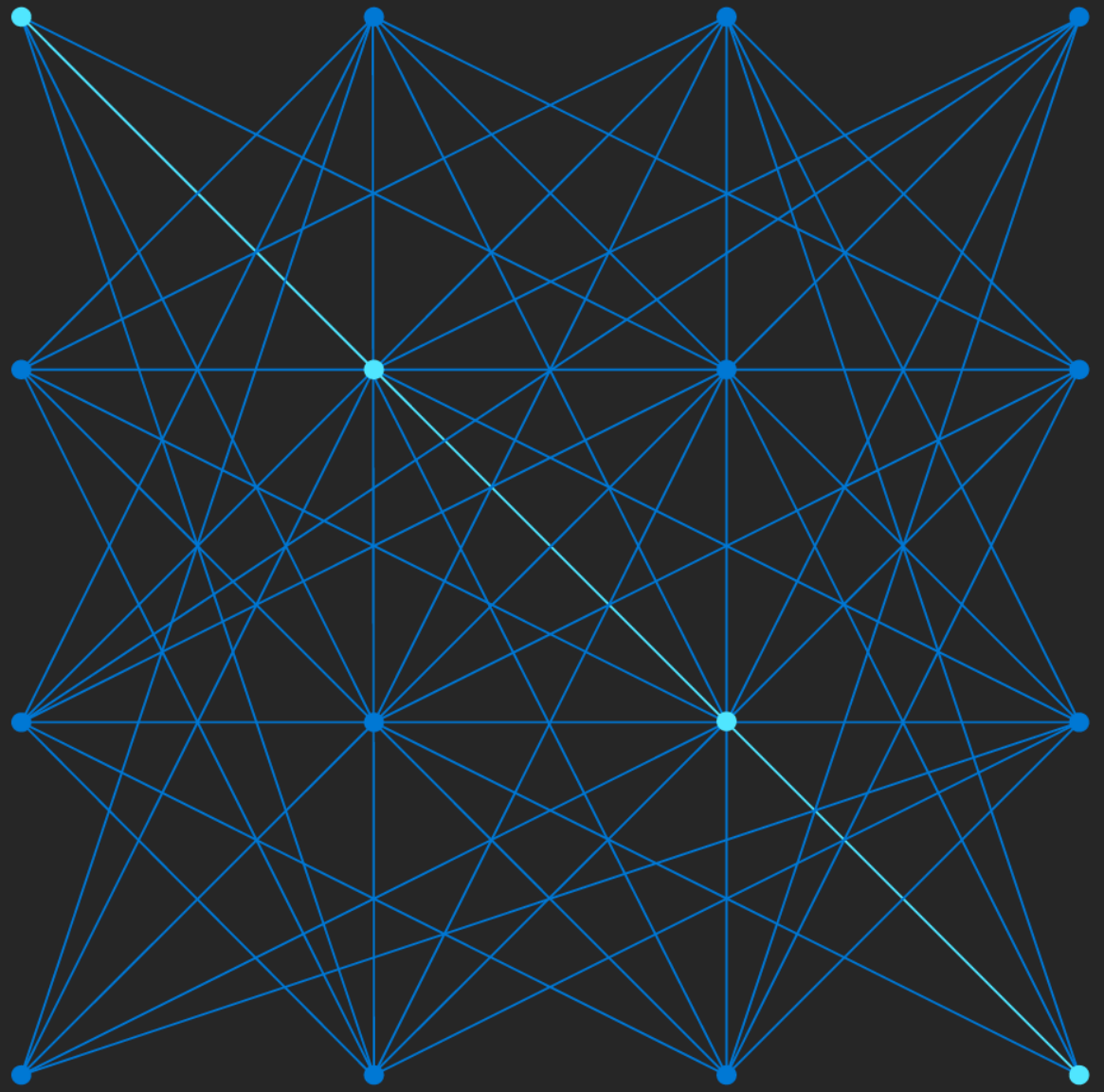
12h35 – 12h40 - Thank You & Conclusion - **Andres Prieto**

12h45 – 13h00 - *Q&A*

Microsoft Azure

AKS Must Know (AKS 101)

Rita Silveira da Costa
App Innovation Global Black Belt
Microsoft



AGENDA

Why Containers?

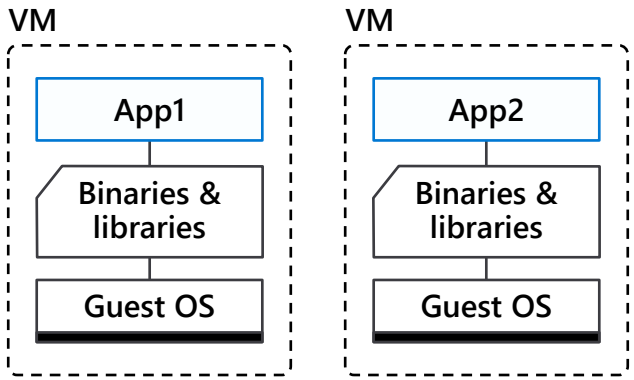
Kubernetes

Azure Kubernetes Service

Customer Stories

© Microsoft Corporation

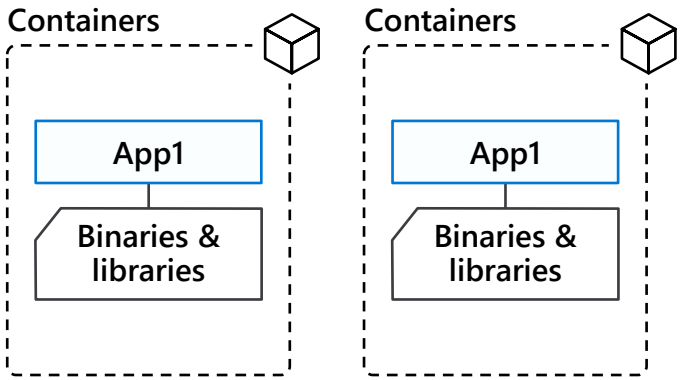
Why Containers?



Virtual machines

Virtualize the hardware

VMs as units of scaling



Containers

Virtualize the **operating system**

Applications as units of scaling

Kubernetes: deploy and manage containerized workloads/services at scale

Kubernetes is…

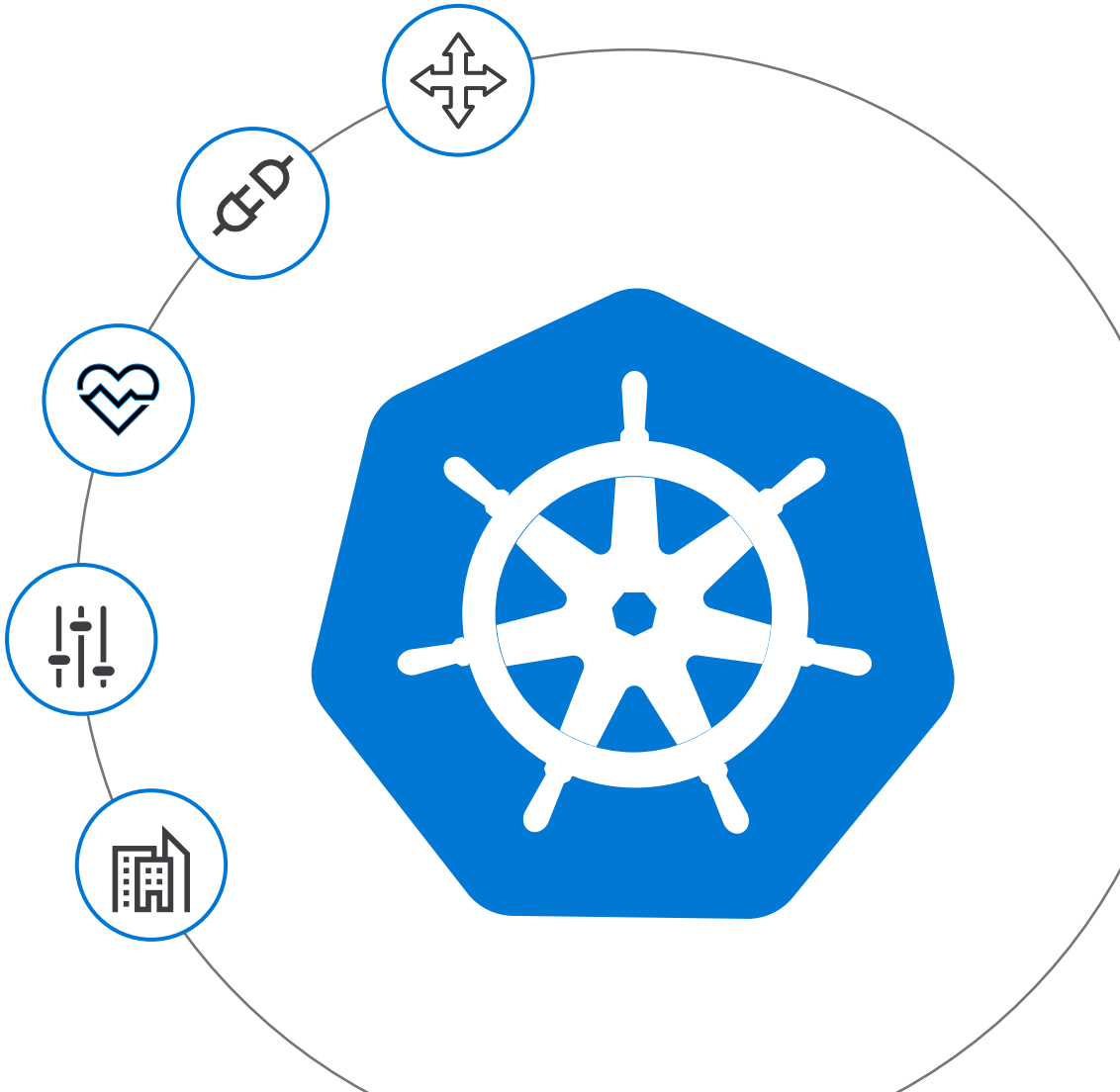
Portable
Public, private, hybrid, multi-cloud

Extensible
Modular, pluggable, hookable, composable

Self-healing
Auto-placement, auto-restart, auto-replication, auto-scaling

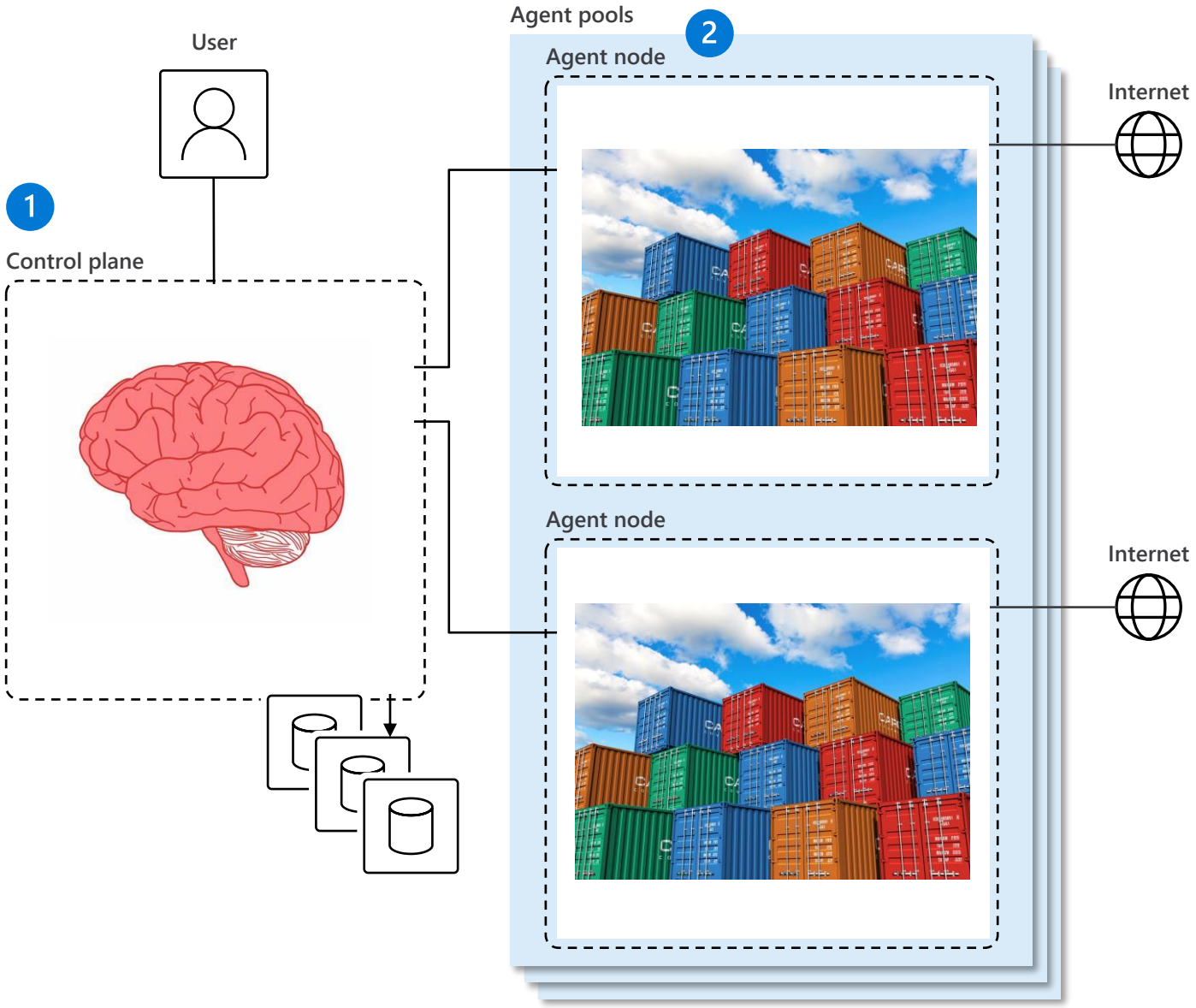
Flexible
Facilitates both declarative and imperative configuration and automation

Enterprise-ready
Supported by a large, and growing ecosystem



Kubernetes is complex

1. **Control Plane:** manages the agent nodes and the pods in the cluster
   - **api-server**: front end of the Kubernetes control plane; exposes Kubernetes API
   - **controller-manager**: runs the controller processes
   - **scheduler**: tracks newly created pods and selects node to run them on
   - **etcd**: stores the state of the cluster (config, running workloads status, etc.)
2. **Agent nodes:** run your application workloads
   - **Pods**: a collection of containers co-located on a single machine
   - **kube-proxy**: a network proxy that runs on each node in a cluster
   - **kubelet**: agent that runs on each node in a cluster; ensures containers are running in a pod
   - **Containers**: software responsible for running containers



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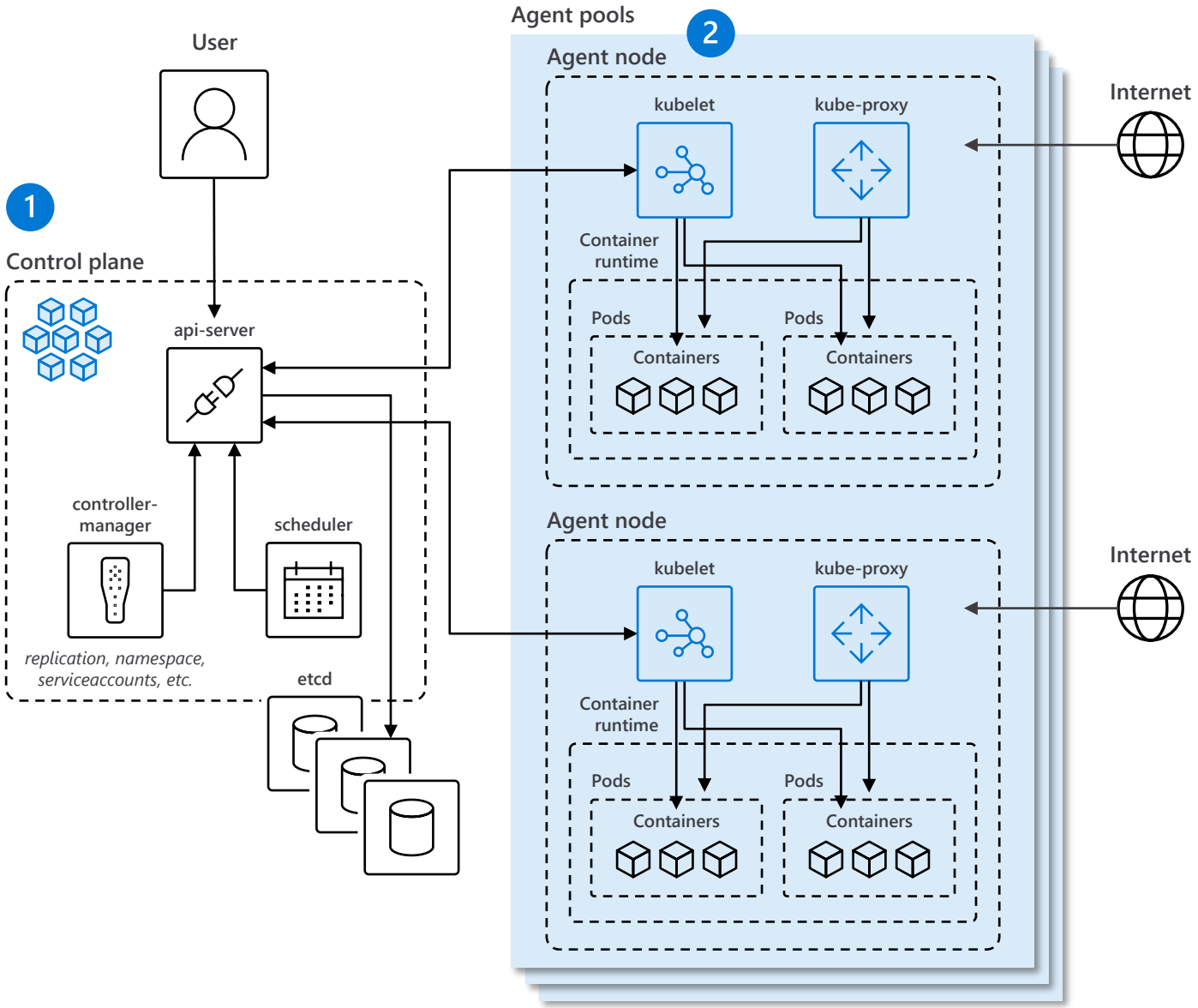
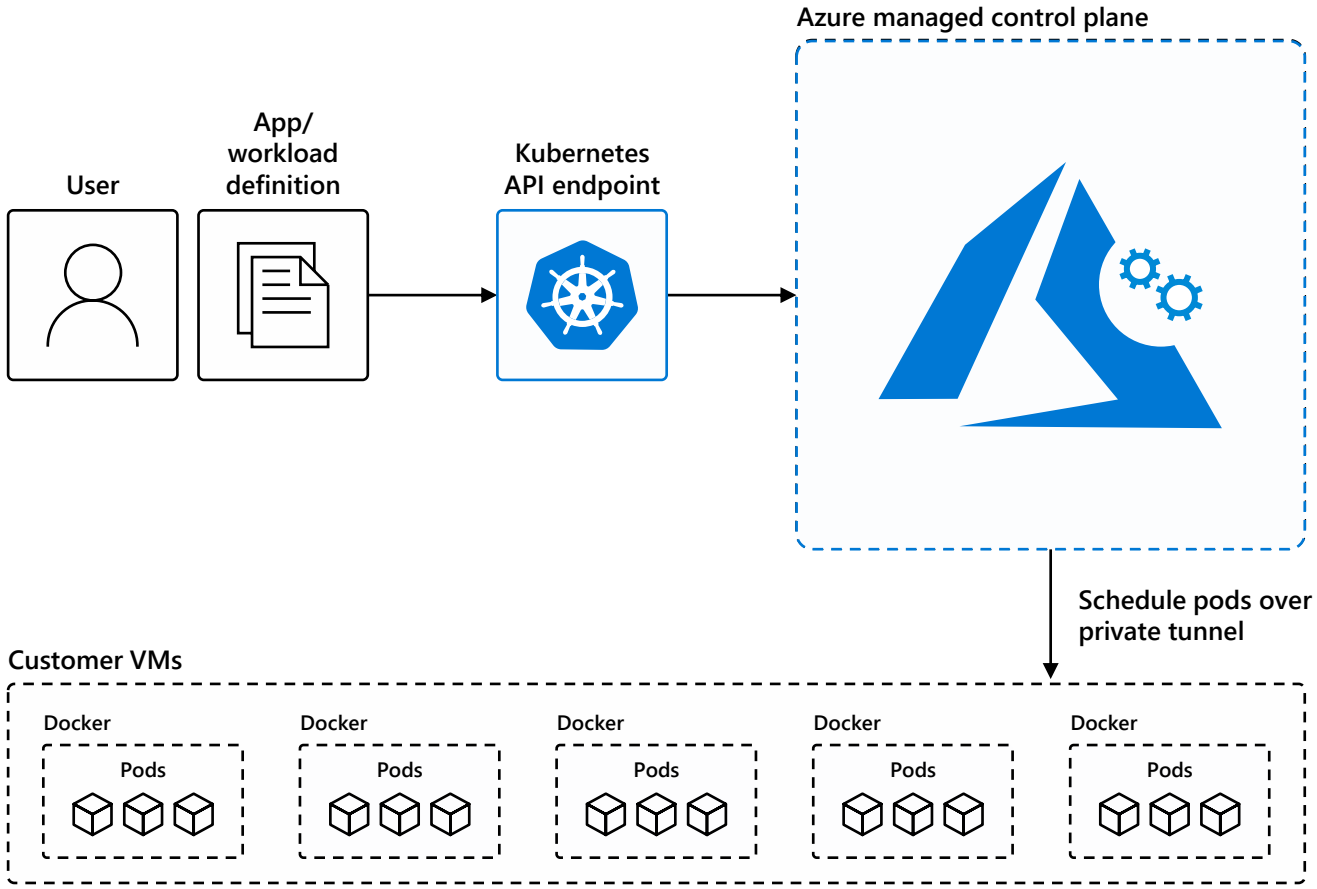


Managed Kubernetes handles the complexity for you

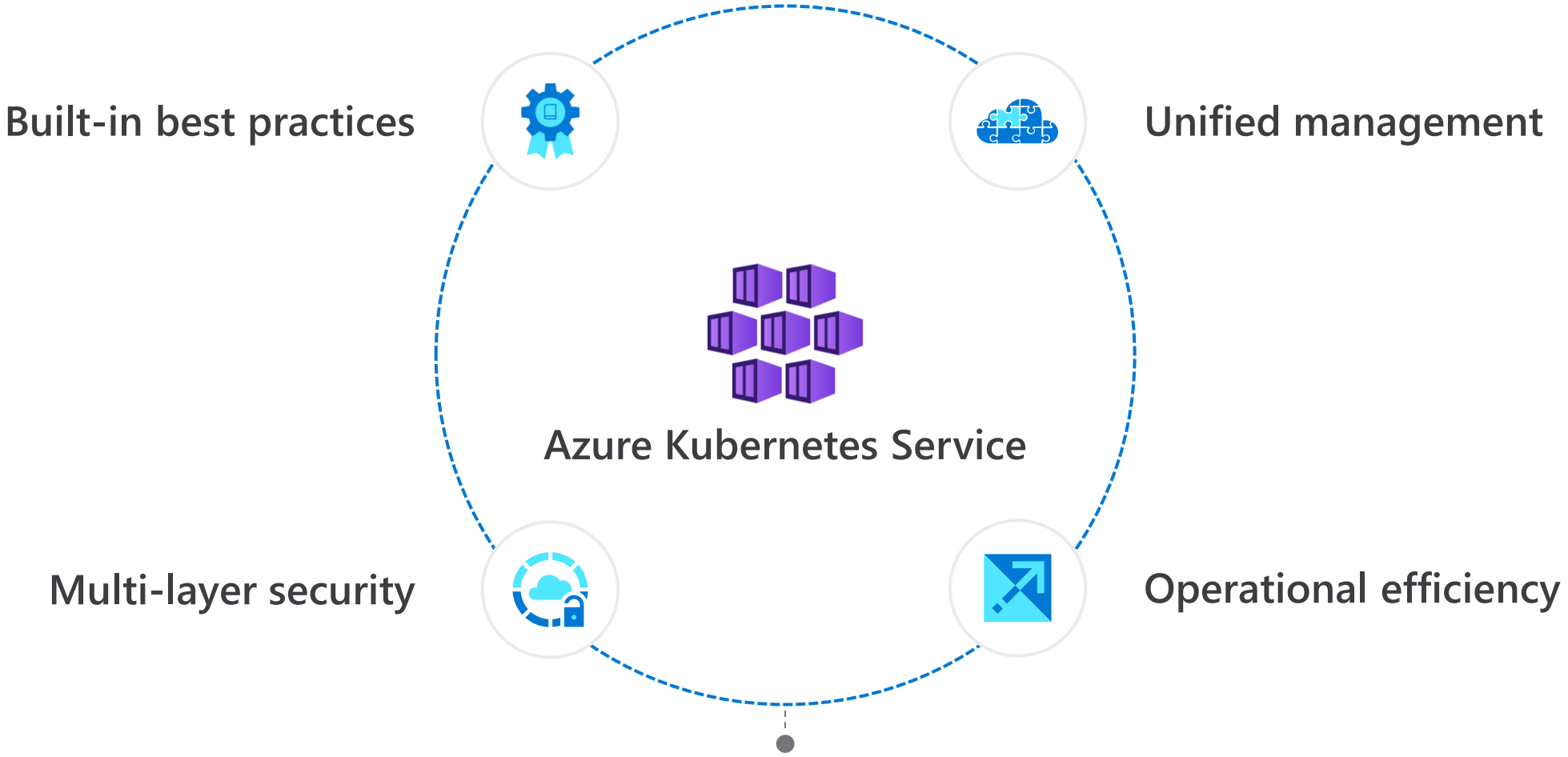
Focus on your containers and code, not the plumbing of them

Responsibilities	DIY with Kubernetes	Managed Kubernetes on Azure
Containerization		
Application iteration, debugging		
CI/CD		
Provisioning, upgrades, patches		
Reliability availability		
Scaling		
Monitoring and logging		

Customer Microsoft

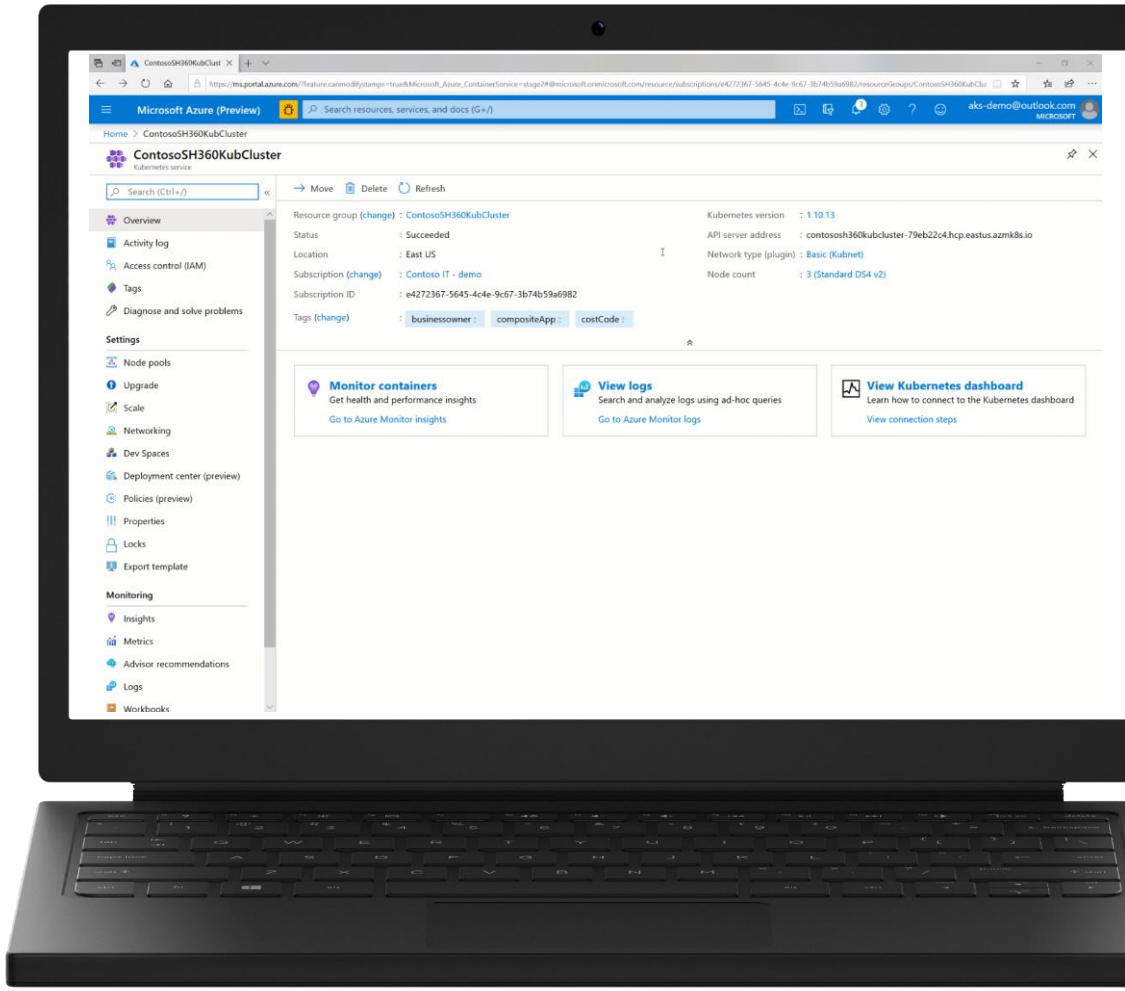


Azure Kubernetes Service is the most advanced Kubernetes platform



Built-in best practices

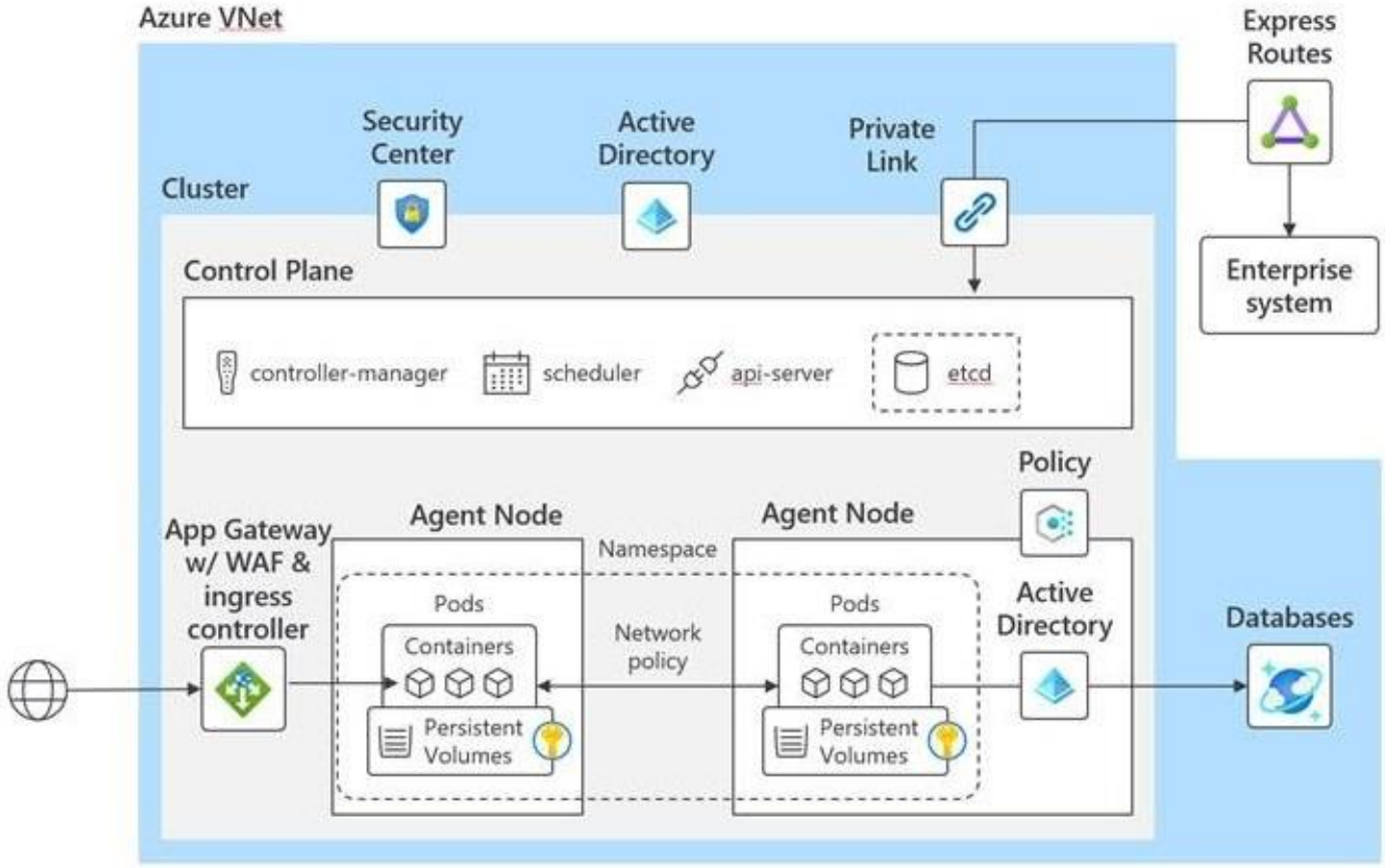
- Based on knowledge from thousands of customer engagements
- Proactive and actionable recommendations from Azure Advisor
- Proactively improve performance, availability, and security
- Intelligent, self-diagnostic portal-based experience
- Self-service troubleshooting with proven tools



