



Azure Updates – Ignite 2019

SATO Naoki (Neo)

Senior Software Engineer
Microsoft Corporation
Twitter @satonaoki

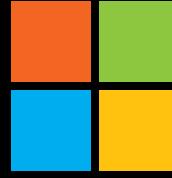




Invent with purpose on Azure

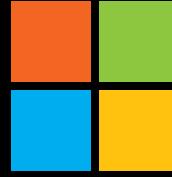
Julia White & Jason Zander





Microsoft Azure

Invent with purpose



Microsoft Azure

Be future
ready

Build on
your terms

Operate hybrid
seamlessly

Trust
your cloud

>95% of Fortune 500
use Microsoft Azure



Azure

Infrastructure

Hybrid

Cloud
Native Apps

Data +
Analytics

Artificial
Intelligence

Azure

Infrastructure

Hybrid

Cloud
Native Apps

Data +
Analytics

Artificial
Intelligence

54

Azure regions

More than AWS &
Google combined



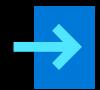
● Available region ● Announced region ◆ Availability zones



Most reliable network

More than 160 Edge sites and 20,000 peering connections
30 billion packets per second over WAN
On-premises to on-premises connectivity
with Azure Global WAN

Comprehensive VM offerings



Entry level



Compute intensive



Graphics intensive



General purpose



Storage optimized



High-performance computing



Burstable



Memory optimized



SAP HANA certified

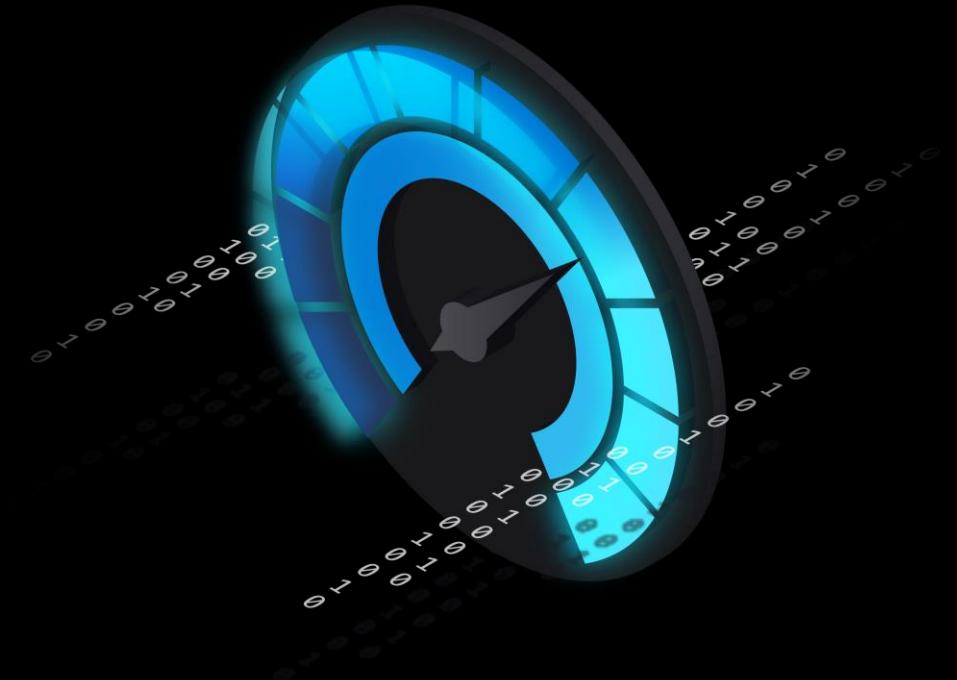
Ultra Disk Storage

Highest performance disks in the cloud

Supports up to 160,000 IOPs + 2GB/sec per disk

4GB to 64TB in size

<1ms read/write latency



Windows Virtual Desktop

GENERALLY AVAILABLE

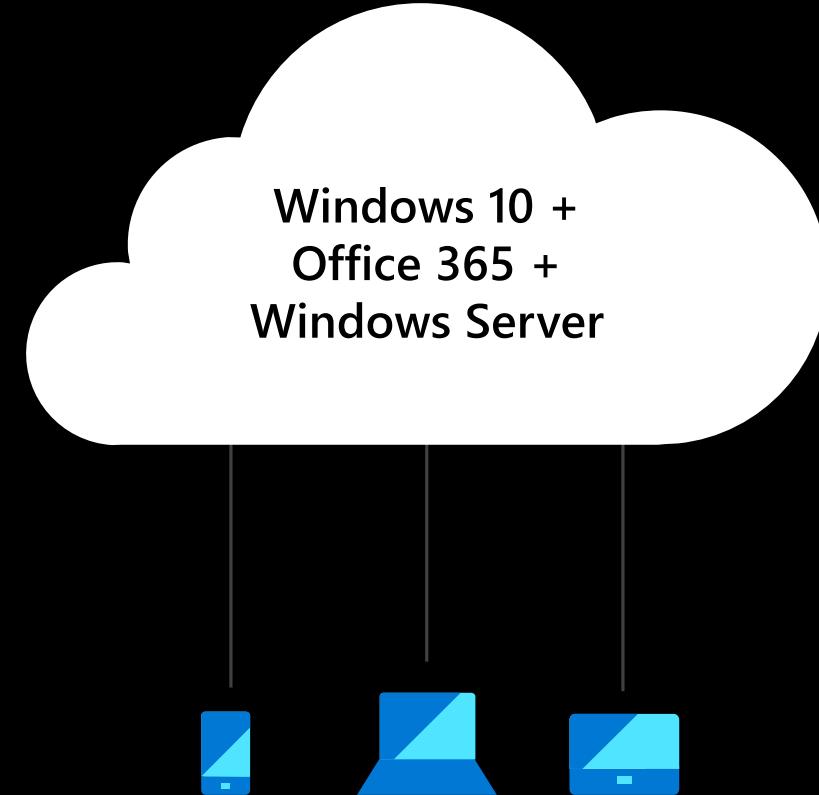
Only multi-user Windows 10 experience

Optimized for Office 365 ProPlus

Deploy and scale in minutes

Virtualize desktops and apps

Pay for usage only



Purpose-built infrastructure

CRAY

 **NetApp®**

 **SAP®**

NEW

vmware®

Azure is SAP's preferred cloud

ABInBev

accenture

astellas



CALTEX

Carlsberg Group

CEMEX

centrica

Chesapeake ENERGY

Chevron

COATS

Coca-Cola

CONA SERVICES LLC

co op

COSTCO WHOLESALE

DAIMLER

devon

e.ON

equinor

GRUNDFOS

malaysia airlines

MITSUI & CO.,LTD.

Mondelēz International

ORICA

puma

RioTinto

SAMSUNG

SHISEIDO

T-Mobile

Unilever

Walgreens Boots Alliance

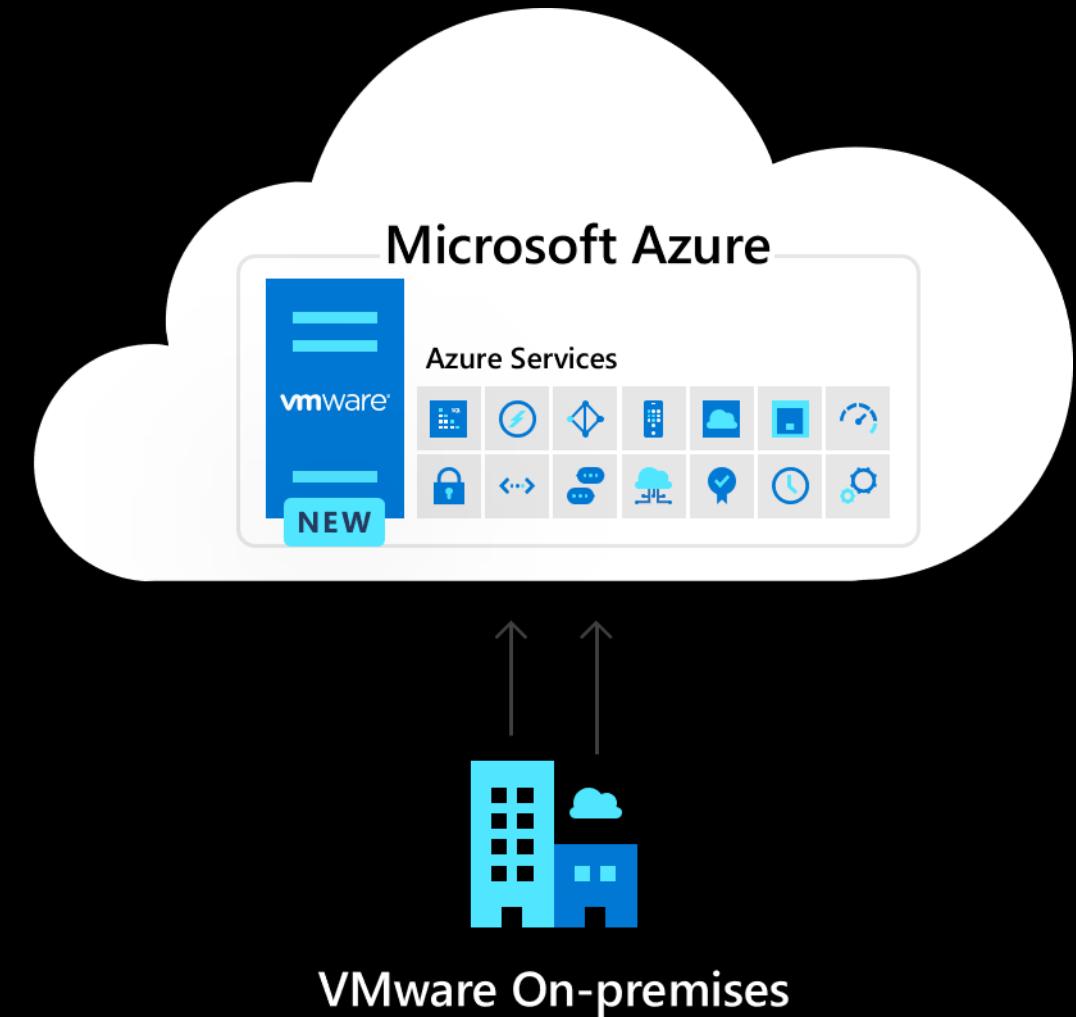
ZUELLIG PHARMA
making healthcare more accessible

Azure VMware solutions

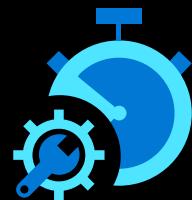
Run your native VMware workloads in Azure

Leverage existing VMware investments and skills

Direct integration with Azure Services



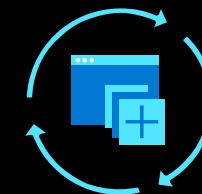
Why thousands of customers are migrating to Azure today



Operational
efficiency



Security
and compliance



Application
innovation

Azure Migration Program (AMP)



Best practice guidance



Infrastructure and
data foundations



Offers and discounts



Migration planning
and execution



Technical skill building



Specialized partners

Microsoft Cloud Adoption Framework for Azure

Proven guidance from Microsoft
to accelerate your cloud adoption journey



Azure

Infrastructure

Hybrid

Cloud
Native Apps

Data +
Analytics

Artificial
Intelligence

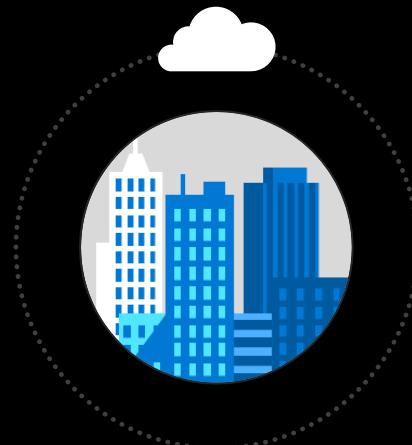
Why Hybrid?



At the edge
and disconnected



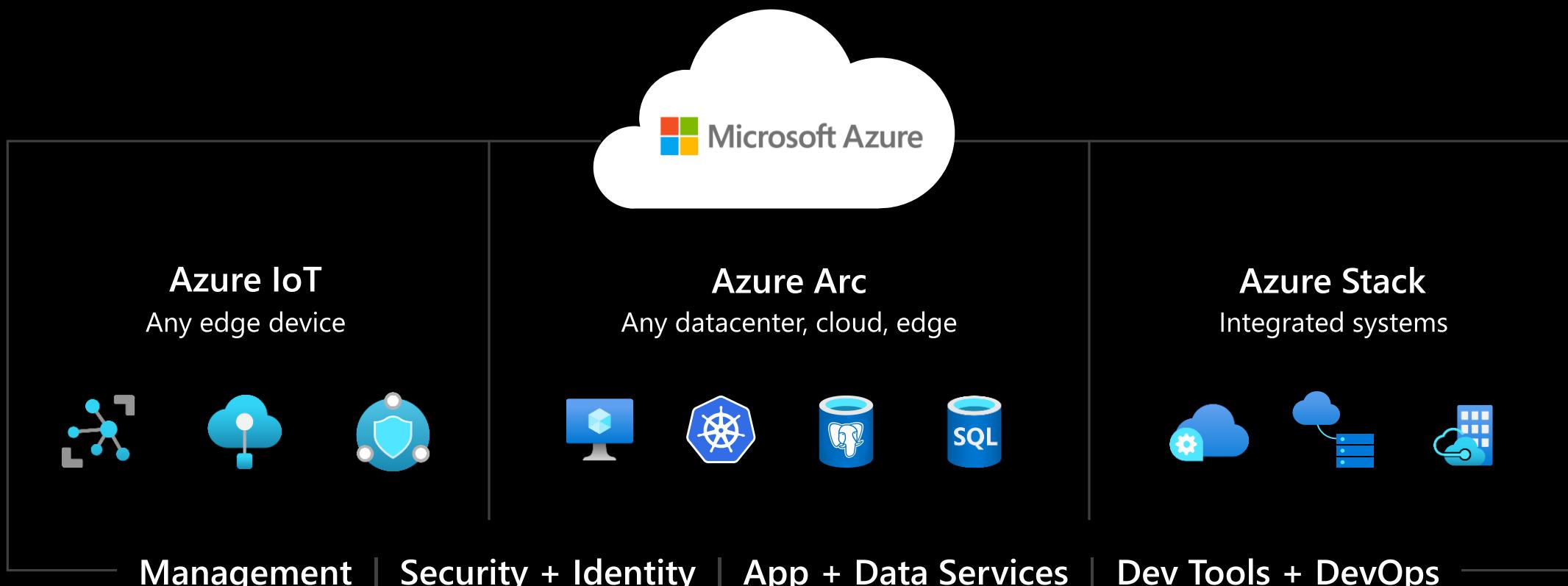
Meet every regulatory
requirement



Cloud application
model on-premises

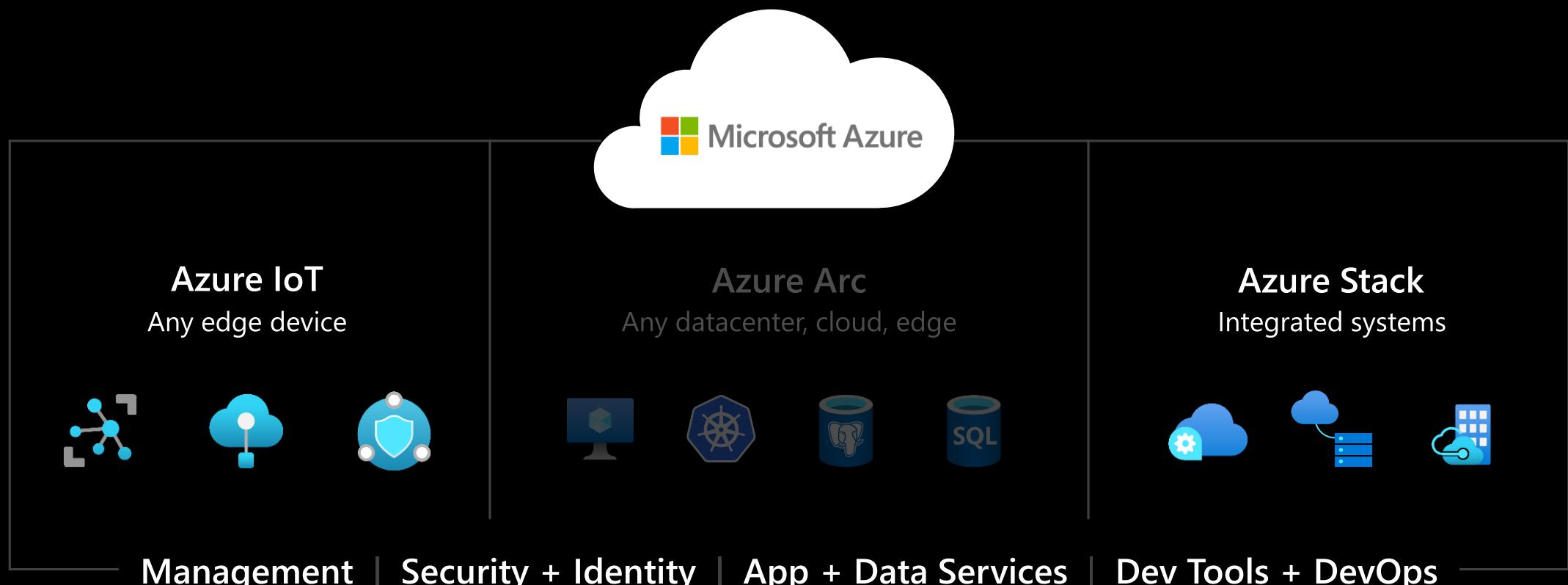
Azure Hybrid

Innovation anywhere with Azure



Azure Hybrid

Innovation anywhere with Azure



1,000's of Azure IoT certified devices





Azure Sphere



HoloLens



Azure Kinect



Azure Stack Portfolio

Azure Edge Devices

New Azure Stack Edge

PREVIEW

Network add-on (MEC)



