



IoT in Action

#IoTinActionMS

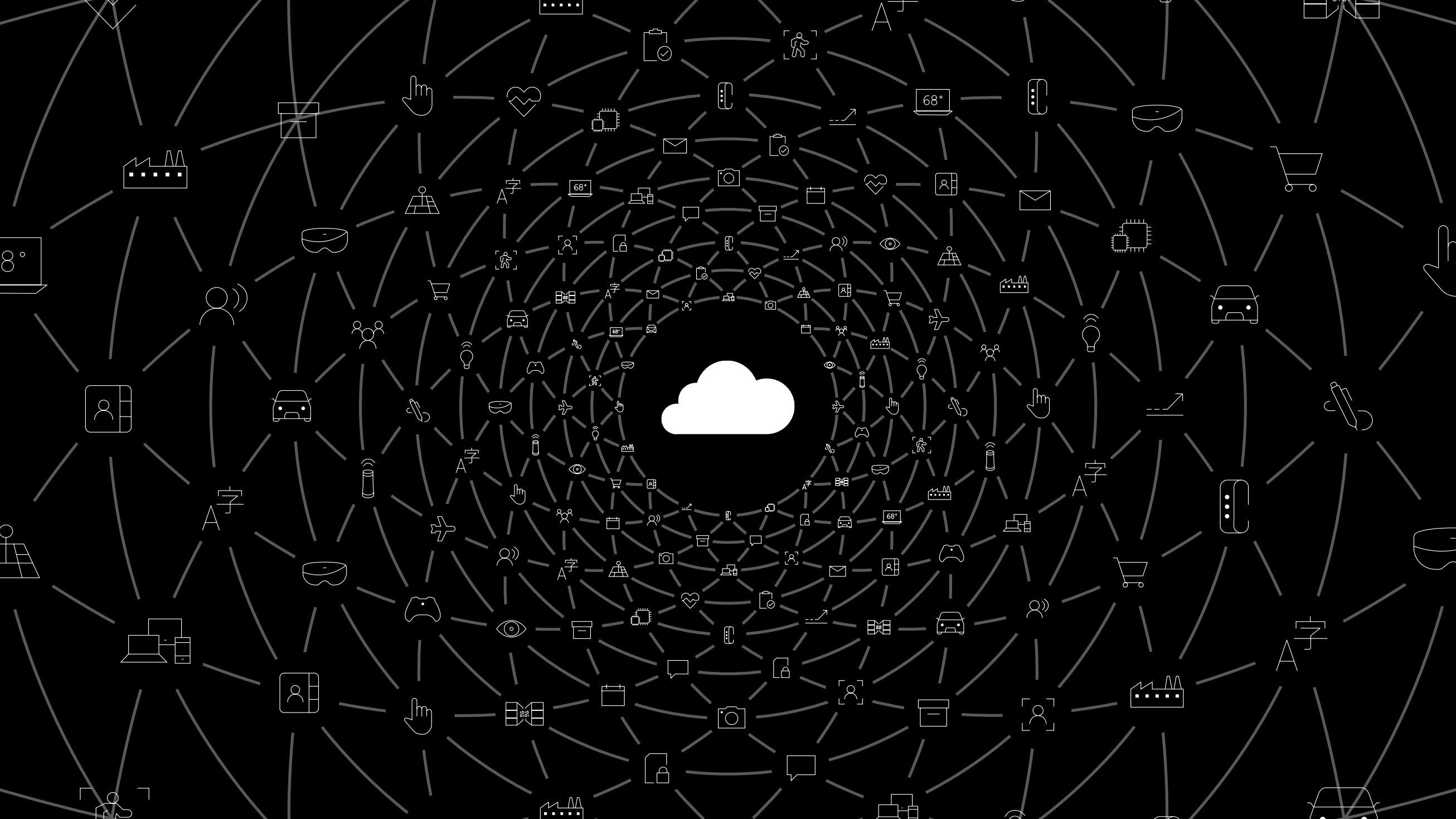


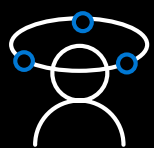
Evolving IoT with AI, Mixed Reality and Automation