For more information, see Enterprise-scale for AKS

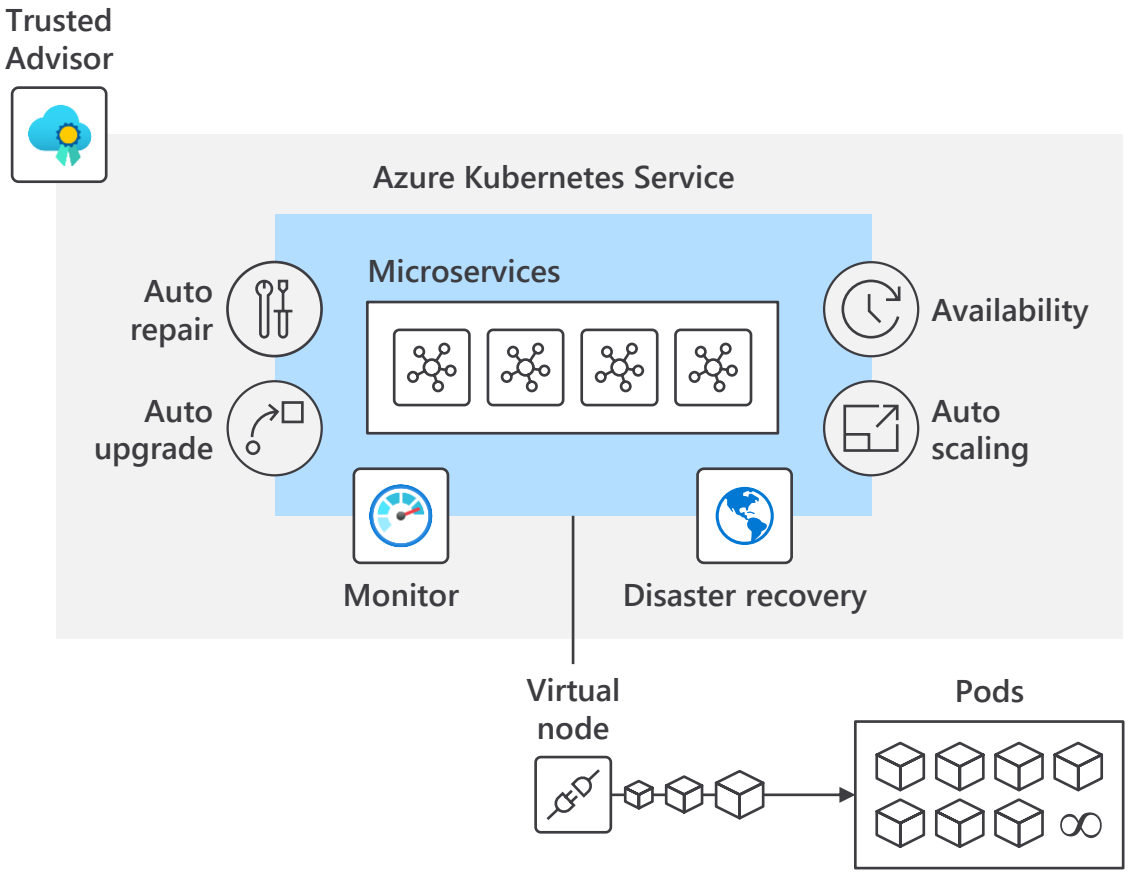
Multi-layer security

- Enforce compliance rules with Azure Policy
- Identity and access control using Azure Active Directory
- Encrypt using your own keys, stored in Azure Key Vault
- Gain unmatched security management with Azure Security Center integration
- Interact securely with Kubernetes API server using Azure Private Link



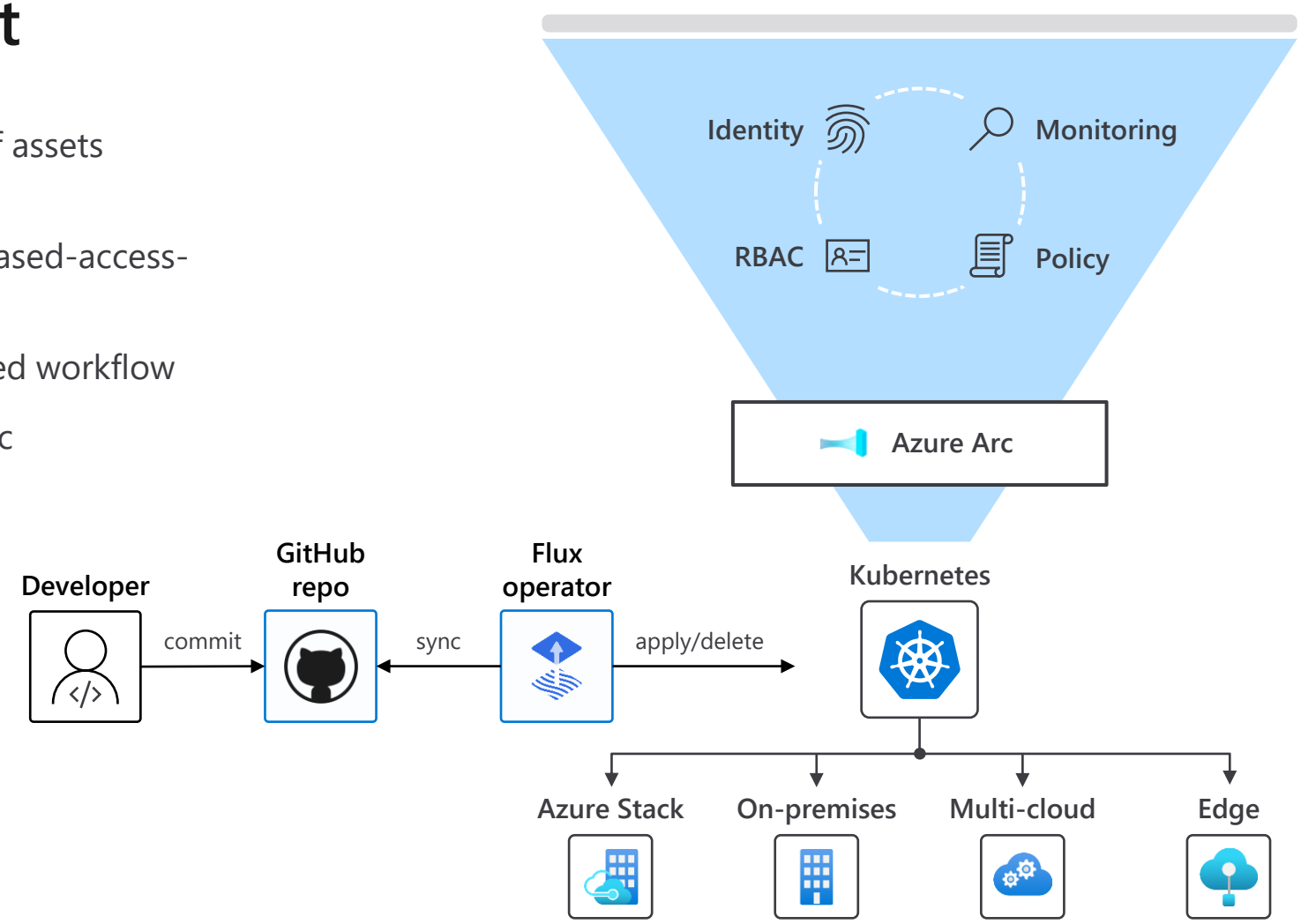
Operational efficiency

- Elastically add compute capacity with serverless Kubernetes
- Higher availability using redundancies across availability zones
- Paired region deployment for disaster recovery
- Real-time personalized recommendations with Azure Advisor
- Detailed insights via Azure Monitor
- Financially-backed opt-in Service Level Agreement (SLA)
- Workload specific cost savings options



Unified management

- Central inventory and monitoring of assets running anywhere
- Consistently apply policies & role-based-access-controls (RBAC)
- Deploy resources using GitOps-based workflow
- Use Flux operator for automatic sync



Bringing you the enterprise expertise

Best practices from
1000s
of enterprise engagements

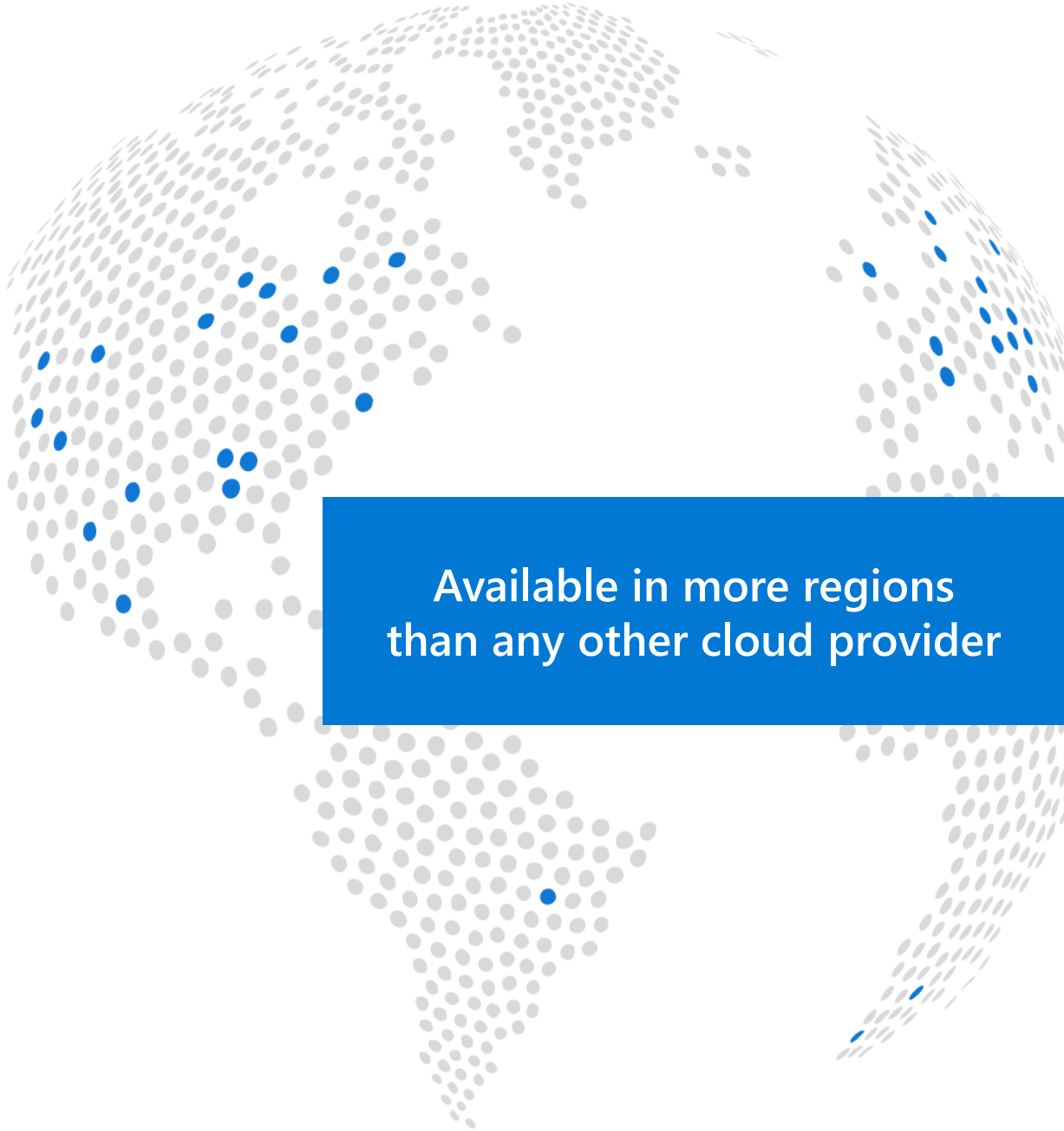
3,500
Security experts focused on your data security and privacy

24x7x365
on-call support backed by Kubernetes certified experts

Built-in Best practices

Multi-layer Security

Enterprise support



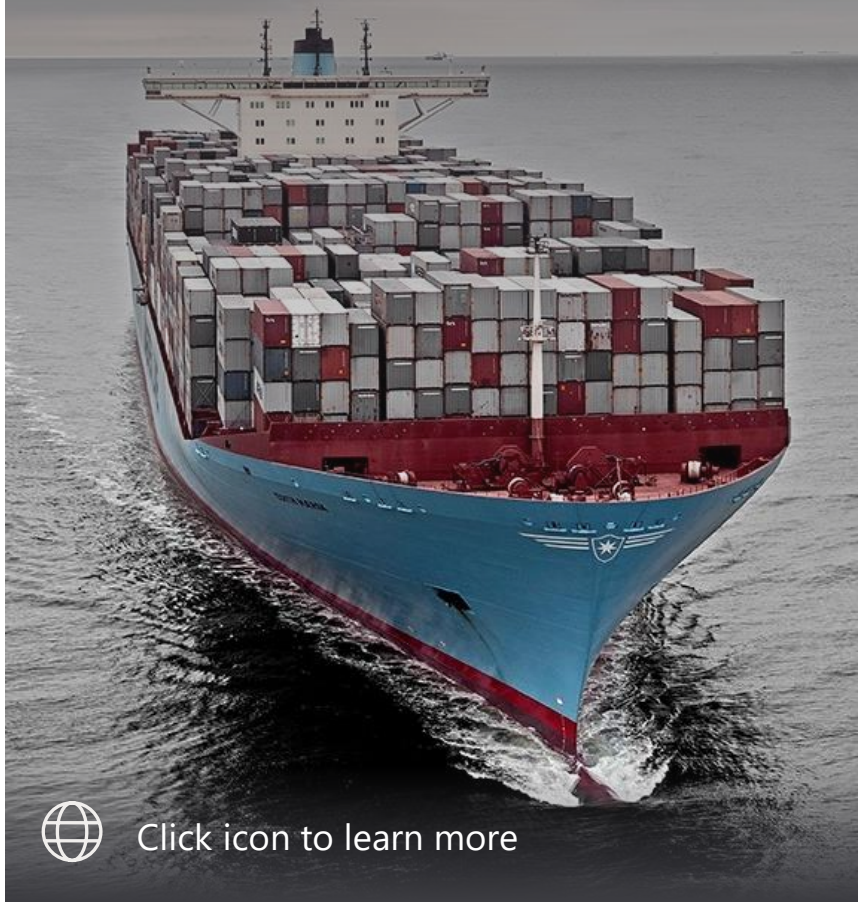
Available in more regions than any other cloud provider

MAERSK

Maersk uses AKS for a customer service process to elevate NSAT, an industry-wide challenge

Needs:	Get near-real-time data to provide better customer service
	Collect data for future Machine Learning driven features
Challenges:	Compute & memory intensive features
	Data integration difficulties
	Limited organisational experience in Cloud & Kubernetes
Requirements:	Spend less time on container software management
	Automation and continuous delivery
	Full visibility to application, container and infrastructure
	Fine grained security and access control
Outcomes:	Reduced environment provisioning time from 1+ weeks to 2.5 hours
	AKS and CaaS can potentially save 33% on run cost

> Using Kubernetes on Azure satisfies our objectives for efficient software development. It aligns well with our digital plans and our choice of open-source solutions for specific programming languages."
>
> — *Rasmus Hald, Head of Cloud Architecture, A.P. Moller - Maersk*



Click icon to learn more

Mercedes-Benz
Research & Development North America

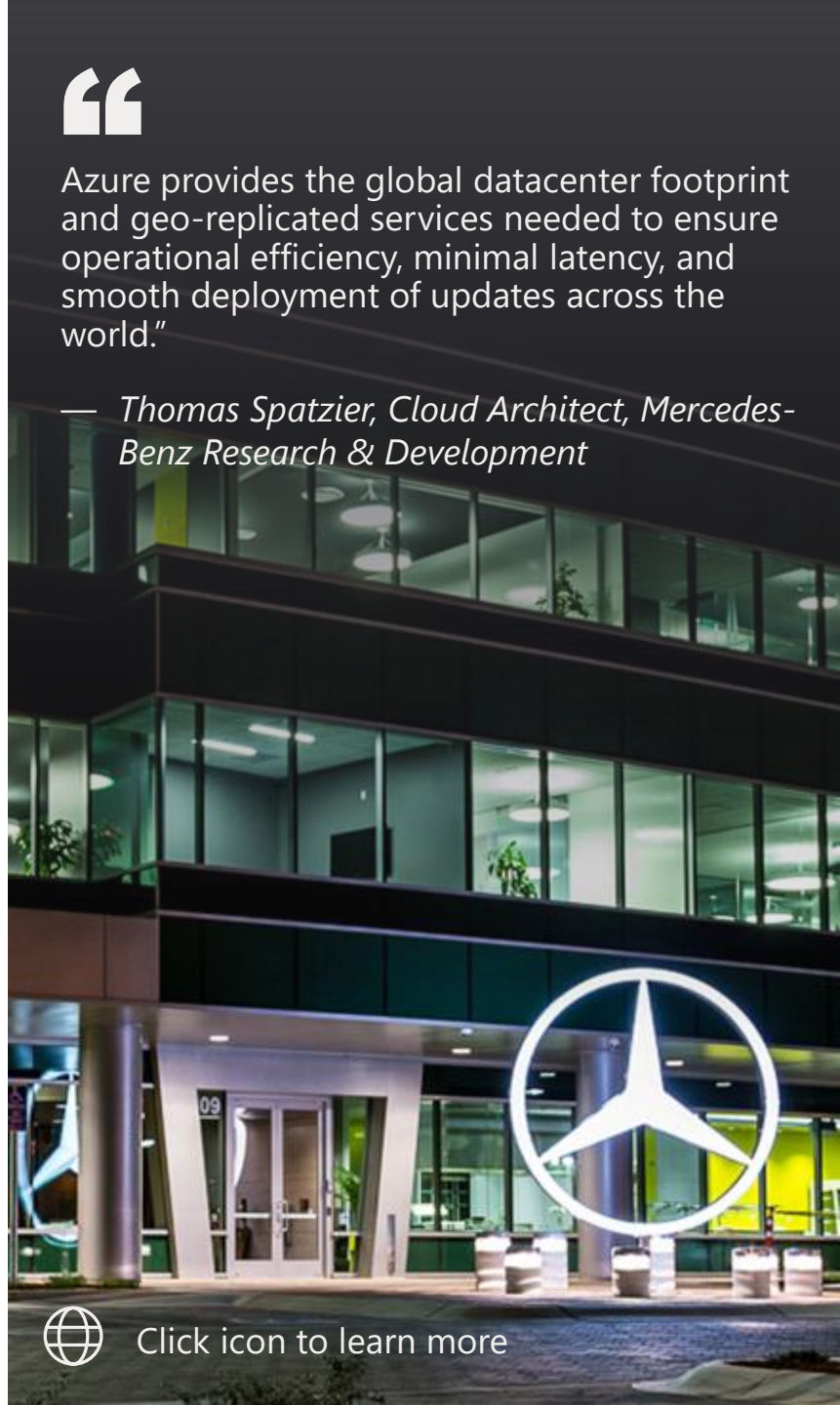
Mercedes-Benz R&D creates container-driven cars powered by Microsoft Azure

Challenge: The infotainment system in a car runs software that was flashed as a monolith when a vehicle rolled off the factory line. Developing an app for such system requires a deep understanding of the hardware architecture and the low-level functionality and coordination across multiple teams. Additionally, software updates would only be possible at authorized Mercedes-Benz service locations once or twice per year.

Solution: Using containers, developers can build, test and run apps on emulators. After these automated tests are run in simulated vehicles in the cloud, apps can run on a test car. The test car's head unit connects to the cloud during vehicle ignition, locates the newly assigned app, retrieves its metadata, pulls the described container image, and starts the app.

Outcome: By containerizing the head unit apps and using Azure application services, the team can keep the software inside of the cars updated and release new features in weeks instead of months, while preserving quality and security of vehicle and driver data.

> "Azure provides the global datacenter footprint and geo-replicated services needed to ensure operational efficiency, minimal latency, and smooth deployment of updates across the world."
>
> — *Thomas Spatzier, Cloud Architect, Mercedes-Benz Research & Development*



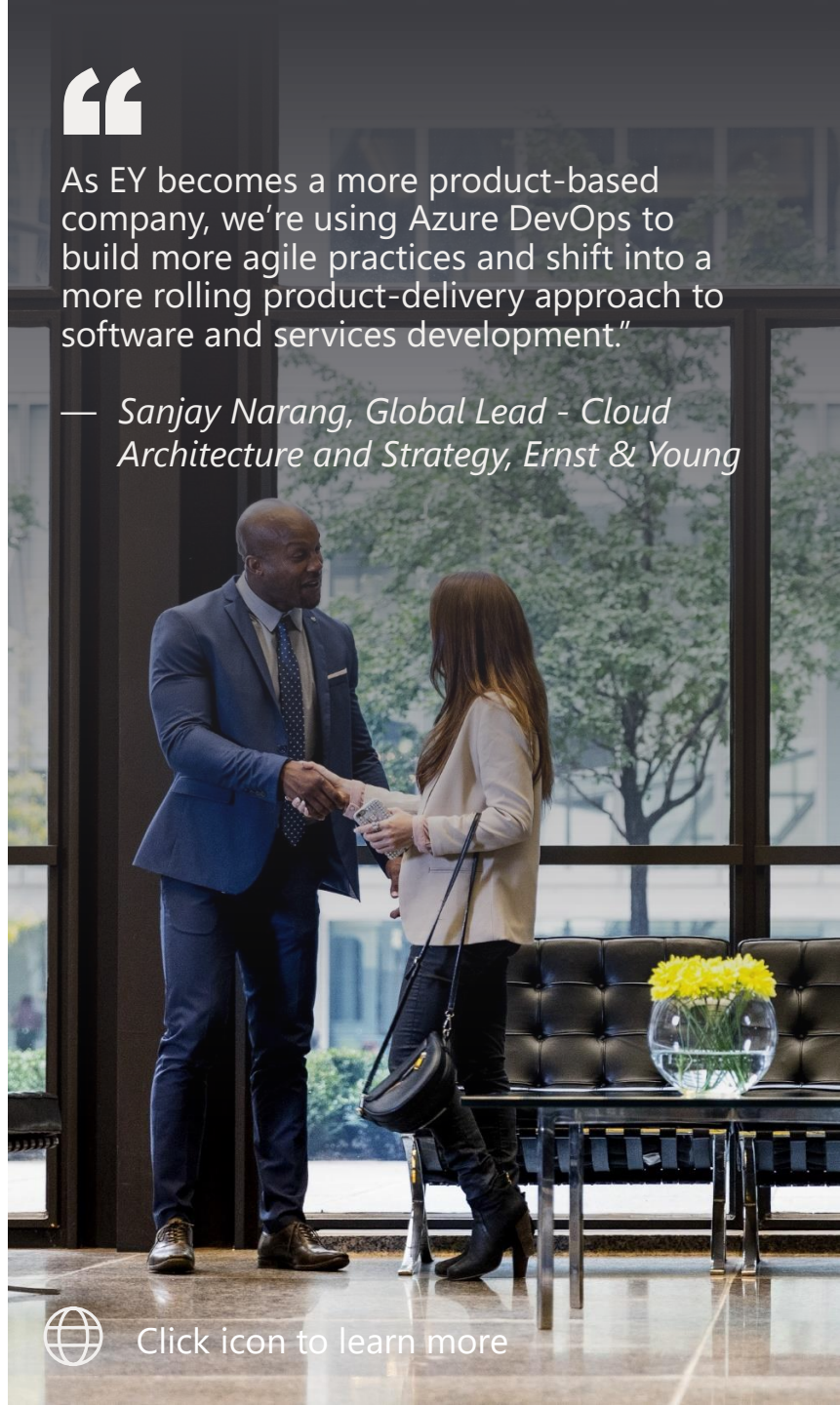
Click icon to learn more

Ernst & Young accelerates application delivery and innovation with Azure

Challenge: The Ernst & Young (EY) Client Technology team builds the software that EY uses to provide great services to customers. But with disparate processes in use across the organization, EY wanted to standardize development and create new solutions faster.

Solution: With Microsoft Azure DevOps and Azure Kubernetes Services, EY is creating more agile development practices and using containerization to drive more value in the solutions that it delivers.

Technology: Since standardizing its development approach with Azure, EY is now delivering more consistent, secure, and innovative solutions to its employees and customers—and faster than ever before.



Best support for your enterprise needs

Container Adoption Best Practices
aka.ms/adopt/containers

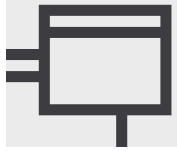
Kubernetes on Azure
aka.ms/K8sonAzure

Learning path
aka.ms/LearnKubernetes

What is Kubernetes
aka.ms/k8sLearning

Hear from experts
aka.ms/AKS/videos

Case studies
aka.ms/AKS/casestudy



See what's new
aka.ms/k8sroadmap

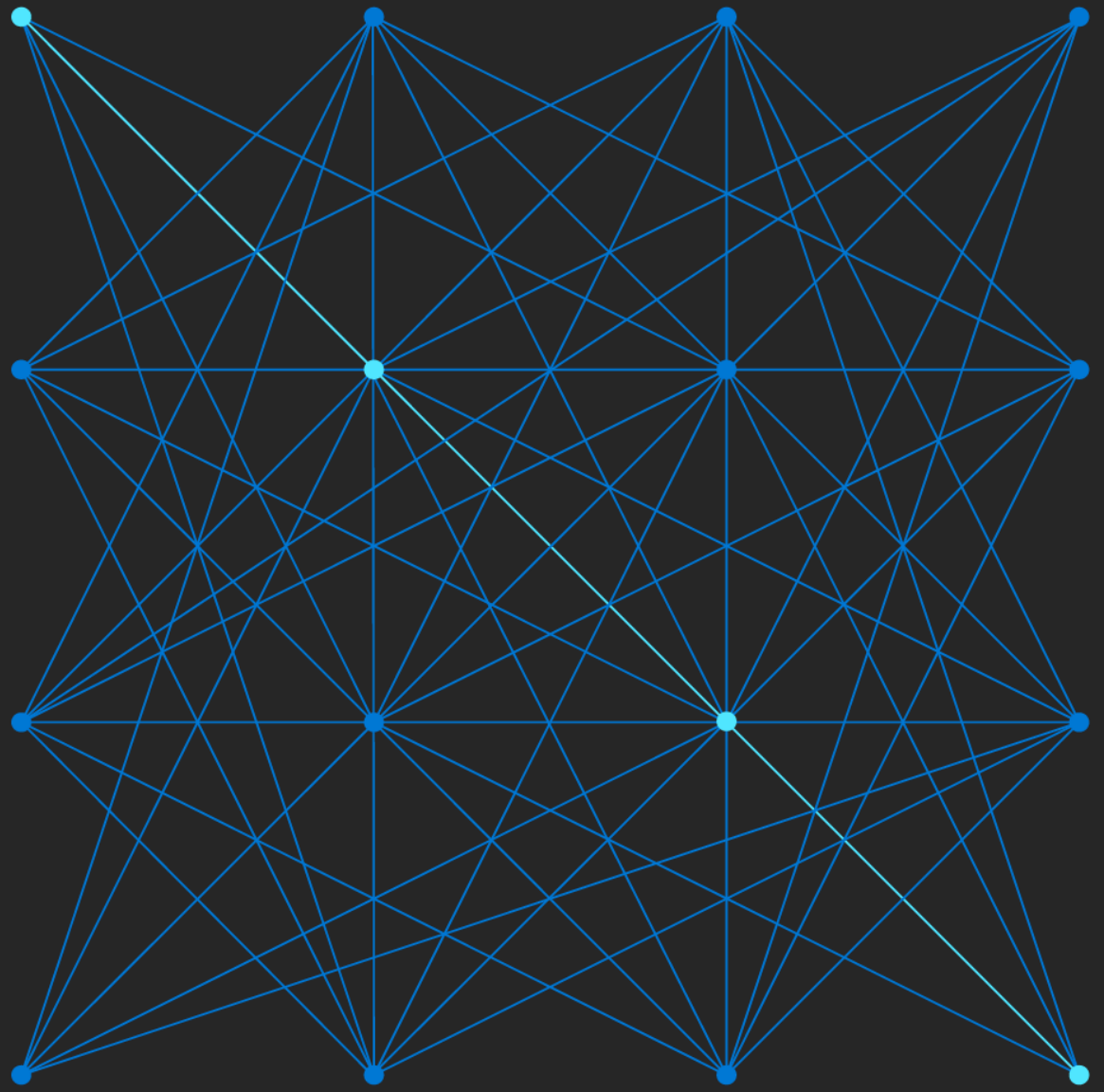
Try for free
aka.ms/AKS/trial

Microsoft Azure

Hybrid World with Containers: Azure-enabled Arc

Maria Jordan
EMEA GBB Azure Hybrid
Microsoft

Pamir Erdem
EMEA GBB Azure Hybrid
Microsoft



Customer environments and application requirements are evolving

Single control plane with Azure Arc

How to govern and operate across disparate environments?

How to ensure security across the entire organization?

How to best enable innovation and developer agility?

How to meet regulatory requirements and overcome technical hurdles?

100's–1,000's of apps

- VMs
- Databases
- Containers
- Serverless

.NET, JS, Java, GO, php

Diverse infrastructure

- Datacenters
- Hosters
- Branch offices
- OEM hardware
- IoT devices
- Edge

Hybrid & Multi-Cloud

Microsoft Azure

aws

Google Cloud

Alibaba Cloud

vmware

ORACLE

IBM Cloud

Customer challenges when hybrid

Complexity

"I need to have health visibility in a single pane of glass to all my existing and future infrastructure and applications."