Commercial Series

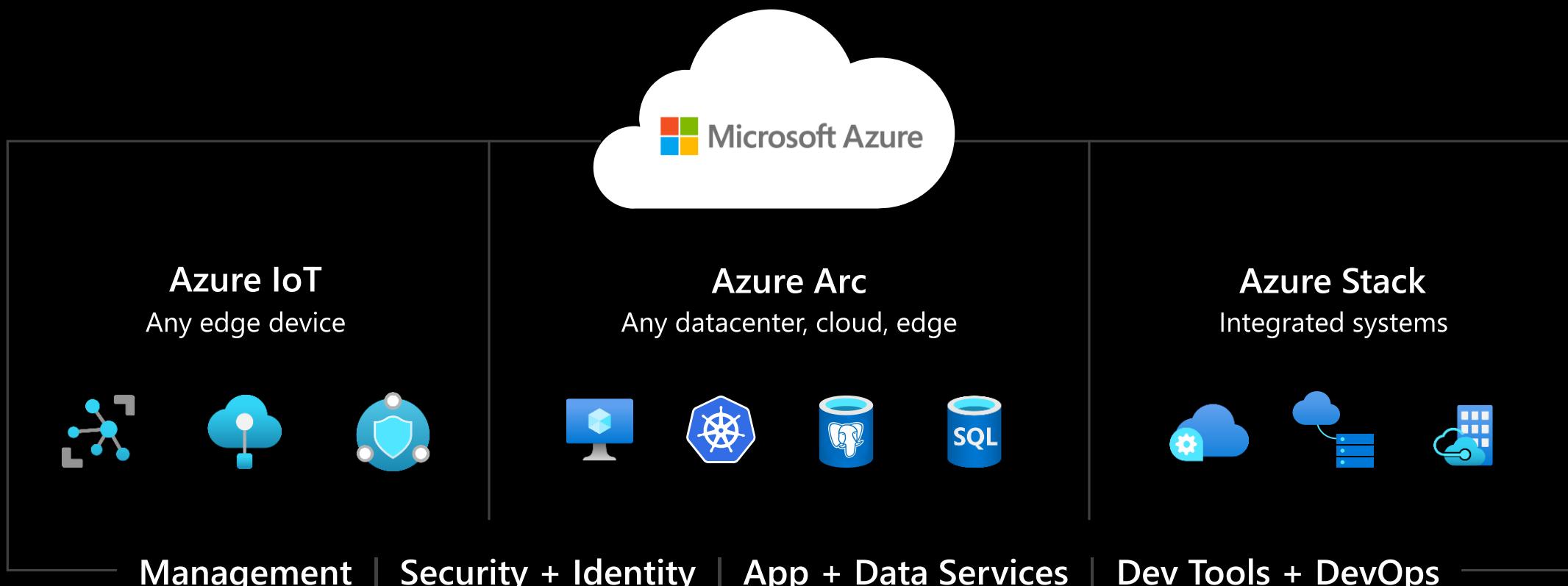


Rugged Series



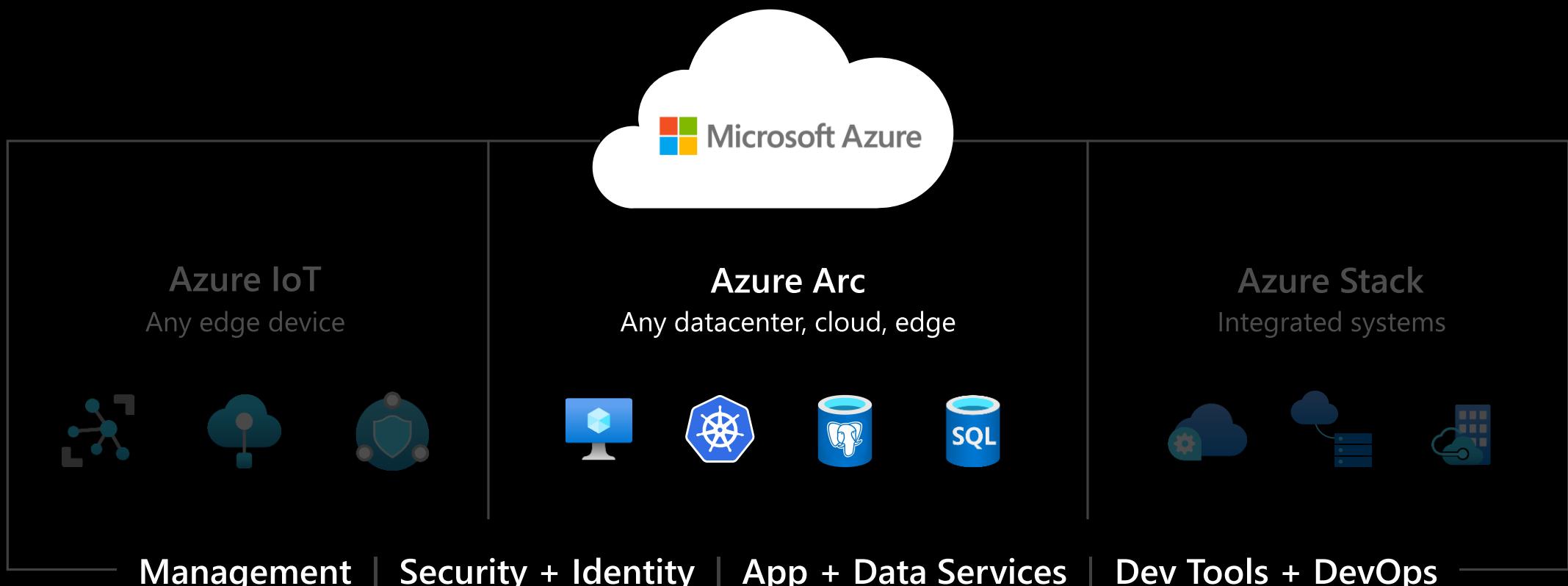
Azure Hybrid

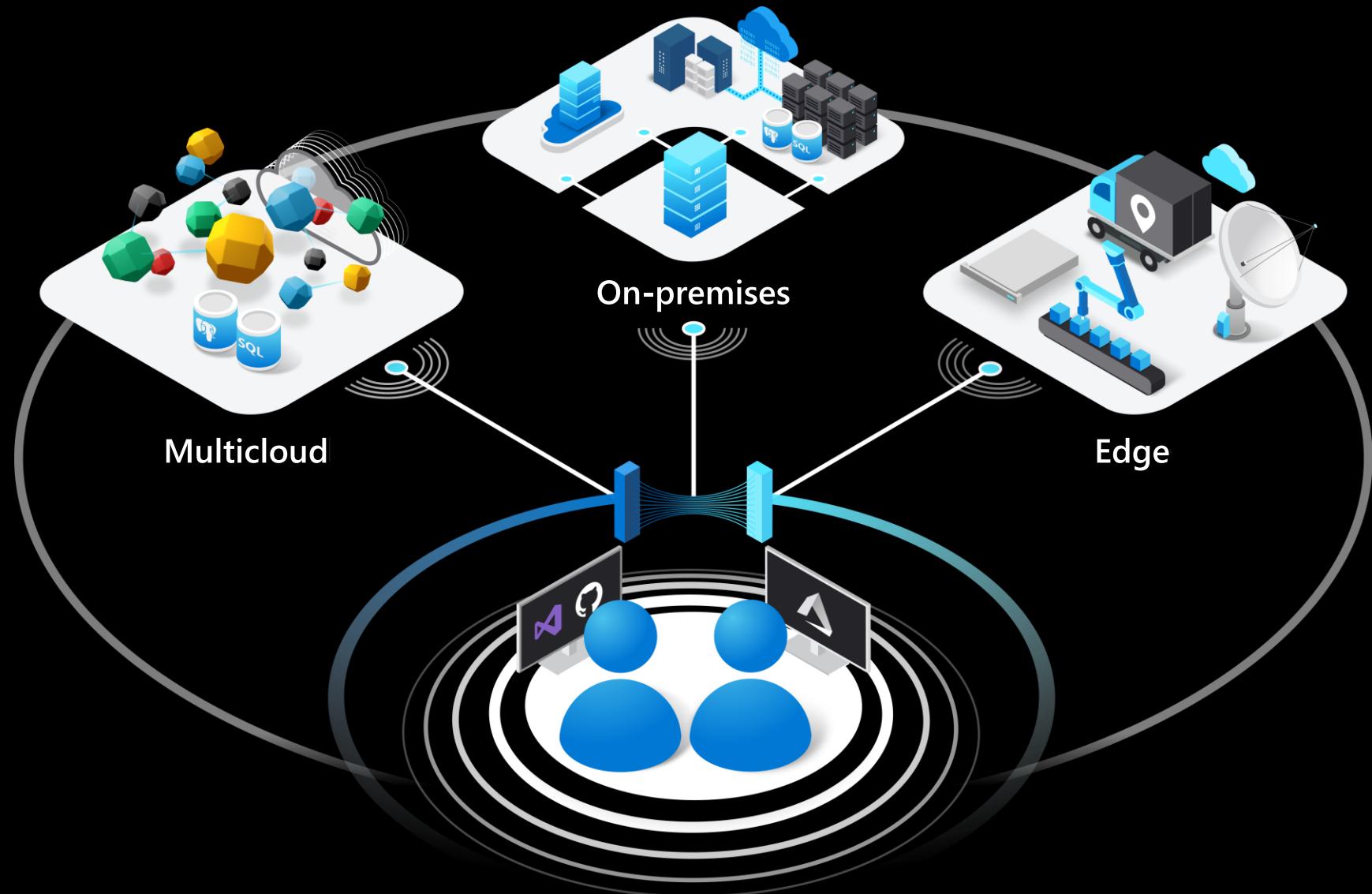
Innovation anywhere with Azure



Azure Hybrid

Innovation anywhere with Azure



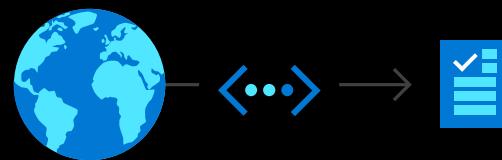


Announcing

Azure Arc

PREVIEW

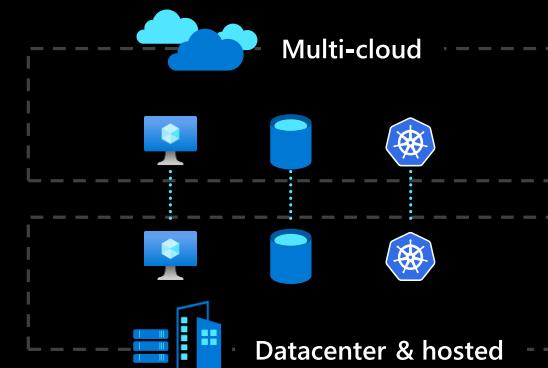
Azure Arc use cases



Manage VMs and
Kubernetes at scale



Run Azure data services
anywhere



Organize, govern, and
secure across environments

Azure Data Services anywhere

PREVIEW

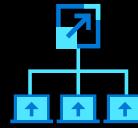
Azure SQL Database

PREVIEW

Azure Database for PostgreSQL



Always
current



Elastic
scale



Unified
management



Unmatched
security

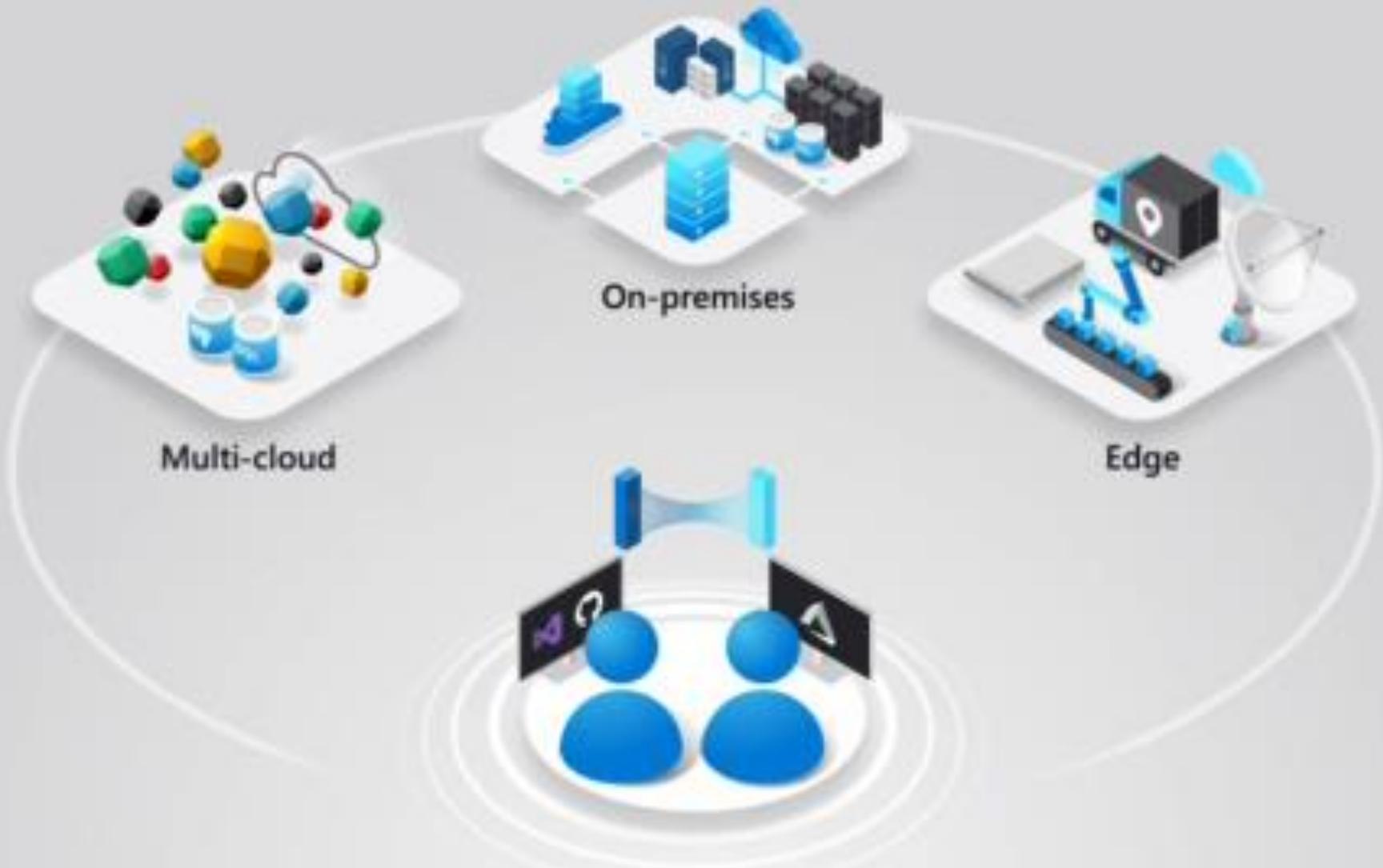


Cloud
billing



Any hardware, any Kubernetes





Azure

Infrastructure

Hybrid

Cloud
Native Apps

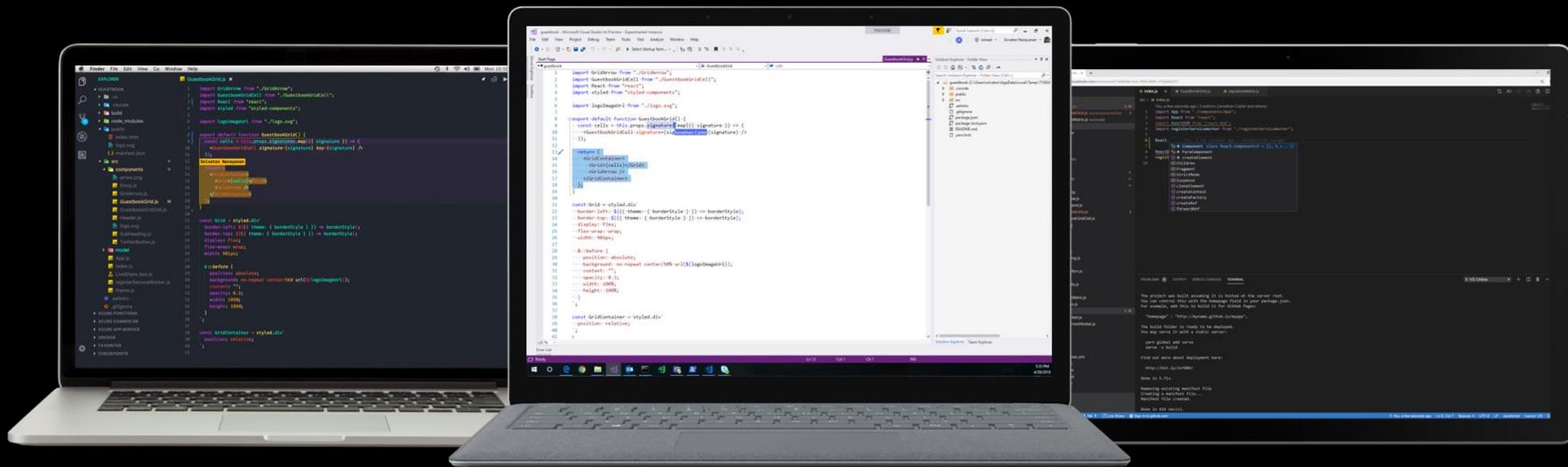
Data +
Analytics

Artificial
Intelligence

Dev Tools and DevOps

Visual Studio Family

Tools for every developer



Top Dev Tools measured by Stack Overflow survey

Stack Overflow: *Developer Survey Results, 2019*

51%