Rashmi Misra
General Manager, AI Platforms
Microsoft

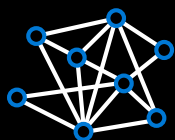
IoT in Action







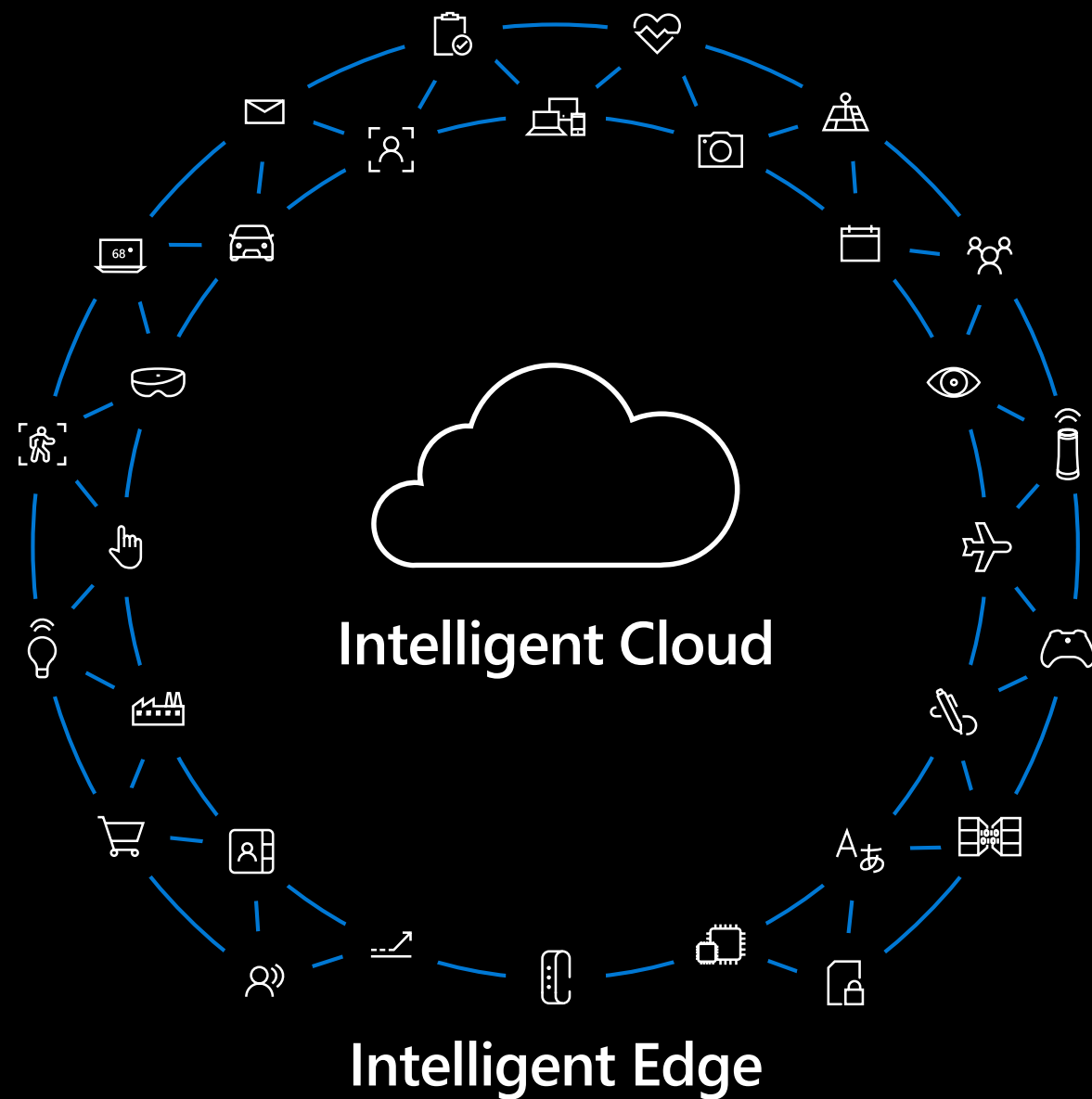
People-centred
experiences



Artificial
Intelligence



Ubiquitous
computing











09:06



Discover Weekly

FOLLOWING

BY SPOTIFY



▶ SHUFFLE PLAY

Available Offline



Intelligent Edge



We are living in an
automated world



Evolution of industrial systems

Mechanized systems



Powered by **steam or electricity**

Manually operated

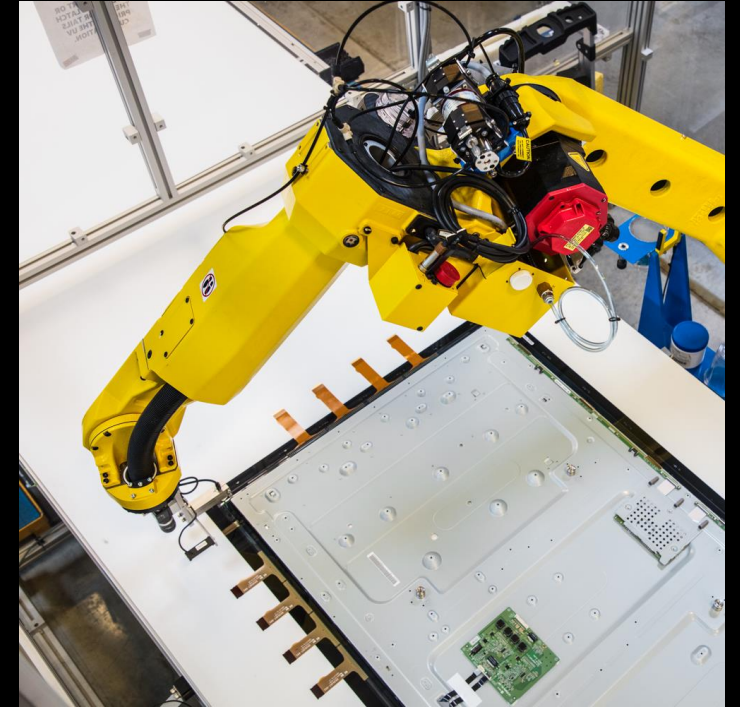
Automated systems



Powered by **software**

Fixed operation

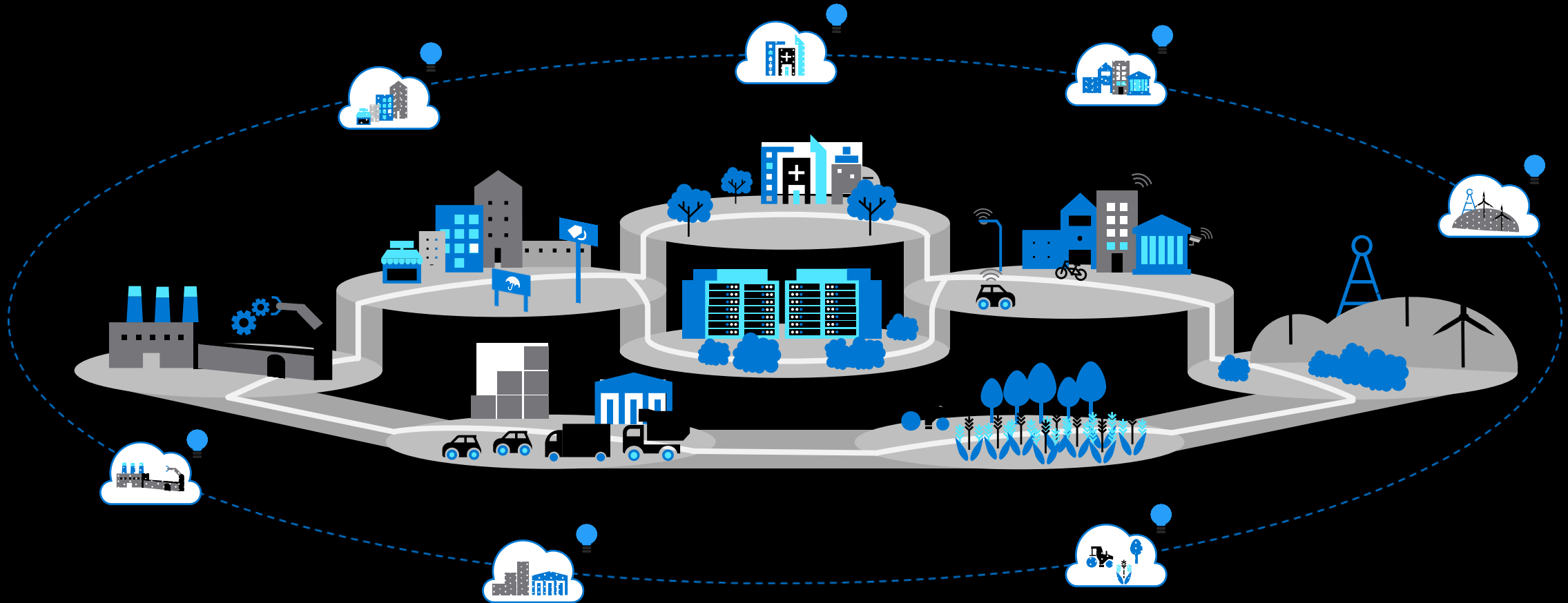
Autonomous systems



Powered by **AI**

Intelligent operation (sense/plan/act)

Convergence is driving new opportunities



Cloud

Globally available, unlimited compute resources

IoT

Harnessing signals from sensors and devices, managed centrally by the cloud

Edge

Intelligence offloaded from the cloud to IoT devices

Digital Twins

Create living replicas of any physical environment, track the past and predict the future

AI

Breakthrough intelligence capabilities, in the cloud and on the edge

Microsoft's comprehensive IoT product portfolio



Azure Security
Center for IoT

Azure IoT
Priority Verticals



Manufacturing



Retail



Agriculture



Energy



Smart Cities



Healthcare



Transportation

Azure IoT
Solutions



Azure IoT Central
(SaaS)



Azure IoT Reference
Architecture & Accelerators
(PaaS)



Dynamics Connected
Field Service
(SaaS)