Compliance

"I need to manage security and incident management across my public cloud and datacenter assets."

Inconsistency

"I want my on-prem skills to work in the cloud, and my cloud skills to work on-prem."

Regulation

"Our DB layer must remain on-premises due to sensitive patient data and data availability needs."

Latency

"We can't take a dependency on the internet. If we lose connectivity, we still want to be able to access the data."

Legacy

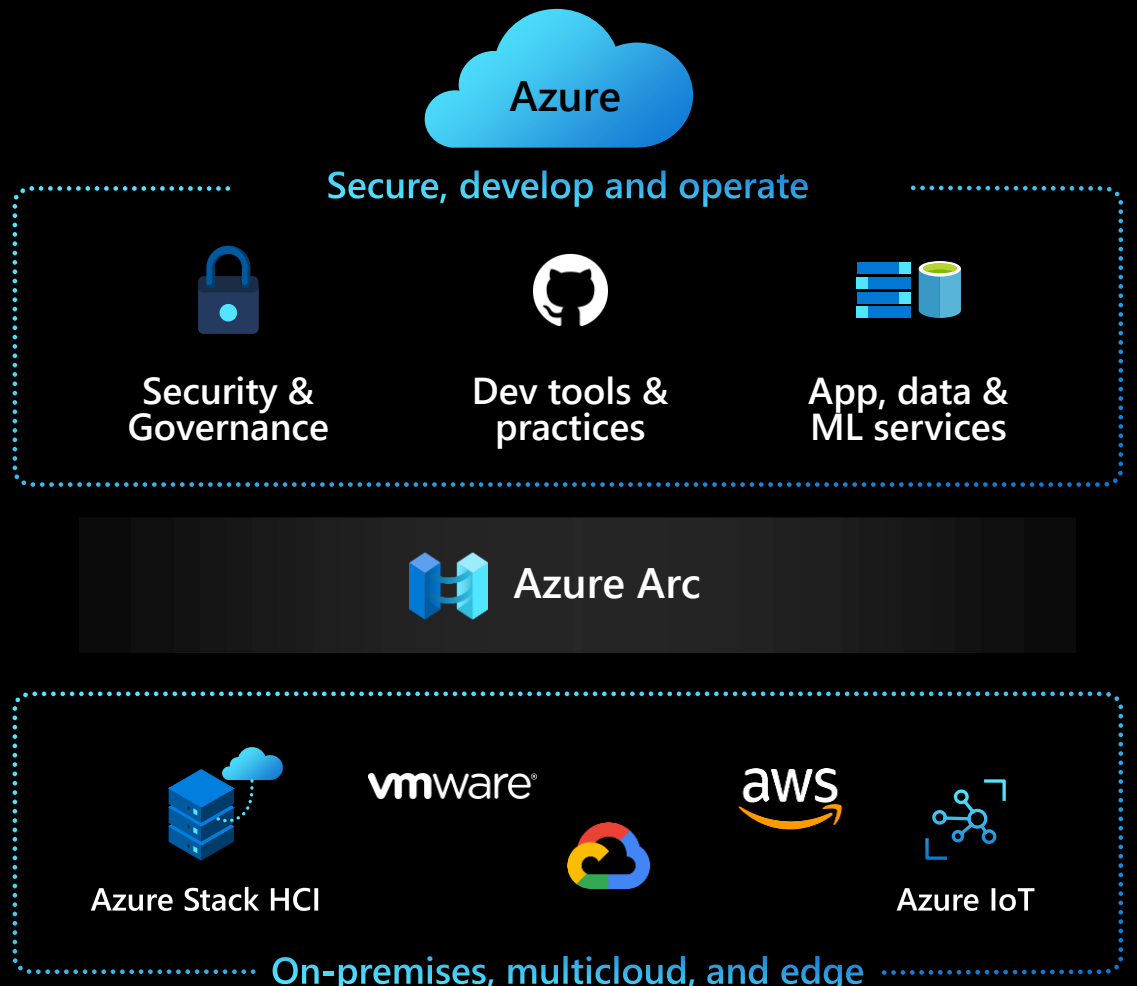
"Our older systems take too much maintenance. We want evergreen technology and to pay for it like a utility."

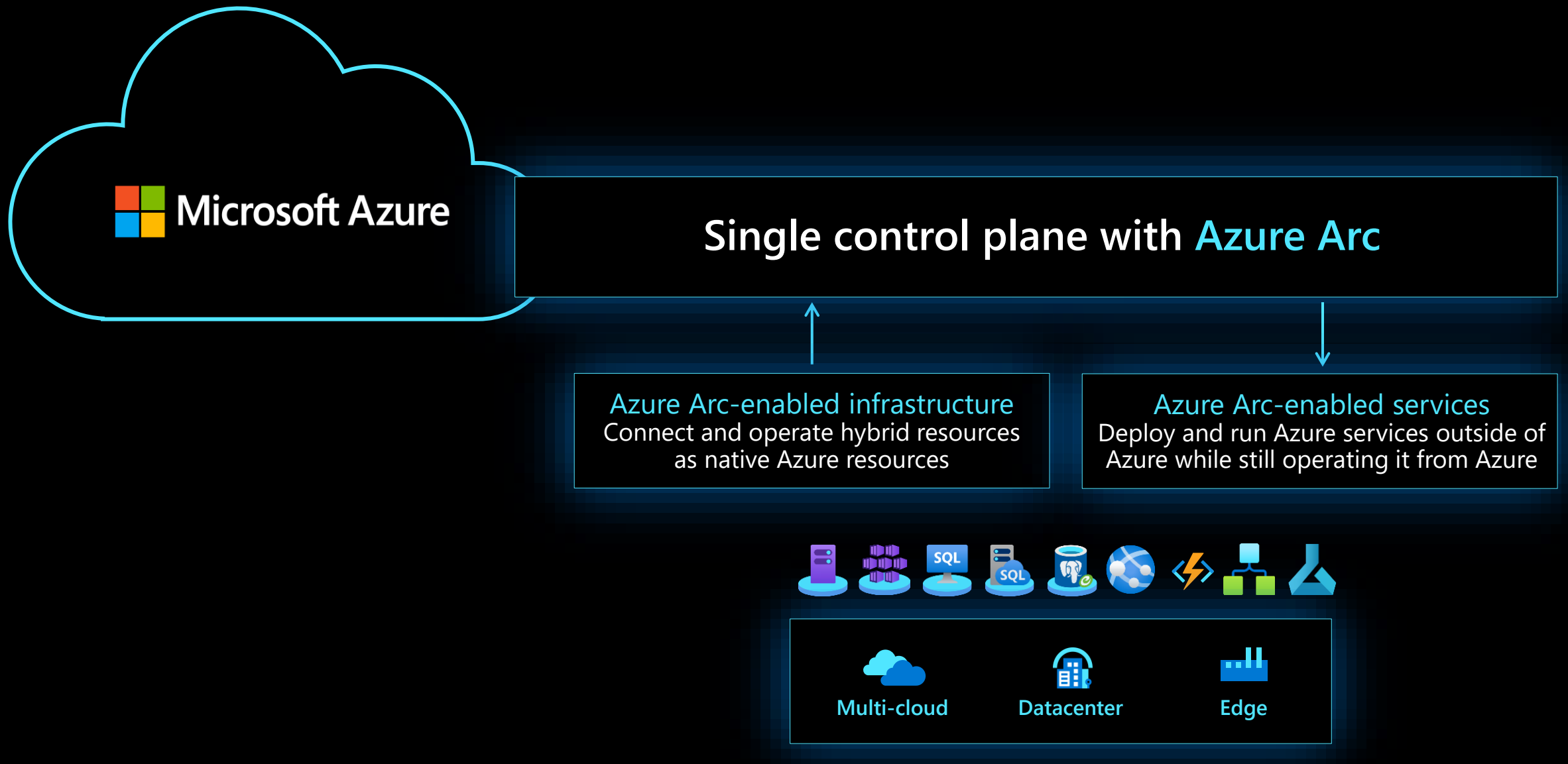
Multi-cloud

Datacenter

Edge

Innovate anywhere with Azure Arc




Microsoft Azure
Single control plane with Azure Arc
Azure Arc-enabled infrastructure
Connect and operate hybrid resources as native Azure resources
Azure Arc-enabled services
Deploy and run Azure services outside of Azure while still operating it from Azure
SQL
SQL
Multi-cloud
Datacenter
Edge

Microsoft Azure

Azure Arc

Azure Arc-enabled infrastructure

Connect and operate hybrid resources as native Azure resources

Visibility

Bring distributed Windows, Linux, SQL and Kubernetes together a single plane of glass

Compliance

Reduce risk and cost by establishing a single governance frame for all your workloads without additional overhead or additional approval processes

Consistency

Simplify the way you work by consolidating tooling and using cloud-native technology and practices everywhere

Azure Arc-enabled services

Deploy and run Azure services outside of Azure while still operating it from Azure

Flexibility

Reduce risk and adhere to regulatory requirements by deploying cloud services on-premises

Latency

Deploy data services on-premises, close to your data sources with support for both disconnected and connected workloads

Always current

Get evergreen SQL and PostgreSQL Hyperscale on-premises with a cloud billing model

Multi-cloud

Datacenter

Edge

Azure Arc-enabled infrastructure

Bring on-premises and multi-cloud infrastructure to Azure

Azure Arc-enabled servers

Windows Server

SUSE

Red Hat

aws

AWS Linux 2

GENERALLY AVAILABLE

SQL Server on Arc-enabled servers

GENERALLY AVAILABLE

Azure Arc-enabled Kubernetes

CANONICAL

RANCHER

OpenShift

AKS on Azure Stack HCI

GENERALLY AVAILABLE

Azure Arc-enabled Kubernetes

Connect, manage, and operate Kubernetes clusters and applications running anywhere using Azure Arc

Connect

Support for multiple flavors
Deploy to an existing cluster
OSS ecosystem friendly

Configure

Configure GitOps workflows
Enforce desired state across clusters
Cluster & Namespace support

Operate and Monitor

Azure Monitor Integration
Health status reporting
Cluster & App observability

Govern and Secure

Built-in Azure Policies
Cluster security baseline
Role-Based Access Control
Compliance across environments

Any infrastructure, any Kubernetes

kubeadm

AKS

OpenShift

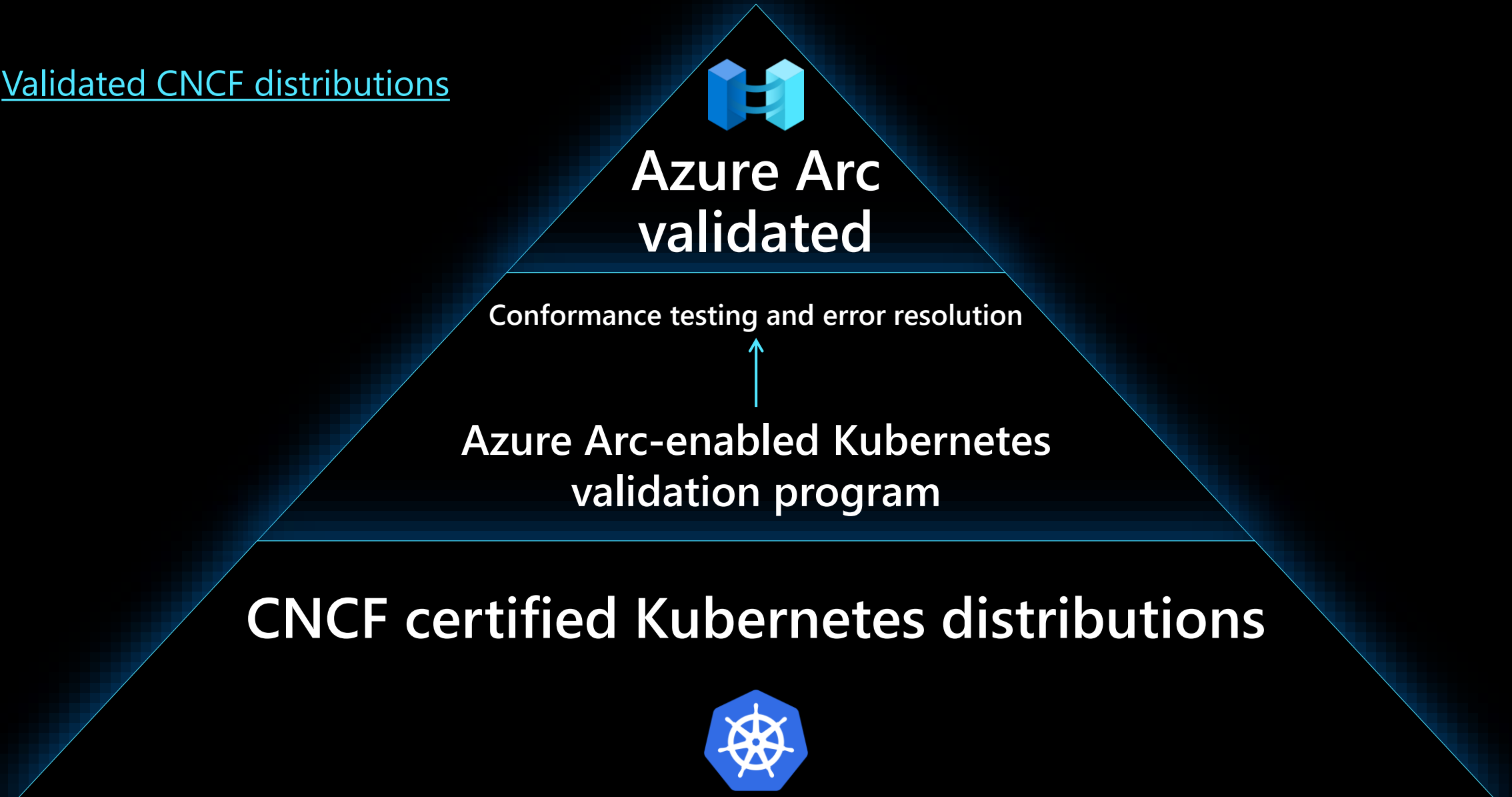
EKS

GKE

VMware Tanzu

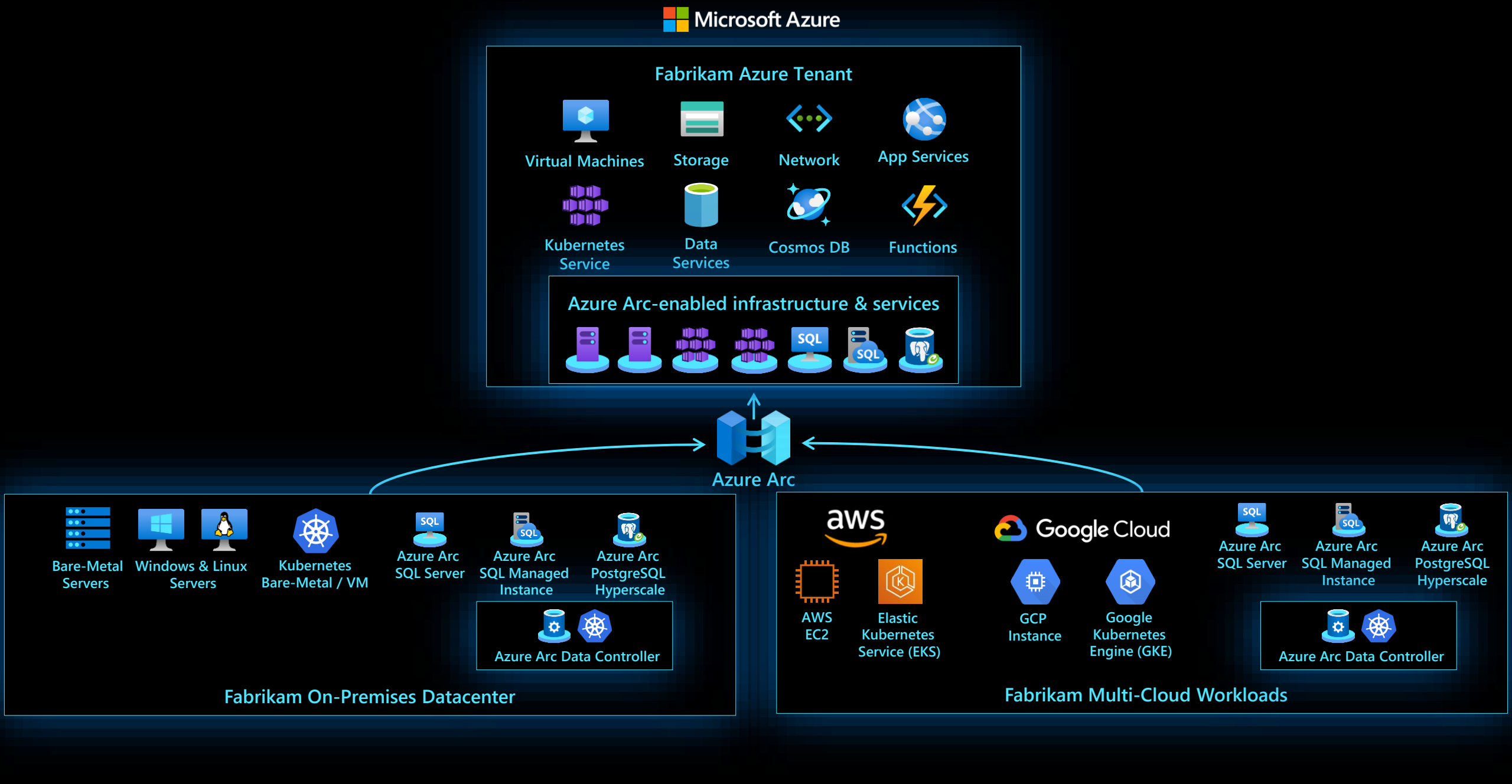
Azure Arc-enabled Kubernetes validation program

Validated CNCF distributions



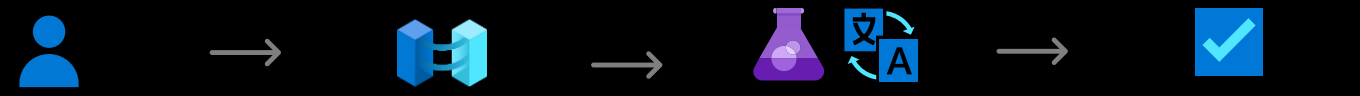
Demo

- Arc-enabled Kubernetes
- Monitoring & Logs
- Policy
- Defender for Container


Microsoft Azure
Fabrikam Azure Tenant
Virtual Machines
Storage
Network
App Services
Kubernetes Service
Data Services
Cosmos DB
Functions
Azure Arc-enabled infrastructure & services
SQL
SQL
Azure Arc
Bare-Metal Servers
Windows & Linux Servers
Kubernetes Bare-Metal / VM
Azure Arc SQL Server
Azure Arc SQL Managed Instance
Azure Arc PostgreSQL Hyperscale
Azure Arc Data Controller
Fabrikam On-Premises Datacenter
aws
AWS EC2
Elastic Kubernetes Service (EKS)
Google Cloud
GCP Instance
Google Kubernetes Engine (GKE)
Azure Arc SQL Server
Azure Arc SQL Managed Instance
Azure Arc PostgreSQL Hyperscale
Azure Arc Data Controller
Fabrikam Multi-Cloud Workloads

App, Data & ML services

Scenario	Real-time data analysis, predictions and decisions
	Use familiar tools and frameworks for ML and app deployment
	Meet latency and compliance needs



Data Scientist → Manage local app, data and ML services → Train and inference → Intelligent applications and solutions

Azure Arc-enabled data services

Cloud experience for data workloads anywhere

GENERALLY AVAILABLE Azure SQL | PUBLIC PREVIEW Azure Database for PostgreSQL

Support all connectivity modes

Always current

Automated updates
Evergreen SQL

As-a-Service

Built in HA/DR
Automation at scale

Elastic scale

Scale up and down
Without app downtime

Unified management

Single pane of glass
Consistent workflows

Any hardware, any Kubernetes

Azure Arc-enabled application services PREVIEW

Run your apps, anywhere

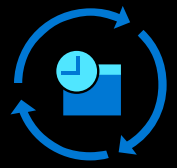
App Service

Functions

Logic Apps

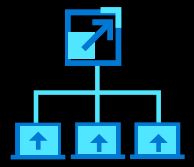
API Management

Event Grid



Cloud-native, at scale

Manage applications running on Kubernetes at scale with modern cloud native practices



Flexibility

Use the services you want with any CNCF-conformant Kubernetes cluster

Unified Management

Single view across hybrid and multicloud environments

Any Kubernetes, anywhere

Azure Arc-enabled machine learning

PREVIEW

Build models on-premises, in multi-cloud, and at the edge with Azure Arc

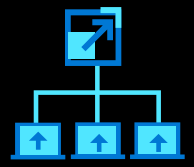
Azure Machine Learning

Innovate rapidly

Use familiar tools

Meet regulatory compliance

Auto scale compute anywhere



Operate efficiently

Get started in minutes

No data movement

Leverage existing infrastructure

Unified Management

Single view for on-premises and clouds

Consistent workflows

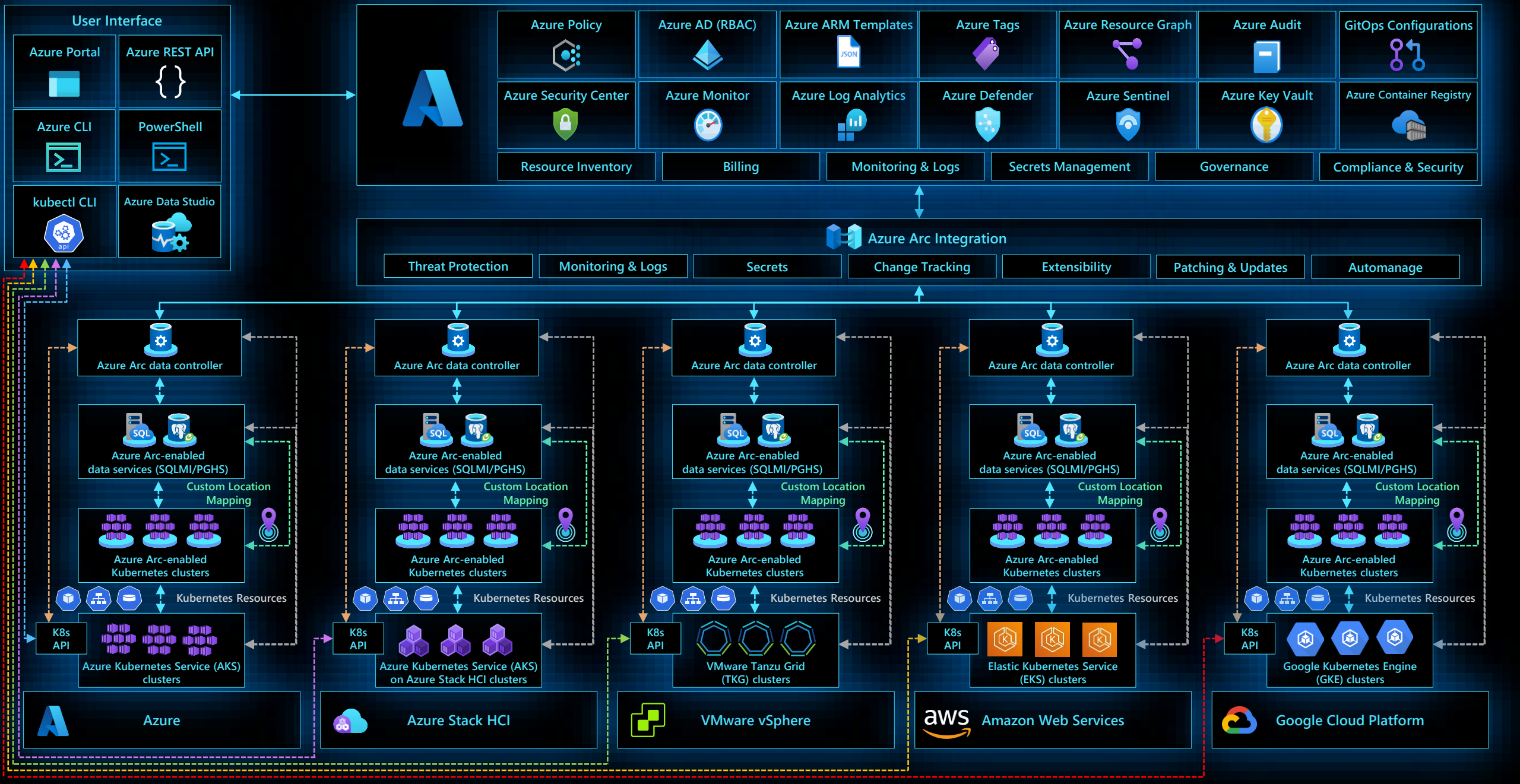
Any Kubernetes, anywhere

Demo

- Arc-enabled App Services
  - Hiding Kubernetes Complexity
  - Reuse existing toolset
- Arc-enabled SQL Managed Instances

Azure Arc-enabled data services

On-premises and multi-cloud integration



Complete guidance for hybrid and multicloud approach

Cloud Adoption Framework

Guide your cloud journey across people, process and technology

Build skills across your team with **Microsoft Learn**

Accelerate deployment with **Reference Architectures**

Optimize workloads with **Azure Well-Architected**

Apply **best practices** to rapidly onboard

Review **technical documentation** on featured products

Start with the cloud adoption framework to guide your cloud journey and build on it using the hybrid adoption scenario guidance

https://aka.ms/adopt/hybrid

Get started

Azure Arc-enabled servers generally available, get started today: https://aka.ms/Azure-Arc
Azure Arc-enabled Kubernetes generally available, get started today: https://aka.ms/Azure-Arc-Kubernetes
Try Azure Arc-enabled data services: https://aka.ms/hybrid-data-services

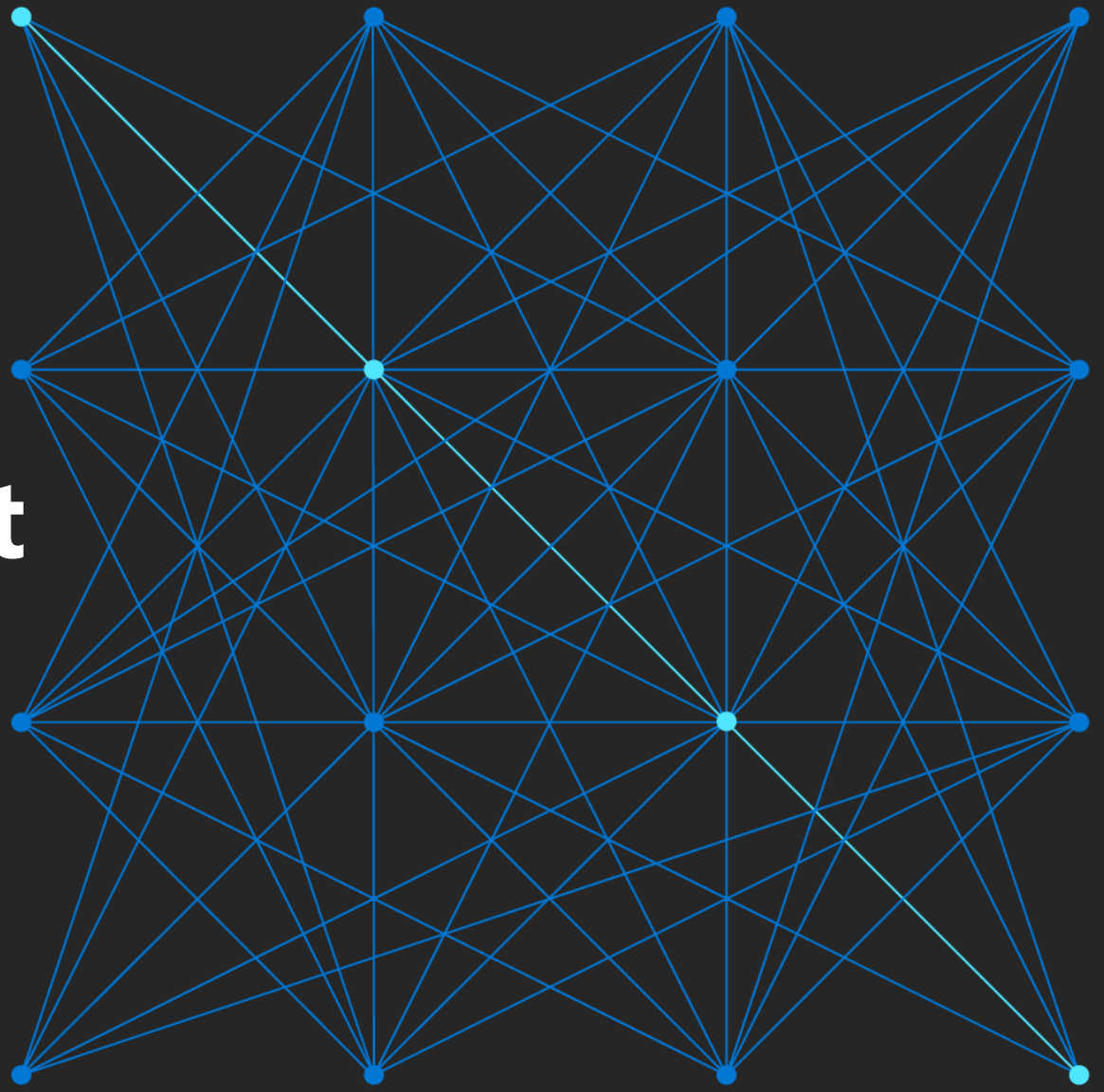
Learn more

Azure Arc Jumpstart: https://aka.ms/AzureArcJumpstart
Technical documentation: https://aka.ms/AzureArcDocs
Azure Arc Learning Path: https://aka.ms/AzureArcLearn

Microsoft Azure

A glimpse of what's next

Roy de Milde
Global Black Belt
Microsoft



Microsoft Azure

Agenda

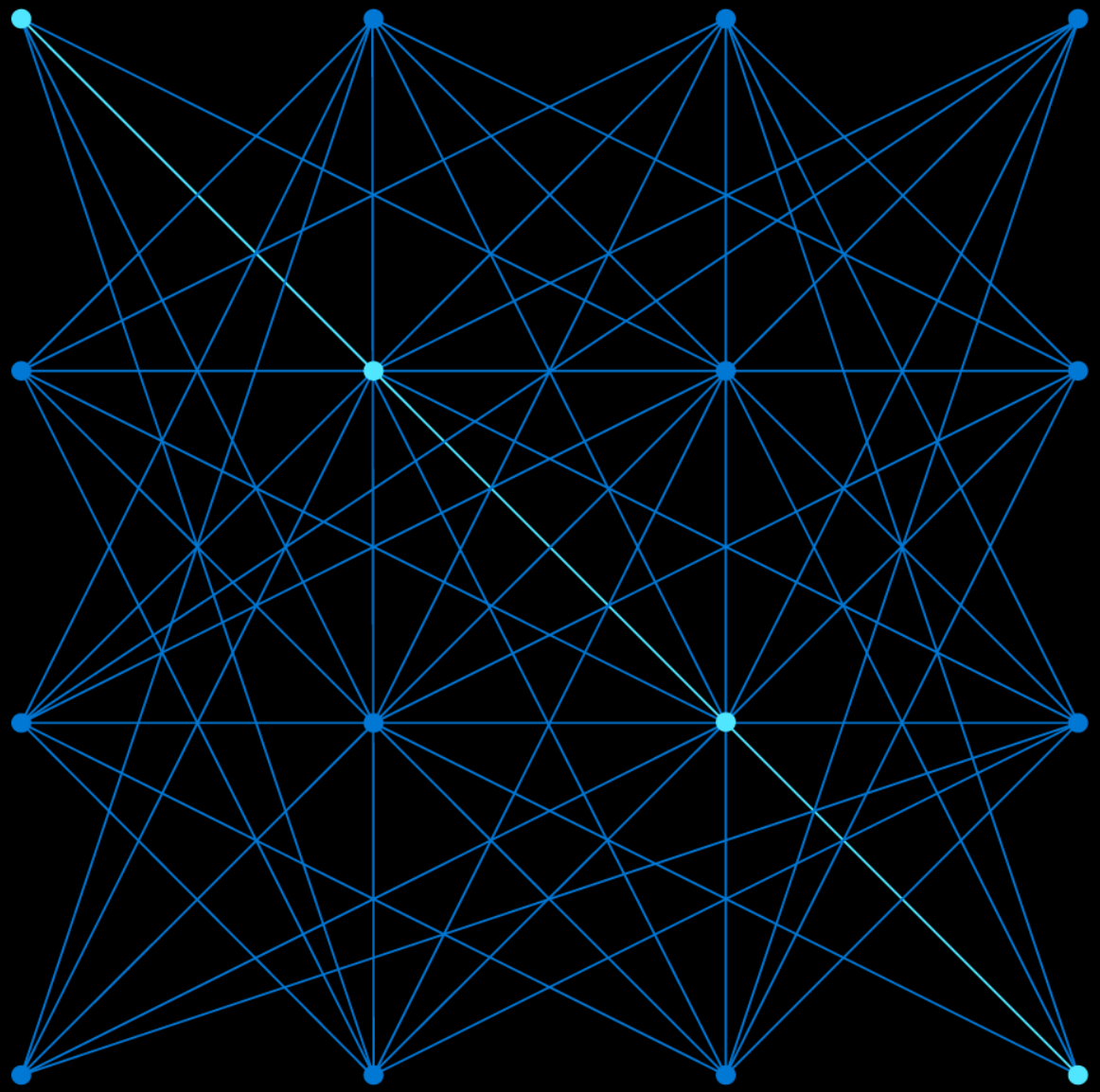
KEDA
Events here, event there….