#1 Visual Studio Code

32%

#2 Visual Studio

Announcing

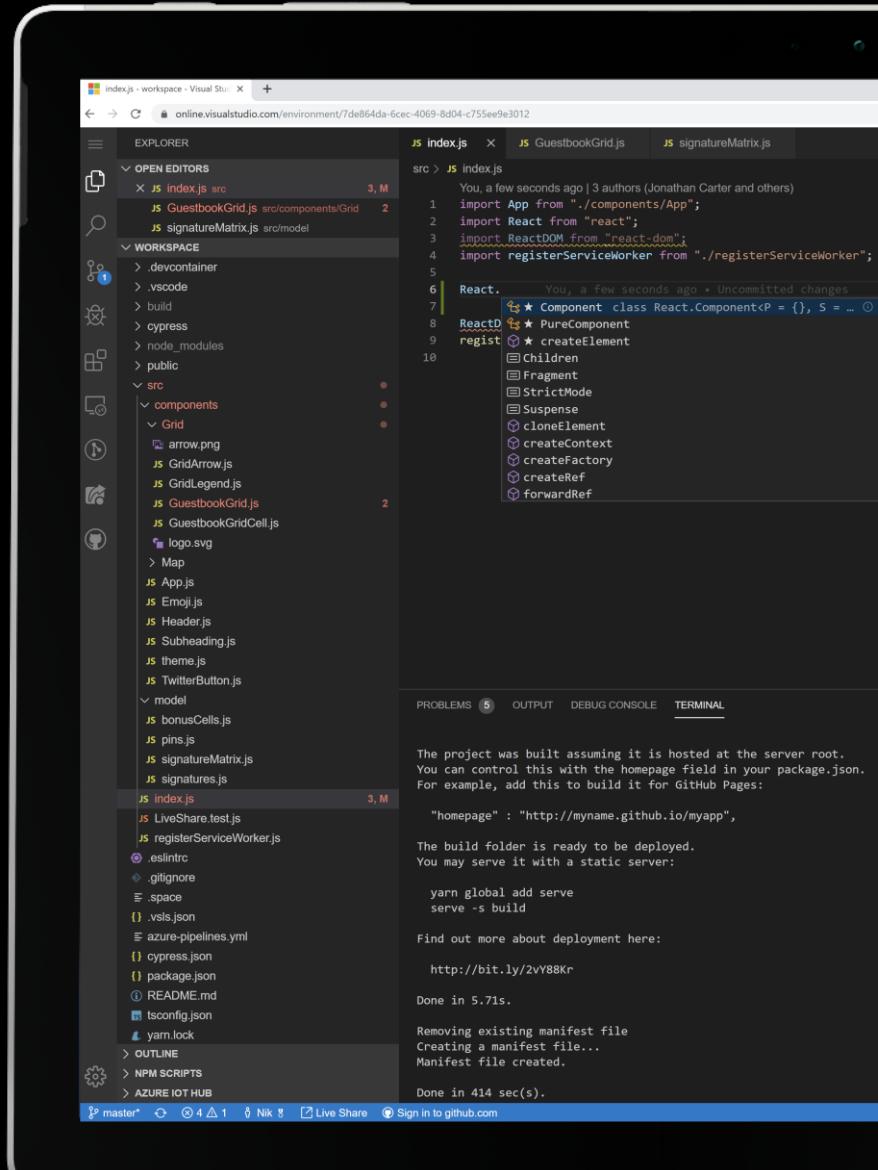
Visual Studio Online

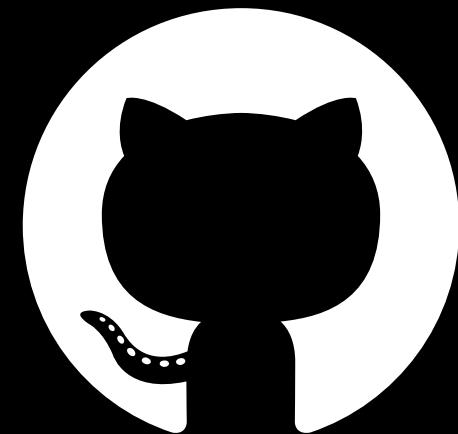
PUBLIC PREVIEW

On-demand development environments in the cloud

Use Visual Studio Code or a browser-based editor

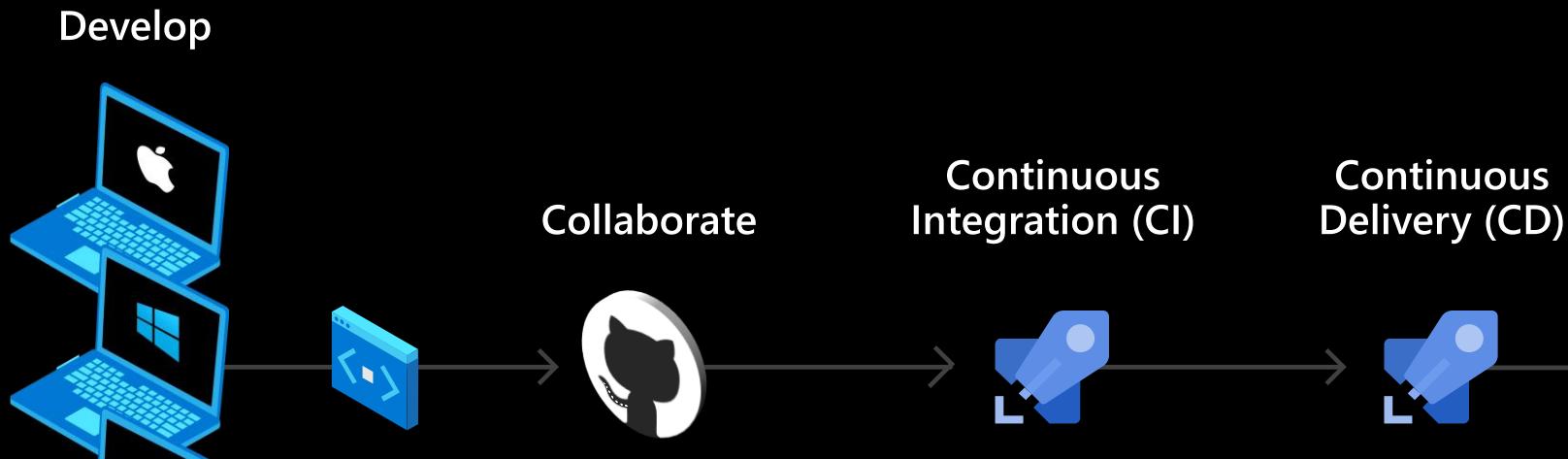
Full extension marketplace, with IntelliCode and Live Share built-in





GitHub

DevOps



Multi-cloud



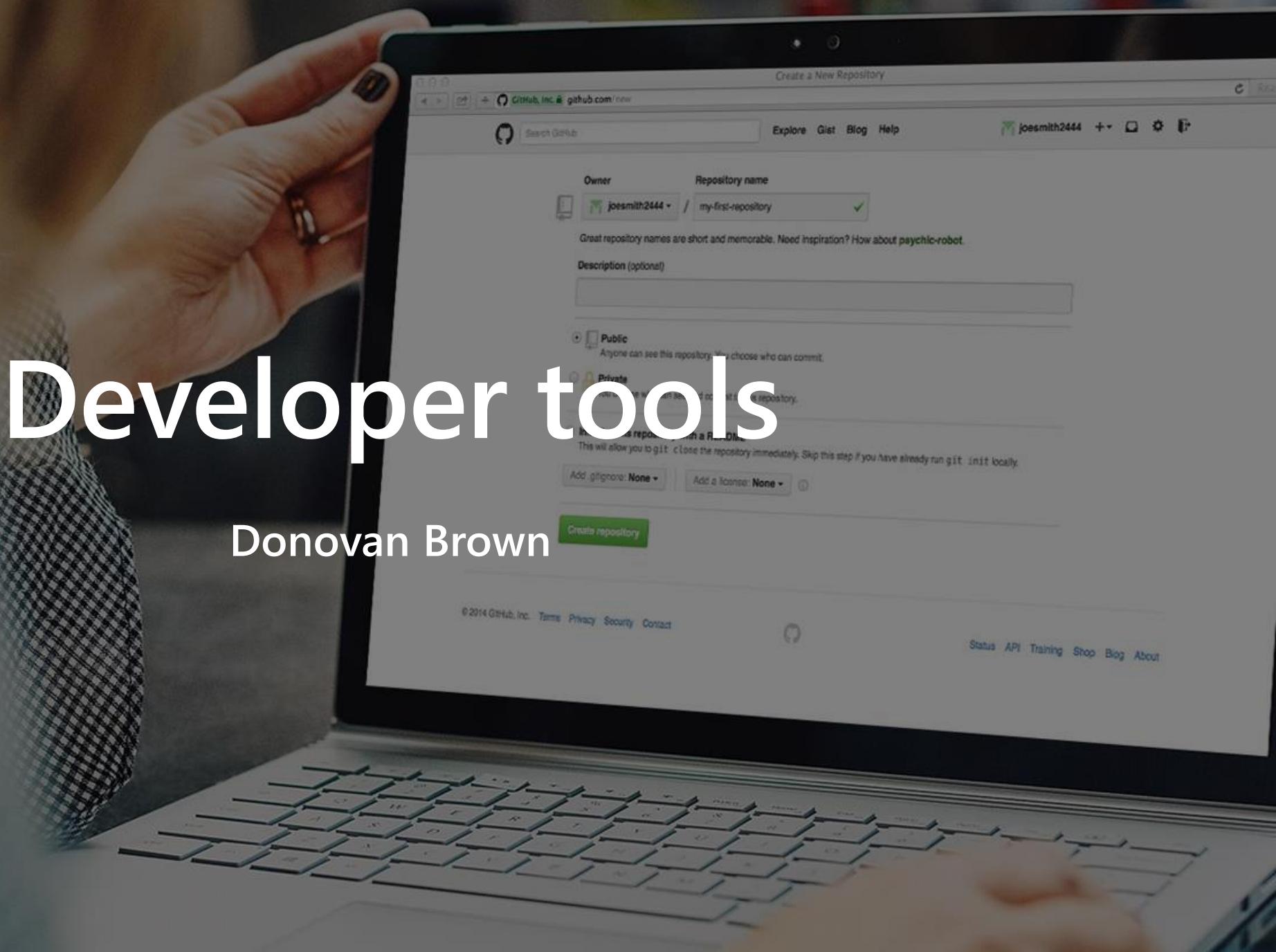
On-premises



Edge

Developer tools

Donovan Brown



Azure Serverless

Azure Serverless Compute

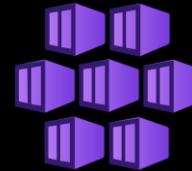
Focus on apps, not infrastructure



App Service



Functions

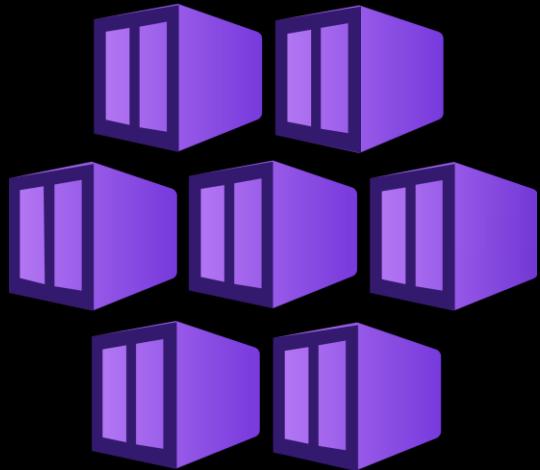


Azure Kubernetes
Service

Azure Kubernetes Service customers

Fastest growing Azure compute service





Announcing

Azure Kubernetes Service

GENERALLY AVAILABLE

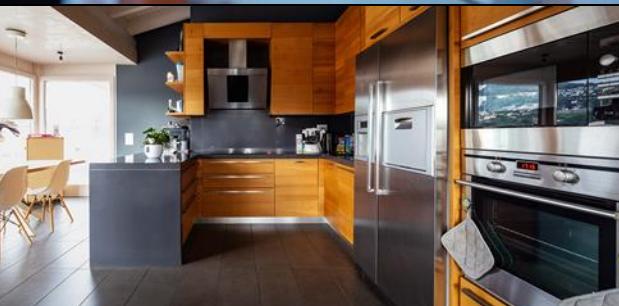
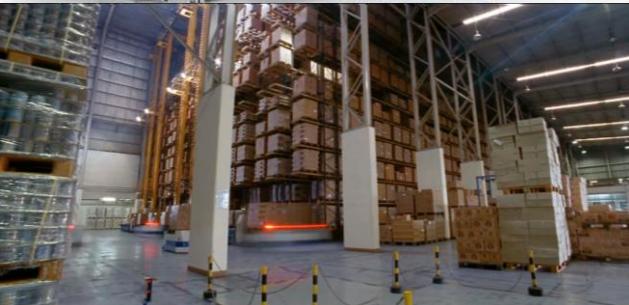
Availability zones, autoscaling, multiple node pools

PREVIEW

Dev Spaces to develop and test locally

PREVIEW

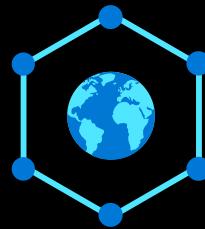
Azure Security Center integration for AKS