Azure
Services for IoT



Azure IoT Hub
Azure IoT Hub Device
Provisioning Service
Azure Digital Twins
Azure Time Series Insights
Azure Maps

Azure Stream Analytics
Azure Cosmos DB
Azure AI
Azure Cognitive Services
Azure ML
Azure Logic Apps

Azure Active Directory
Azure Monitor
Azure DevOps
Power BI
Azure Data Share
Azure Spatial Anchors

IoT & Edge
Device Support



Azure Sphere
Azure IoT Device SDK
Azure IoT Edge
Data Box Edge

Windows IoT
Azure Certified for IoT—Device
Catalog
Azure Stream Analytics
Azure Storage

Azure ML
Azure SQL
Azure Functions
Azure Cognitive Services



Global Access

1 in 9 people are undernourished (UN)

65% Reduce poverty for 65% of the world's poor who live in rural areas and work in farming

70% more food is needed by 2050



Sustainable Production

70% of global water resources are needed for Agriculture

24% of global greenhouse emission comes from Agriculture

251T liters of water to be saved in 2030 from implementing Smart Agriculture



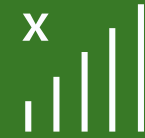
Need for Economic Growth

30% of global workers are employed by Agriculture

10-30% Agriculture contributes 10% of global GDP and up to 30% in low income countries

\$4.8T Global Agriculture revenue

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



FarmBeats



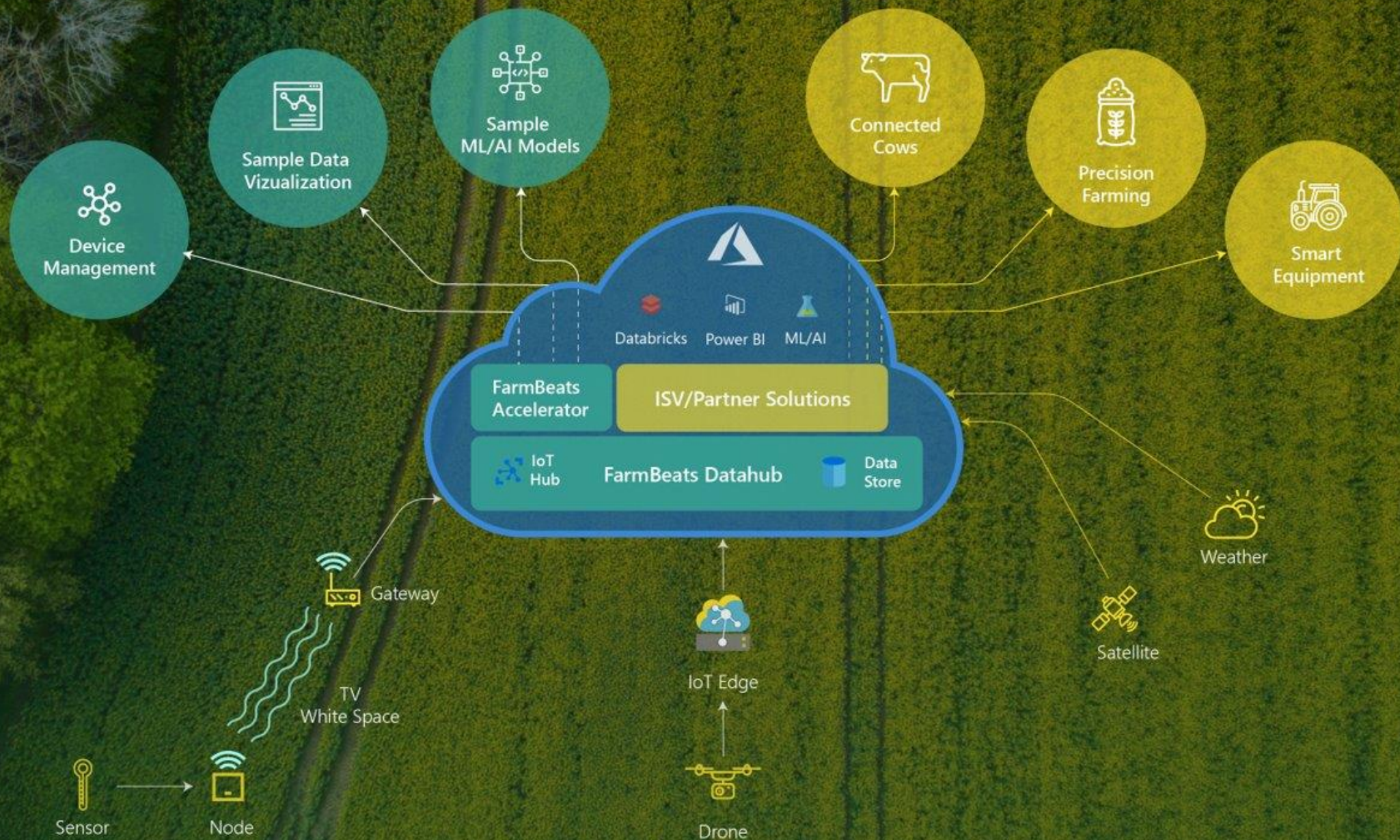
Combine visual data from drones with the sensor data from the farm