DAPR
Developer productivity to the max

Container Apps
What is this?

Arc-enabled application services
Build once, run everywhere!

Closing and Q&A



KEDA is a Kubernetes-based Event Driven Autoscaler.
With KEDA, you can drive the scaling of any container in Kubernetes based on the number of events needing to be processed.

Features

Event-driven

Intelligently scale your event-driven application

Autoscaling Made Simple

Bring rich scaling to every workload in your Kubernetes cluster

Built-in Scalers

Out-of-the-box scalers for various vendors, databases, messaging systems, telemetry systems, CI/CD, and more

Multiple Workload Types

Support for variety of workload types such as deployments, jobs & custom resources with `/scale` sub-resource

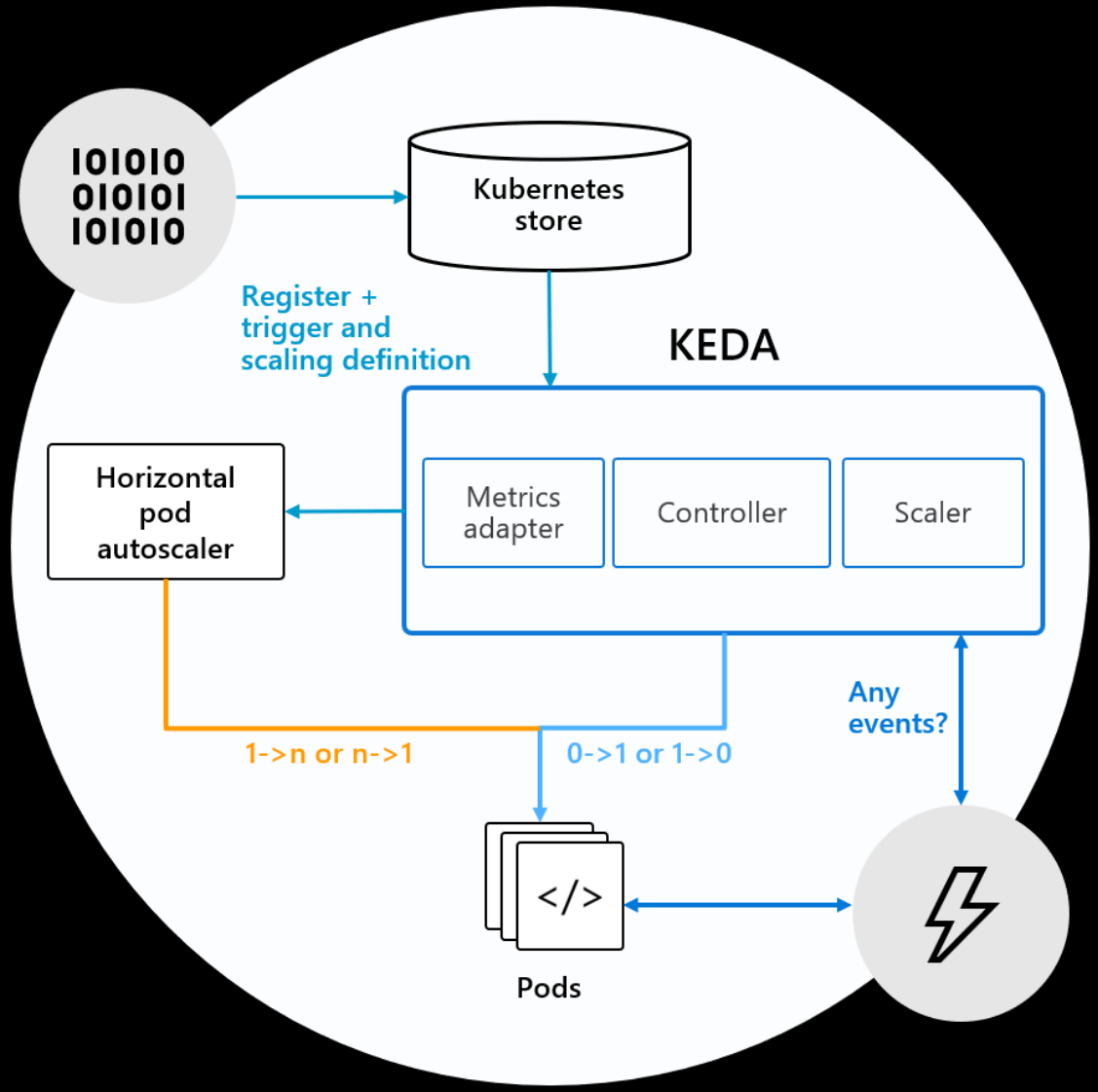
Vendor-Agnostic

Support for triggers across variety of cloud providers & products

Azure Functions Support

Run and scale your Azure Functions on Kubernetes in production workloads

How KEDA Works



Basics

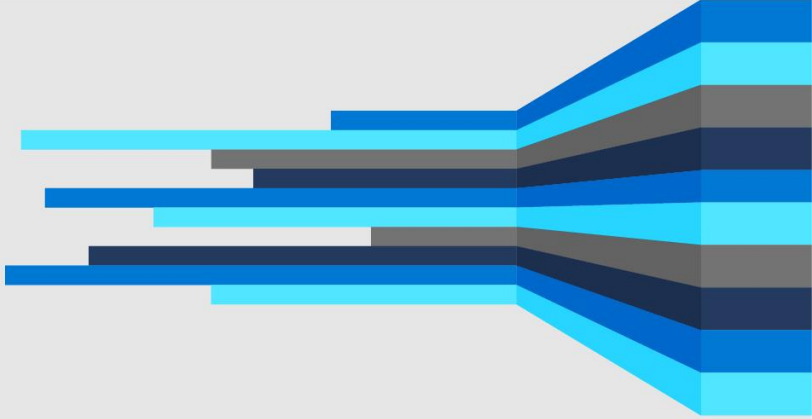
- Scales to and from 0 on no events
- Acts as a K8s metrics server

Event Scalers

- Kafka
- RabbitMQ
- Azure Storage Queues
- Azure Service Bus Queues and Topics
- *More coming …*

HTTP Scale leveraging K8s components

Integrates with Azure Function



Distributed Application Runtime

State of Enterprise Developers

Being asked to develop resilient, scalable, microservice-based apps that interact with services

Use multiple languages and frameworks during development

Focus on building apps not infrastructure

What is holding back microservice development?

Have limited tools and programming model runtimes to build distributed applications

Programming model runtimes have narrow language support and tightly controlled feature sets

Runtimes only target specific infrastructure platforms with limited code portability across clouds and edge

Dapr Goals

Best-practices building blocks

Any language or framework

Consistent, portable, open APIs

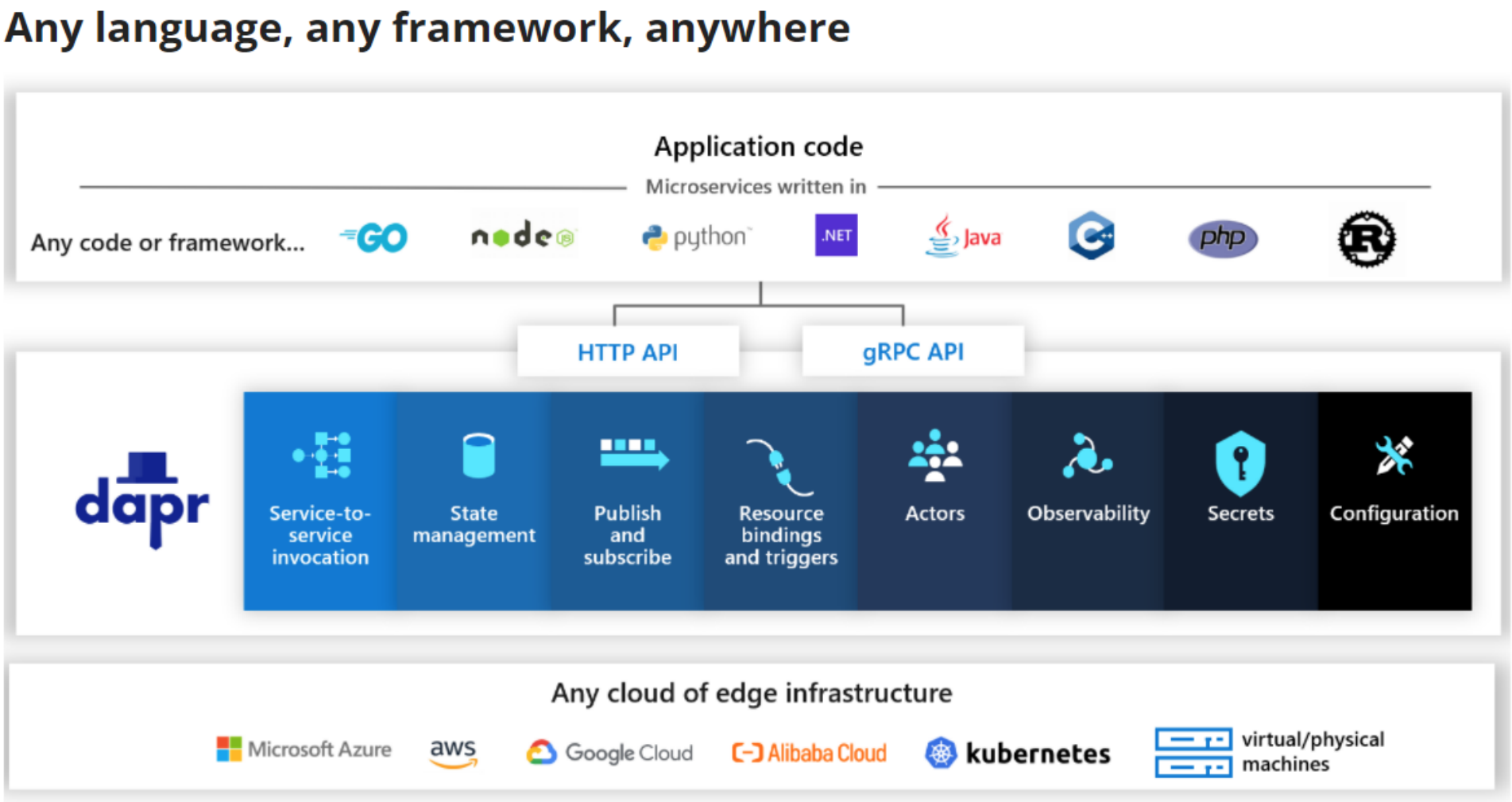
Adopt standards

Extensible and pluggable components

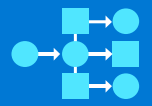
Platform agnostic cloud + edge

Community driven vendor neutral

Overview...


Any language, any framework, anywhere
Application code
Microservices written in
Any code or framework...
HTTP API
gRPC API
dapr
Service-to-service invocation
State management
Publish and subscribe
Resource bindings and triggers
Actors
Observability
Secrets
Configuration
Any cloud of edge infrastructure
Microsoft Azure
aws
Google Cloud
Alibaba Cloud
kubernetes
virtual/physical machines

Microservice building blocks



Service-to-service invocation

Perform direct, secure, service-to-service method calls

State management

Create long running, stateless and stateful services

Publish and subscribe

Secure, scalable messaging between services

Bindings (input/output)

Trigger code through events from a large array of inputs

Input and output bindings to external resources including databases and queues

Actors

Encapsulate code and data in reusable actor objects as a common microservices design pattern

Observability

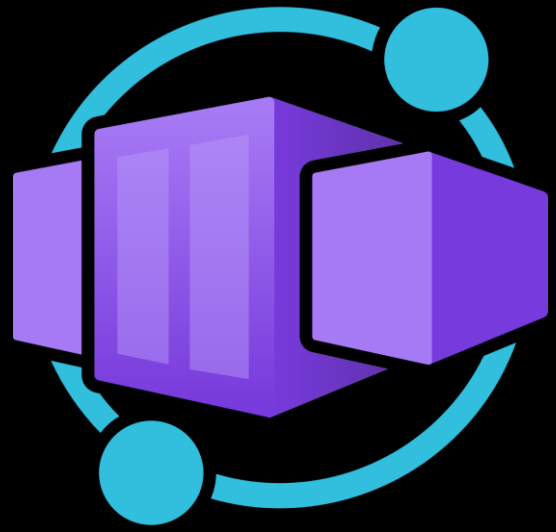
See and measure the message calls across components and networked services

Secrets

Securely access secrets from your application

Azure Container Apps

Public preview



Serverless containers for microservices

Build modern apps on open source

Focus on apps, not infrastructure

Seamlessly port to Kubernetes

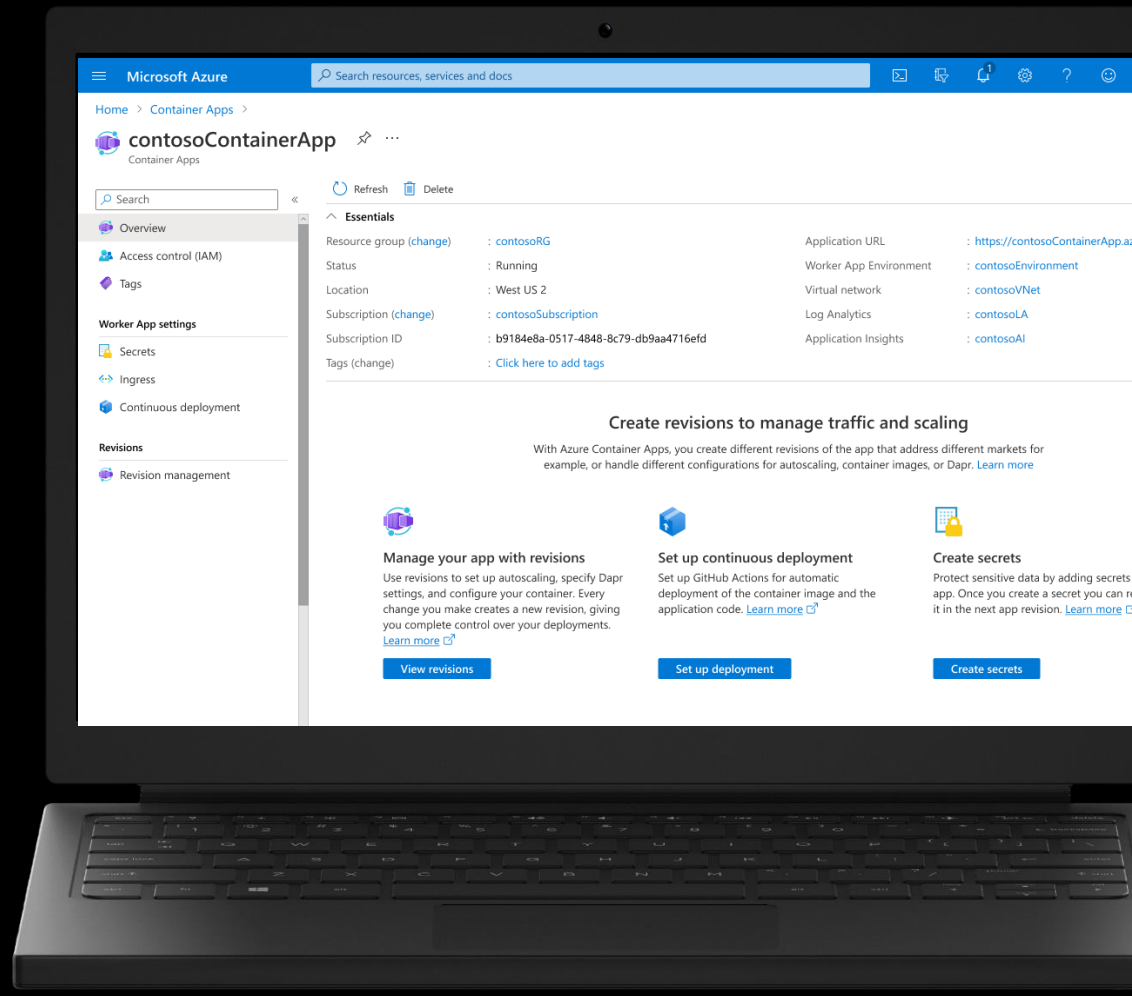
Kubernetes KEDA dapr DAPR envoy Envoy

Scale with flexible serverless containers

Run containers and scale in response to HTTP traffic or a growing list of KEDA-supported scale triggers including Azure Event Hub, Apache Kafka, RabbitMQ Queue, MongoDB, MySQL, and PostgreSQL

Get robust autoscaling capabilities without the overhead of managing complex infrastructure.

Scale to zero and pay for only what you use, by the second.



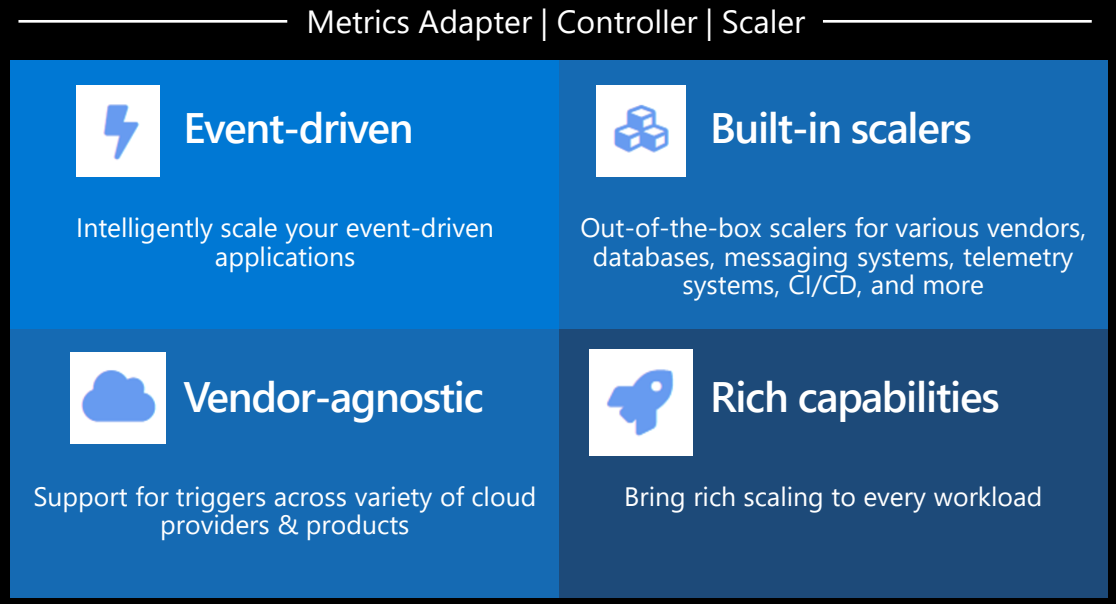
Application autoscaling made simple

Open-source, extensible, and vendor agnostic

KEDA

Kubernetes-based Event Driven Autoscaler

Drive the scaling of any container based on a growing list of 35+ event sources, known as: scalers



keda.sh

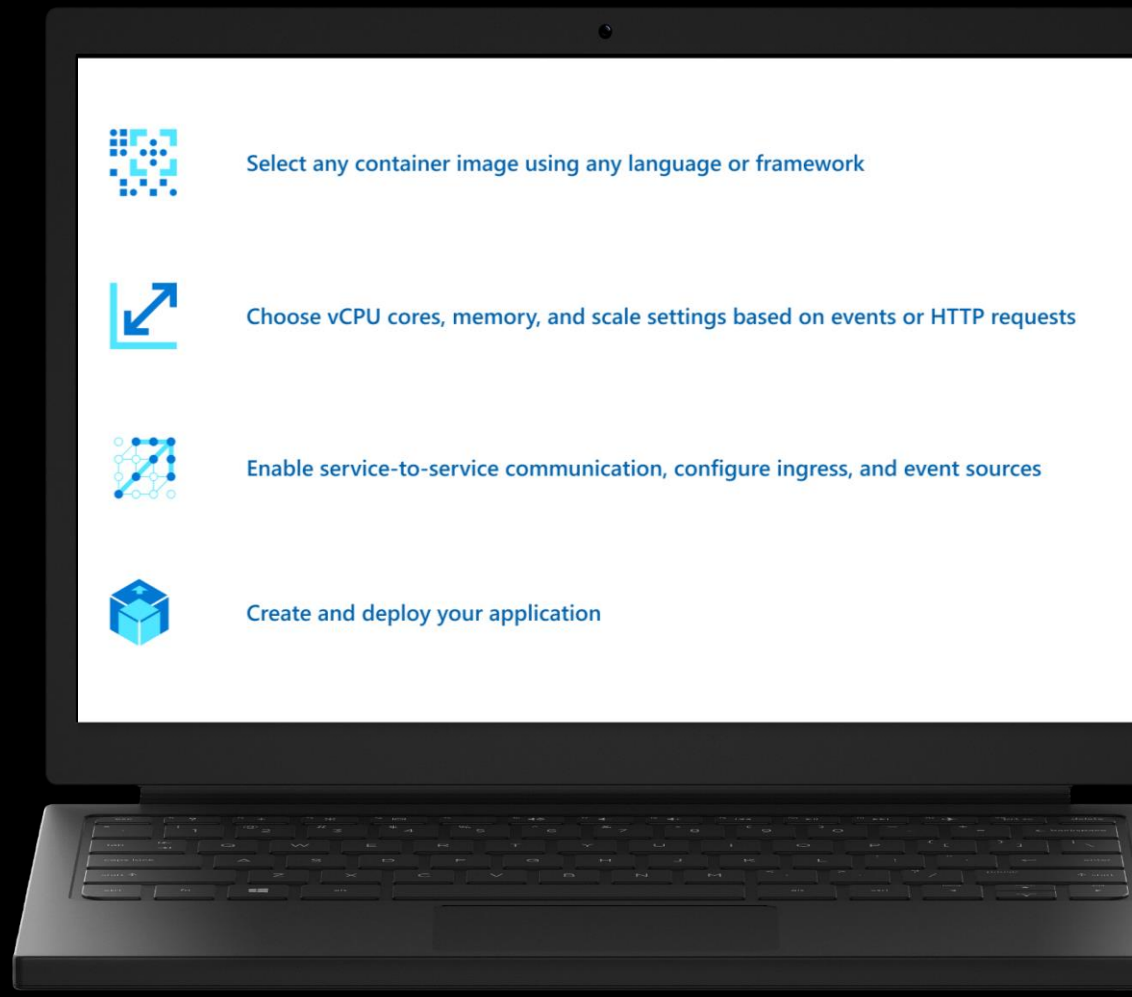
CLOUD NATIVE COMPUTING FOUNDATION

Accelerate developer productivity

Build microservices, APIs, event processing workers, and background jobs using containers.

Write code in your favorite programming language and accelerate development with built-in Distributed Application Runtime (Dapr) integration to simplify common tasks like event processing, pub/sub, and service invocation.

Set up a code-to-cloud pipeline using GitHub Actions.



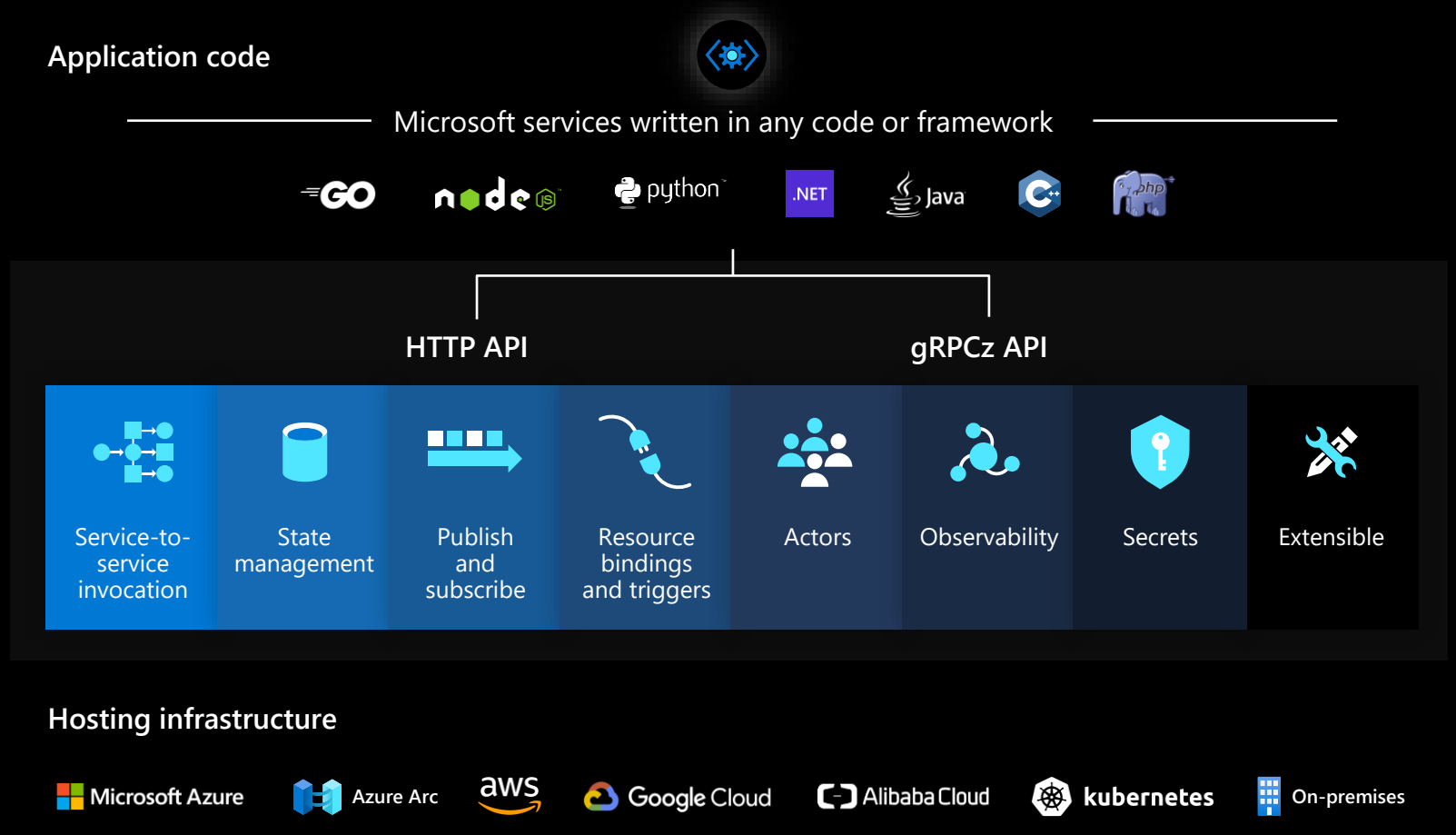
Microservices using any language or framework

Any cloud or edge infrastructure

dapr

Distributed Application Runtime

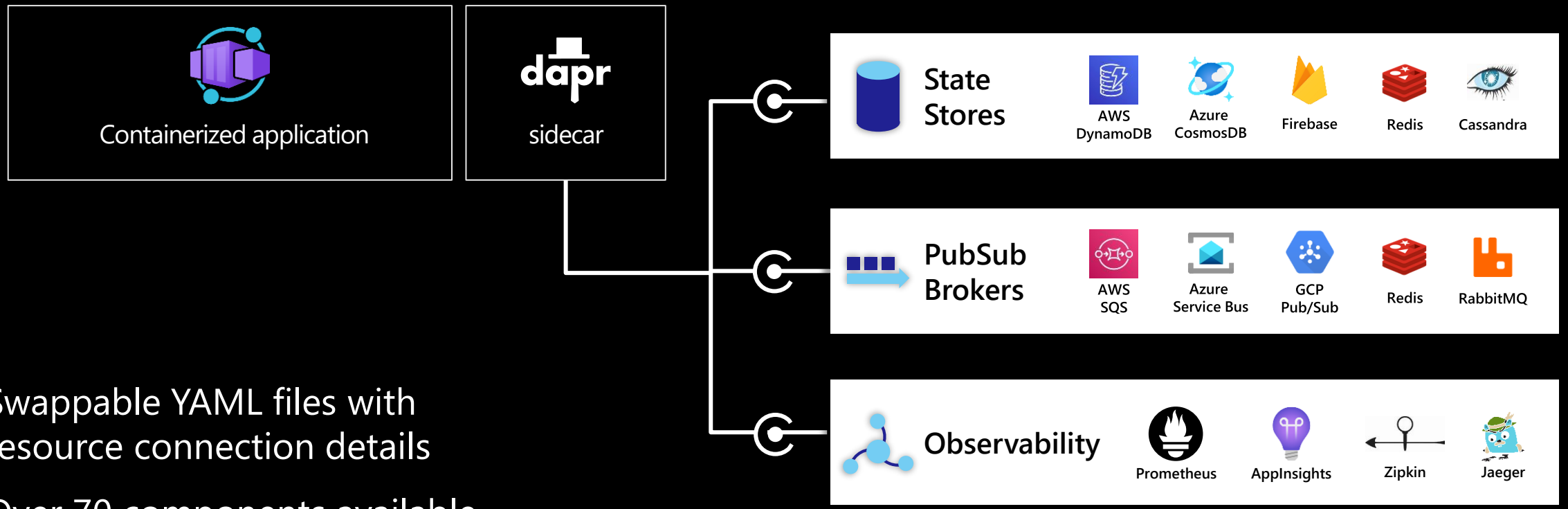
Portable, event-driven, runtime for building distributed applications across cloud and edge



dapr.io

CLOUD NATIVE COMPUTING FOUNDATION

Dapr components



Swappable YAML files with resource connection details

Over 70 components available

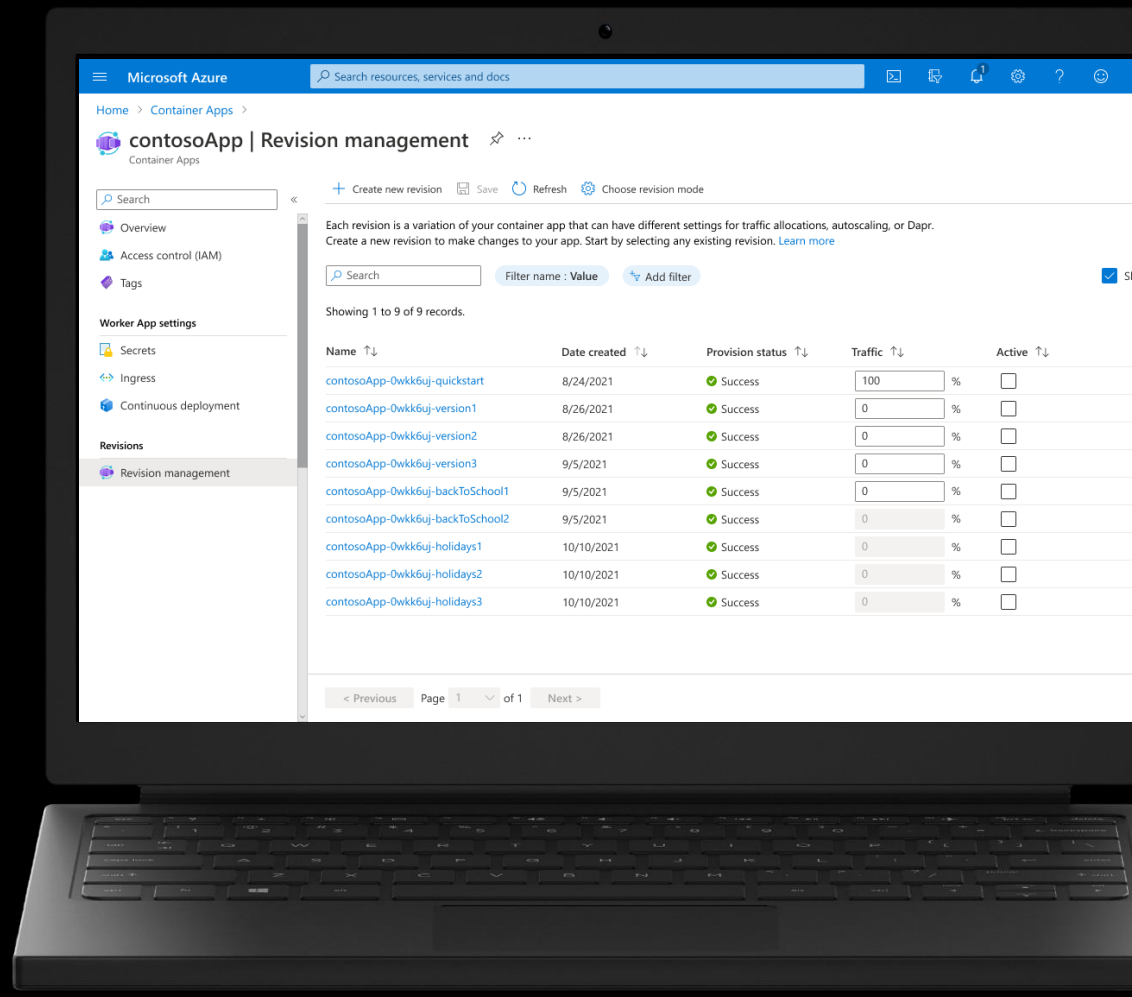
Create components for your resource at: github.com/dapr/components-contrib

Build modern apps on open-source

Create modern apps with open standards on a Kubernetes foundation with portability in mind.