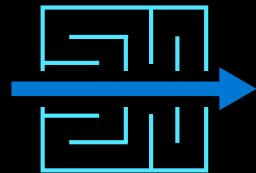
Thousands of Azure IoT customers



Transform your business with Azure IoT



Comprehensive
Broadest portfolio



Simple
Fastest time to value



Secure
Industry leading end-to-end

Azure IoT

Broadest portfolio

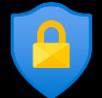
Industry solution accelerators



Fully managed services



Azure
IoT Central



Azure Security
Center for IoT



Dynamics Connected
Field Service

Developer services

Azure IoT Hub
Azure IoT Edge

Azure Digital Twins
Azure Maps

Azure Time Series Insights
Azure Stream Analytics

Microsoft Azure

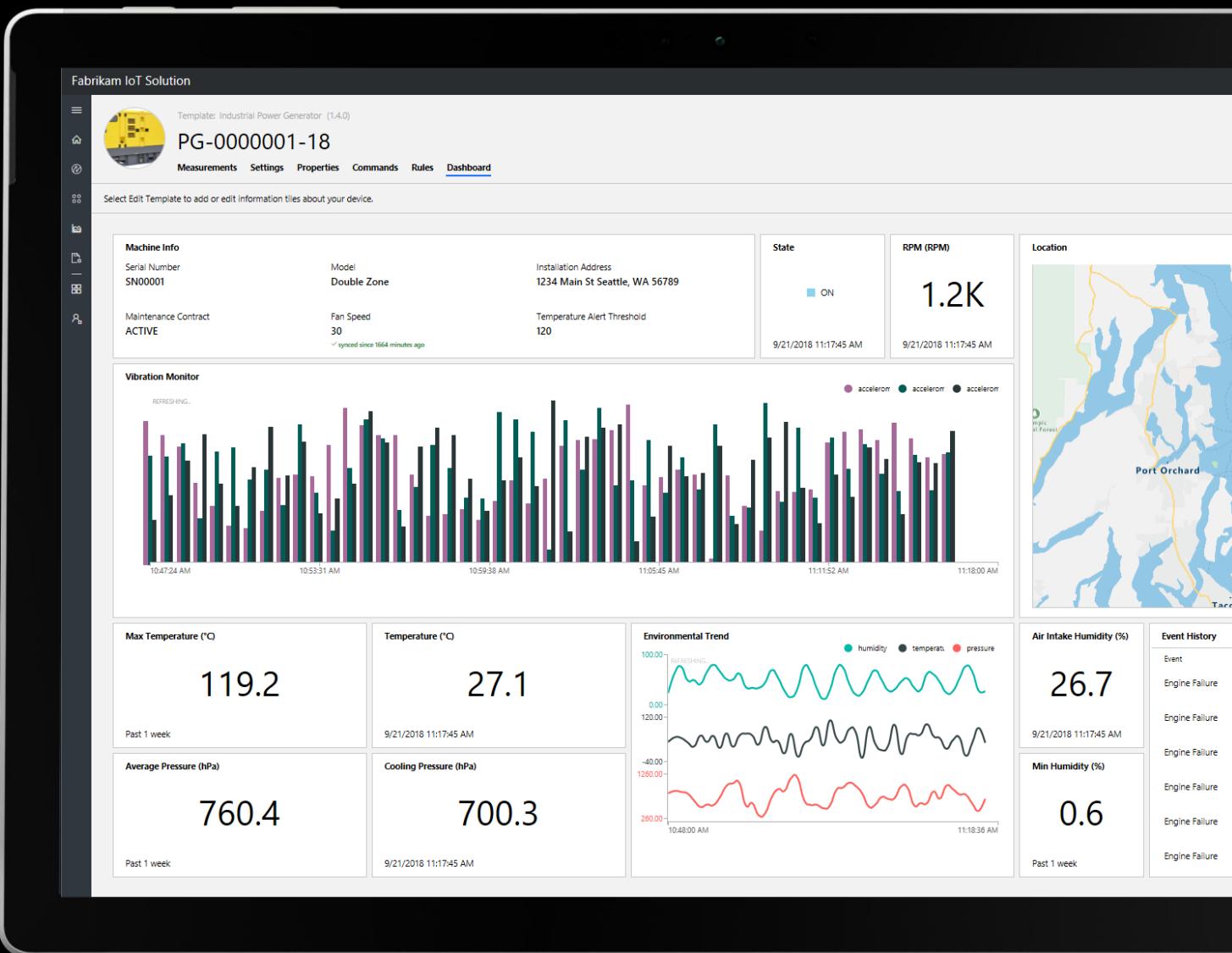
Infrastructure | Data | AI | App Dev

Fastest time to value

Azure IoT Central

IoT Plug & Play

Industry solution templates

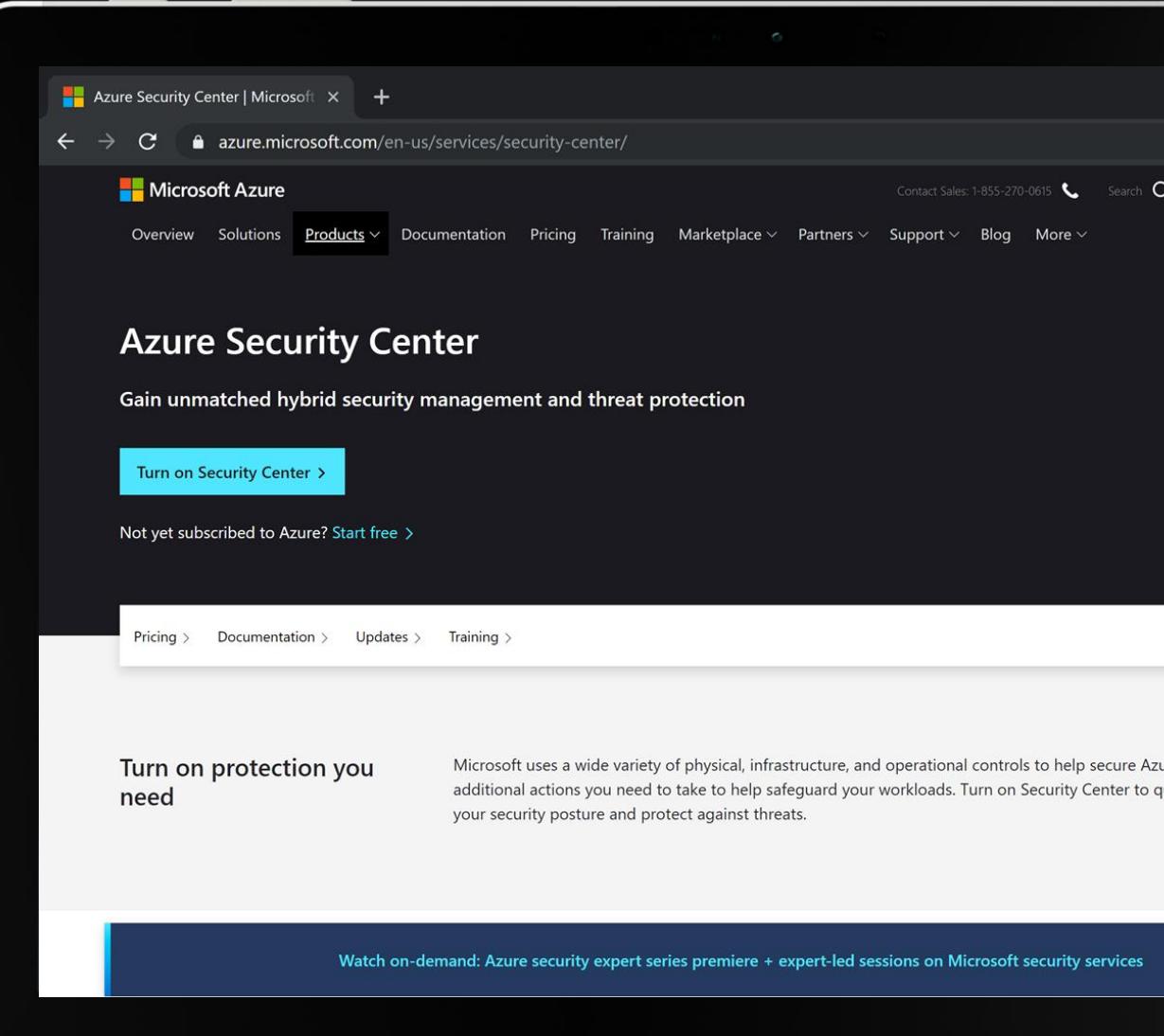


Industry leading end-to-end security

Azure Sphere

Azure Security Center for IoT

Azure Sentinel



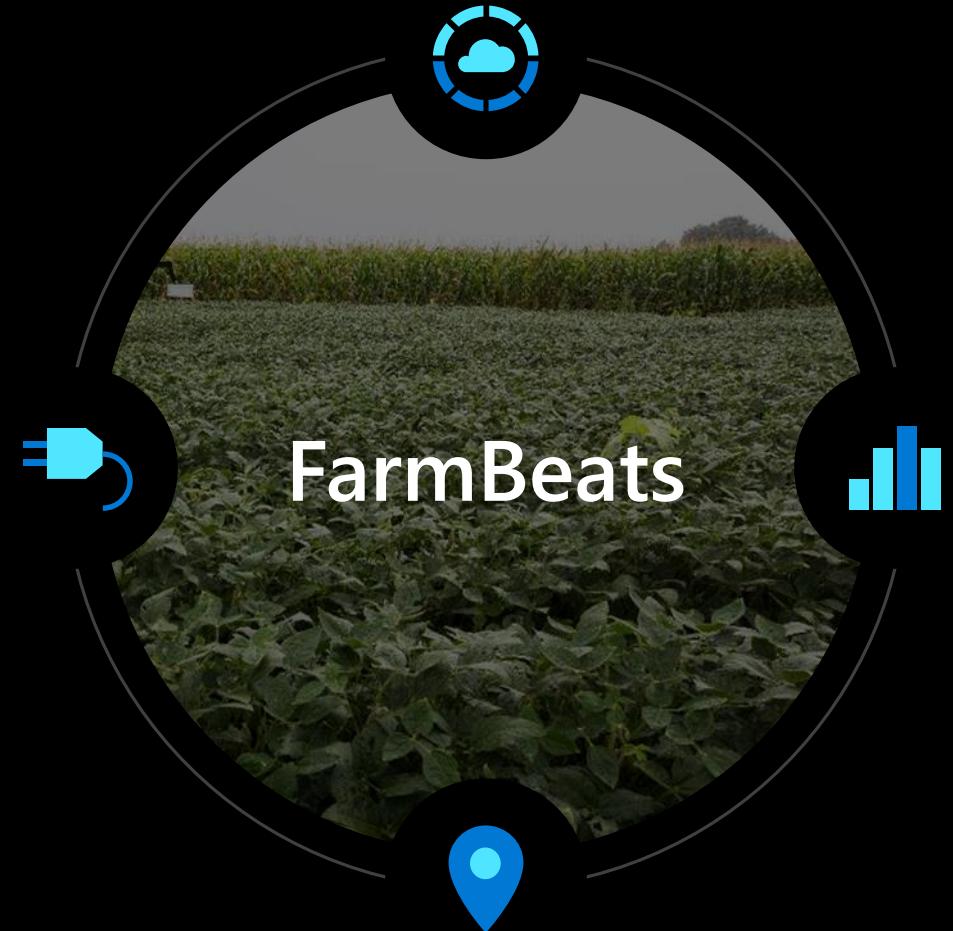
The screenshot shows the Microsoft Azure website with a dark theme. The top navigation bar includes links for Overview, Solutions, Products (which is currently selected), Documentation, Pricing, Training, Marketplace, Partners, Support, Blog, and More. The main heading is "Azure Security Center" with the subtext "Gain unmatched hybrid security management and threat protection". A prominent blue button says "Turn on Security Center >". Below it, a link says "Not yet subscribed to Azure? Start free >". At the bottom of the main content area, there's a section titled "Turn on protection you need" with a callout about Microsoft's security controls. A small video player at the bottom right says "Watch on-demand: Azure security expert series premiere + expert-led sessions on Microsoft security services".

Announcing

FarmBeats

PREVIEW

An end-to-end system
that enables seamless data
collection and insights
for agriculture



Azure

Infrastructure

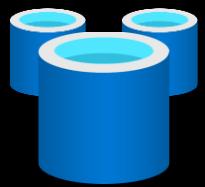
Hybrid

Cloud
Native Apps

Data +
Analytics

Artificial
Intelligence

Data + Analytics



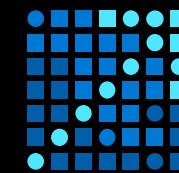
Relational



Non-relational

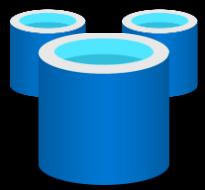


Data Warehouse



Big Data

Data + Analytics



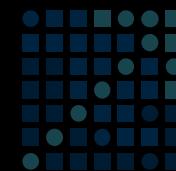
Relational



Non-relational



Data Warehouse



Big Data

Announcing

SQL Server 2019

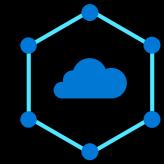
GENERALLY AVAILABLE

SQL runs everywhere



On-premises

SQL Server



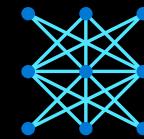
Azure

Azure SQL DB
SQL Server



Multi-cloud

Azure SQL DB (Arc)



Edge

Azure SQL DB Edge

PREVIEW

SQL keeps getting better

Built-in AI for peak performance

Serverless workloads

Evergreen in Azure



SQL is best on Azure

Azure SQL DB

GigaOm TPC-E Benchmark, October 2019

\$2,119.10

3 year pricing/tps

86% LESS

\$290.72

Azure

aws

Azure SQL VM

GigaOm TPC-E Benchmark, October 2019

\$445.65

3 year pricing/tps

87% LESS

\$59.02

Azure

aws

Data without limits

Azure Hyperscale Databases

Massive scale for relational databases

Gigabytes of data → Hundreds of Terabytes of data
Hundreds transactions/second → Millions of transactions/second