Drones are ~1000
dollars and automatic

Can cover large
areas quickly

Can collect
visual data



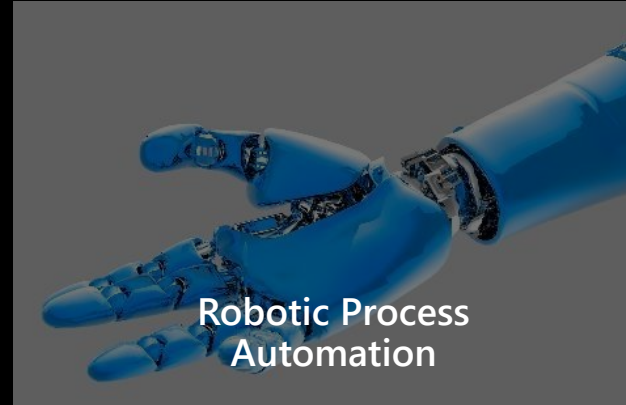
- ISV/Partner
- FarmBeats
- Azure



Oil & Gas



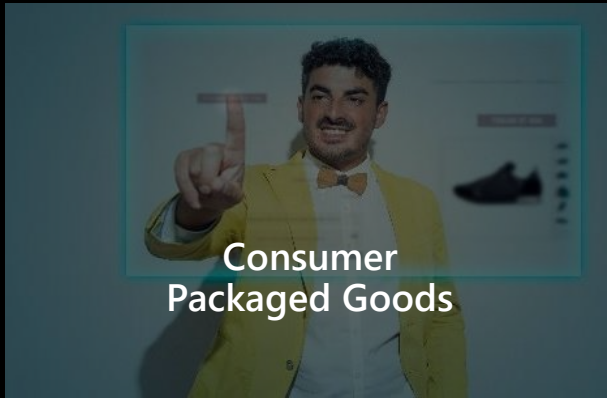
Government &
Smart Cities



Robotic Process
Automation



Healthcare



Consumer
Packaged Goods



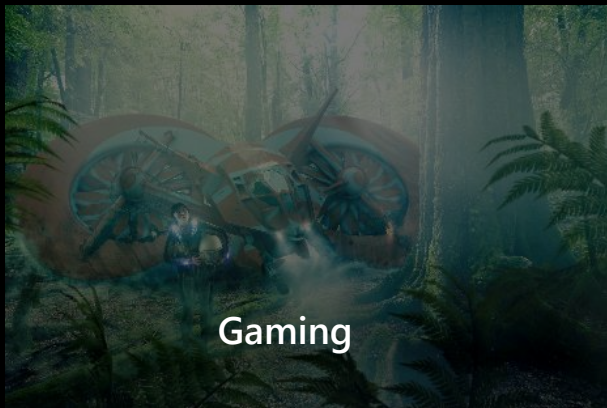
Retail



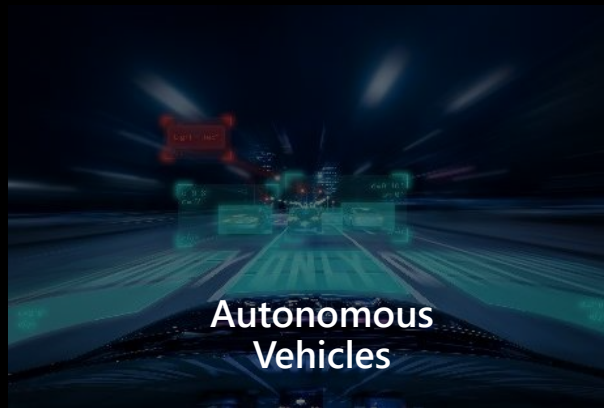
Financial Services



Manufacturing



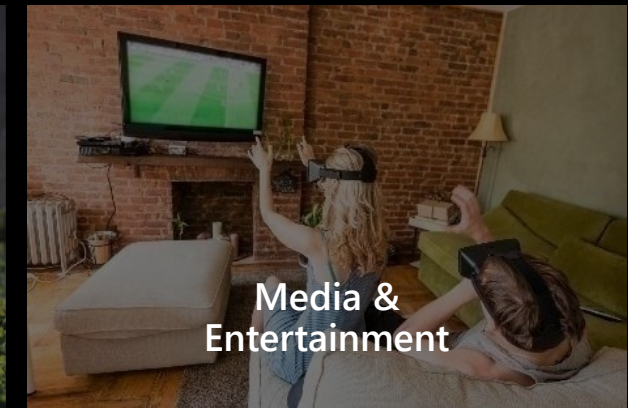
Gaming



Autonomous
Vehicles



Agriculture



Media &
Entertainment

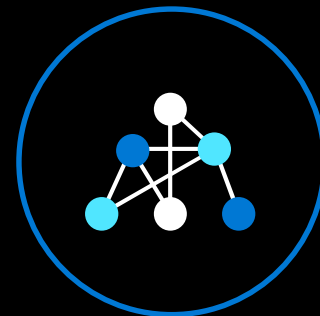
Azure AI



AI apps & agents



Knowledge mining



Machine learning

Deliver breakthrough experiences



AI apps & agents

- Bot Service
- Cognitive Services

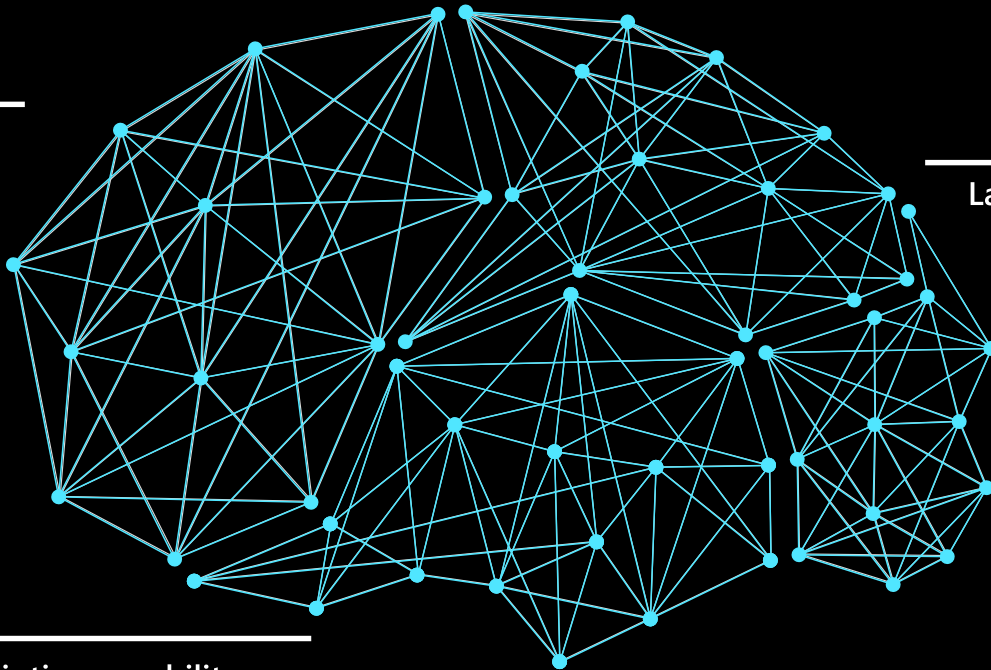
Azure Cognitive Services

Decision

Personalizer
Anomaly Detector

Speech

Conversation transcription capability
Neural Text-to-Speech
Speech Service Device SDK