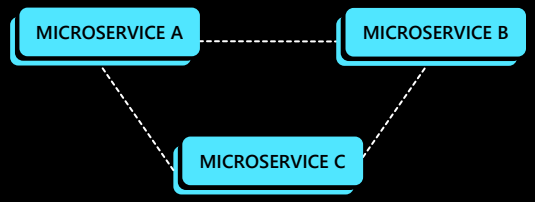
Contribute directly to OSS projects to influence product capabilities.

Rely on streamlined application lifecycle tasks such as application upgrades and versioning, traffic shifting, service discovery, and monitoring.



What can you build with Azure Container Apps?

Microservices



Deploy and manage a microservices architecture with the option to integrate with DAPR.

AUTO-SCALE CRITERIA

Individual microservices can scale independently using any KEDA scale triggers

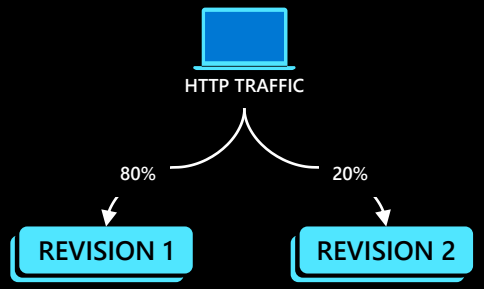
Event-driven processing

E.g. queue reader application that processes messages as they arrive in a queue.

AUTO-SCALE CRITERIA

Scaling is determined by the number of messages in the queue

Public API endpoints



HTTP requests are split between two versions of the container app where the first revision gets 80% of the traffic, while a new revision receives the remaining 20%.

AUTO-SCALE CRITERIA

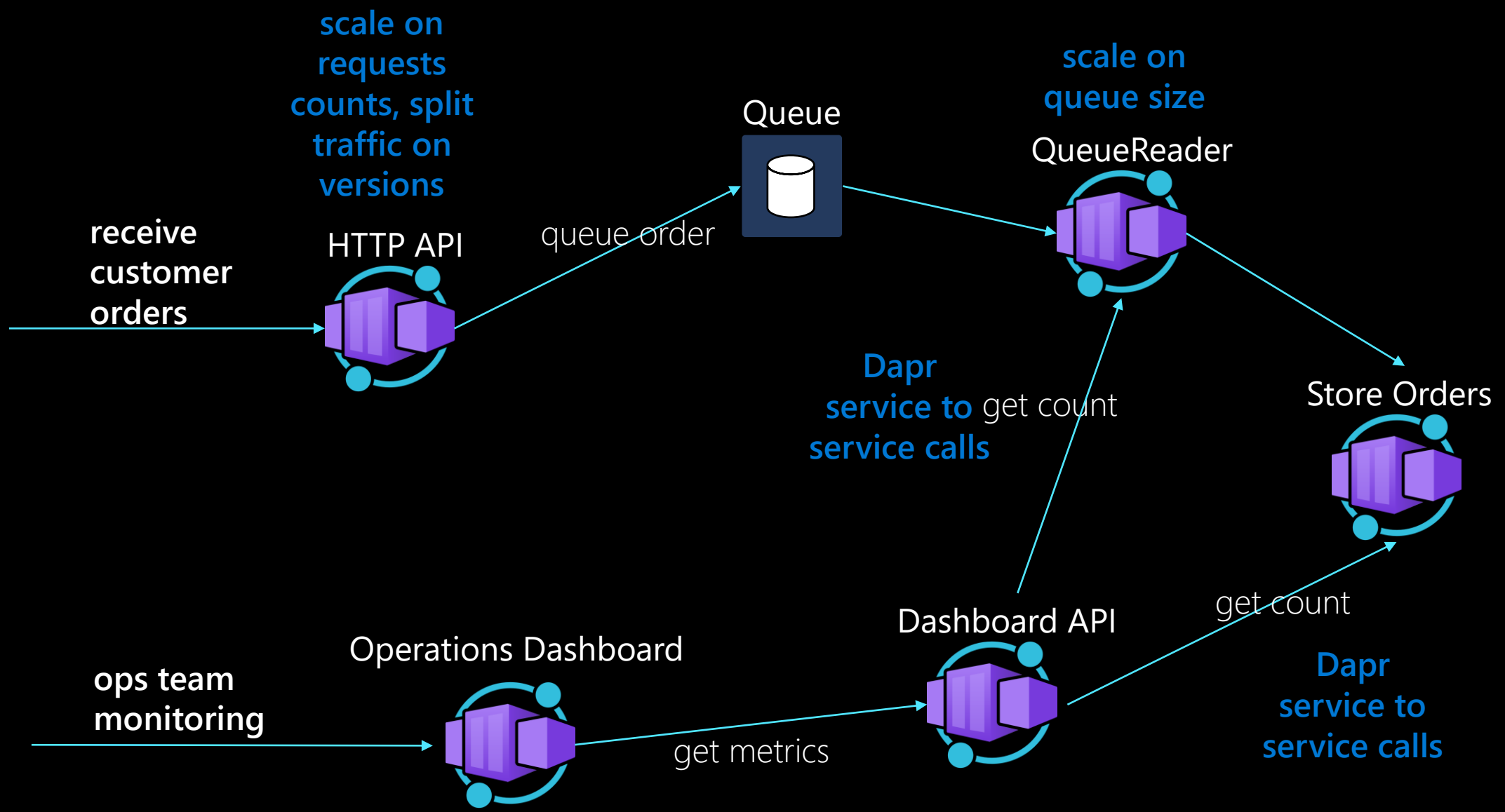
Scaling is determined by the number of concurrent HTTP requests

Background processing

E.g. continuously-running background process that transforms data in a database.

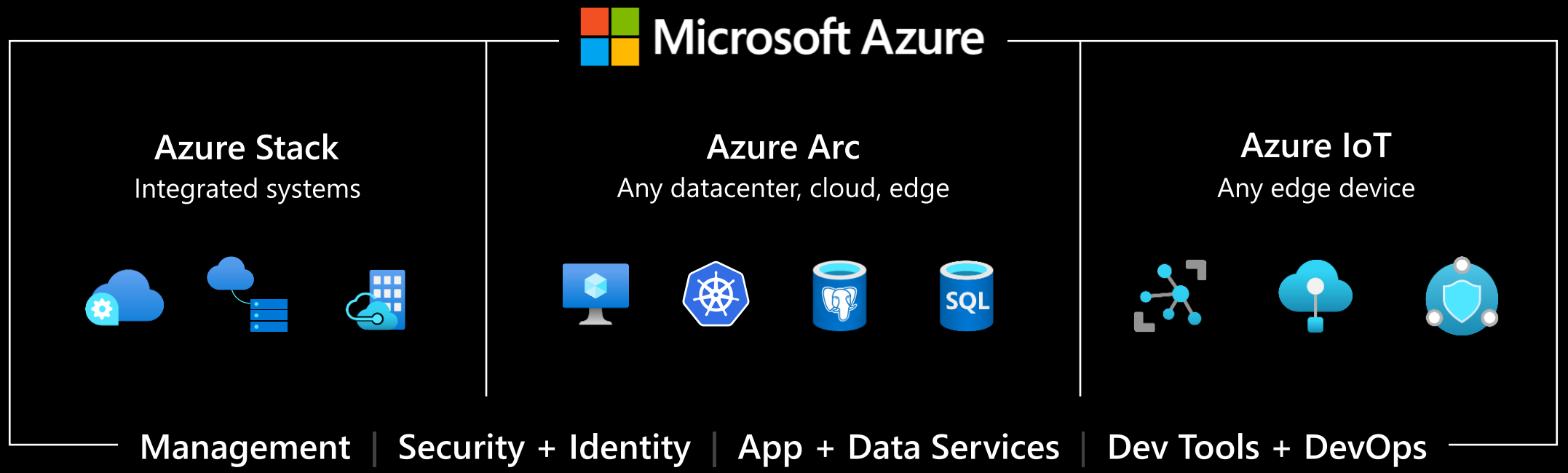
AUTO-SCALE CRITERIA

Scaling is determined by the level of CPU or memory load


scale on requests counts, split traffic on versions
Queue
scale on queue size
QueueReader
receive customer orders
HTTP API
queue order
Dapr service to get count service calls
Store Orders
get count
Dashboard API
Operations Dashboard
ops team monitoring
get metrics
Dapr service to service calls

Azure hybrid

Innovation anywhere with Azure

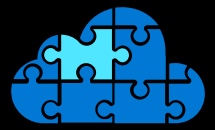


Azure Arc

Bring Azure services and management to any infrastructure

Run Azure Services anywhere

Extend Azure management across your environments



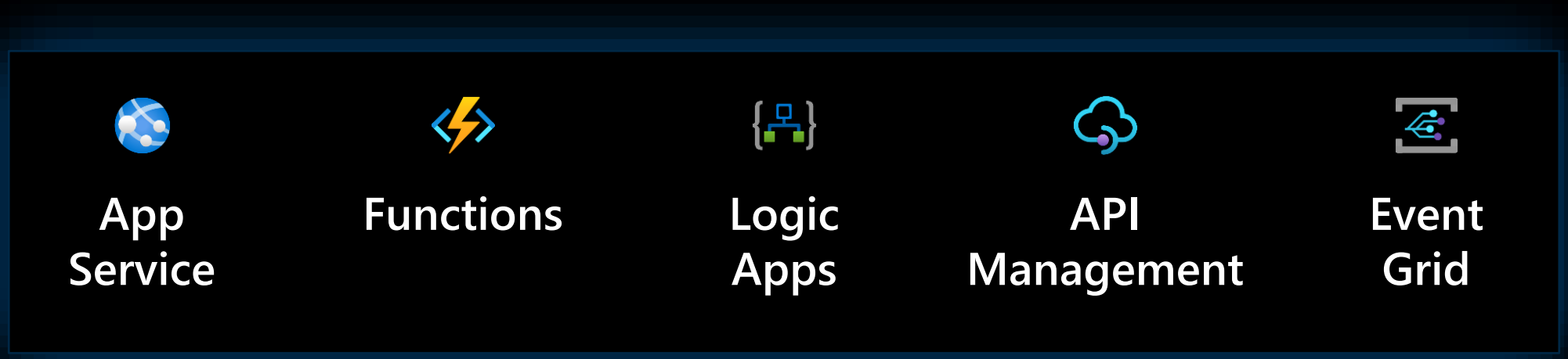
Adopt cloud practices on-premises

Implement Azure security anywhere

Azure Arc is a set of technologies that extends Azure management and enables Azure services to run across on-premises, multi-cloud, and edge

Azure application services New

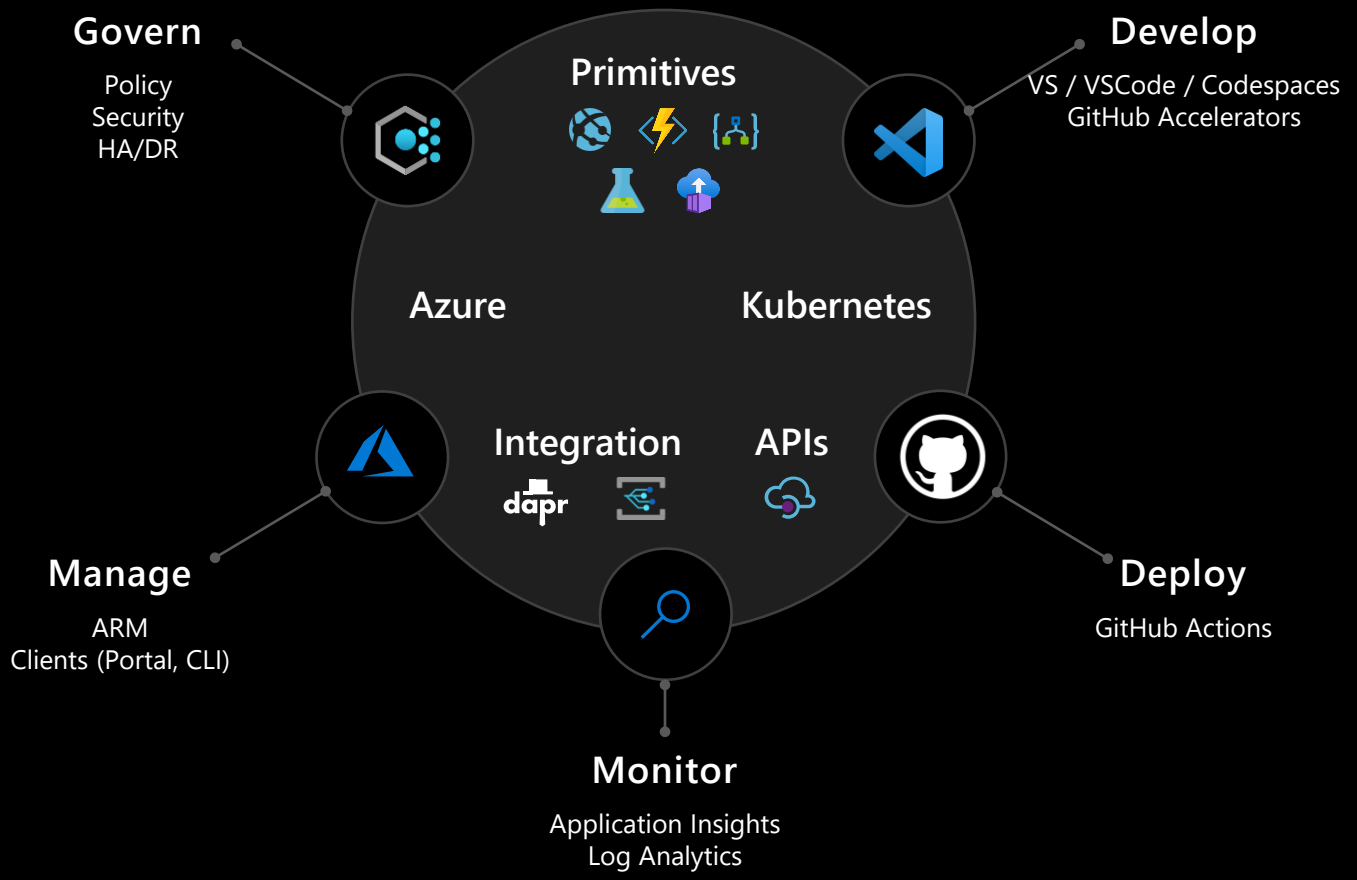
Run your apps, anywhere



Azure | On-premises | AWS | GCP

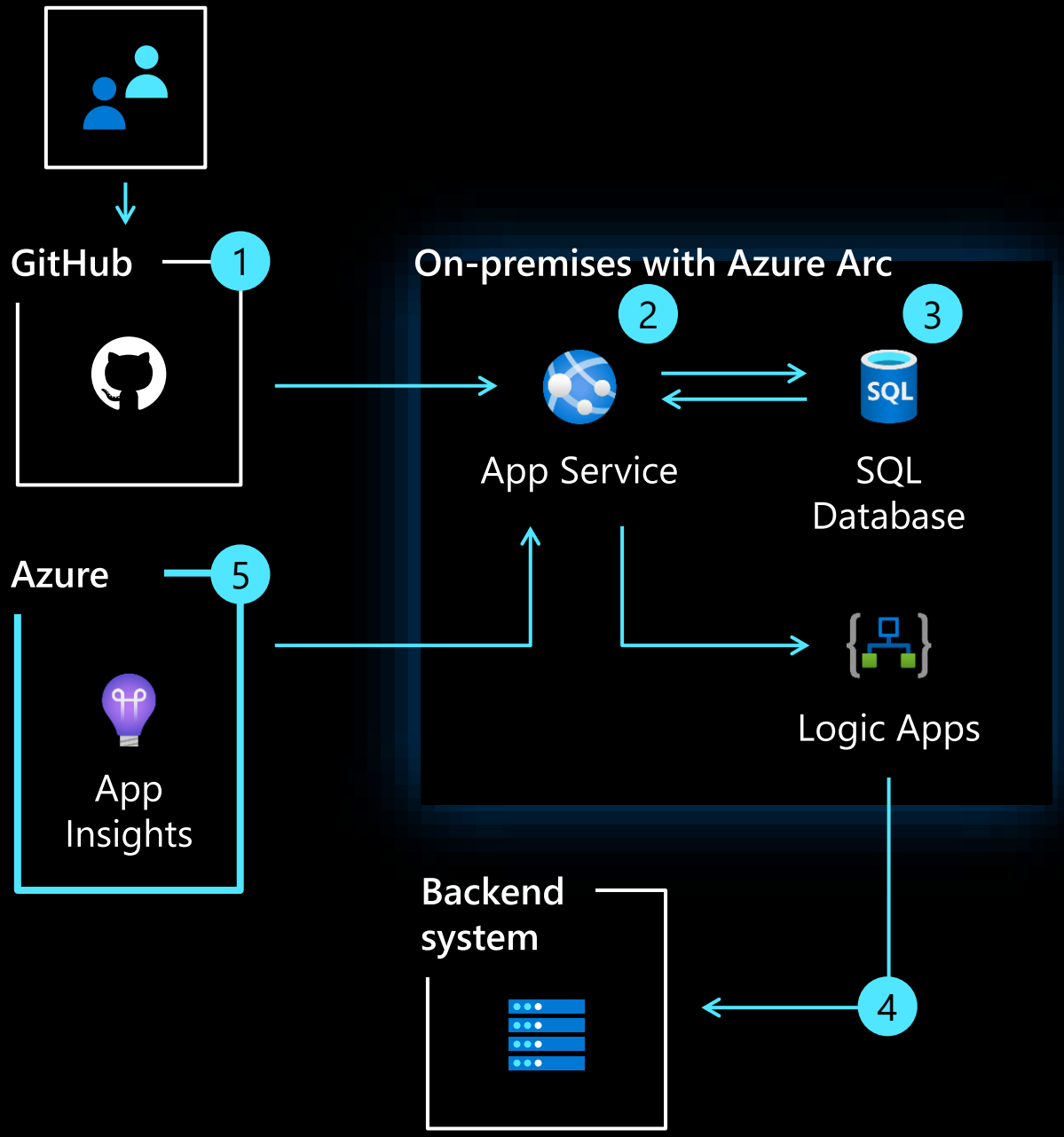
Arc-enabled developer services

Primitives for specific use case | Consistency across developer and operator lifecycle | Integrates with common services



App modernization

1. GitHub Actions for DevOps pipelines regardless of where the app is running
2. App Service deployed locally for web front end
3. Data modernization using managed SQL database in edge location
4. Data from legacy system is surfaced using Logic Apps connectors
5. App Insights running in Azure to provide app telemetry and performance metrics