SQL Database



PostgreSQL



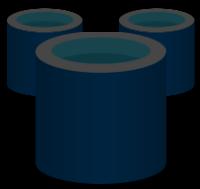
MySQL

Announcing

Azure Database for PostgreSQL Hyperscale

GENERALLY AVAILABLE

Data + Analytics



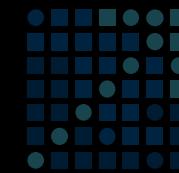
Relational



Non-relational



Data Warehouse

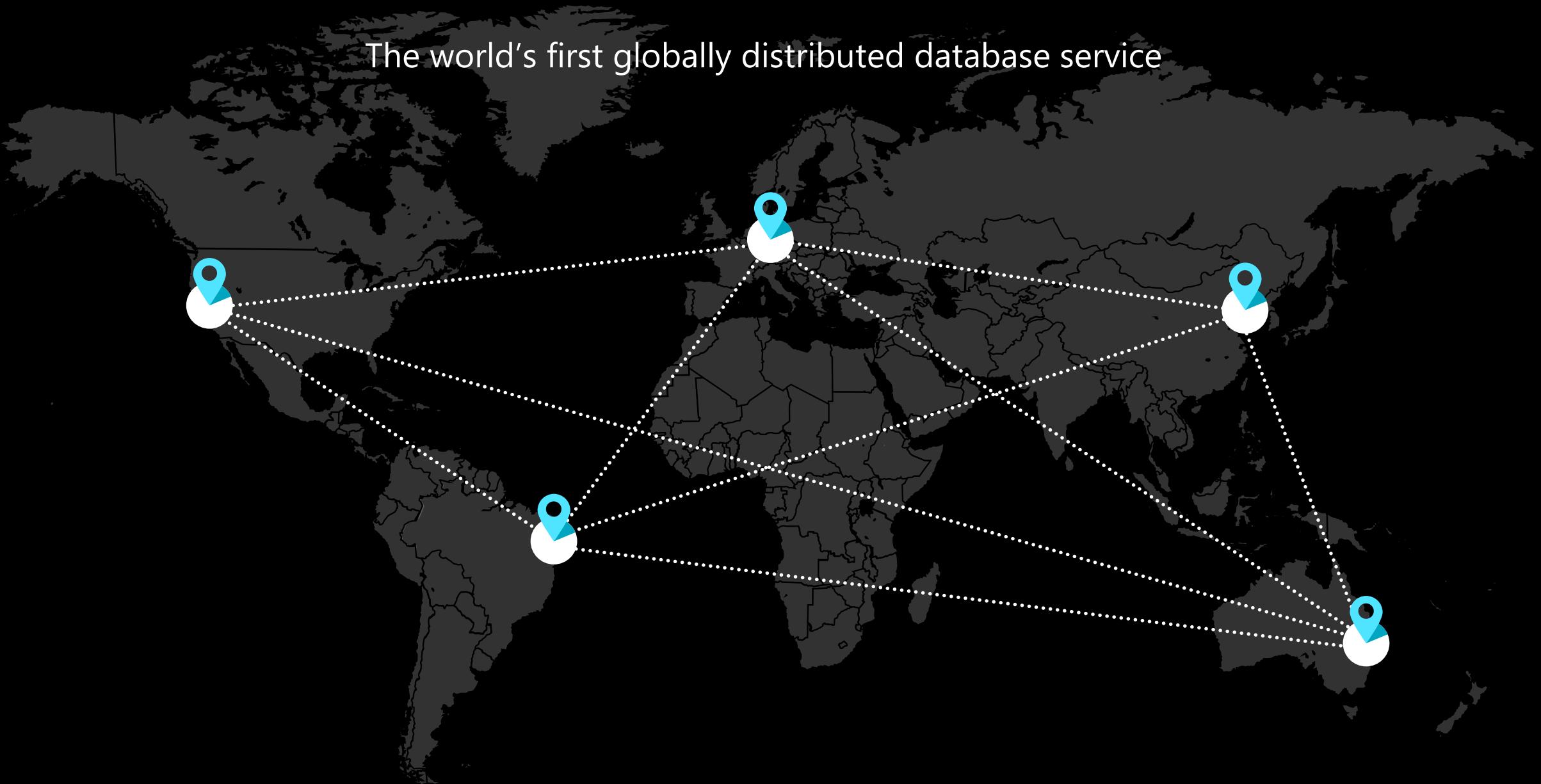


Big Data

Planet-scale data

Azure Cosmos DB

The world's first globally distributed database service



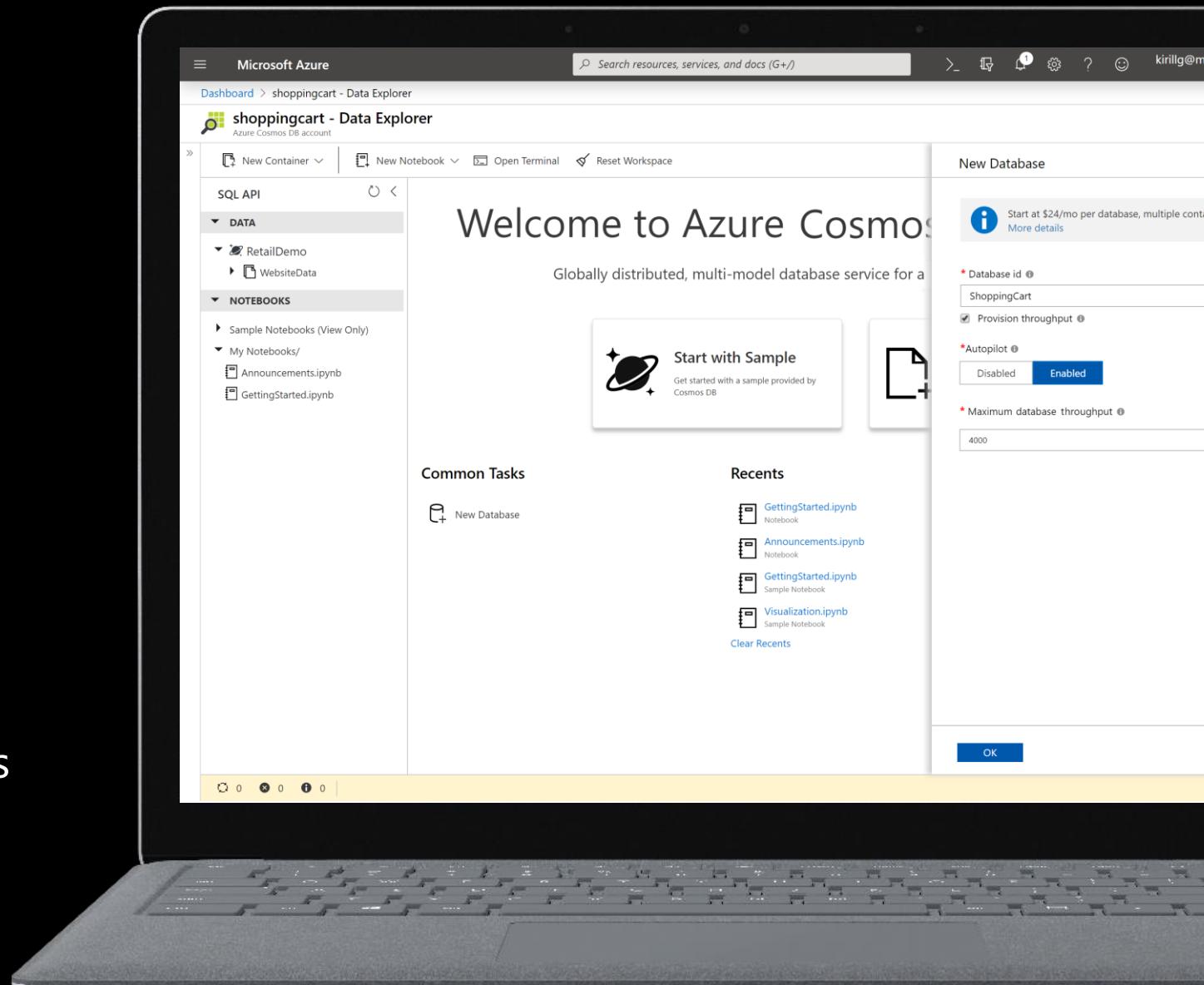
Azure Cosmos DB Autopilot

NEW CAPABILITIES

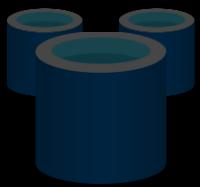
No capacity planning required

Auto scaling without compromising SLA

Compatible with all Azure Cosmos DB APIs



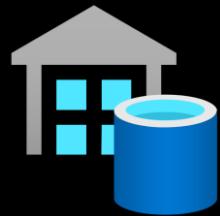
Data + Analytics



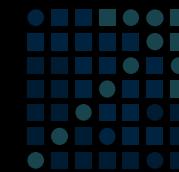
Relational



Non-relational

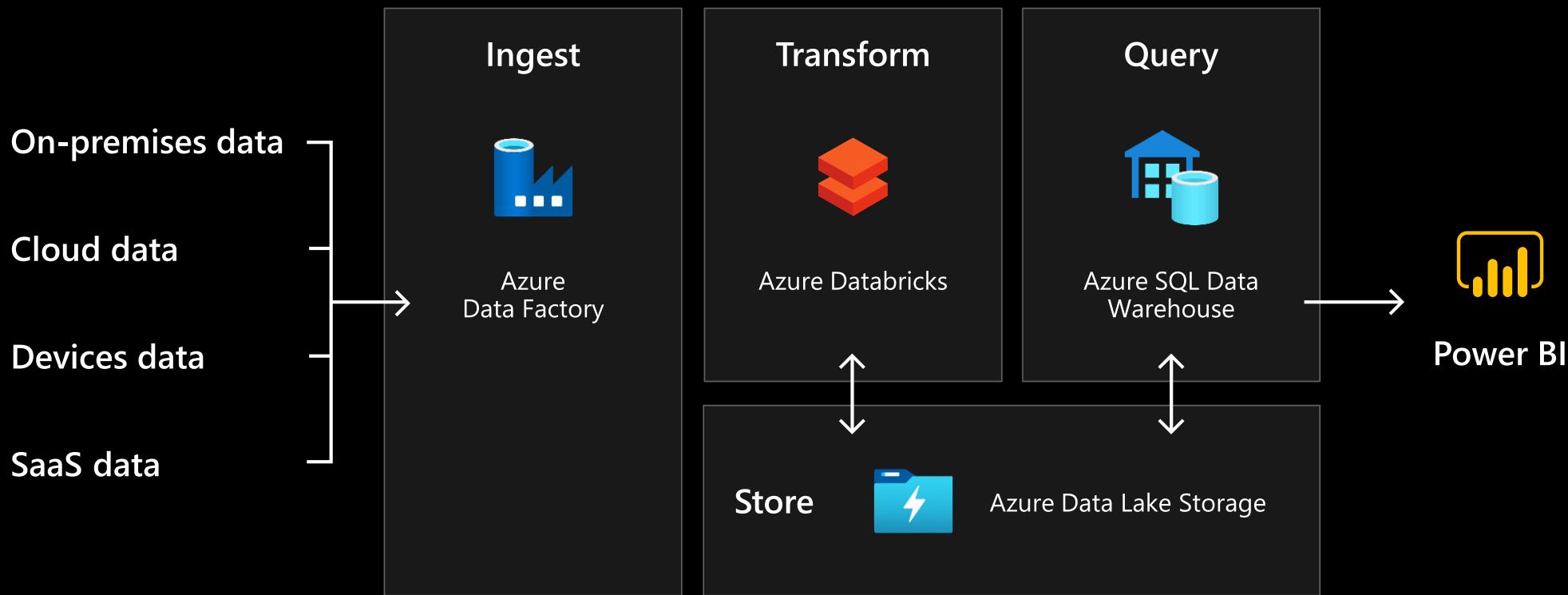


Data Warehouse



Big Data

Azure Analytics



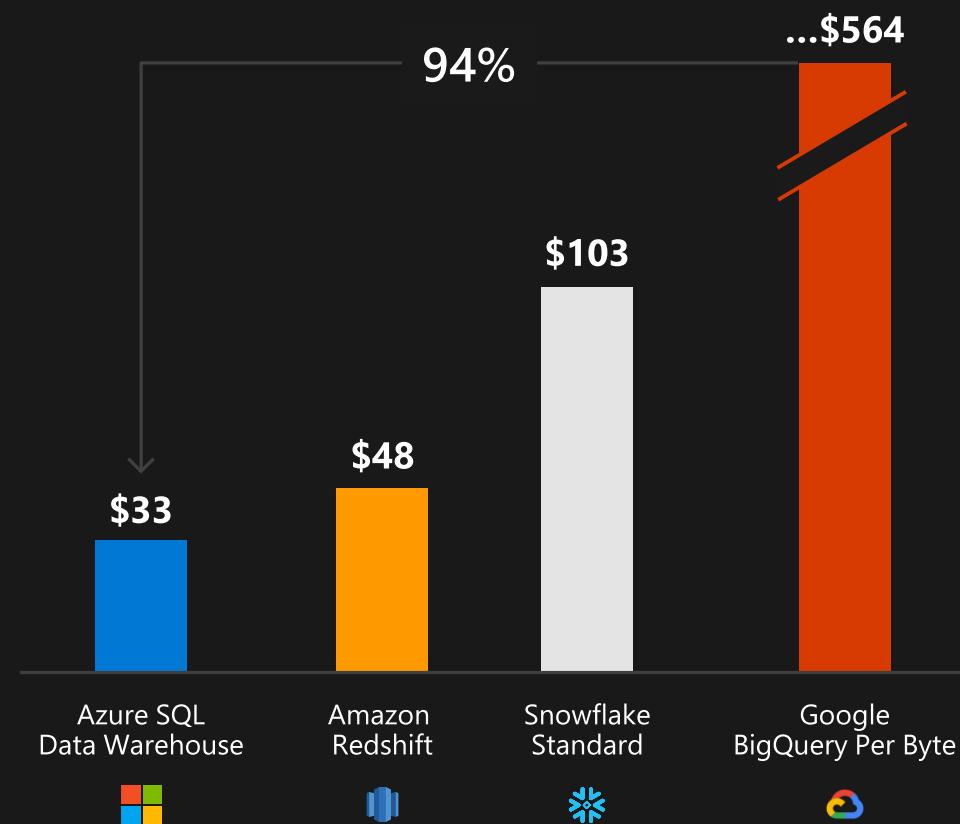
Azure Analytics is simply unmatched

Up to 14x faster and costs 94% less
than other cloud providers

Most comprehensive security and privacy
capabilities on the market

Azure Analytics + Power BI delivers
insights to all users

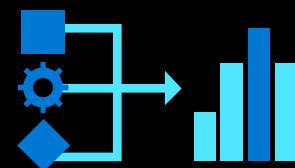
GigaOm TPC-H Benchmark
Lower is better



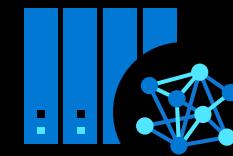
But what if...



Simplify
analytics

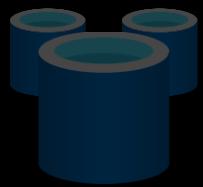


Use existing
skills



Apply AI where
data lives

Data + Analytics



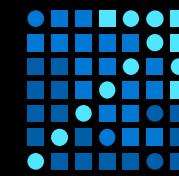
Relational



Non-relational

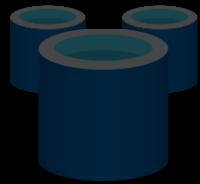


Data Warehouse



Big Data

Data + Analytics



Relational



Non-relational



Data Warehouse + Big Data

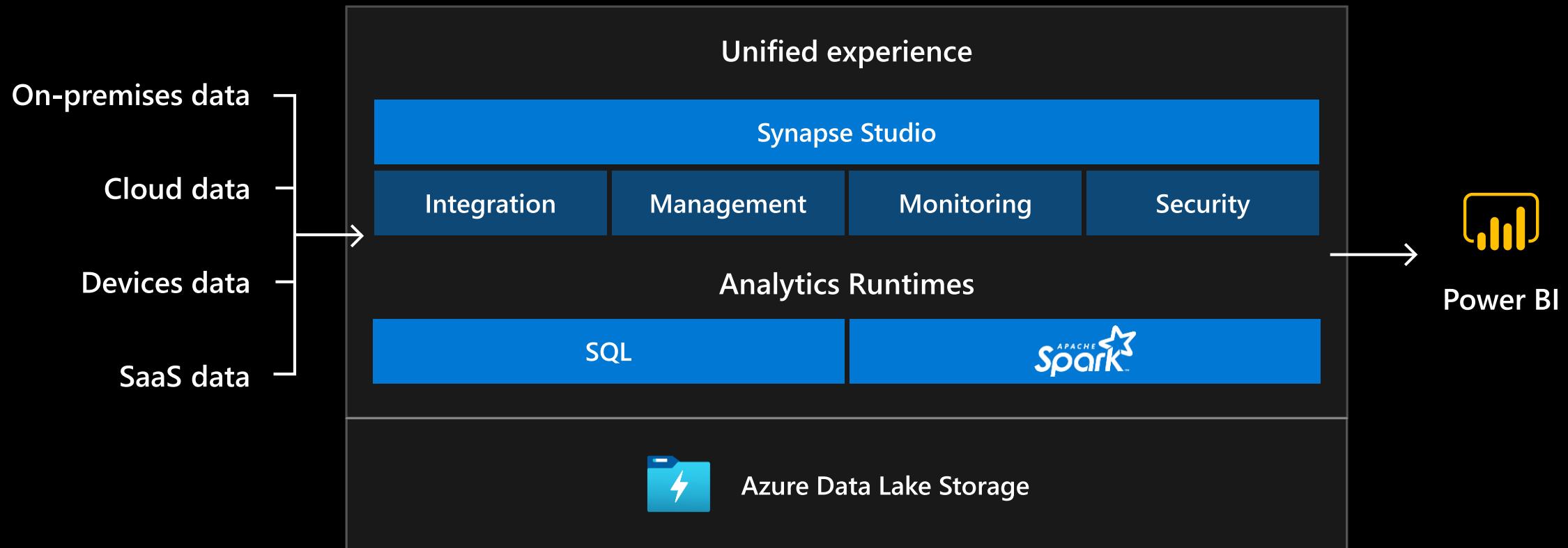
Announcing

Azure Synapse Analytics

PREVIEW

Azure Synapse Analytics

Limitless data warehouse with unmatched time to insights



Azure Synapse Analytics

GENERALLY AVAILABLE

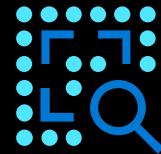
Provisioned Data Warehouse

PREVIEW

On-demand Query as a Service



Limitless
scale



Powerful
insights



Unified
experience



Unmatched
security

Azure

Infrastructure

Hybrid

Cloud
Native Apps

Data +
Analytics

Artificial
Intelligence

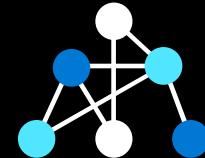
Azure AI momentum



AI Apps and Agents



Knowledge Mining



Machine Learning

5 billion

Cognitive Services transactions
per month

6 billion

Documents processed by
Cognitive Search per day

1 million

Machine Learning experiments
per month

Democratizing AI

AI Apps and Agents with Azure Cognitive Services

Deploy and run anywhere using containers



Vision



Speech



Search



Language



Decision

Announcing

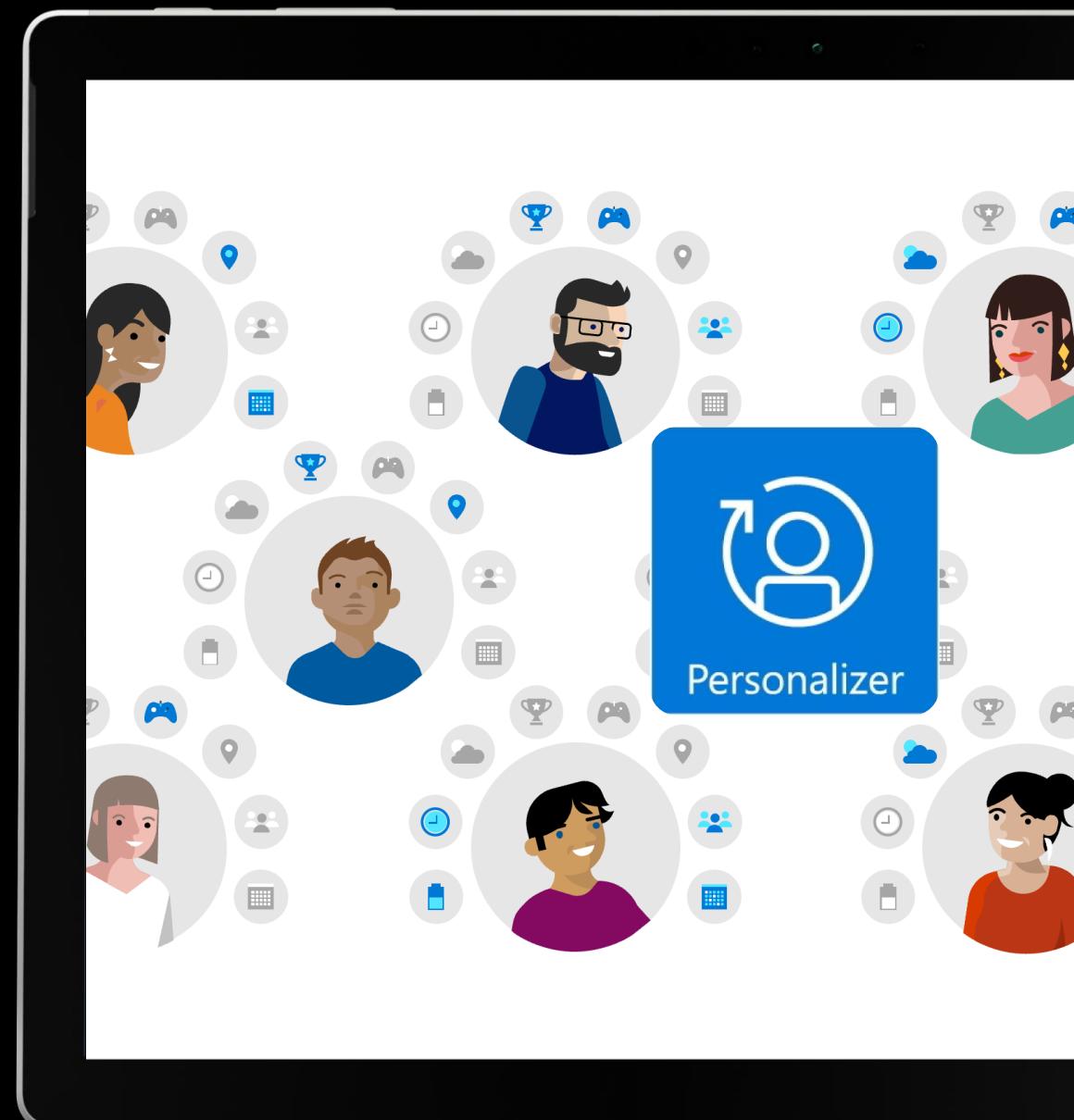
Personalizer

GENERALLY AVAILABLE

Rich, personalized experiences for every user

Simple access to powerful reinforcement learning

Strata 2019 innovative product winner





Speech

NEW CAPABILITIES

Custom Neural Voice

Learns your organization's terminology
with Office 365 data



Language detection



Face detection



Organization entity extraction



Location entity extraction



Key phrase extraction



And more...