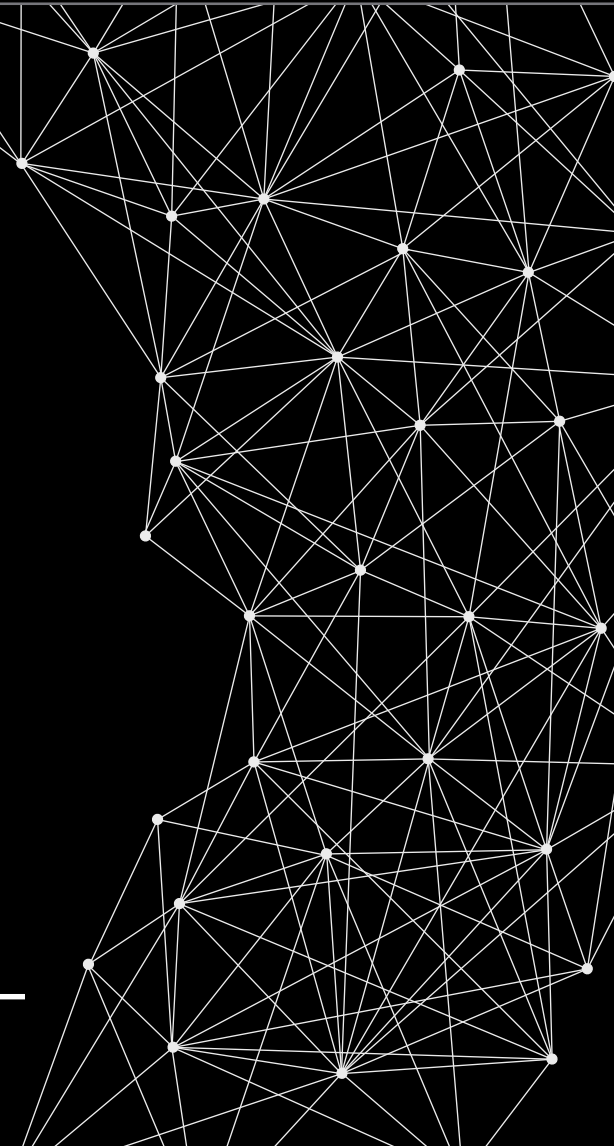
Language

Language Understanding
QnA Maker

Vision

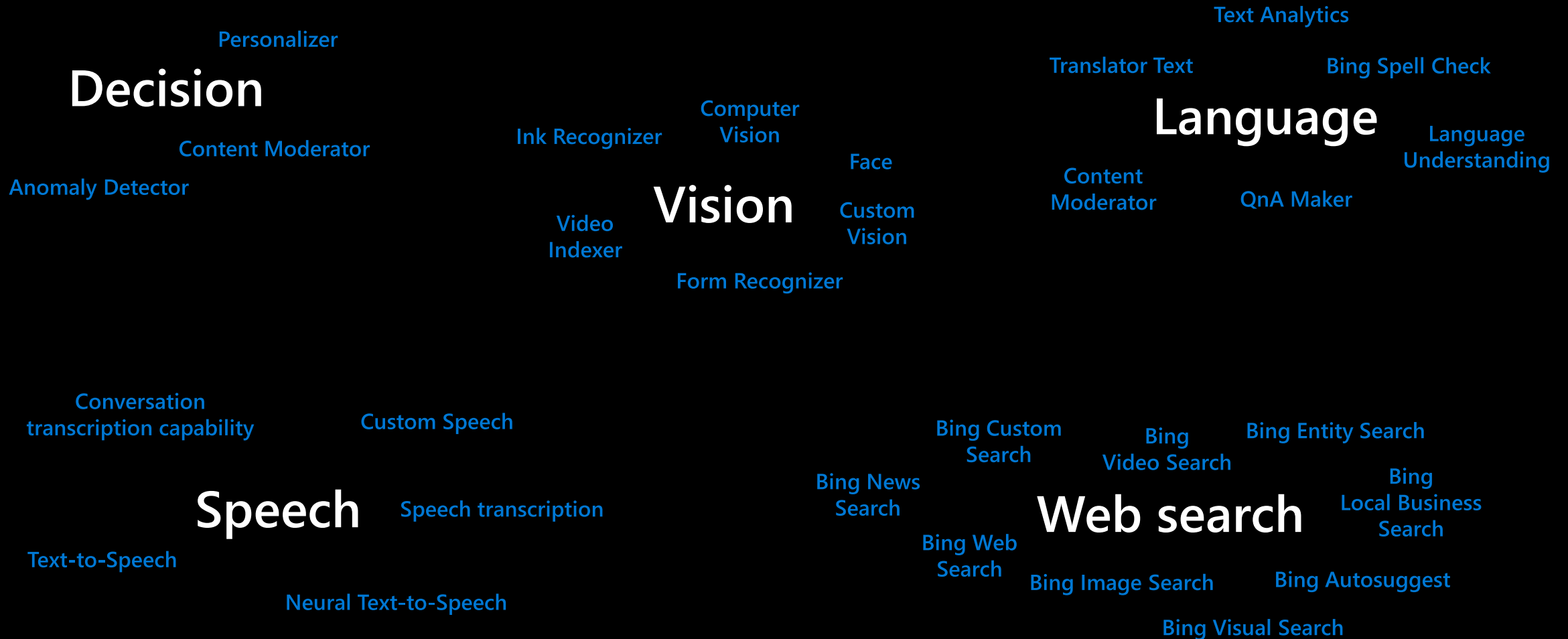
Ink Recognizer
Computer Vision

Web search



Azure Cognitive Services

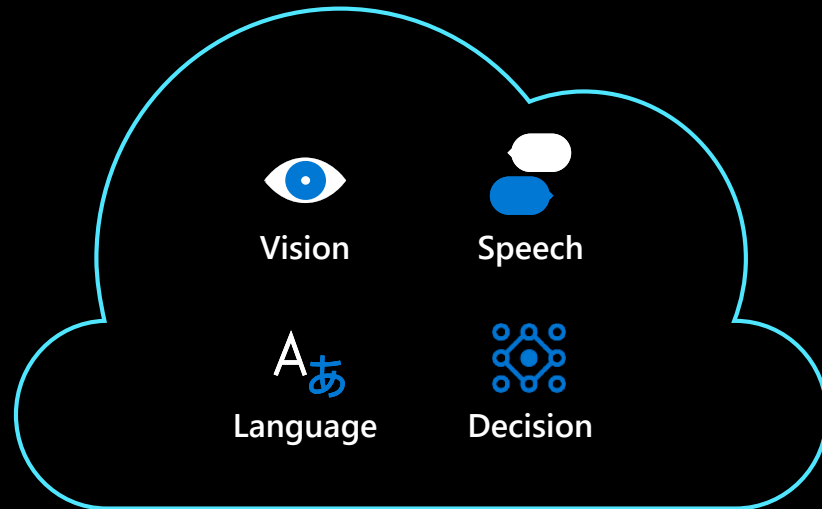
The most comprehensive pre-trained AI



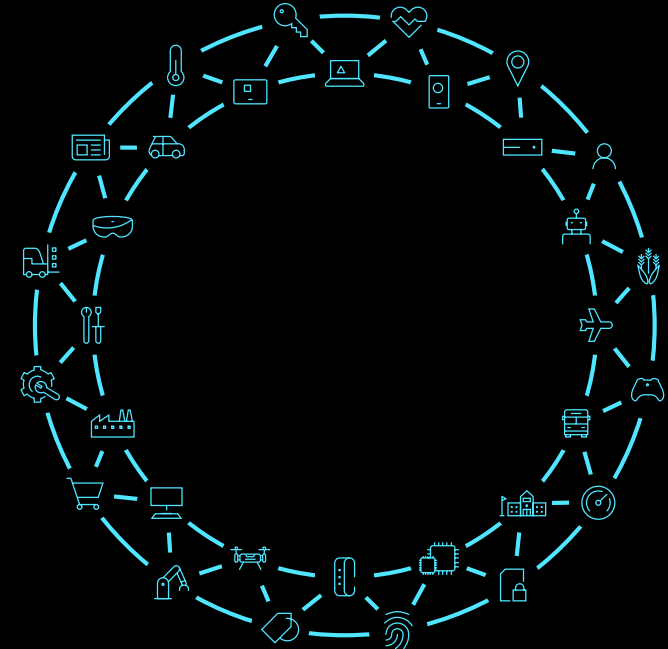
Deploy anywhere using containers

Deploy anywhere using containers

Azure Cognitive Services

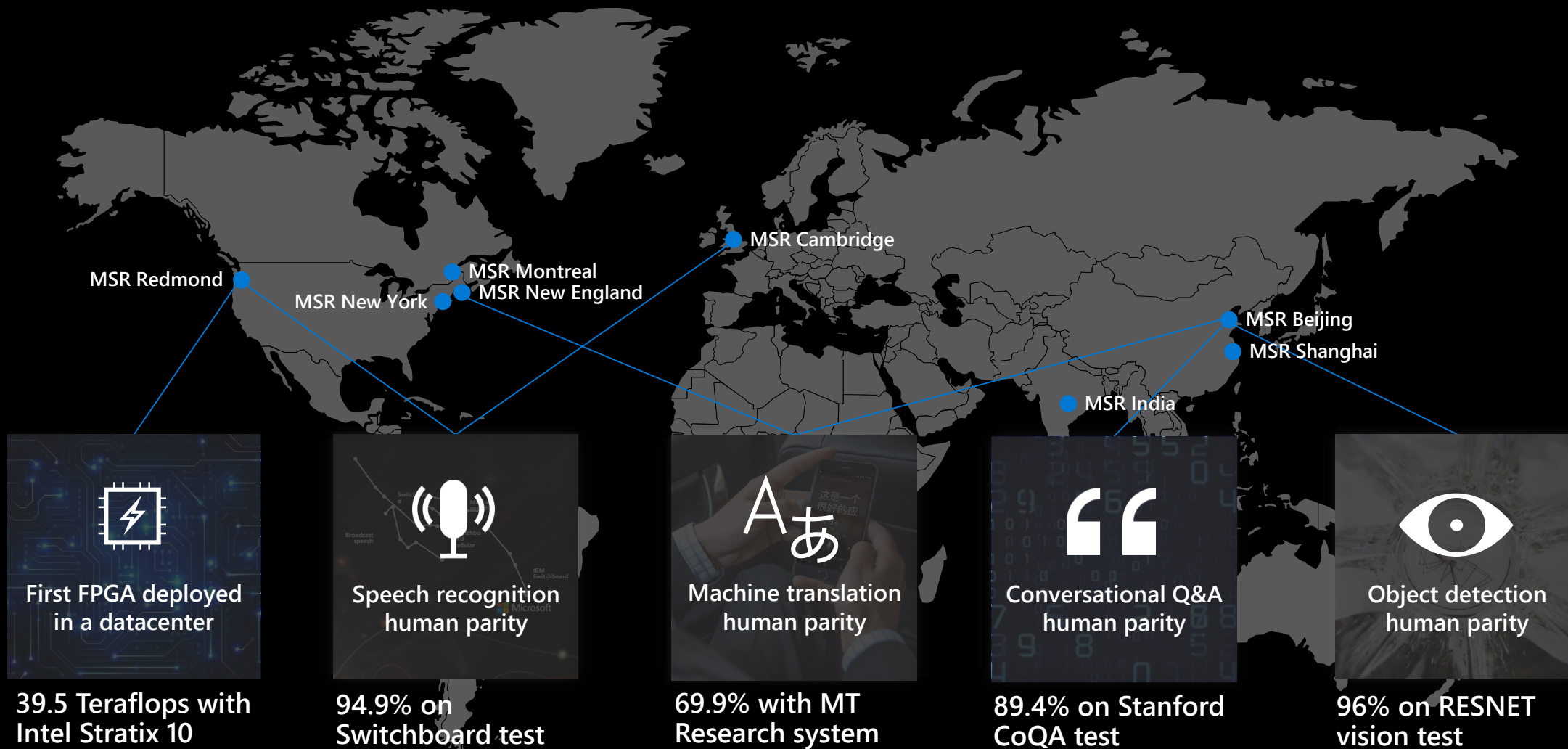


Wherever your data resides



Azure AI

Fueled by Microsoft breakthrough research



Machine Learning on Azure

Domain specific pretrained models