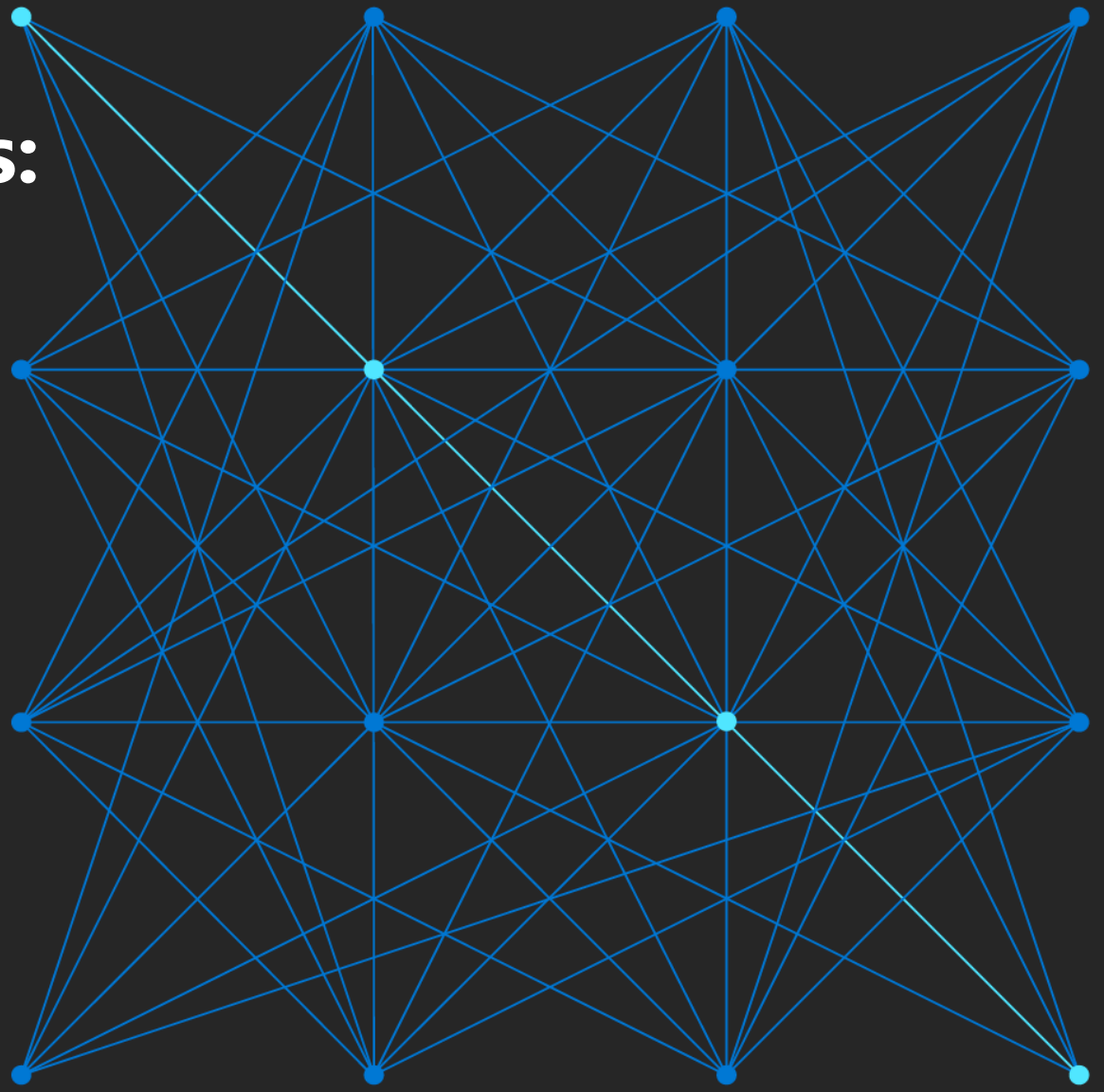
Microsoft Azure

Infuse AI into your applications: Speech, Language, Vision and OpenAI

Xiapeng Li
AI Business Lead
Microsoft Western Europe

Gabrielle Davelaar
AI Solution Specialist,Global Black Belt
Microsoft

Francesco Tumiatti
AI Solution Specialist, Global Black Belt
Microsoft



Microsoft Azure

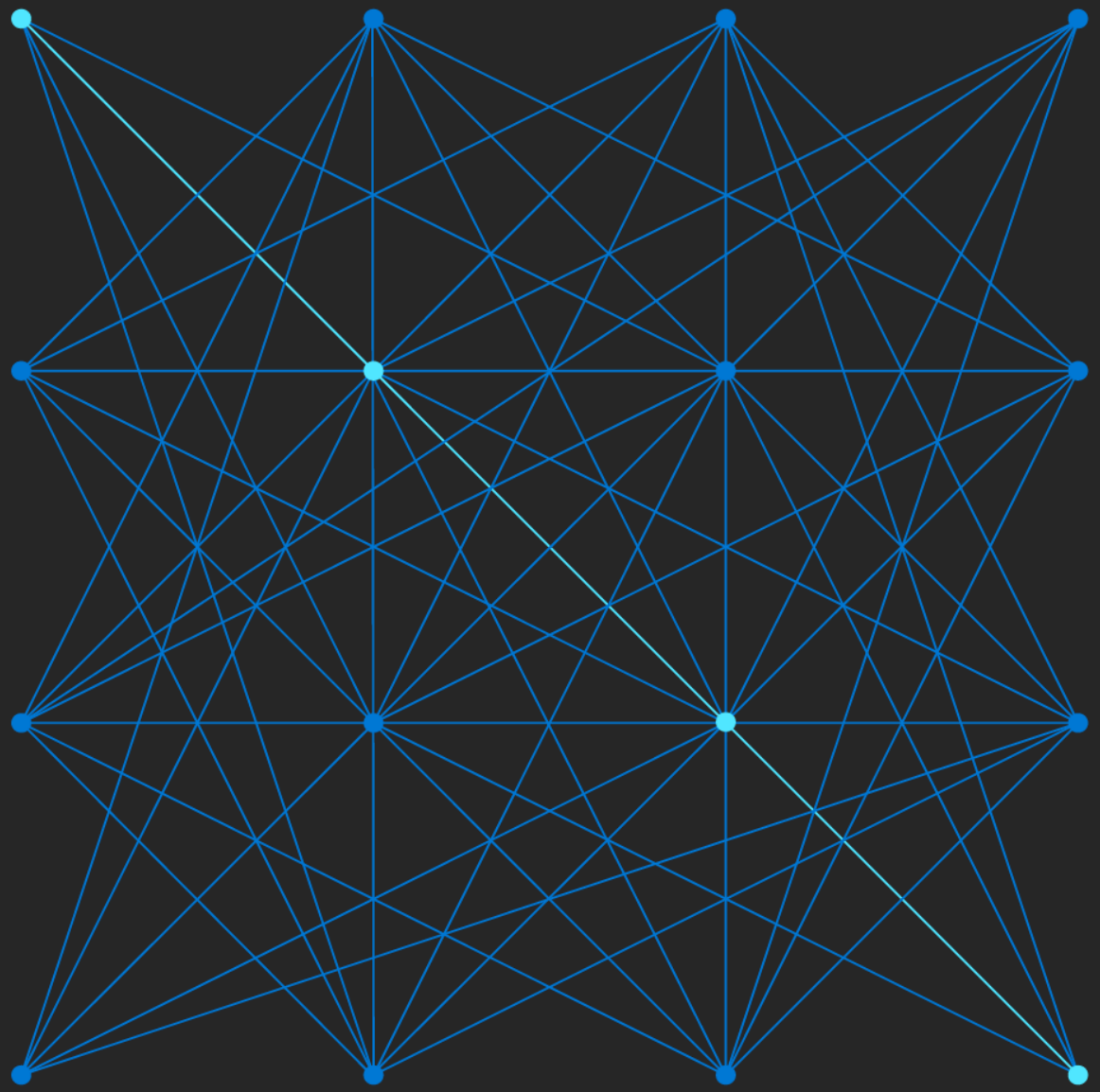
Agenda

Introduction
Xiaopeng Li

Speech, Language, OpenAI
Francesco Tumiatti

Vision
Gabrielle Davelaar

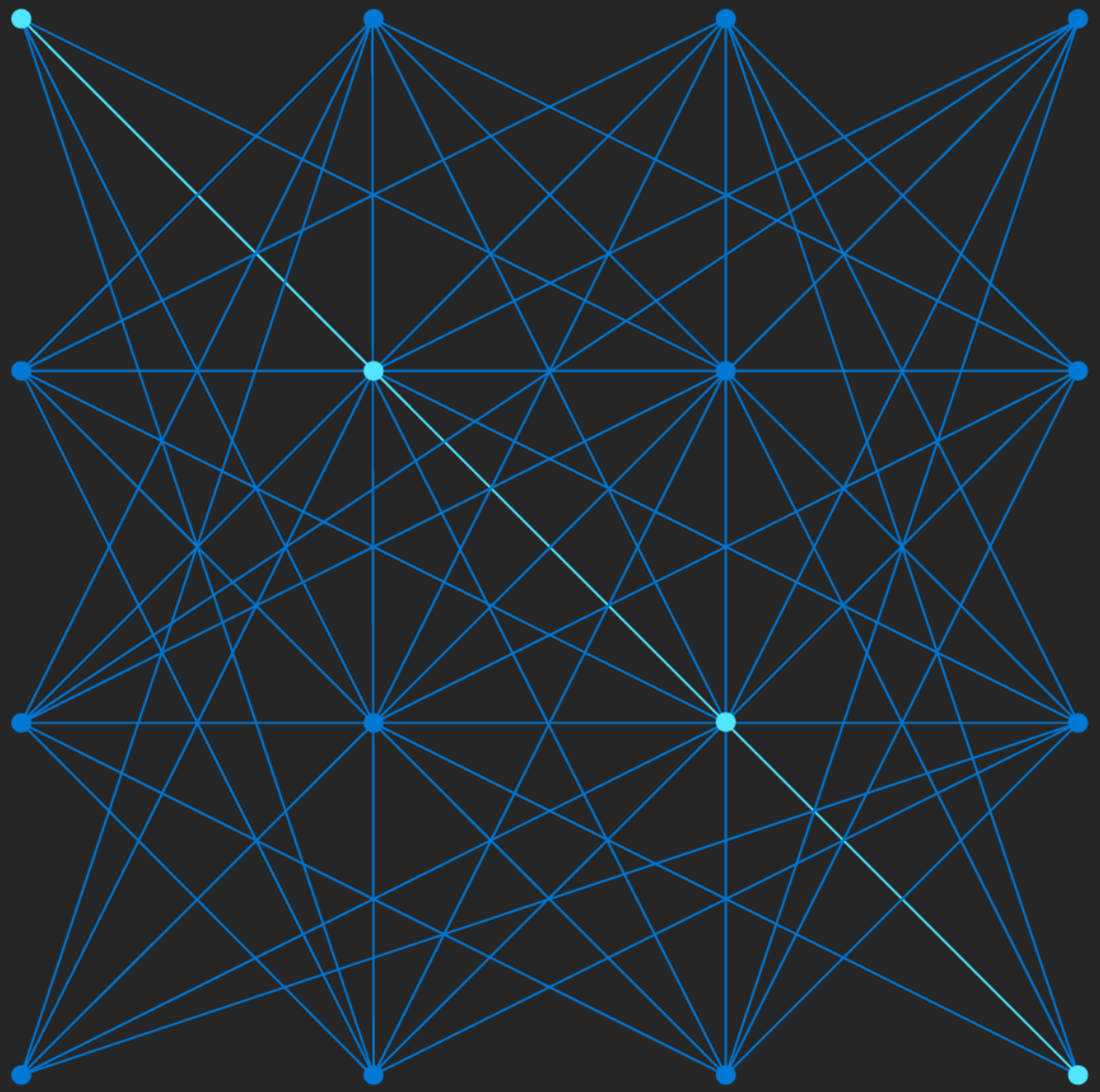
Q&A



Microsoft Azure

Introduction

Xiaopeng Li
AI Business Lead



Microsoft Research

Turning ideas into reality for 30 years

8 MSR Labs

1k+ Researchers

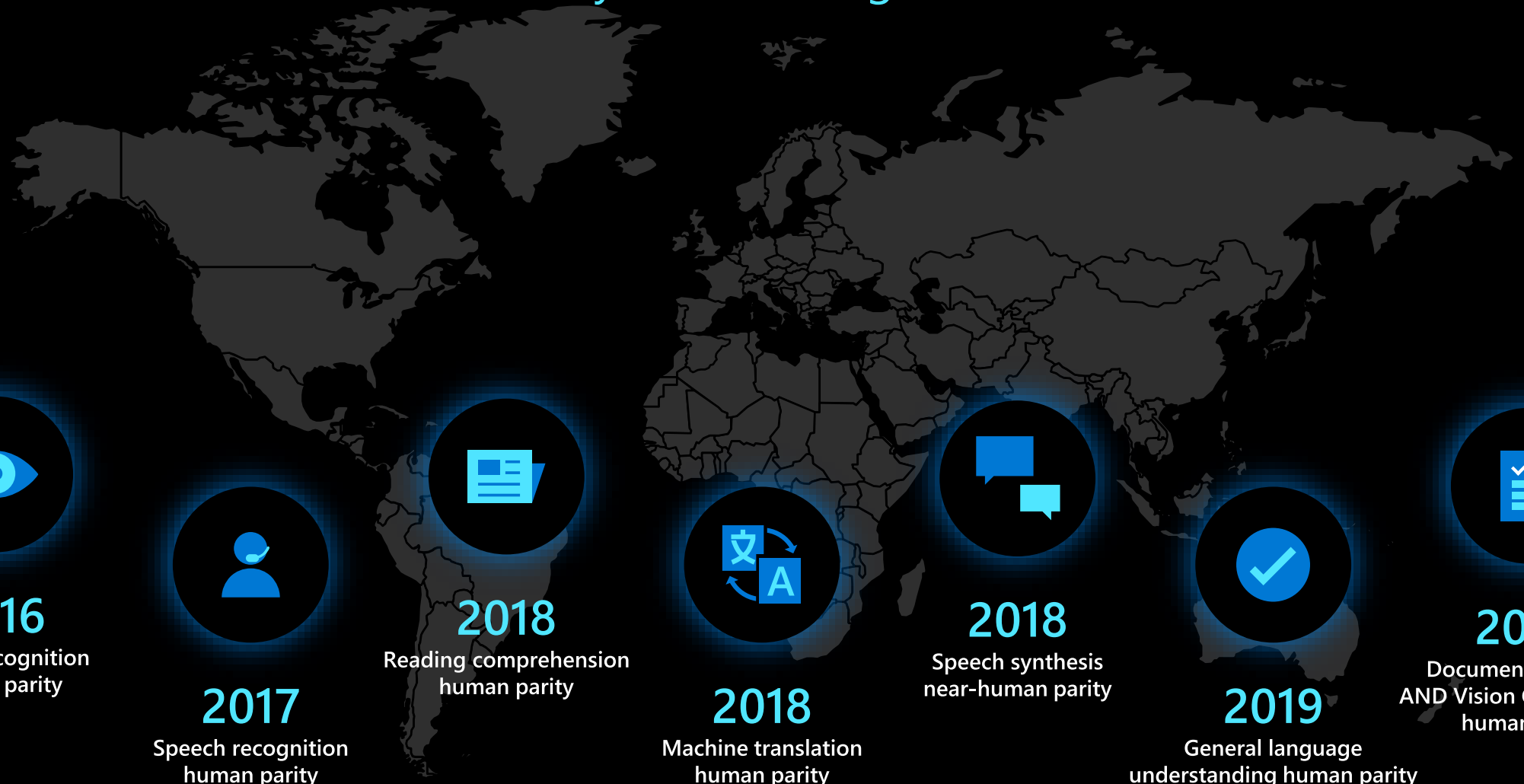
20+ Fields

4k+ WW Patents

22k+ Papers

Driving innovation

Fueled by breakthrough research



2016
Object recognition human parity

2017
Speech recognition human parity

2018
Reading comprehension human parity

2018
Machine translation human parity

2018
Speech synthesis near-human parity

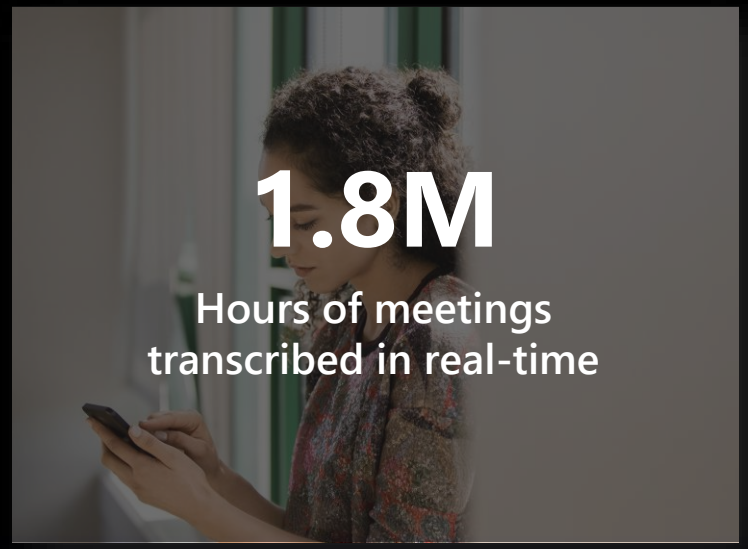
2019
General language understanding human parity

2020
Document summary AND Vision Captioning at human parity

Azure AI

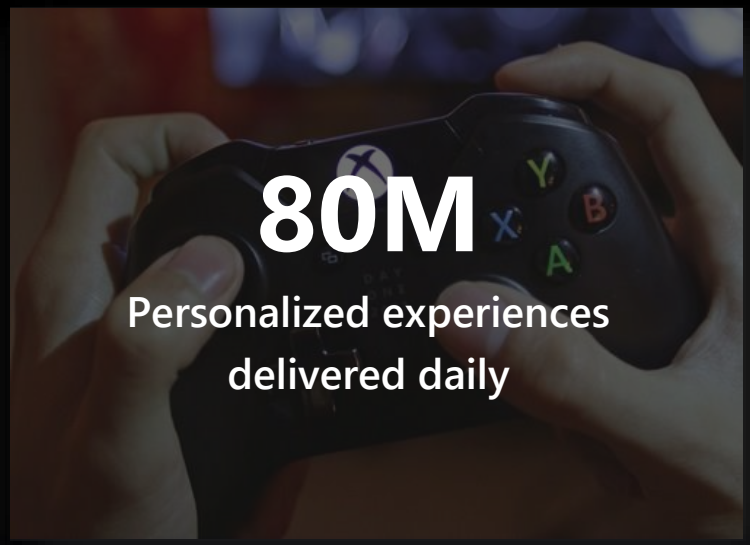
Tested at scale in Microsoft solutions

Microsoft Teams



Microsoft 365

XBOX



Built on breakthrough AI research

Azure AI

Azure Applied AI Services

Azure Cognitive Search

Azure Form Recognizer

Azure Bot Service

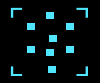
Azure Video Analyzer

Azure Metrics Advisor

Azure Immersive Reader

Azure Cognitive Services

Language



Vision

Speech

Decision

OpenAI

NEW

Azure Machine Learning

Azure Machine Learning

Cloud AI Services Fueling Application Innovation

52%
lack proper data science and machine learning experience

60%
struggle with data integration and data quality

51%
cite long development times as a key issue

Key traits of cloud AI services

- Responsibly built and tested AI models accessible via APIs
- Prebuilt, configurable AI services that do not require data science experience
- Ongoing support from cloud partners

Key benefits of cloud AI services

- Greater options for AI capabilities and scale across multiple apps
- Faster deployment time
- Better support and troubleshooting

Source: 2022 Forrester study Fuel Application Innovation with Specialized Cloud AI Services

Kahoot!

Customer:
Kahoot!

Industry:
Partner Professional Services

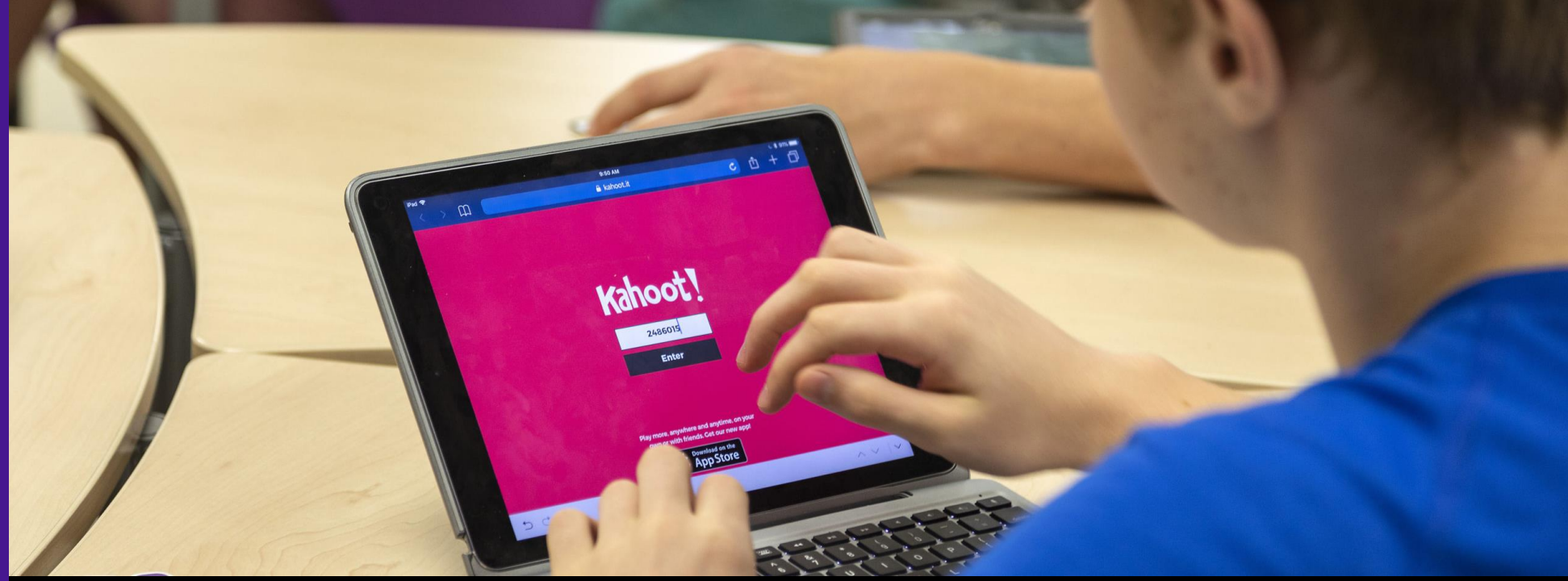
Size:
50–999 employees

Country:
Norway

Products and services:
Microsoft Azure
Azure Cognitive Services
Text to Speech

[Read full story here]

Microsoft



"Kahoot! knew that its online learning games contributed to positive student outcomes, but we wanted to make those games accessible to more students by layering them with inclusive and accessible design features."

—Alexander Remen, Senior Product Manager, Kahoot!

Situation

Kahoot! is well-known for creating engaging games that have a positive impact on students' outcomes. However, it saw an opportunity to empower even more instructors and students by layering its platform with inclusive design features.

Solution

It used a combination of **Text to Speech**, part of Microsoft Azure Cognitive Services, and other Azure AI resources to give its applications read-aloud capabilities to help learners engage with content and help teachers support students.

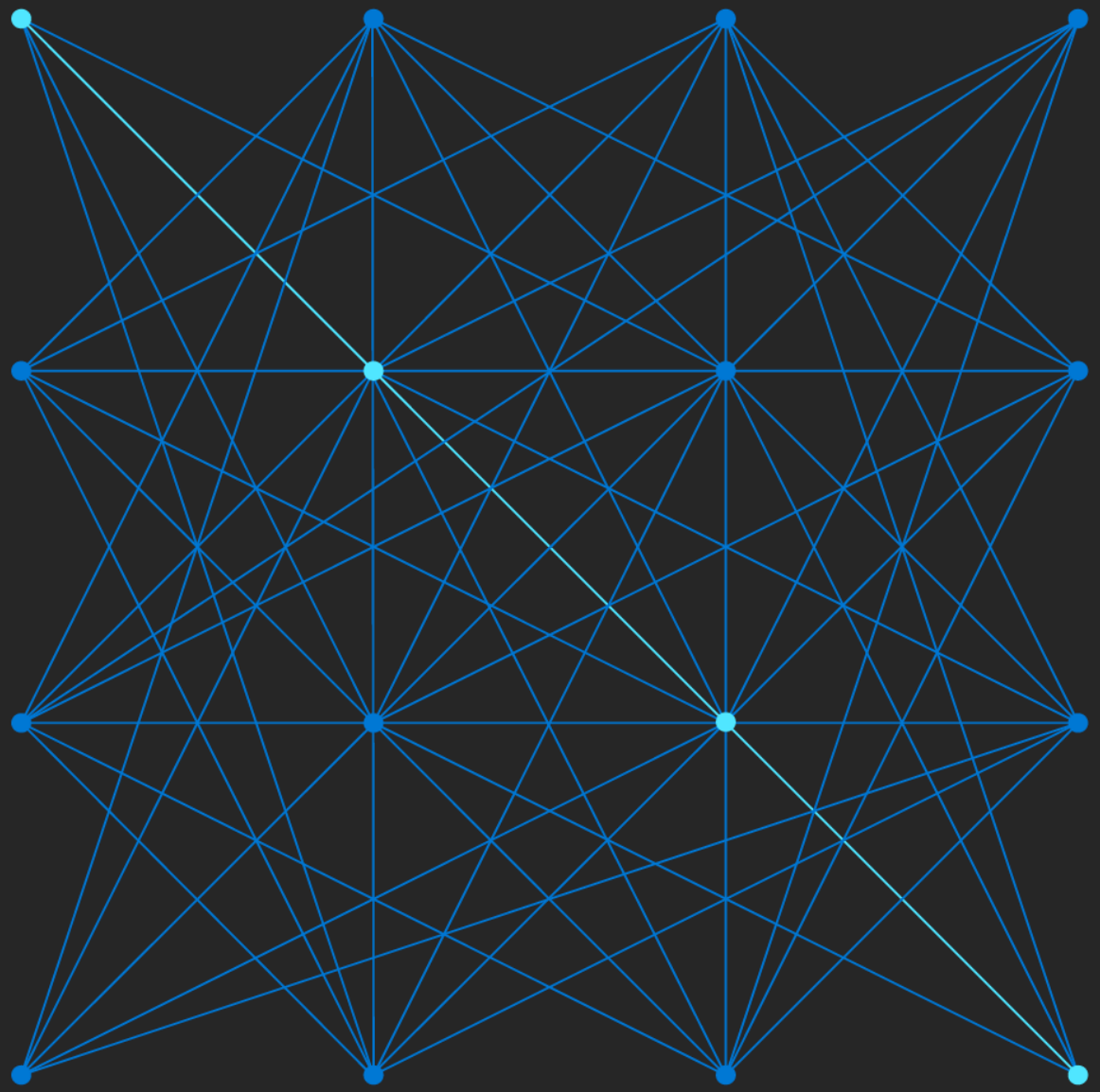
Impact

Kahoot! games now reach and empower a wider audience of teachers and students and support a diversity of learning styles. The company also positioned itself to use its new capabilities to expand its offering in key markets like language learning.

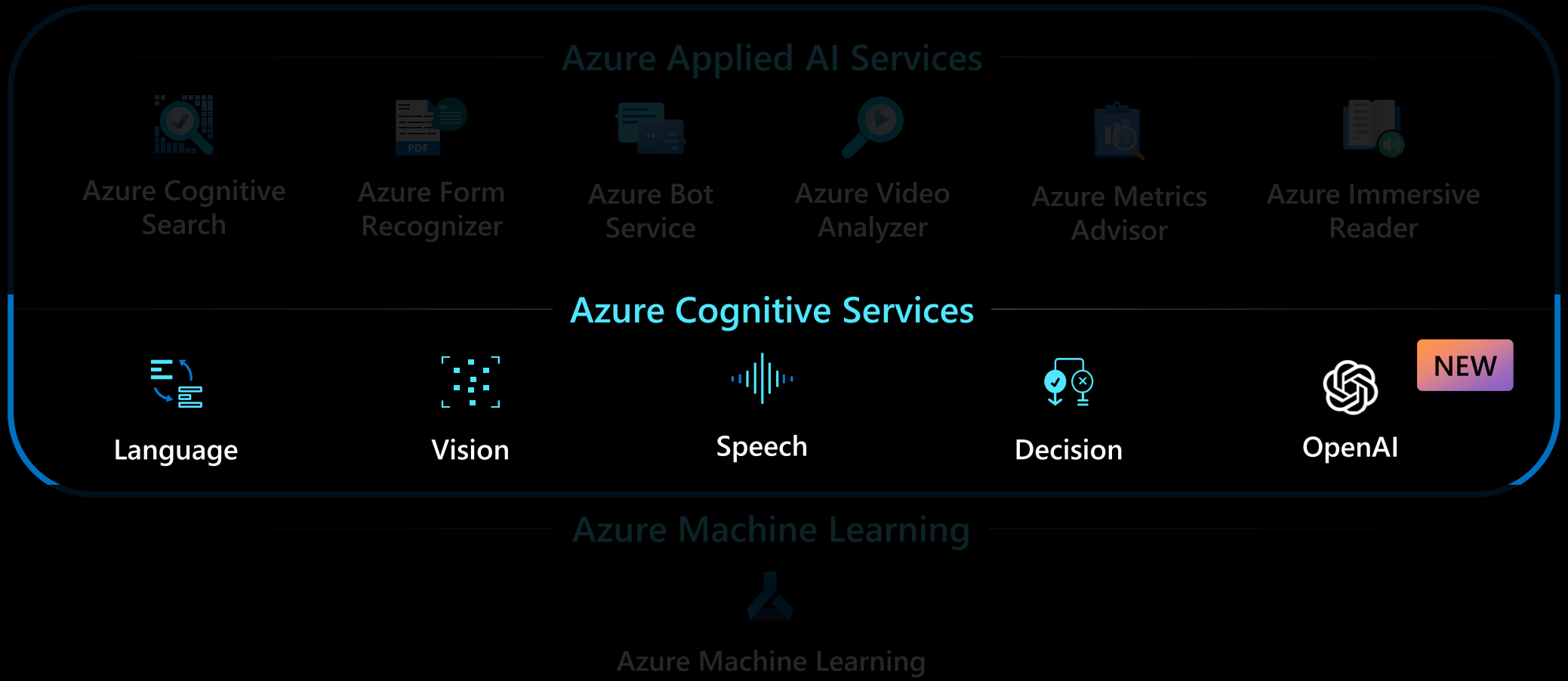
Microsoft Azure

Speech, Language, OpenAI

Francesco Tumiatti
AI Specialist

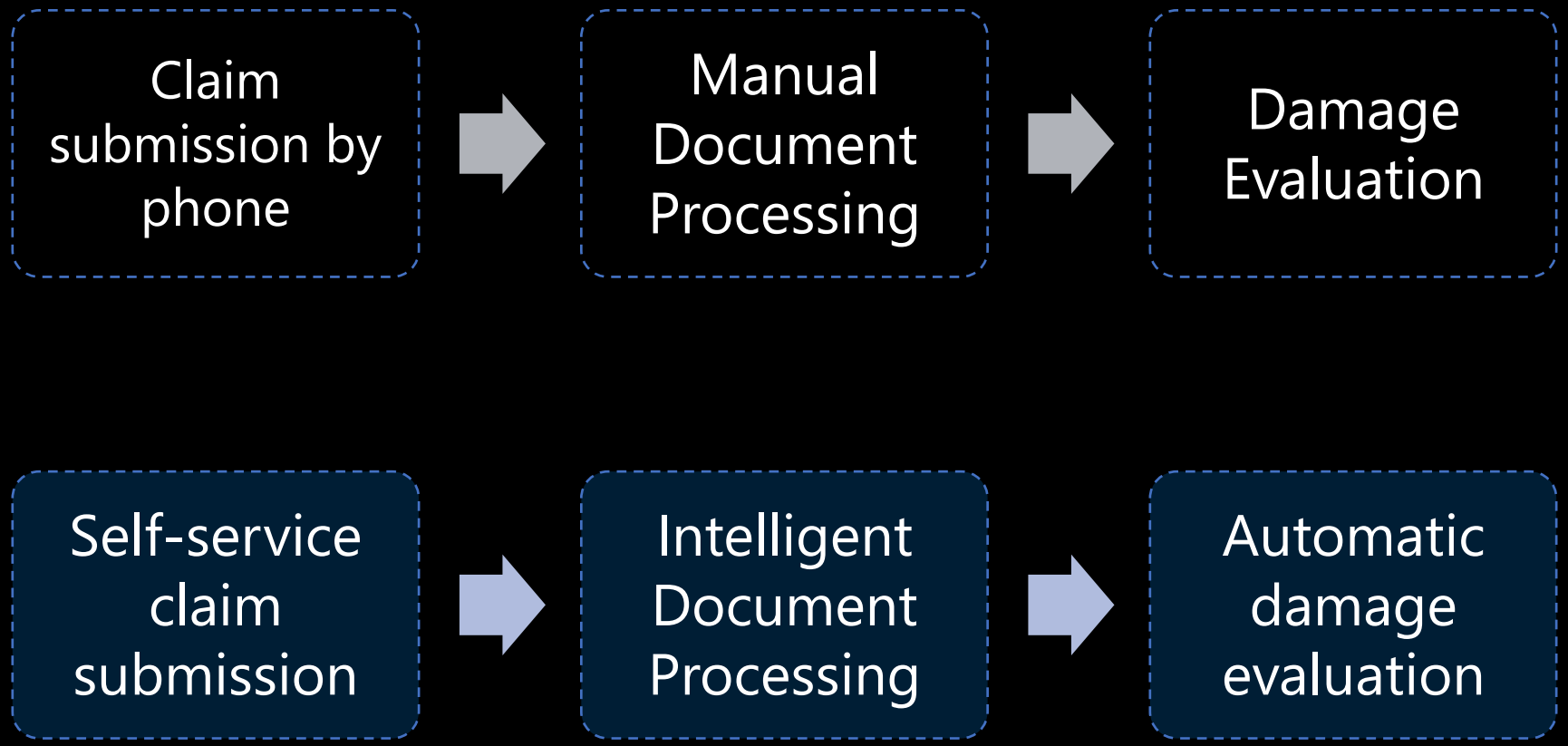


Azure AI


Azure Applied AI Services
Azure Cognitive Search
Azure Form Recognizer
Azure Bot Service
Azure Video Analyzer
Azure Metrics Advisor
Azure Immersive Reader
Azure Cognitive Services
Language
Vision
Speech
Decision
OpenAI
NEW
Azure Machine Learning
Azure Machine Learning

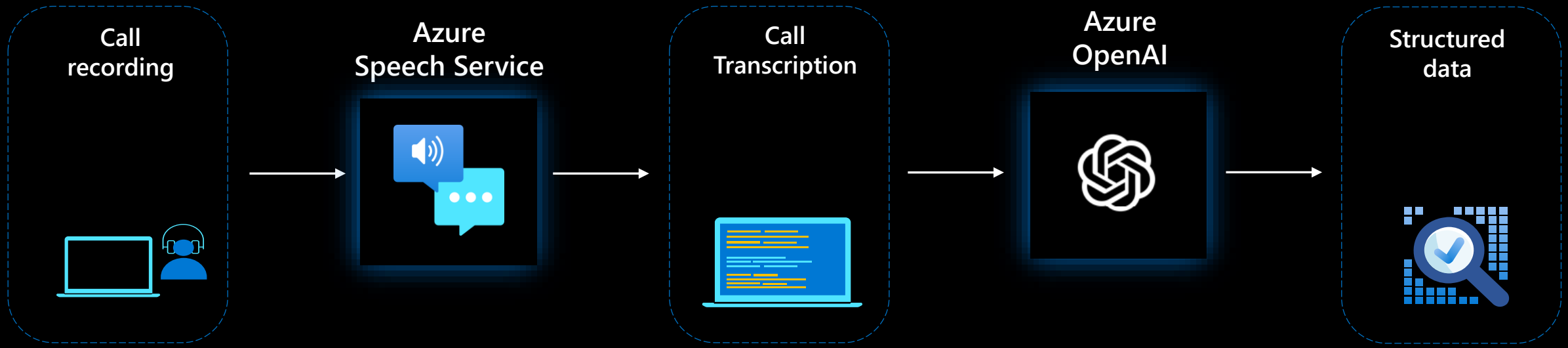
Claims automation

Automate claims processing with Cognitive Services



Speech Transcription & Analytics

Transcribe speech-to-text to unlock applications and deliver insight



Azure Speech Services

Speech to Text

Base vs. Custom Model

Acoustic and Language adapt

Live vs. Batch transcription

Text to Speech

Standard Voices

Neural Adapted Voices

Custom Voices

Speaker Recognition

Speaker Identification

Speaker Verification

Speech Translation

Language Detection

Real Time Translation

Speech SDK

Devices SDK

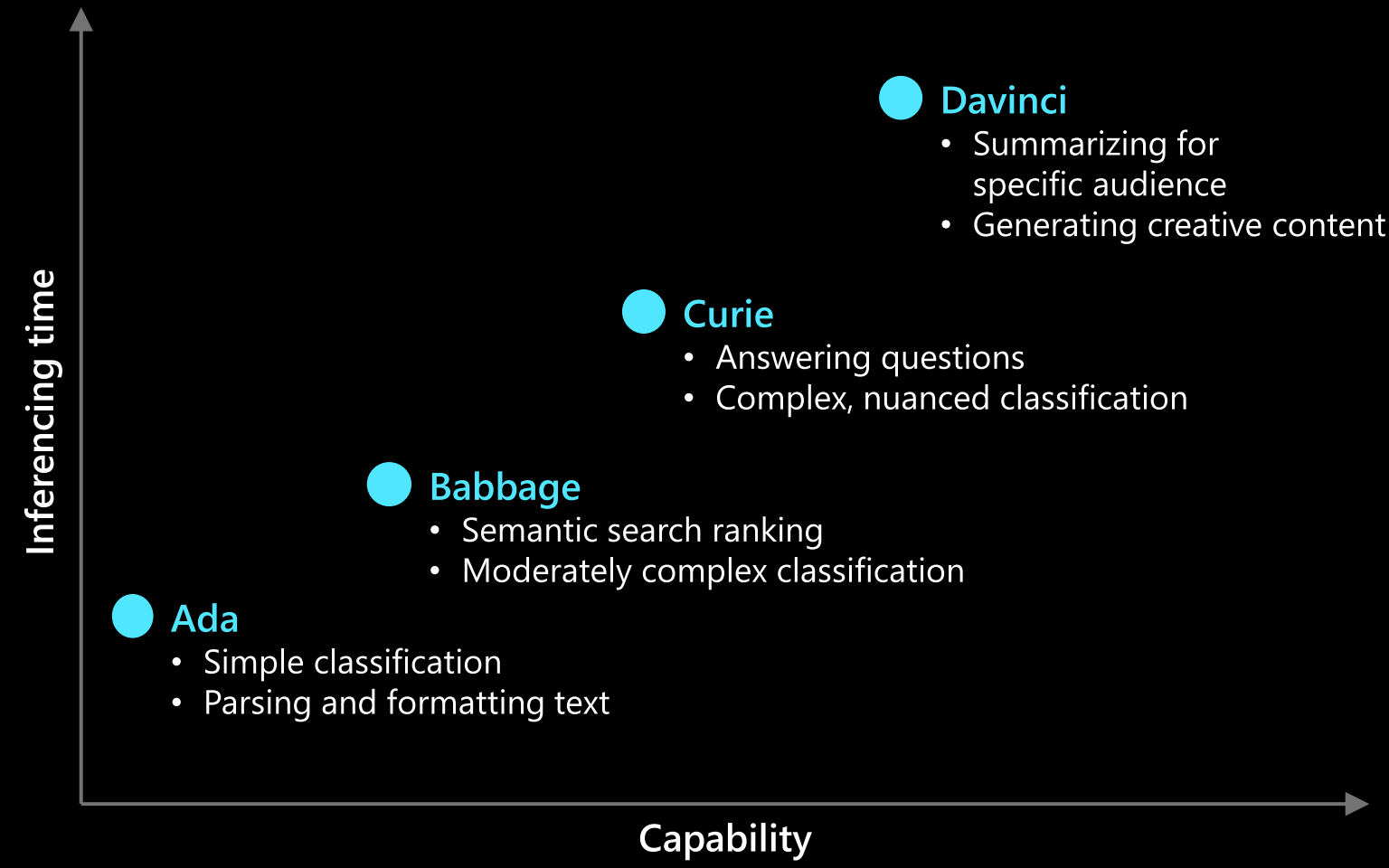
AI Containers

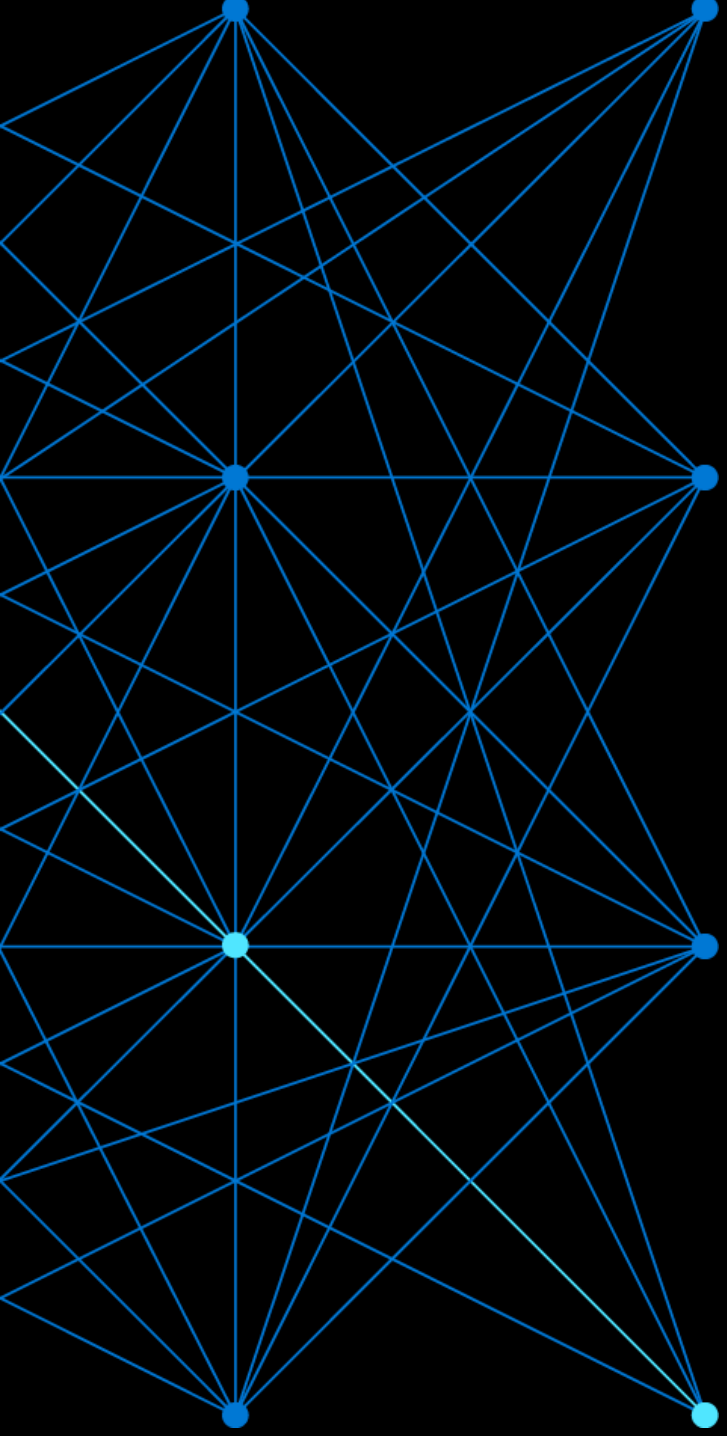
Languages

Voice Models

Speech service documentation

GPT-3 models


Inferencing time
Capability
Davinci
• Summarizing for specific audience
• Generating creative content
Curie
• Answering questions
• Complex, nuanced classification
Babbage
• Semantic search ranking
• Moderately complex classification
Ada
• Simple classification
• Parsing and formatting text