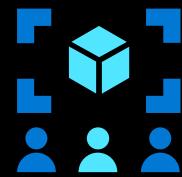
Knowledge Mining with Azure Cognitive Search

Ingest all types of content

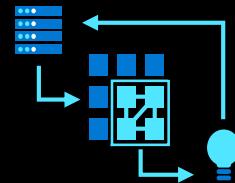
Enrich using built-in models

Explore using immersive search experiences

Azure Machine Learning



For all
skill levels



Industry
leading MLOps



Open and
interoperable

Machine Learning Ops

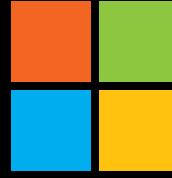


Model reproducibility

Model validation

Model deployment

Model retraining

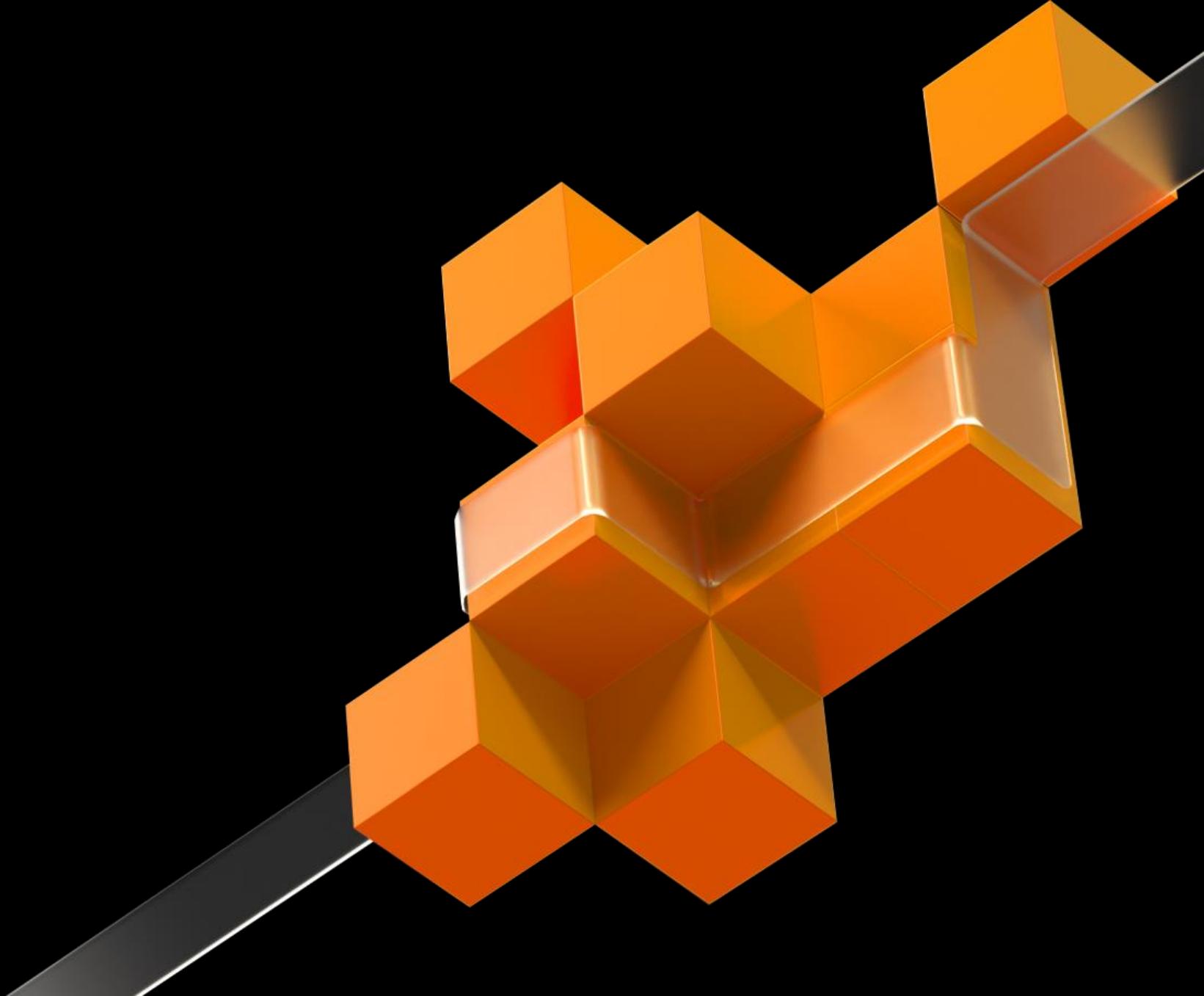


Microsoft Azure

Invent with purpose



Microsoft Ignite



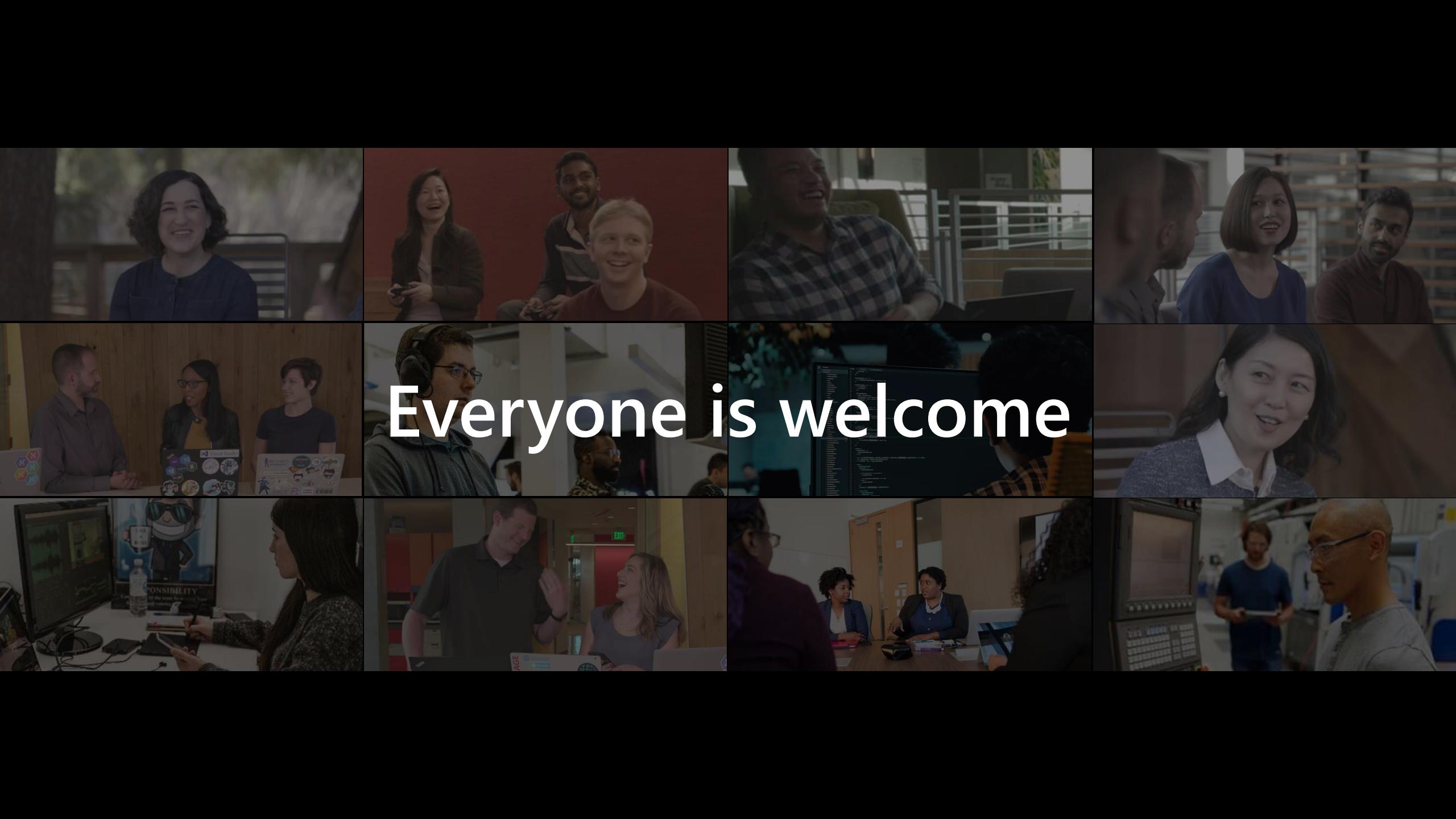


Application development for everyone

Scott Hanselman, Partner Program Manager

 @shanselman

TK05



Everyone is welcome

Let's recap what's new...

NEW CAPABILITIES



Visual Studio

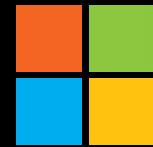
Visual Studio Online — Cloud-powered dev environments

IntelliCode — AI-assisted development

Live Share — Real-time collaboration

Azure tools — One-click deploy to the cloud

NEW CAPABILITIES



Microsoft Azure

Kubernetes

Dev Spaces connect, Azure Security Center Integration

Functions

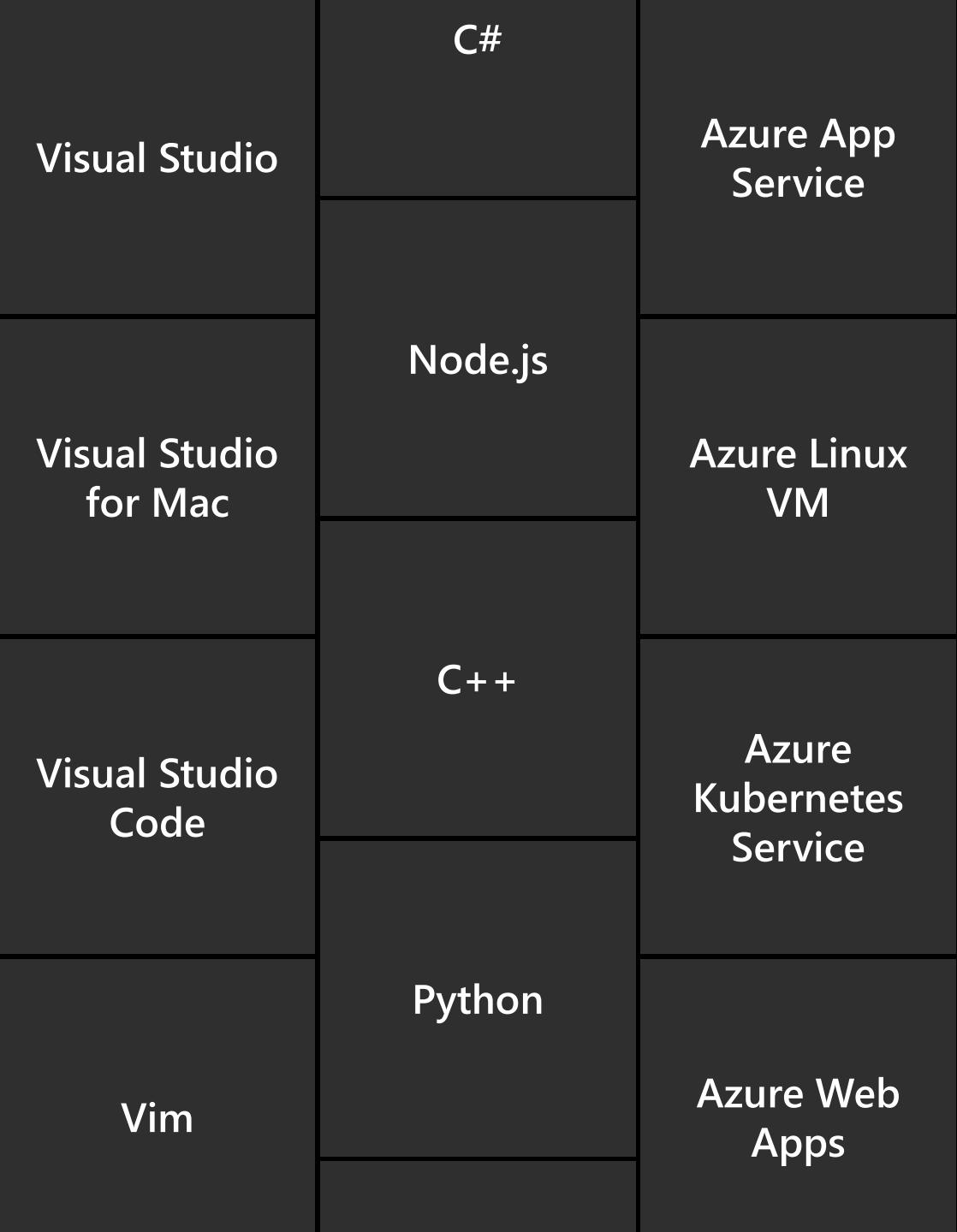
.NET Core 3.0, PowerShell, Premium Plan

App Service

App Service Managed Certificates

Java

Azure Spring Cloud



Your tools
Your languages

Your apps

Vim	Python	Azure Kubernetes Service
Visual Studio	ASP.NET	Azure Web Apps
Visual Studio for Mac	Node.js	iOS
Visual Studio		Azure Web

Your tools

Your languages

Your apps

Visual Studio for Mac	ASP.NET	iOS
Visual Studio Code	Node.js	Azure Web Apps
Vim	C++	Azure Kubernetes Service
		Azure Web

Your tools

Your languages

Your apps

Service

Visual Studio

Java

Azure Web
Apps

Visual Studio
for Mac

C#

iOS

Visual Studio
Code

Node.js

Azure Web
Apps

Azure

Your tools

Your languages

Your apps

Vim

C++

iOS

Visual Studio
Code

Java

Azure Web
AppsVisual Studio
for Mac

C#

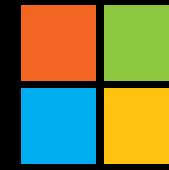
Azure
Kubernetes
Service**Your tools****Your languages****Your apps**

Chipotle.com

“.NET and Azure have played a key role in quicker speed to market and scalability which contribute to better customer experiences!”