To simplify solution development



Vision



Speech



Language



Web search



Decision

Familiar data science tools

To simplify model development



Visual Studio Code



Azure Notebooks



Jupyter



Command line

Popular frameworks

To build advanced deep learning solutions



PyTorch



TensorFlow



Scikit-Learn



ONNX

Productive services

To empower data science and development teams



Azure Machine Learning



Azure Databricks



Machine Learning VMs

Powerful infrastructure

To accelerate deep learning



CPU



GPU



FPGA



From the Intelligent Cloud to the Intelligent Edge



Microsoft platform for autonomous systems



Scale human expertise



Trustworthy autonomy



Real world scenarios

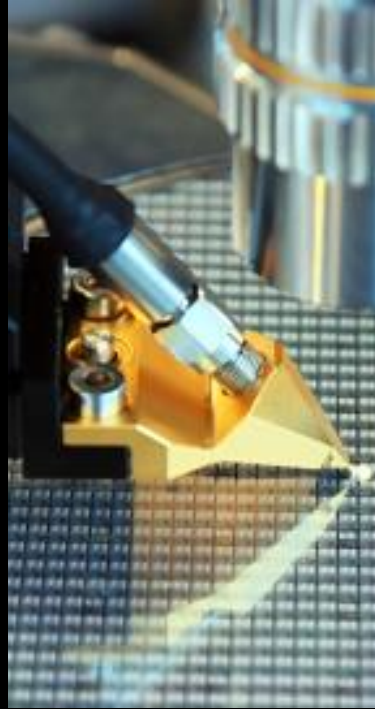
Autonomous systems scenarios



Motion control



Smart buildings



Machine calibration

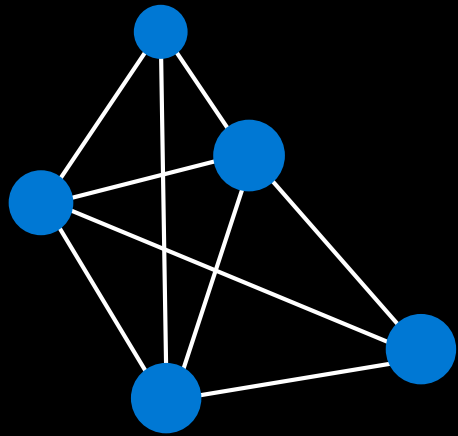


Process control

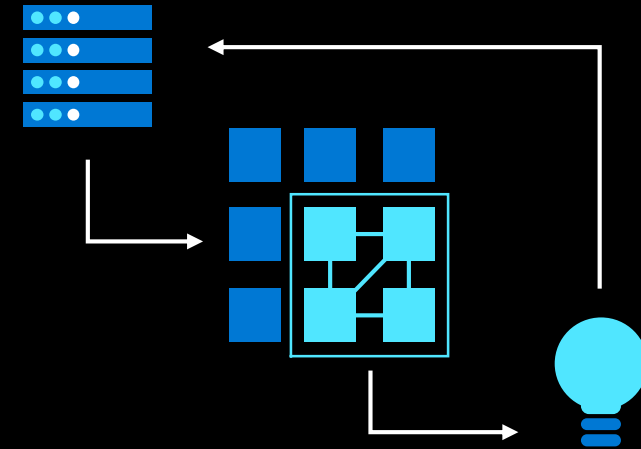


Industrial robotics

Azure Machine Learning service



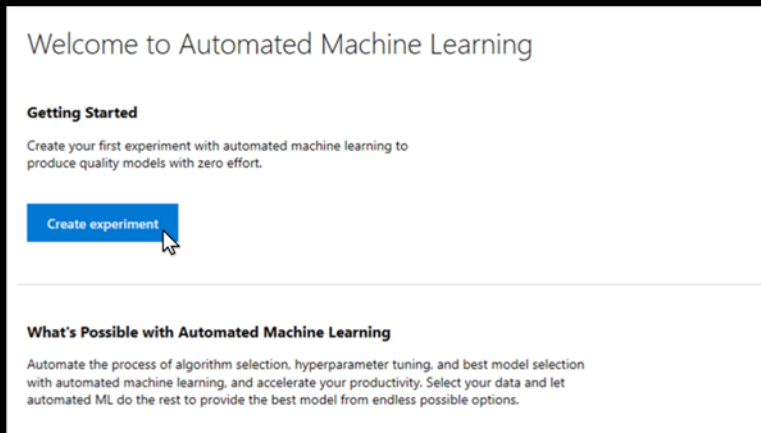
Simplified machine learning



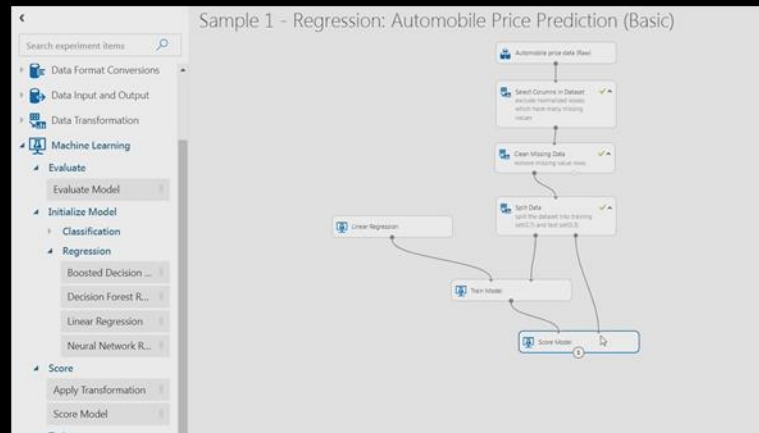
End to end lifecycle management

Open platform

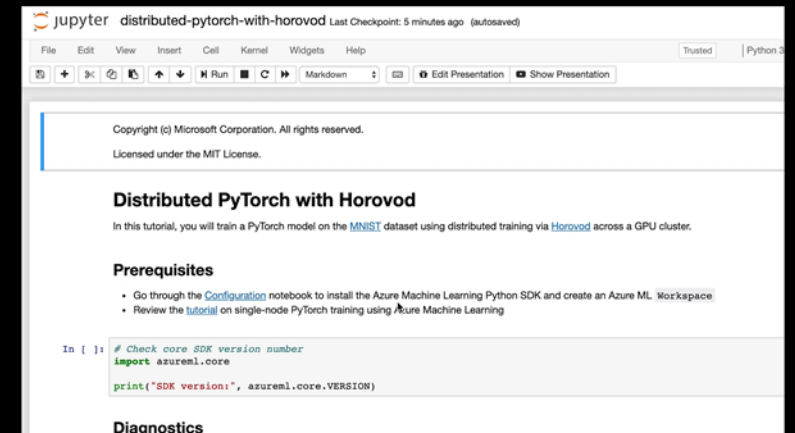
Simplify machine learning for any skill level