Demo Automatic Claim Collection

Automatic Claim Collection

Azure Speech API creates the transcript of the call

Azure OpenAI creates a summary

Create a detailed summary:

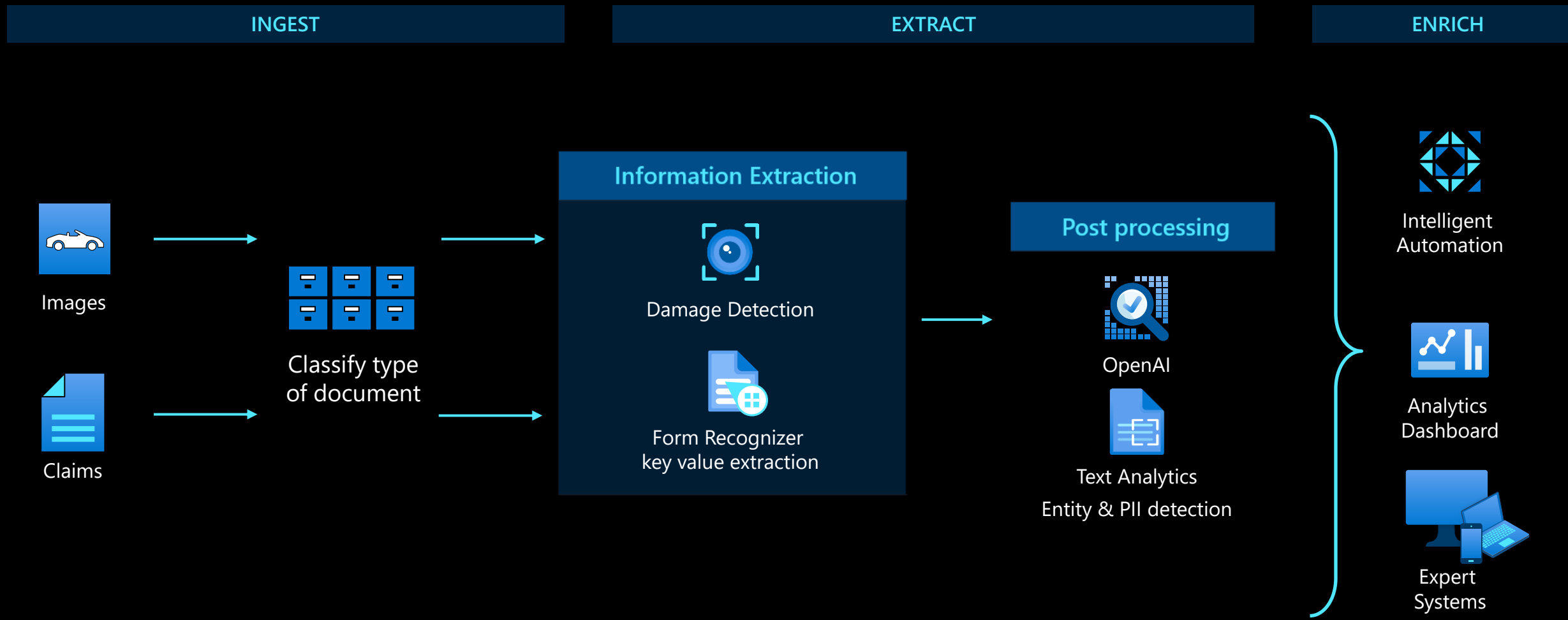
Azure OpenAI extract entities

Extract the following:

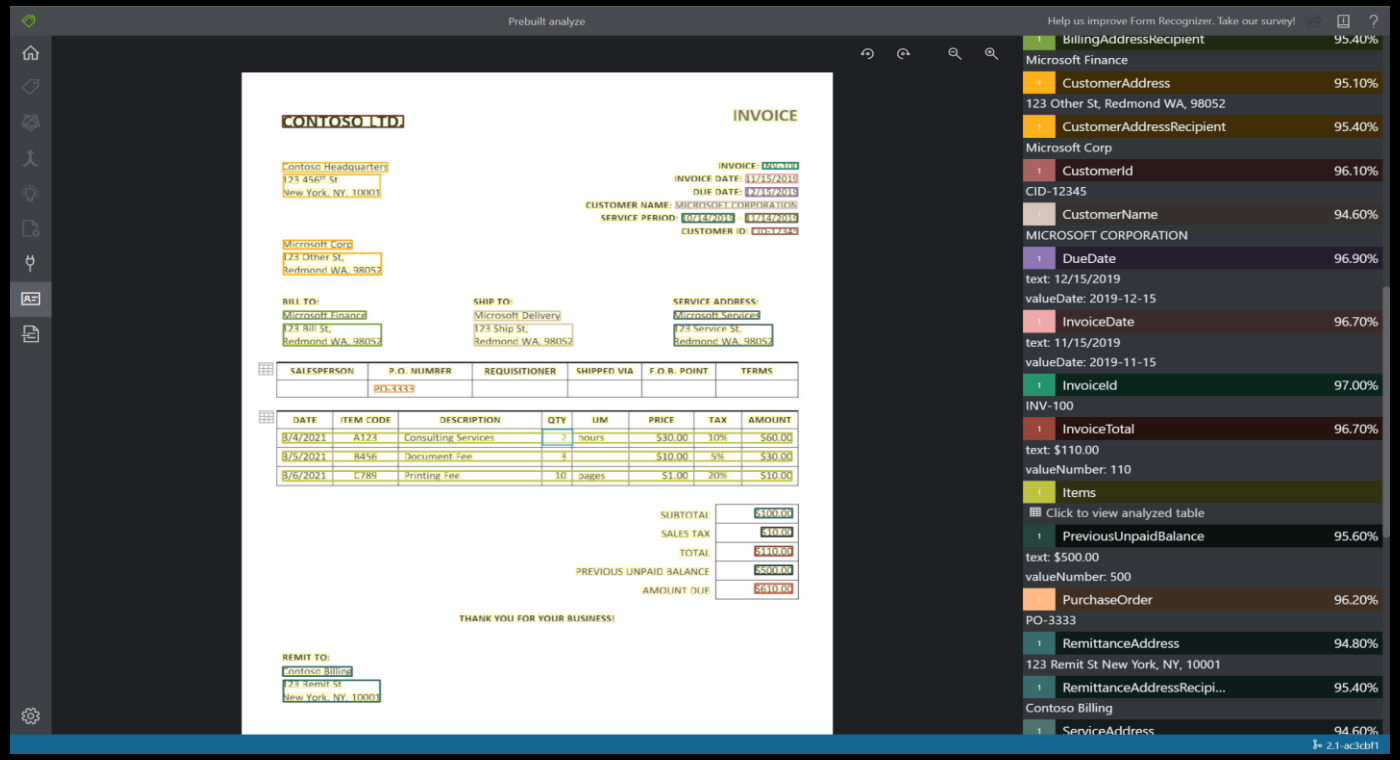
1. Call reason
2. Cause of the incident
3. Drivers names
4. Insurance information
5. Accident location
6. Car damages

Values:

Intelligent Document Processing



Azure Form Recognizer



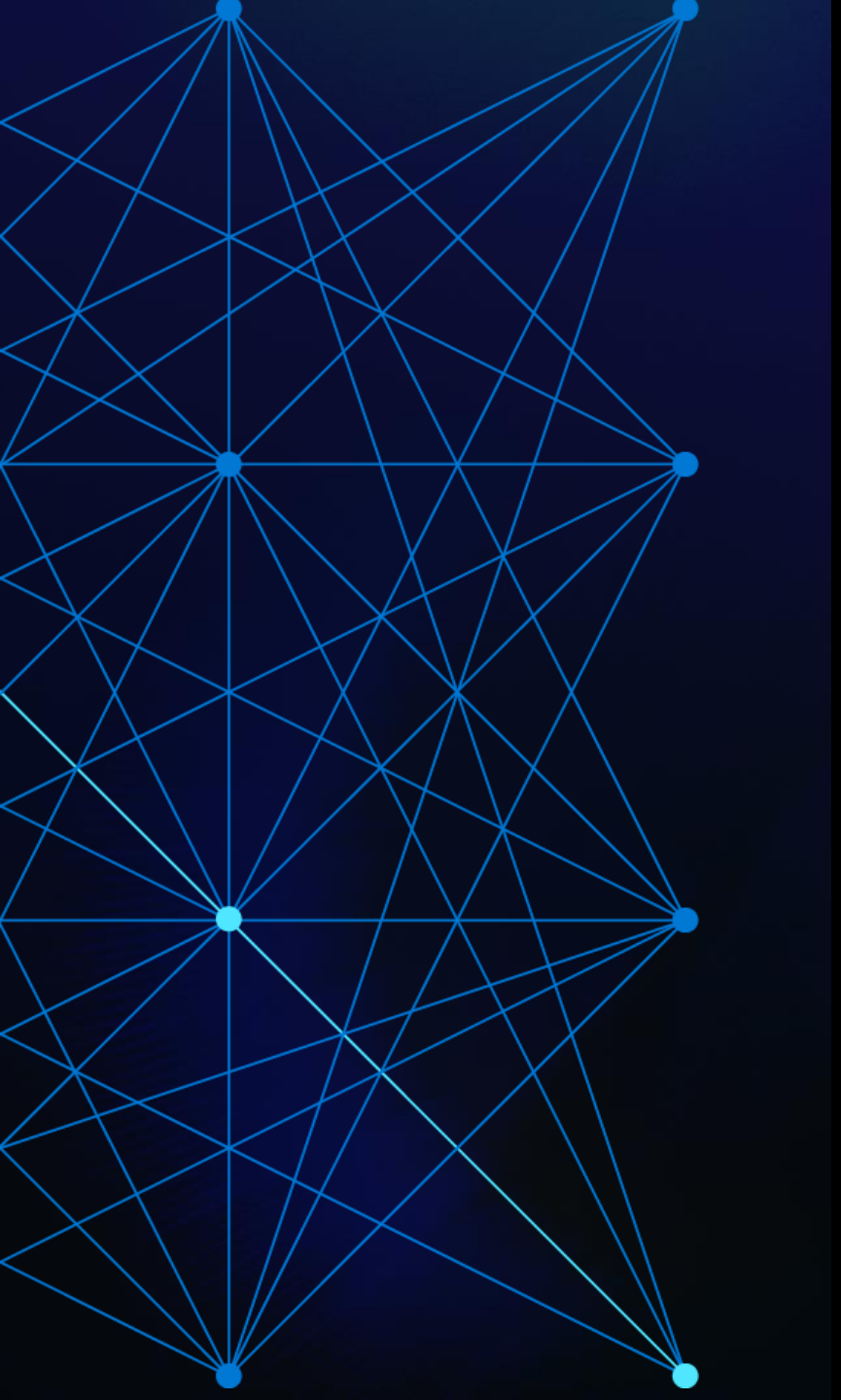
Extract text and structure with simple API

Customize extraction to your forms

Deploy anywhere, from cloud to edge

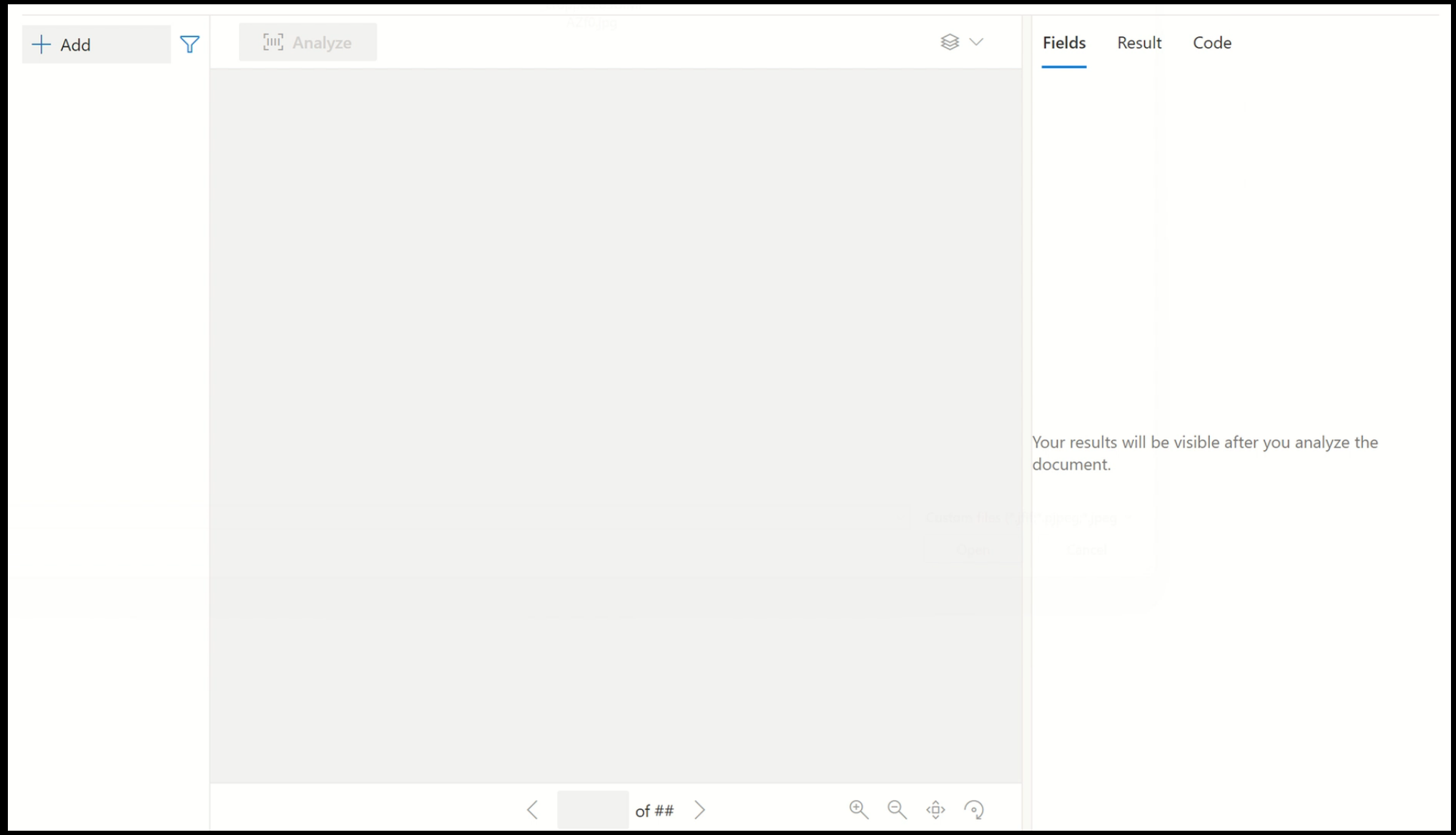
USE CASES

Claims management and automation	Document process automation	Government forms automation

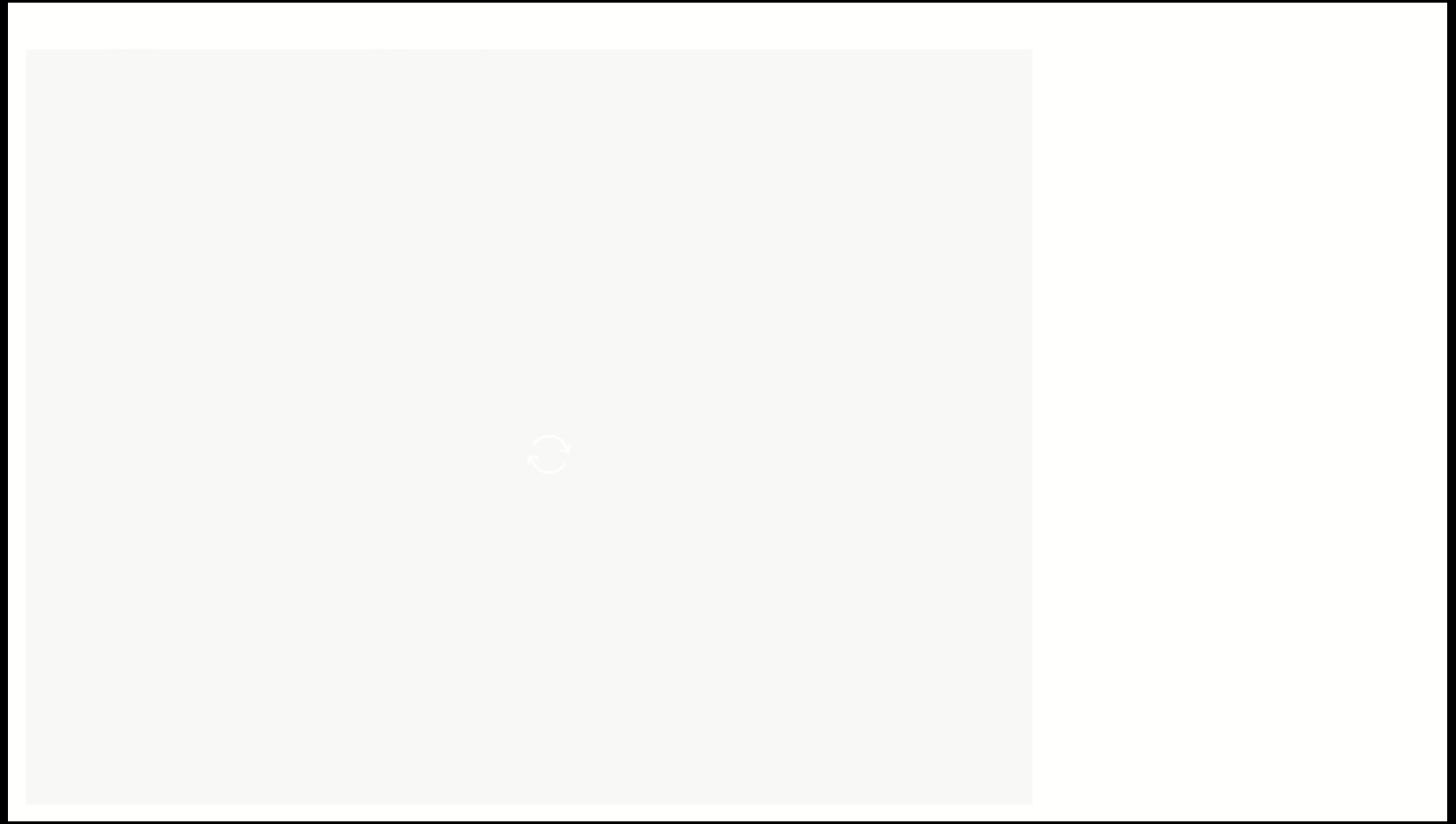


Demo Documents Processing

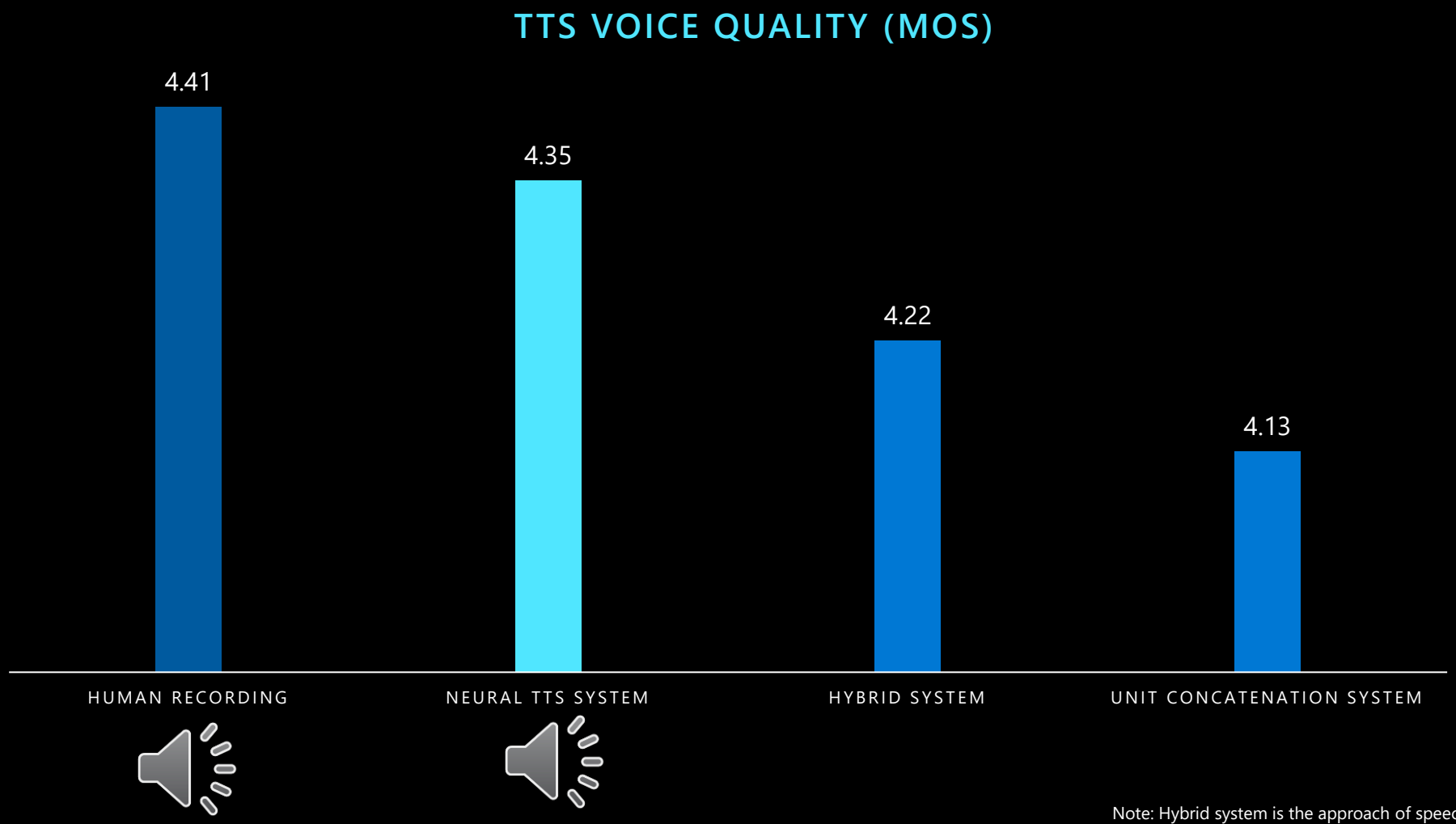
Extract data from vehicle registration document



Automatic Damage Classification



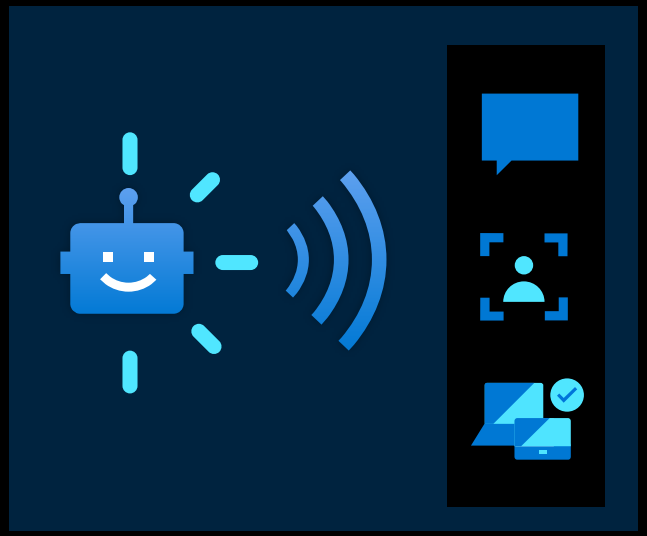
Neural TTS produces voices that are near human-parity



Note: Hybrid system is the approach of speech synthesis that combines traditional acoustic prosody prediction plus WaveNet Synthesizer

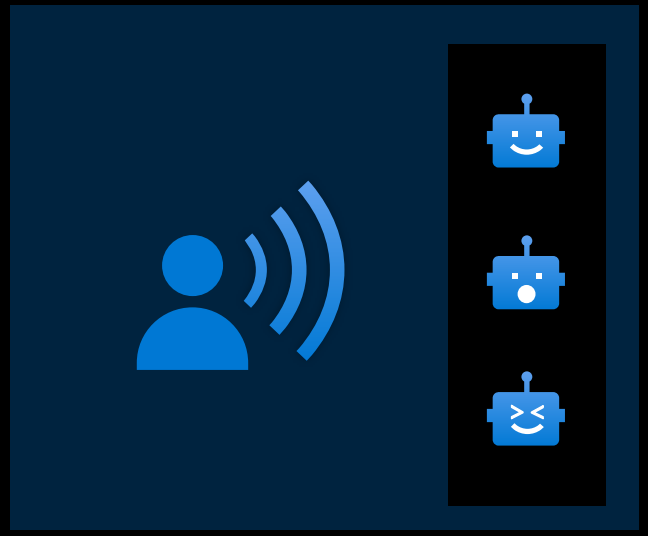
Custom Neural Voice

Custom Neural Voice enables you to build highly realistic branded voices with just a small number of training audios, using end-2-end Neural TTS technology



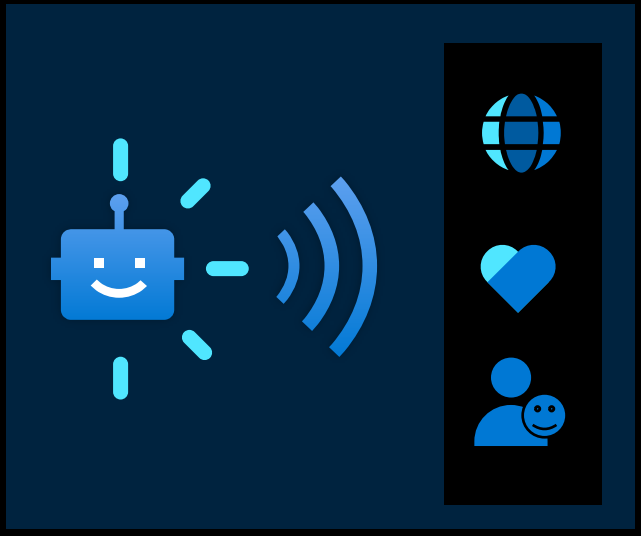
Brand Identity

Design, and implement, a voice model that complements, or augments, your brand strategy



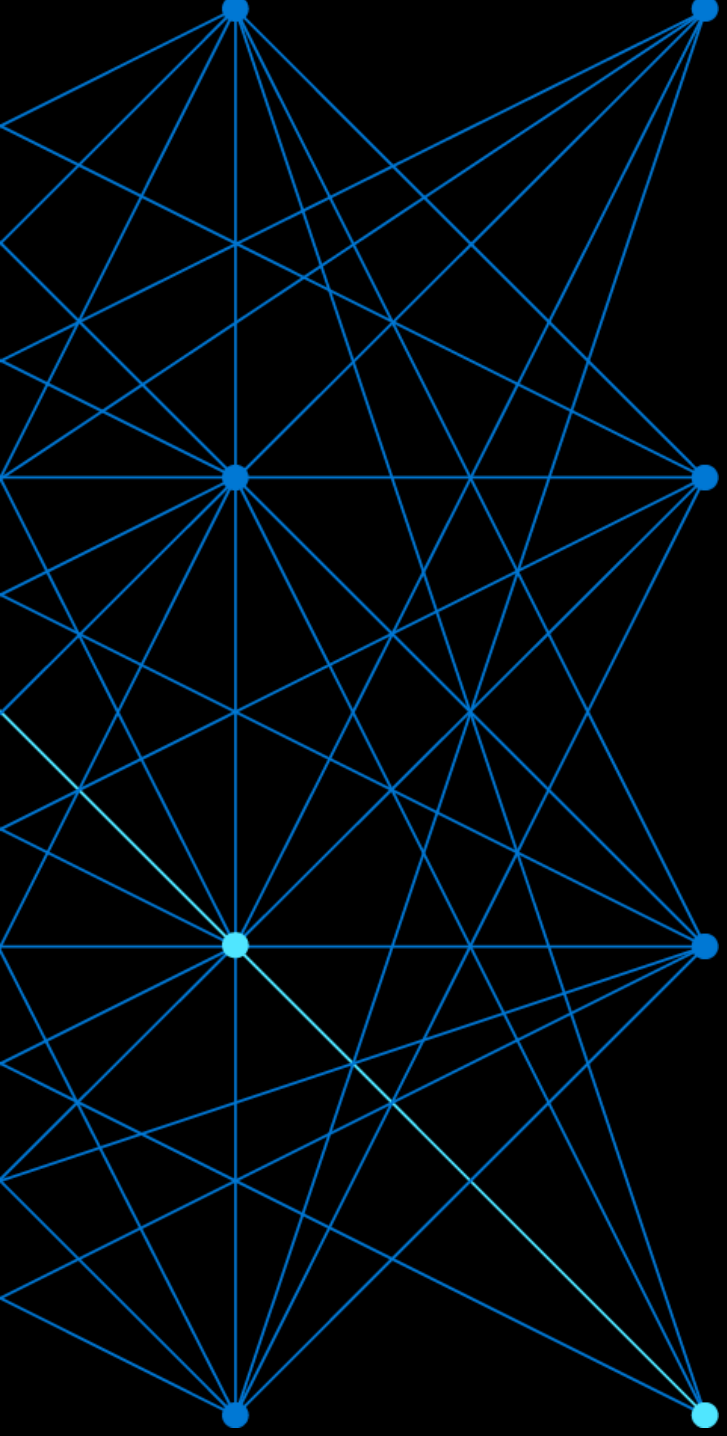
Custom Persona

Extract value from your analytics to work by accommodating customer sentiment with custom voice characteristics