—Mike Smith





Microsoft Azure

Your tools

| Your languages

| Your apps

Azure

Your languages

Your tools

Your apps in the cloud

Your apps on any device

Develop in your
favorite language



Rock, Paper, Scissors, Lizard, Spock

Scissors cuts Paper

Paper covers Rock

Rock crushes Lizard

Lizard poisons Spock

Spock smashes Scissors

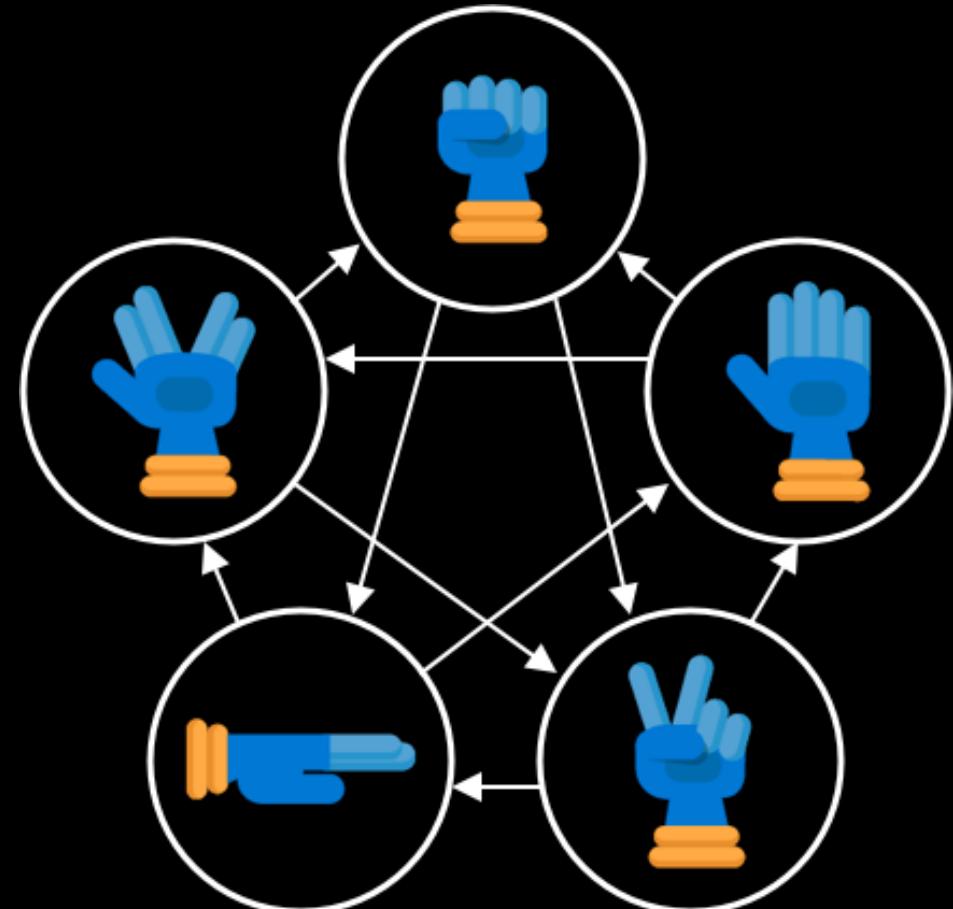
Scissors decapitates Lizard

Lizard eats Paper

Paper disproves Spock

Spock vaporizes Rock

Rock crushes Scissors



Rock, Paper, Scissors, Lizard, Spock

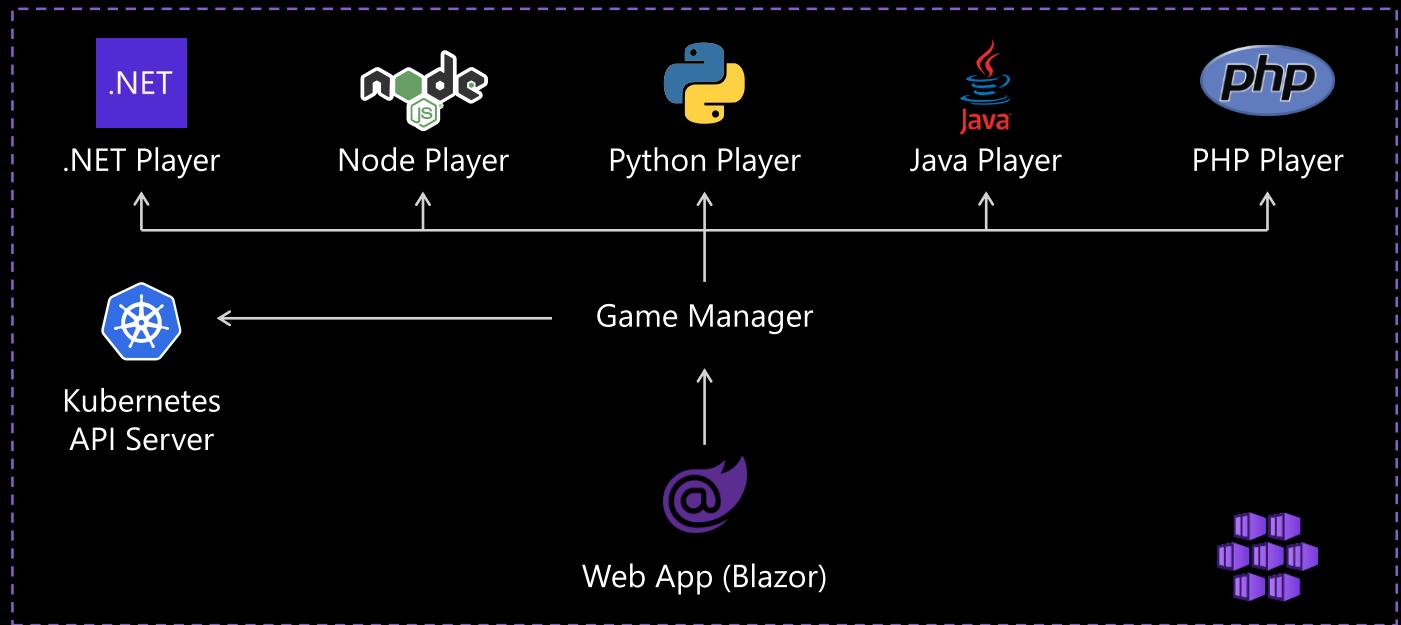


Get the code aka.ms/rpsls

Rock, Paper, Scissors, Lizard, Spock

Scott Hanselman

Rock, Paper, Scissors, Lizard, Spock



Azure

Your languages

Your tools

Your apps in the cloud

Your apps on any device

Tools for every developer



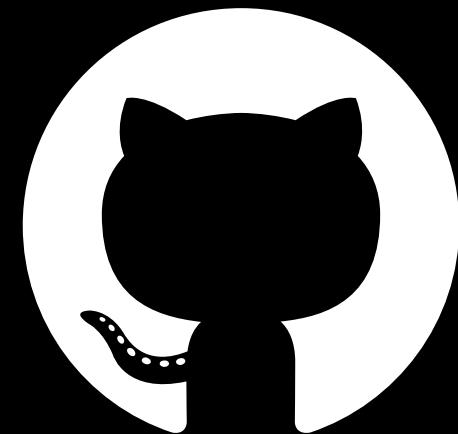
GitHub



Visual Studio



Visual Studio Code



GitHub

RELEASED

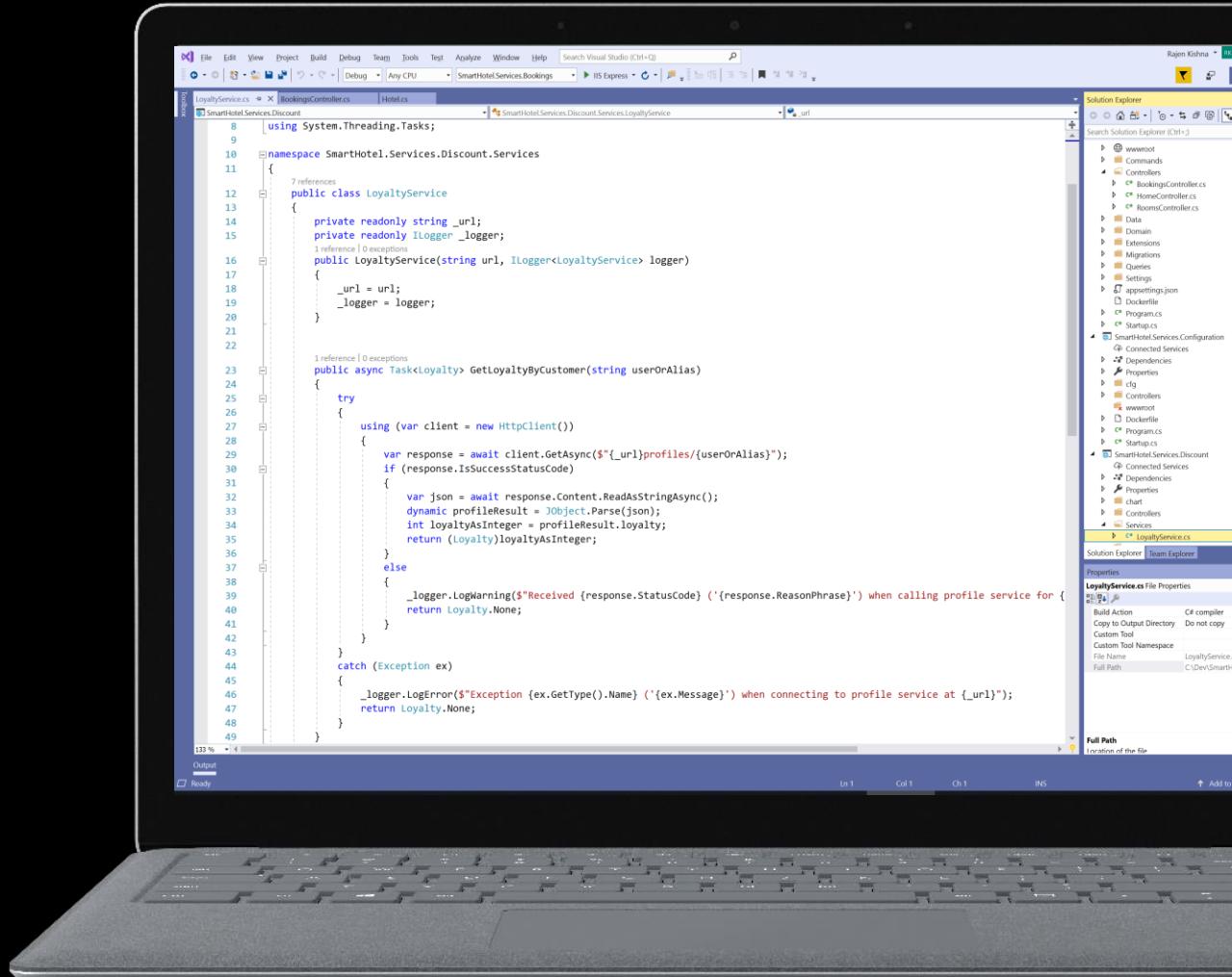
Visual Studio 2019

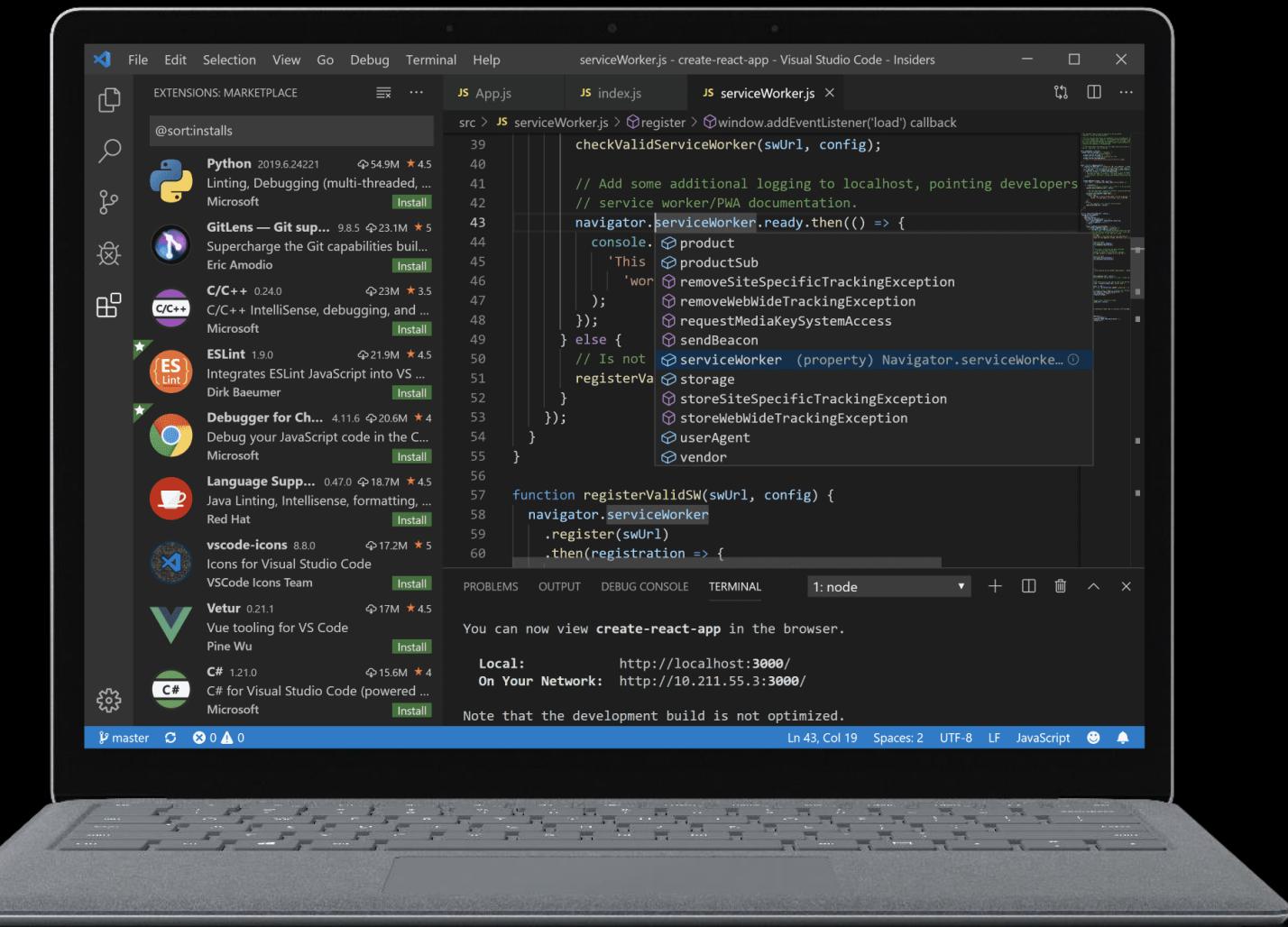
Edit productively with IntelliCode
and additional refactorings

Collaborate with Live Share
and GitHub integration

Improve code quality with historical
debugging and live unit testing

visualstudio.com/downloads





Visual Studio Code

Edit and debug across
macOS, Linux, and Windows

Strong ecosystem of over 16k
extensions, themes, and tools

Work in containers, WSL, or over
SSH with remote development

A photograph of two people in a server room. On the left, a man wearing glasses and a light-colored t-shirt is smiling and looking towards the right. On the right, a young boy with long hair and a beard is smiling and looking towards the camera. They are standing in front of several server racks.

Node.js + Visual Studio Code

Scott Hanselman

.NET

Your platform for building anything



Desktop



Web



Cloud



Mobile



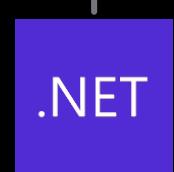
Gaming



IoT



AI



RELEASED

.NET Core 3.1

Long-Term Support (LTS) Preview 2

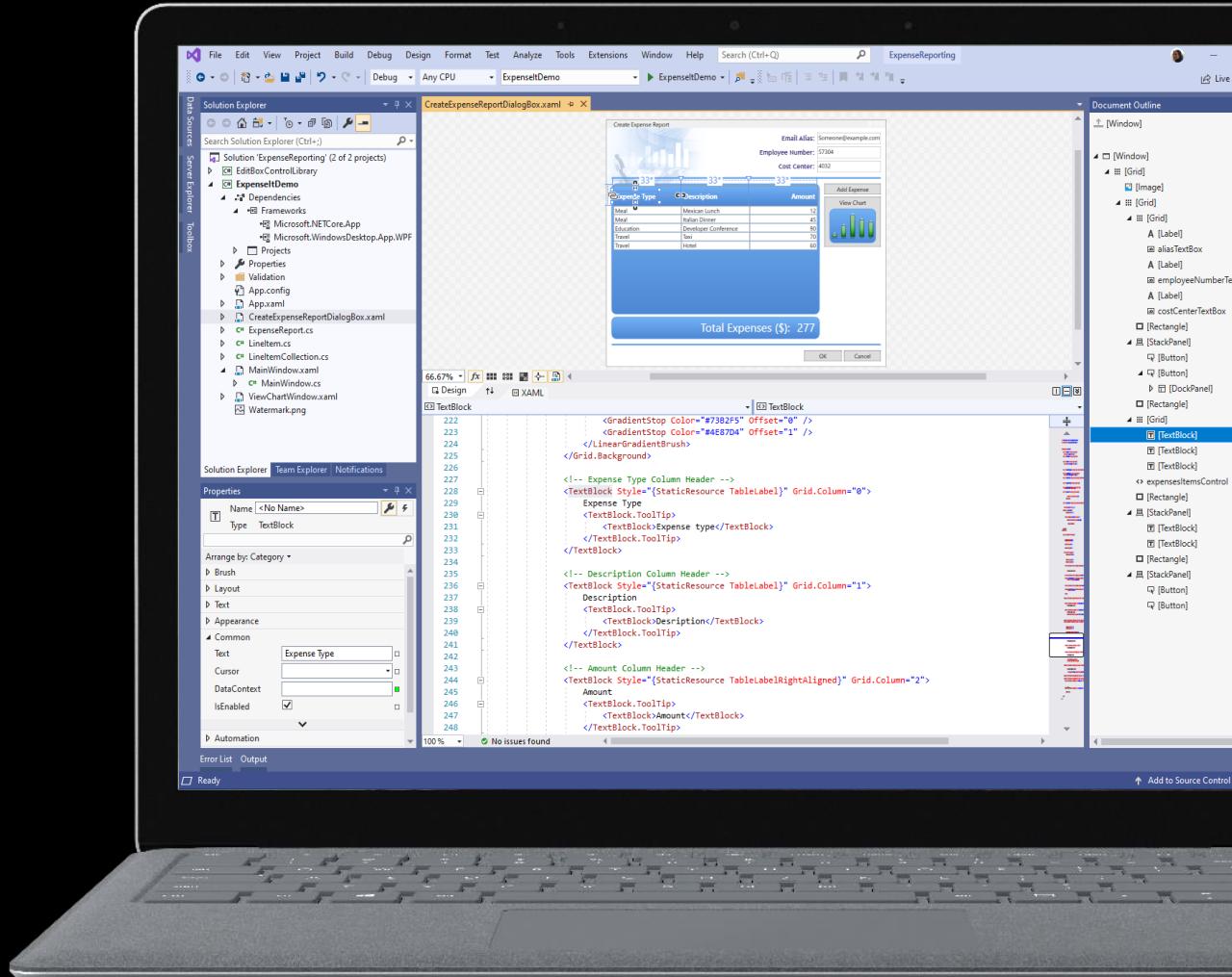
WPF and Windows Forms support

Side-by-side support & self-contained EXEs

Full-stack web development with C# and Razor

New C# 8.0 language features

[dot.net](#)



.NET Core 3.0 + Visual Studio

Leslie Richardson

Azure

Your languages

Your tools

Your apps in the cloud

Your apps on any device

Azure



Edge Devices

Azure Stack

Azure Data Box

Azure Sphere

Azure Kinect

HoloLens



Serverless

Web

Mobile

Mixed Reality

Containers

Events + Integration

Databases

Analytics

AI + Machine Learning

Internet of Things

Media



Infrastructure

Compute

Networking

Storage

Security

Identity



Tools

Visual Studio

Github

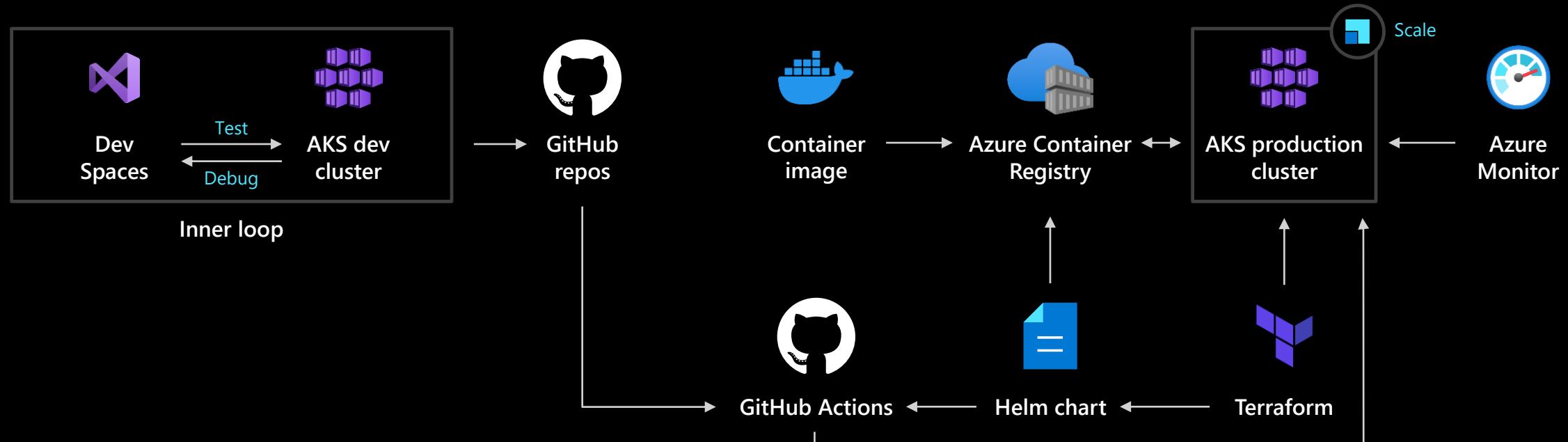
PowerApps

Power BI

Cloud Native Apps

Cloud Native Apps

Containerized application development



Kubernetes

Jessica Deen

Open Source Security

GitHub

Bryan Cross



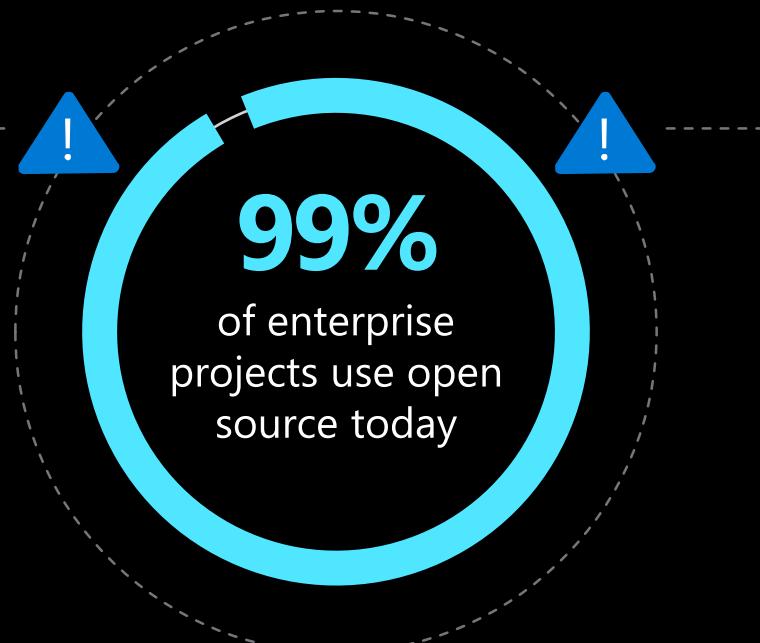
Interconnected community

Securing your codebase with GitHub

Understand and secure your software supply chain

- View and track all your dependencies with Dependency Insights and Dependabot

- Get automated security alerts and version patches



Integrate security into your code-to-cloud workflows

- Scan for thousands of vulnerabilities with Semmle
- Protect leakage of secrets with GitHub Token Scanning



Shift security left

All the way left

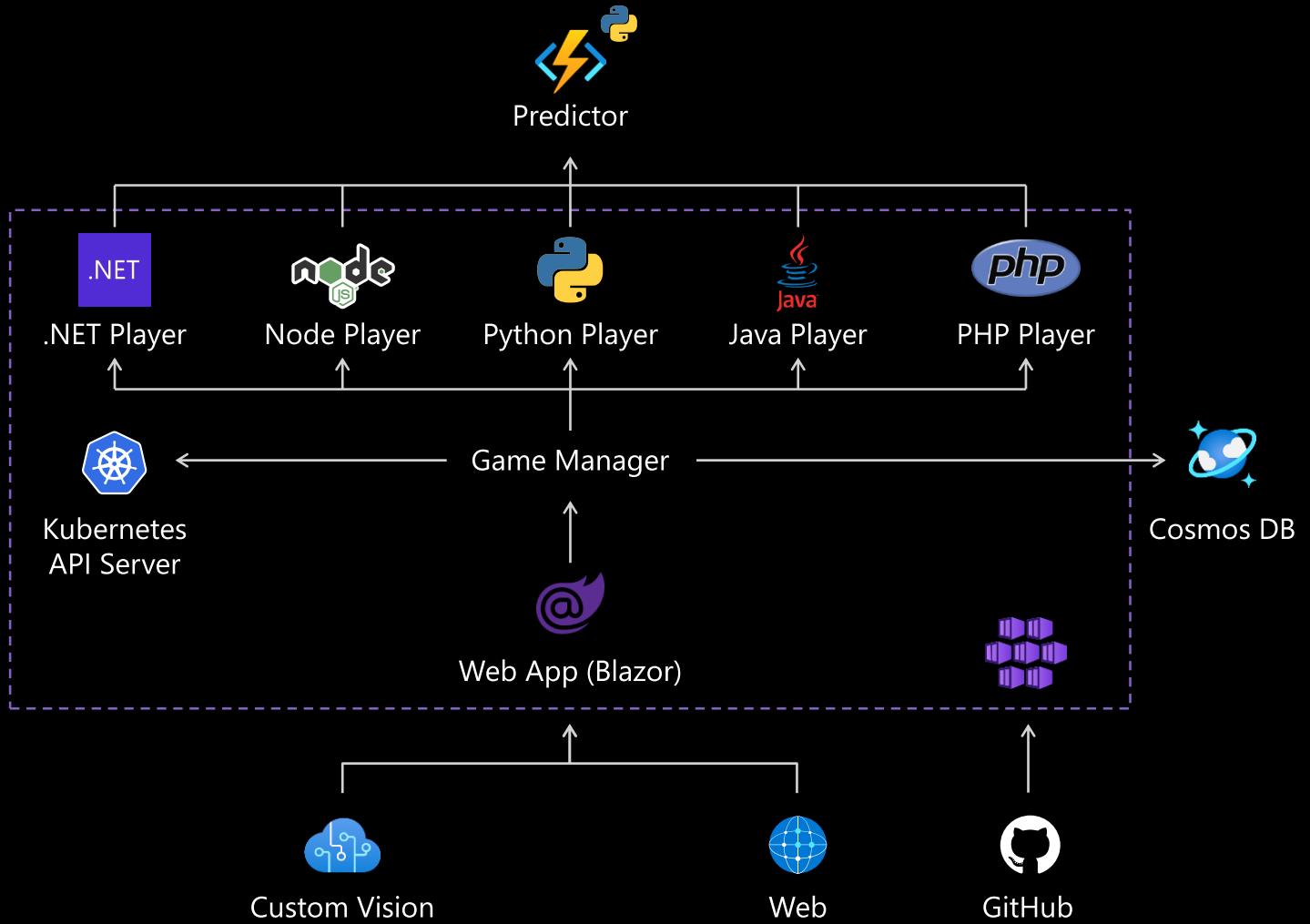
```
diff --git a/config.yml b/config.yml
index 1110370..da7b5de 100644
--- a/config.yml
+++ b/config.yml
@@ -1,2 +1,2 @@
 production:
-  github_token: 4e862a8ec12ef0ad7c1337e8b16d98f4d764b8f6
+  github_token: <%= ENV["GITHUB_TOKEN"] %>
```



Azure ❤ GitHub

AI for everyone

Rock, Paper, Scissors, Lizard, Spock



A close-up photograph of a person's hands typing on a blue laptop keyboard. The person is wearing a dark long-sleeved shirt. The background is blurred, showing what appears to be a modern office environment with a whiteboard and other office equipment.

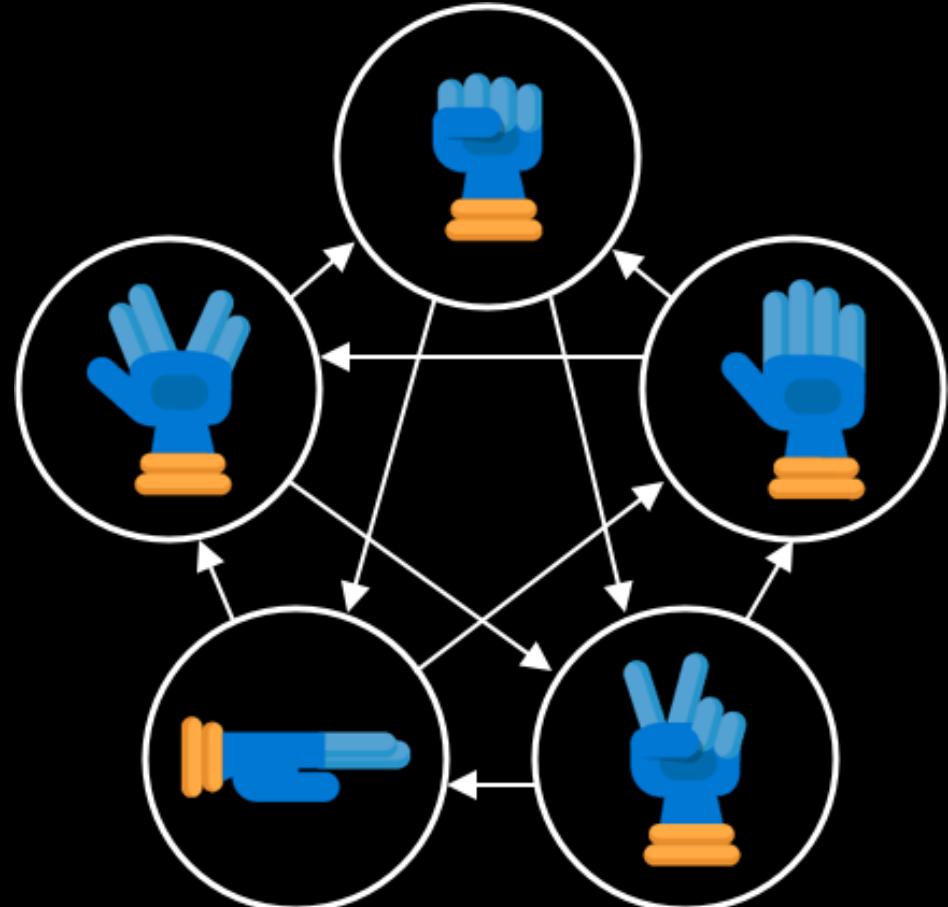
Machine Learning for developers

Seth Juarez

Machine Learning for developers

“The scientific study of algorithms and statistical models that computer systems use to perform a specific task without using explicit instructions, relying on patterns and inference instead.”

—Dr. Ingrid Nette



Rock, Paper, Scissors, Lizard, Spock



Azure

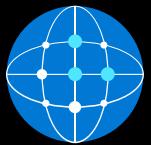
Your languages

Your tools

Your apps in the cloud

Your apps on any device

Your apps on any device



Web



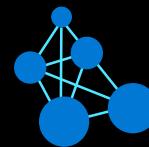
Mobile



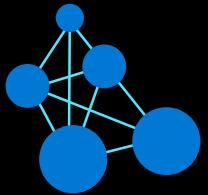
Mixed Reality



Media



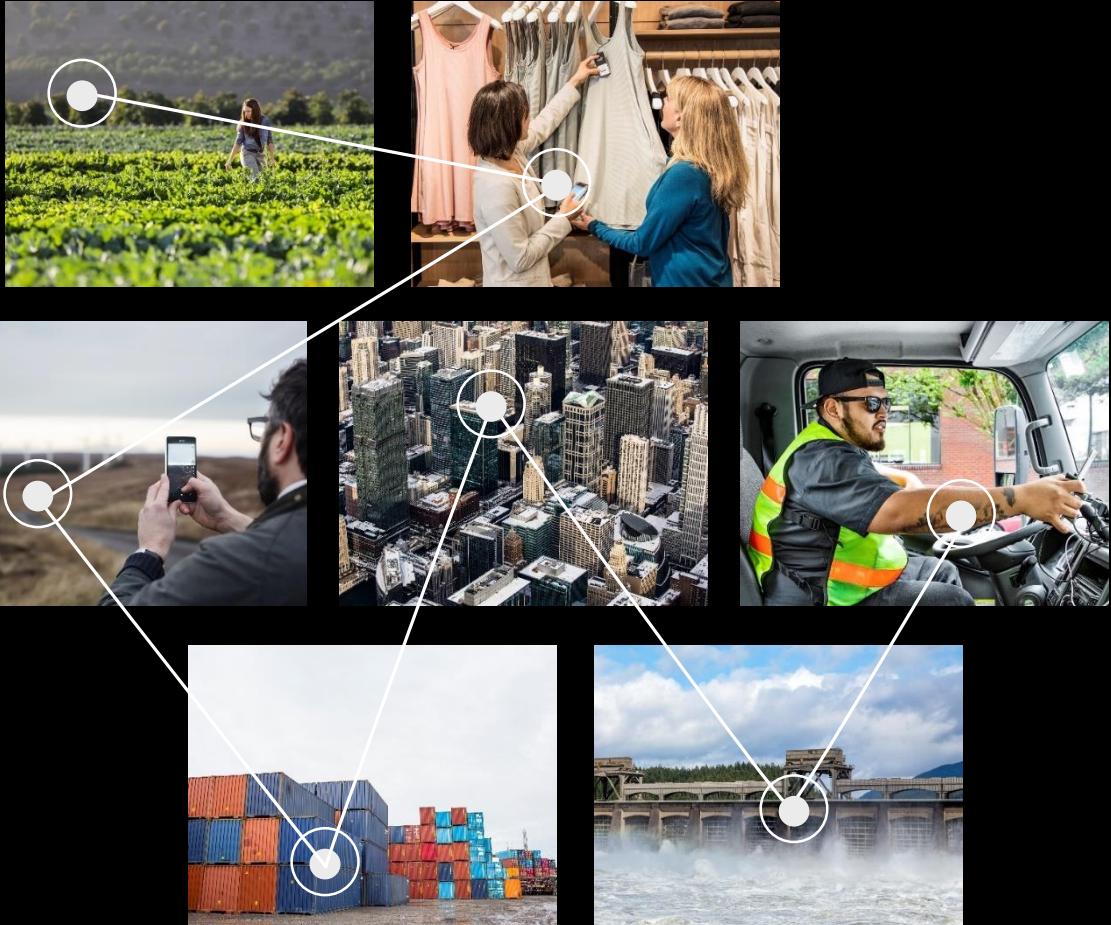
Internet
of Things



Internet of Things

1000+ capabilities

1000+ supported devices



Wilderness Labs' Meadow Microcontroller

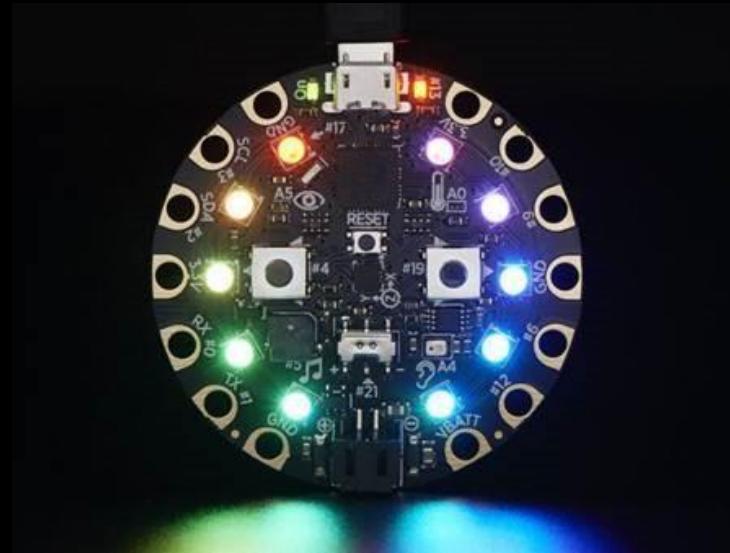
Scott Hanselman

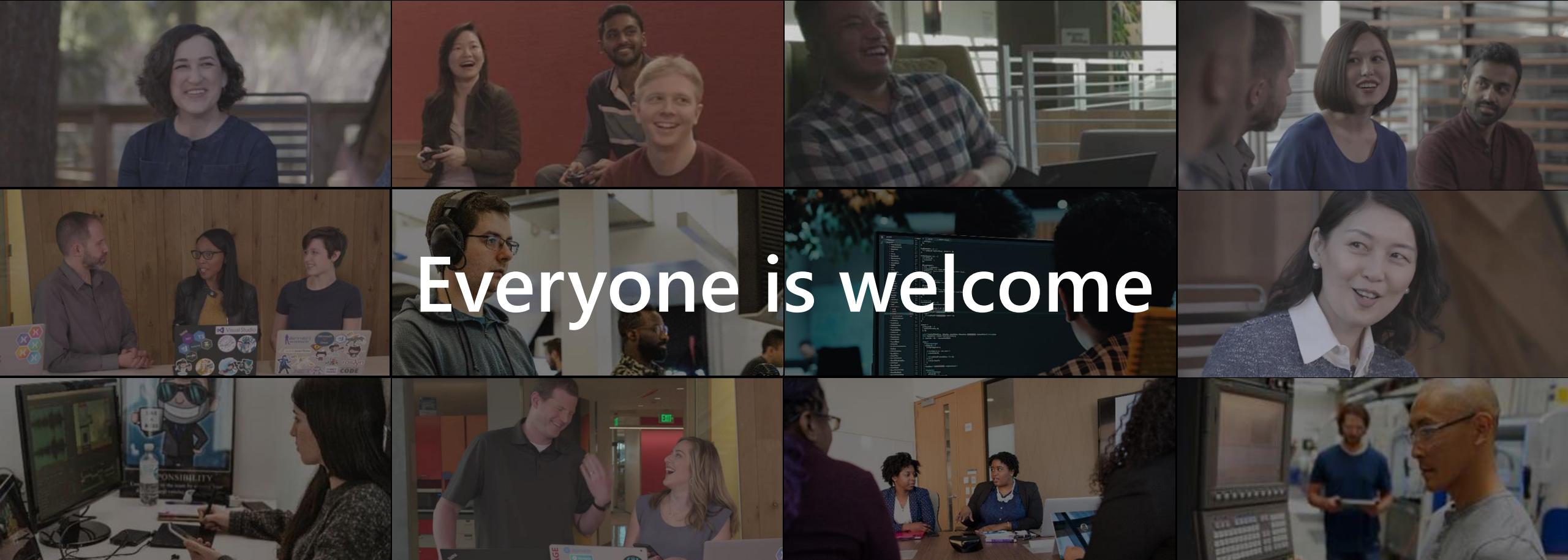
1,000's of Azure IoT certified devices from hundreds of partners today



A world of IoT devices

Adafruit—Circuit Playground Express





Everyone is welcome



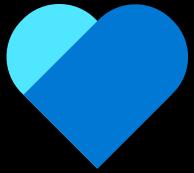
Visit azure.com/developer

Rock, Paper, Scissors, Lizard, Spock



Get the code aka.ms/rpsls

Microsoft



Azure Free Account

<https://azure.microsoft.com/free/>

Microsoft Learn

<https://docs.microsoft.com/learn/azure/>