Natural Interaction

Increase your customers' emotional connection, as well as their interactions, with your applications

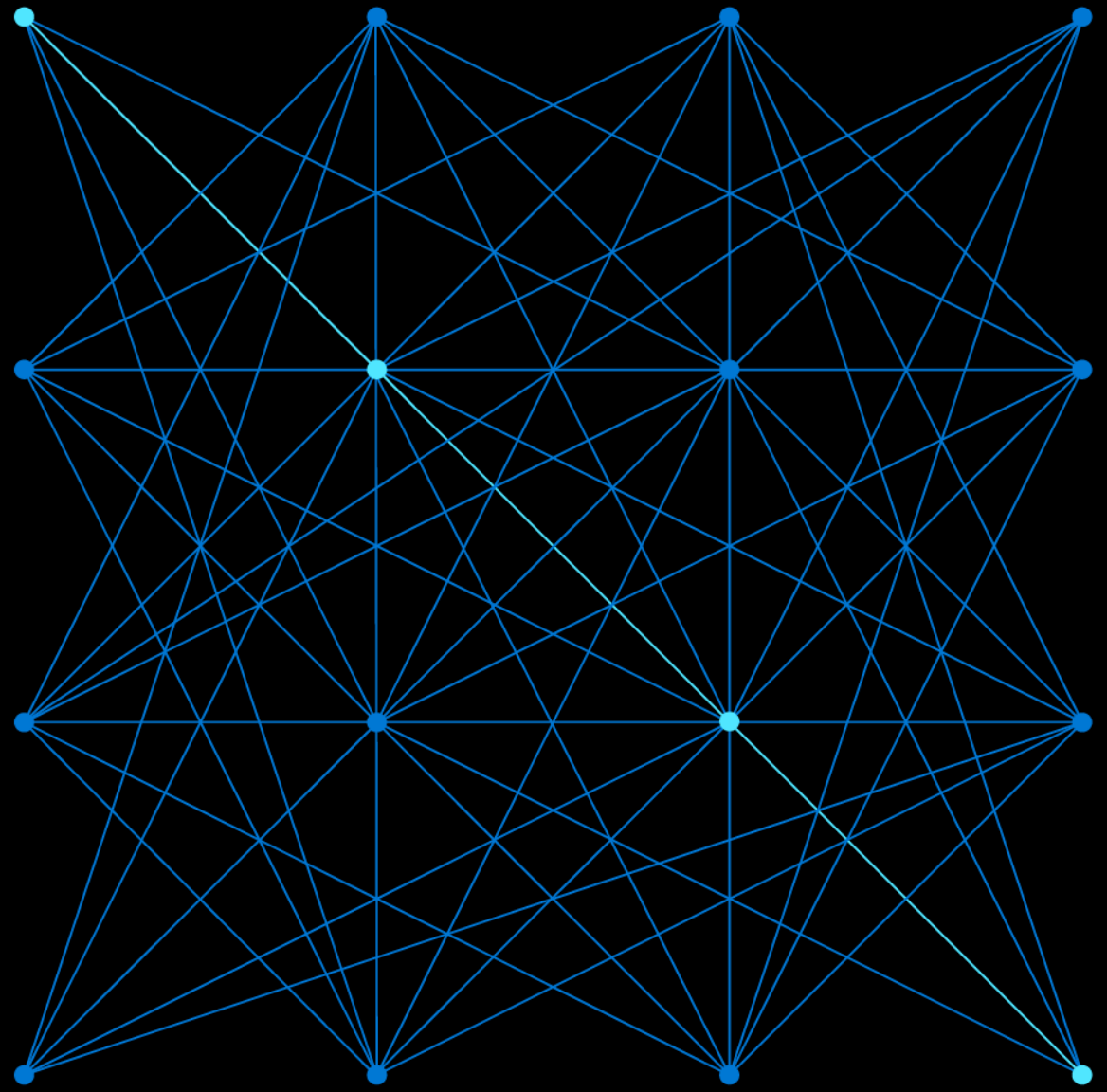


Demo Voice Notification

Microsoft Azure

Computer Vision & Intelligent Video Analytics

Gabriëlle Davelaar
Global Black Belt
Microsoft



Azure AI

Azure Applied AI Services

Azure Cognitive Search

Azure Form Recognizer

Azure Bot Service

Azure Video Analyzer

Azure Metrics Advisor

Azure Immersive Reader

Azure Cognitive Services

Language

Vision

Speech

Decision

OpenAI

NEW

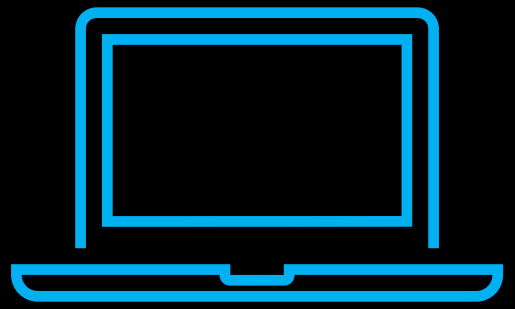
Azure Machine Learning

Azure Machine Learning

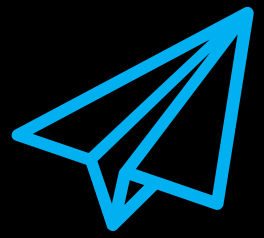
Microsoft Azure

Interpretation of an image or video

A sensing device captures an image or video

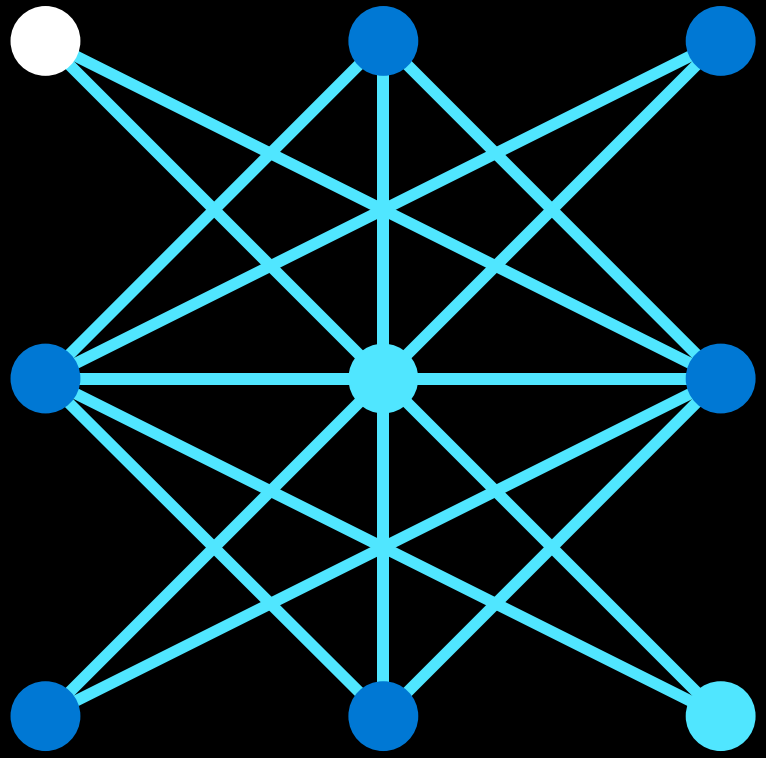


The image or video is then sent to an interpreting device



Information is sent back to the user

Microsoft Azure



- Object classification - demo
- Object identification - demo
- Object tracking - demo
- Optical character recognition - demo

Real Time Computer Vision Spatial Analytics

RXR

Scenario

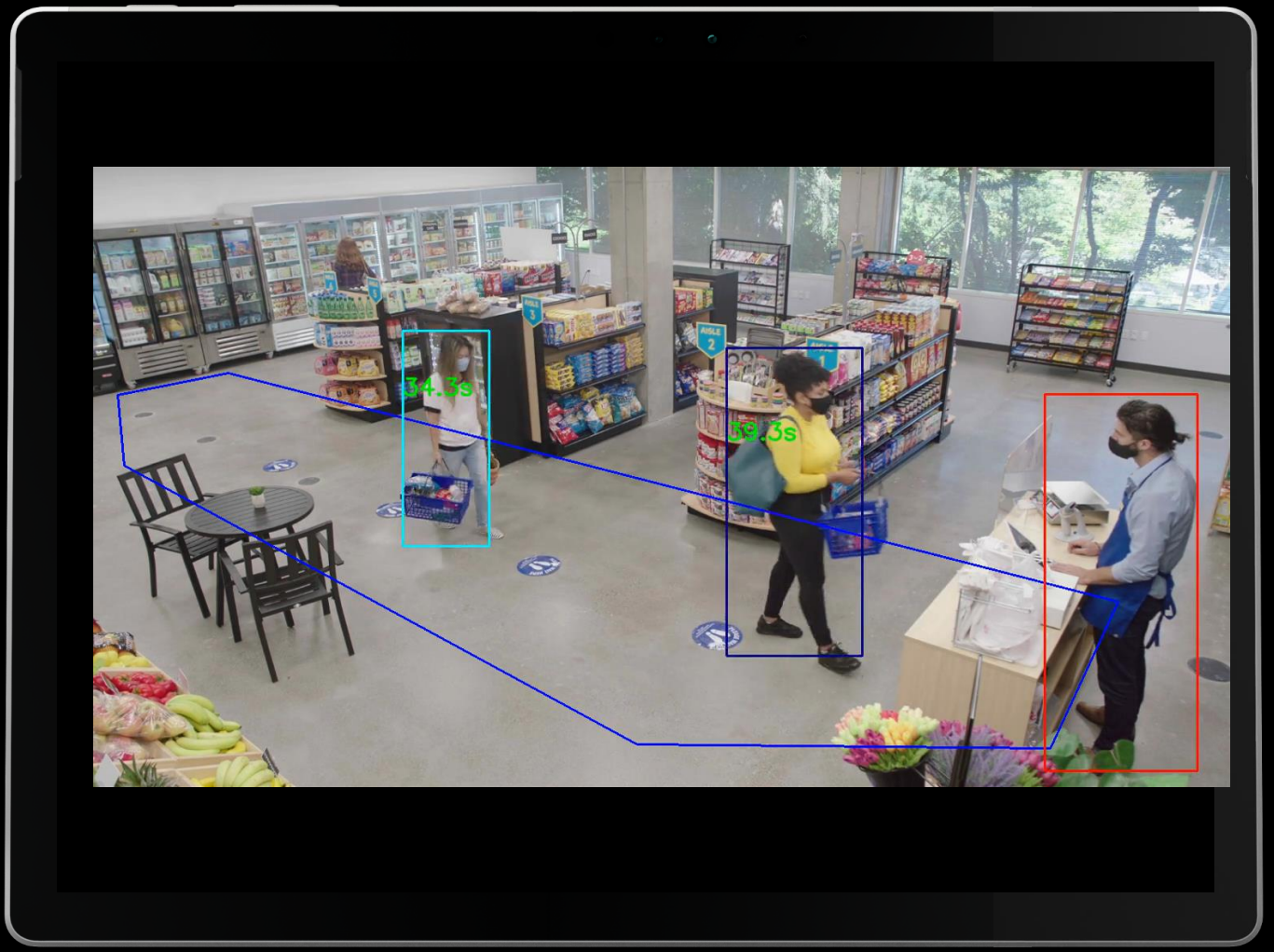
RXR is developing a Building Health Index (BHI) dashboard. They want to supplement it with data relevant to COVID.

Goal

Empower employees to decide if, and when, to come to the office.

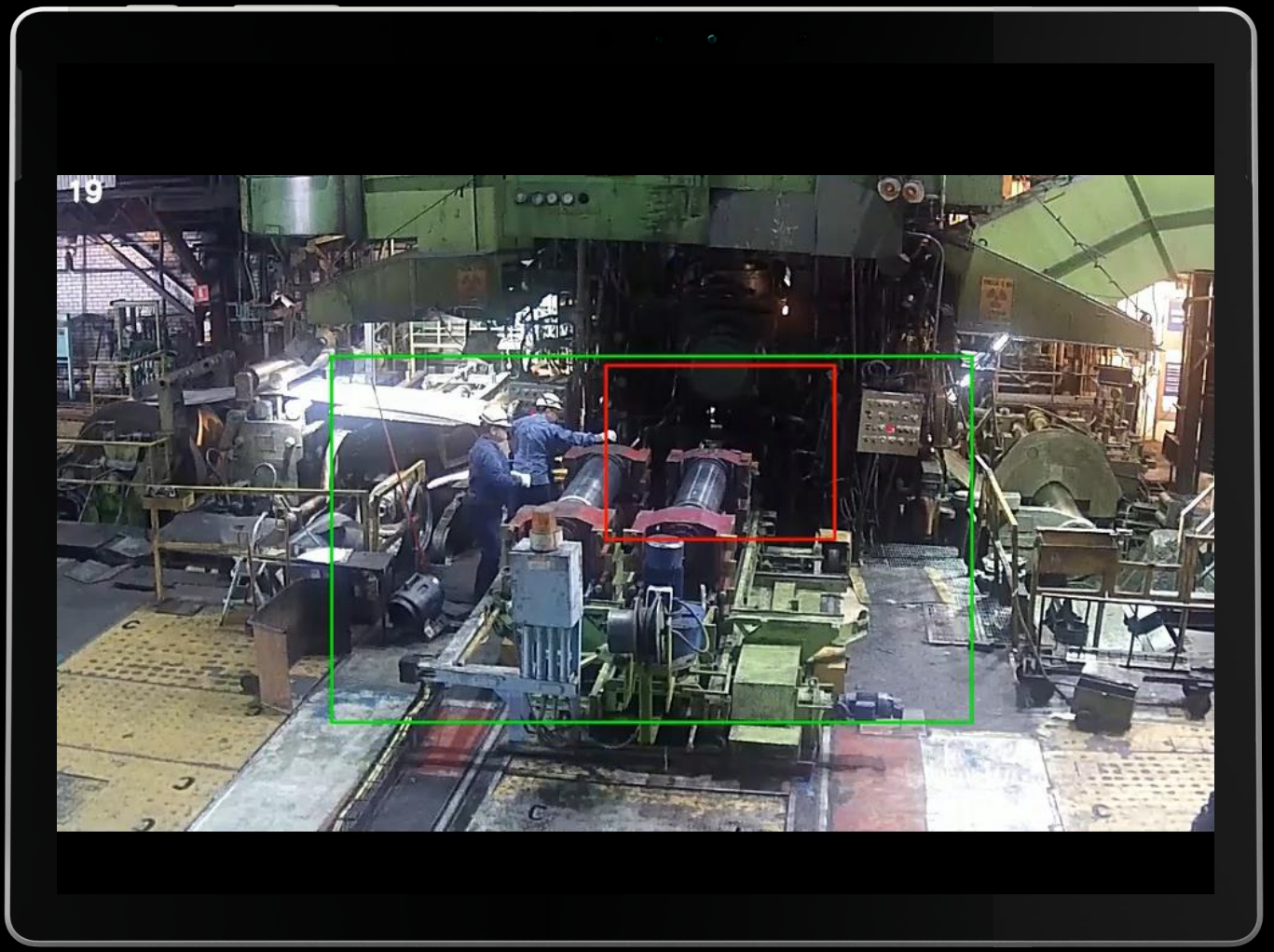
Spatial Analysis

Region of interest



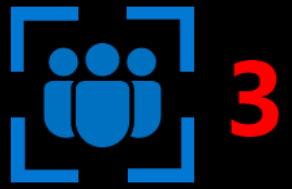
Spatial Analysis

People detection



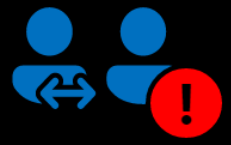
Spatial Analysis

The core operations of Spatial Analysis are all built on a pipeline that ingests video, detects people in the video, tracks the people as they move around over time, and generates events as people interact with regions of interest.



People detection

It finds people in an image and passes a bounding box indicating the location of each person to the people tracking component.

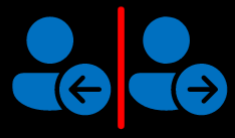


People tracking

This component People detections over time as people move around in front of a camera. It uses temporal logic about how people typically move and basic information about the overall appearance of the people.

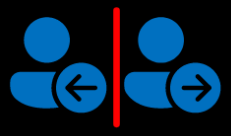
Face mask detection

This component detects the location of a person's face in the camera's field of view and identifies the presence of a face mask.



Region of interest

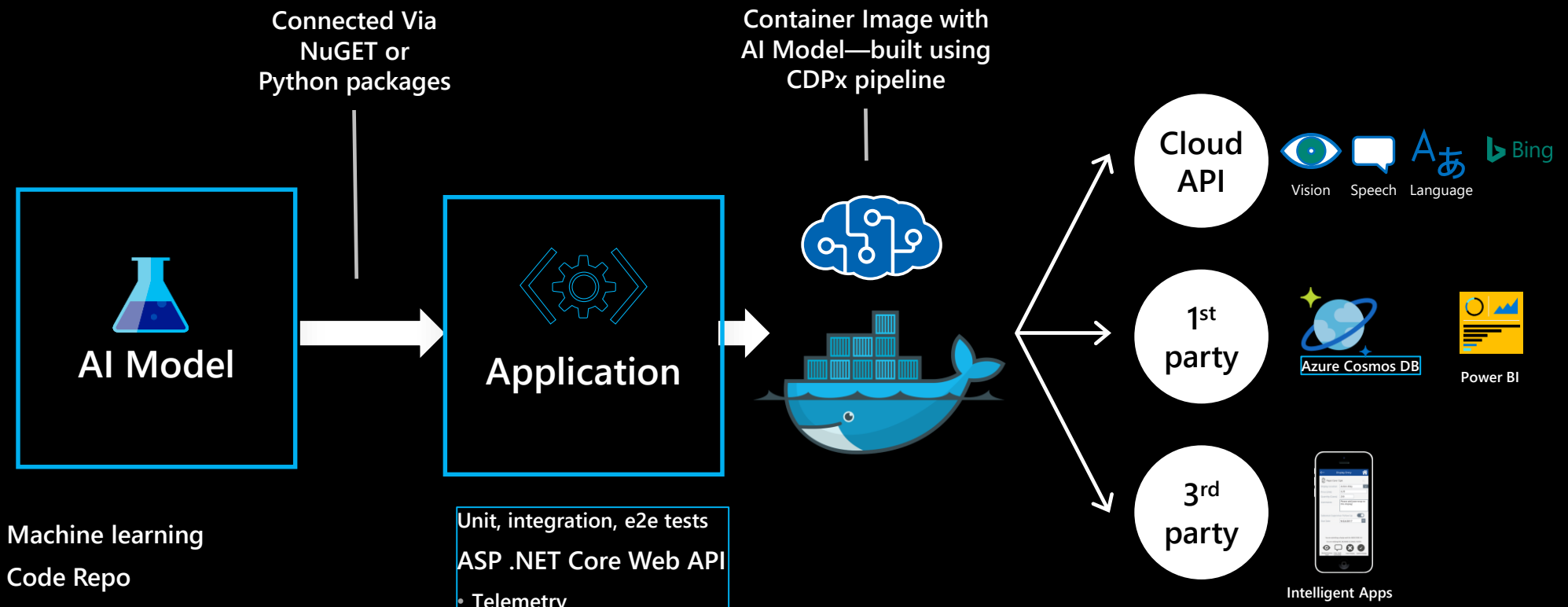
This is a user-defined zone or line in the input video frame. When a person interacts with this region on the video, the system generates an event.



Event

An event is the primary output of Spatial Analysis. Each operation emits a specific event either periodically (like once per minute) or whenever a specific trigger occurs.

Azure Cognitive Services at the Edge



Sensyne Health

Customer:
Sensyne Health

Industry:
Partner Professional Services

Size:
Medium (50-999 employees)

Country:
United Kingdom

Products and services:
Microsoft Azure
Microsoft Azure Cognitive Services
Microsoft Azure Cosmos DB
Microsoft Azure Kubernetes Service (AKS)
Microsoft Azure Machine Learning
Microsoft Power BI

Read full story here

Microsoft

"Our initial benchmark of 500 tests per second is impressive. But after tuning our algorithm and working with Microsoft to use the latest technology from Azure Cognitive Services, we achieved more than 1,000 tests per second running the predictions model on a six-node machine using Triton Inference Server on NVIDIA GPUs in Azure."

—Alan Payne, Chief Information and Product Officer, Sensyne Health

Situation:

The United Kingdom's National Health Service (NHS) put out a call for a solution that could quickly and accurately read Lateral Flow Tests (LFTs) for COVID-19. To answer that call, Sensyne Health needed technology that would deliver fast processing of huge data stores.

Solution:

Sensyne Health created a mobile device app that connects users to a web app that processes LFT results. It combines Microsoft Azure technologies, including Machine Learning, with NVIDIA Triton Inference Server and NVIDIA GPUs and CPUs to assess the LFTs.

Impact:

The Sensyne solution, MagnifEye, far outperforms the original NHS standard, reading 1,000 tests per second with a stunning 99.6 percent accuracy rate.

Boliden builds a sustainable future for mining with automation, AI, and Azure

Azure IoT Products:

- Azure IoT Edge
- Azure IoT Hub
- Microsoft Azure Time Series Insights

Other Products:

- Microsoft Azure
- Azure Stack Edge
- Computer Vison

Partner: Nexer Group

Organization size: 6,000 employees

Industry: Mining

Country: Sweden

Business need: Remote Monitoring, Predictive Maintenance

Read the case study >

"By working with a flexible, fully featured cloud infrastructure, we can bring more productivity, sustainability, and safety to all our sites, without needing to invent everything all over again."

"Before, we couldn't track any trends, and we only took detailed measurements once or twice a week. With our new platform, we're constantly analyzing those streams in depth. We can add in other data, such as weather forecasts, or information about how much sand we're pumping out to the dams—and we can watch those trends over time."

Fredrik Hases, IT Manager, Garpenberg, Boliden

Situation

Located in remote and rugged areas, mining operations rarely have the capacity for the high-demand computing an advanced data and analytics platform required. The company needed to automate and centralize data collection, increase visibility across processes, and add new ways to analyze information.

Solution

By working with Azure, Boliden is bringing scalability and flexibility to its operations, combining the power of the cloud with the benefits of working locally. The team can build systems and tools in Azure and deploy them anywhere using devices.

Impact

Teams no longer have to dedicate hours of manual work to watching video streams, saving two hours a day and helping Boliden draw more value from its camera network. Site managers, inspectors, and analysts now get a deeper view of how the site is performing and can spend more time out in the field, and working on business development activities that help improve performance

Microsoft

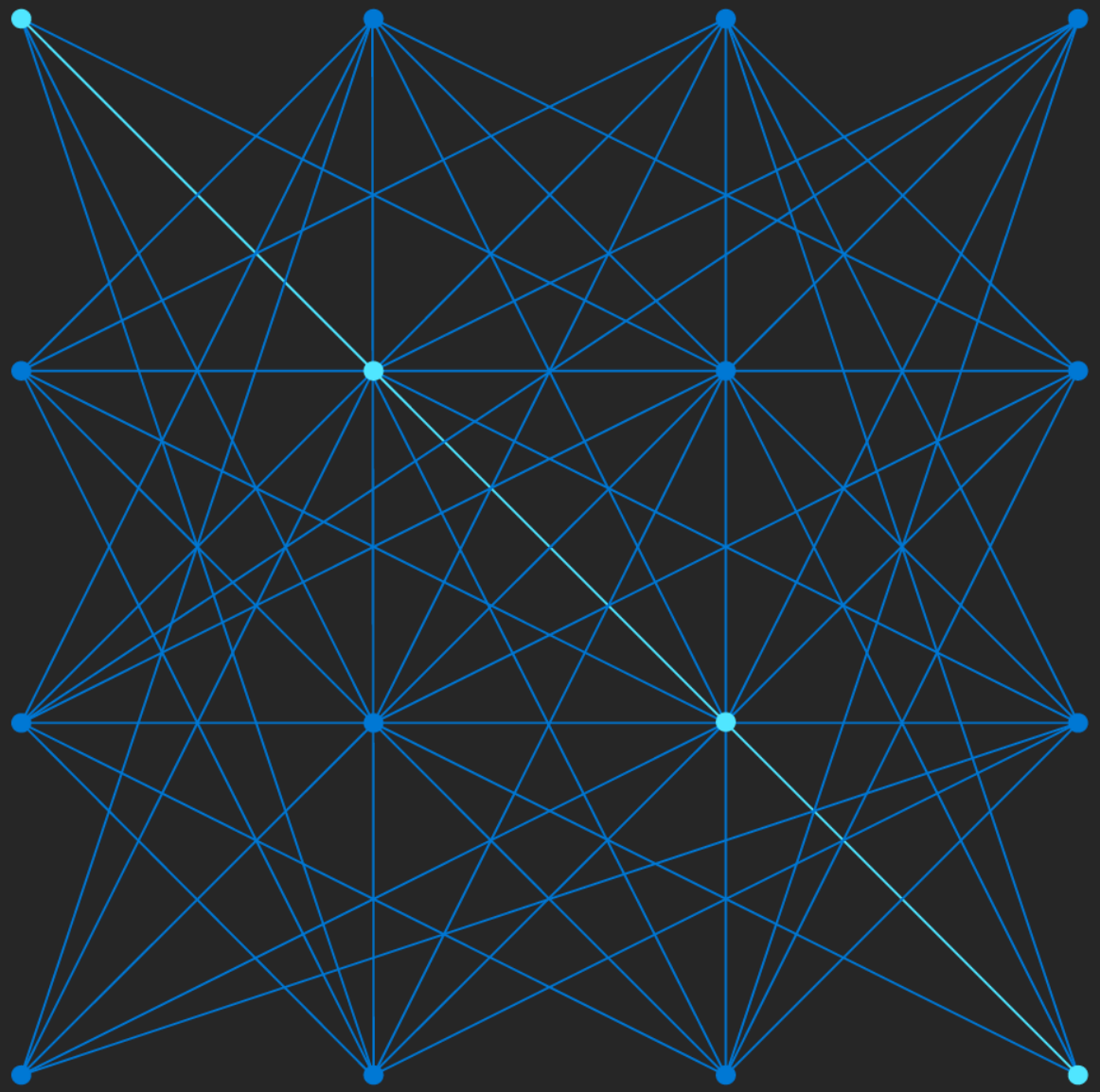
Microsoft Azure

Meet: Saqib Shaikh, Microsoft project lead and co-founder of Seeing AI, who built an app to ‘see’

Microsoft Azure

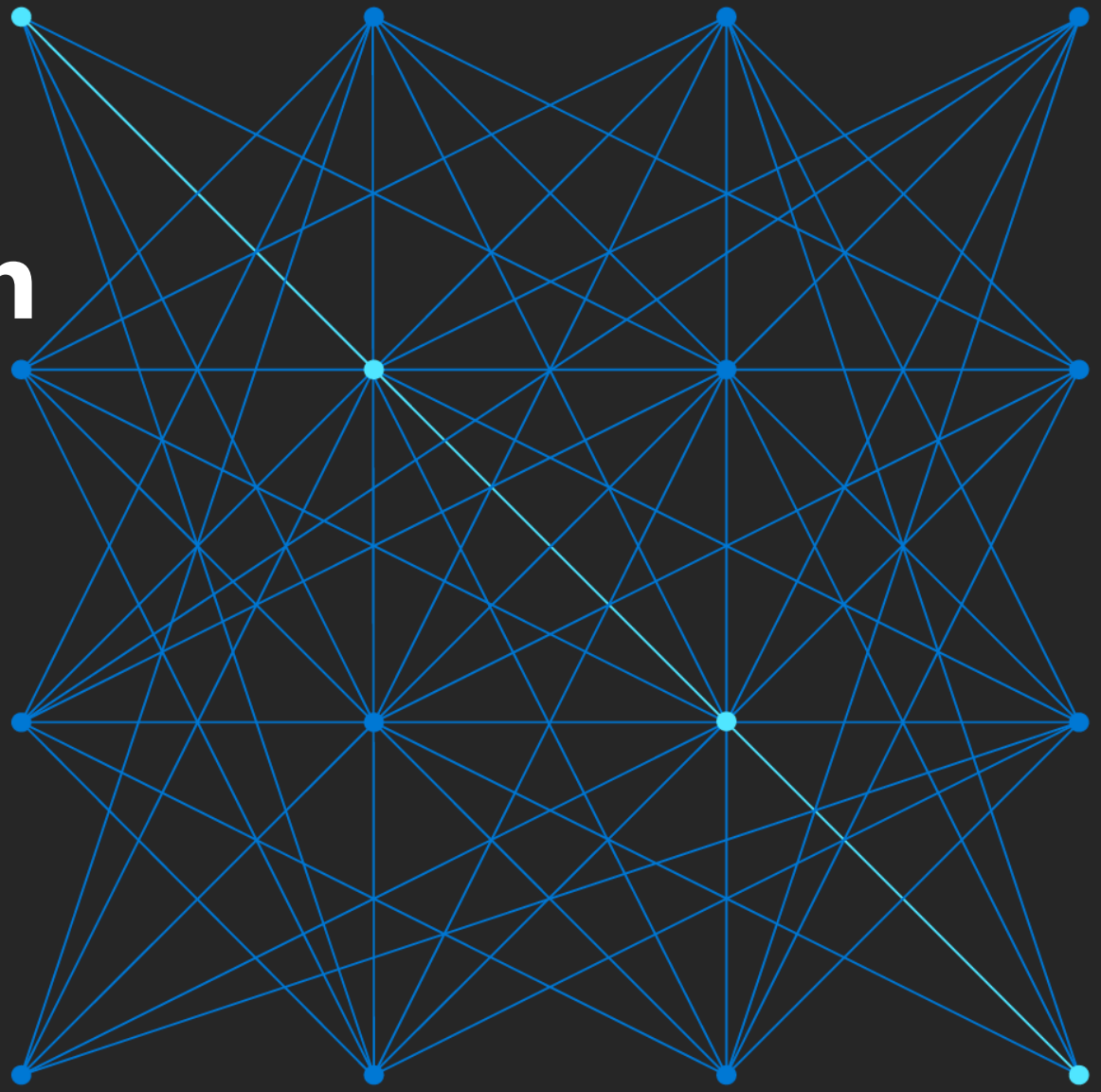
Call to Actions

- Learn more about Azure AI for Developers
- Kick start your 4-week AI learning journey
- Read the O'Reilly report: A Developer's Guide to Building AI Applications
- Read the Forrester study: Fuel Application Innovation with Specialized Cloud AI Services



Microsoft Azure

Thank you & Conclusion



Andres Prieto
Digital & Application Innovation Lead
Microsoft Western Europe