Automated
machine learning UI



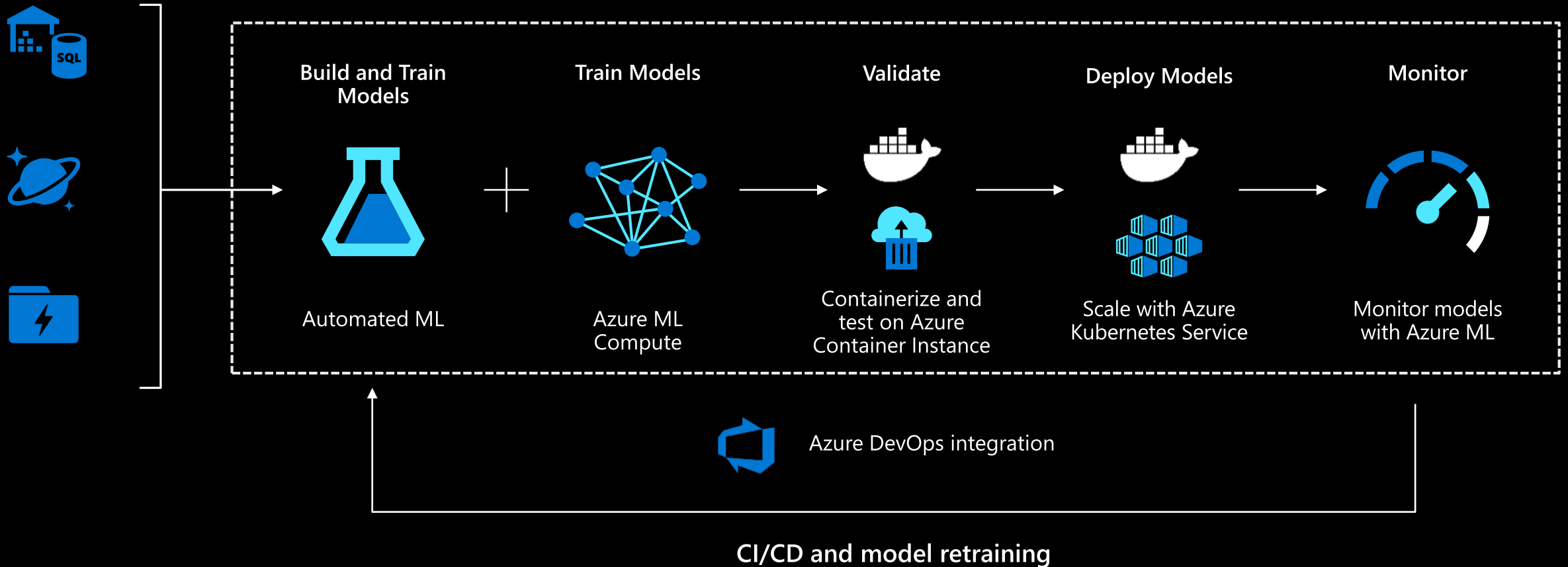
Visual interface



Machine learning notebooks

Deploy machine learning models at scale

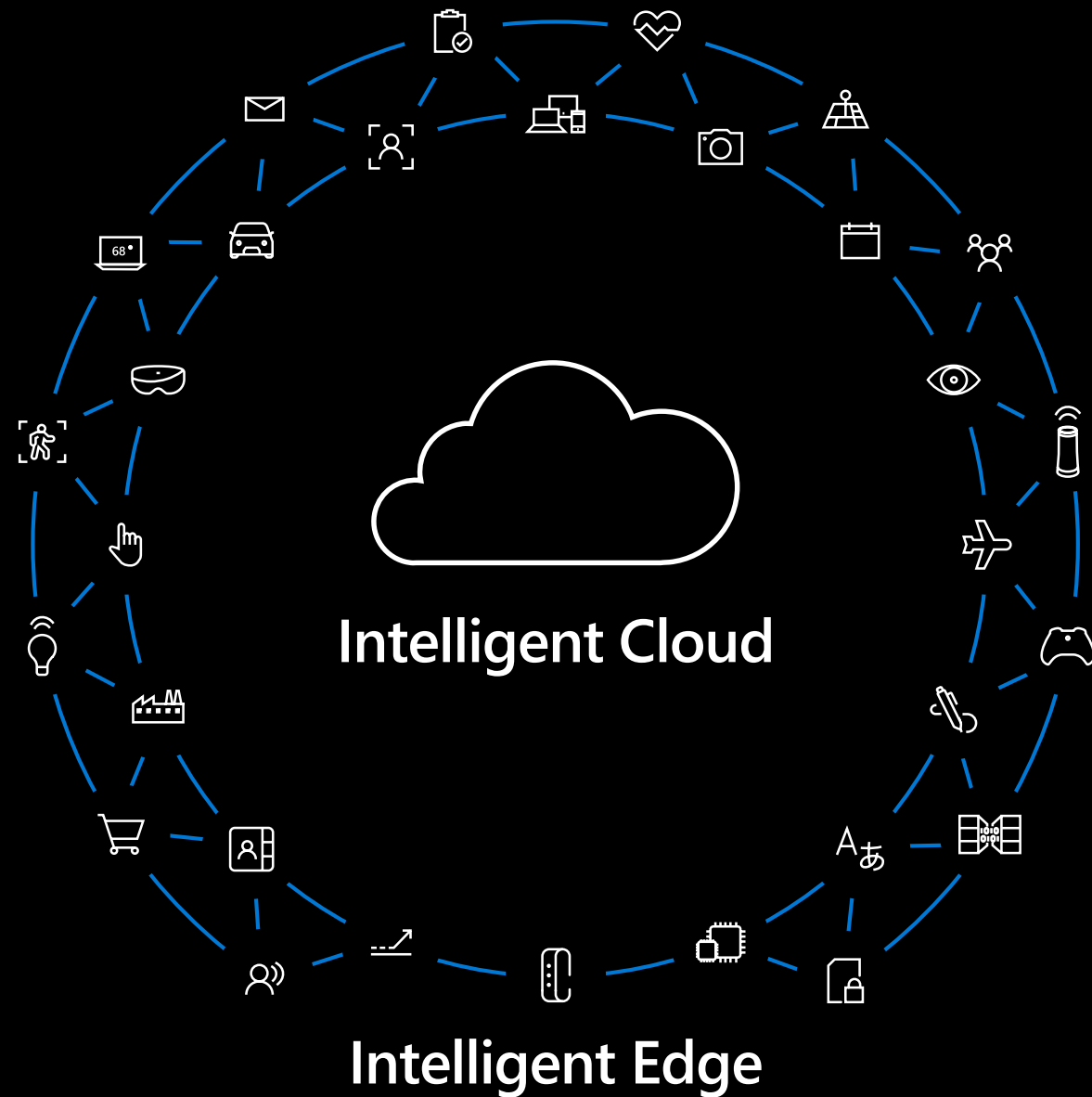
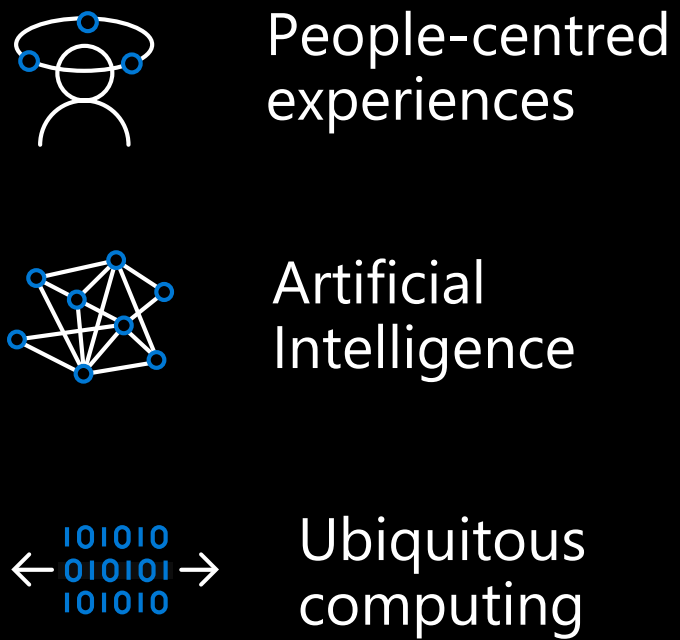
Azure Machine Learning service





bp





Mixed reality

A blending of the physical and digital worlds in which users may interact with digital and real-world objects while maintaining presence in the physical world

Physical world

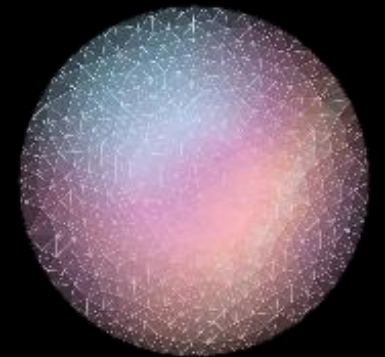


Augmented reality



Virtual reality

Digital world



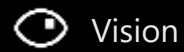
Mixed reality spectrum

■ The Microsoft mixed reality stack

Mixed Reality Applications



Azure Cognitive Services



Vision



Speech



Language



Knowledge



Search

Azure Mixed Reality & IoT Services



Azure Digital Twins

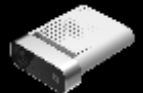


Azure Spatial Anchors



Azure Remote Rendering

Intelligent Edge Devices



Digital twins: fusing physical and digital

Physical
World

Devices



Spaces



People



Data

Control

Data

Control

Data

Control

Systems

Context

Processes

Measure

Insight,
optimization

Measure

Insight,
optimization

Measure

Assistance,
task completion



Operations

Remote monitoring
Fault detection
Predictive maintenance



Insights

Occupancy and utilization
Workplace advisor
Workplace analytics



Experiences

Tenant apps
Employee productivity, comfort, satisfaction
Indoor mapping, location, wayfinding
Mixed reality and cognition

Digital
World

■ The 3rd wave of computing



Microsoft Dynamics 365 business applications

A new vision for work

Empower employees and optimize operations with mixed reality applications from Dynamics 365

Remote assist



Solve problems faster

Guides



Learn by doing

Layout



Design Spaces

Product visualize



Show Customers Product

“The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.”

Mark Weiser | former CTO Xerox Park



ABB

+20%

Increase in
customer satisfaction



kodisoft

+32%

Increase in sales



Rockwell
Automation

\$300K

Cost savings per day



f² FINANCIAL
FABRIC

90%

Reduced time from
documents to insights



TAL

40x

More insurance cases reviewed



200K

Customers interacting
with chatbots



Opportunity
and
Responsibility

Responsible AI

Fairness	Reliability
Inclusivity	Privacy
Transparency	Accountability



NITROGEN
19ppm

Recommendation:
25ppm

AI for Good

AI for Earth
AI for Accessibility
AI for Humanitarian Action

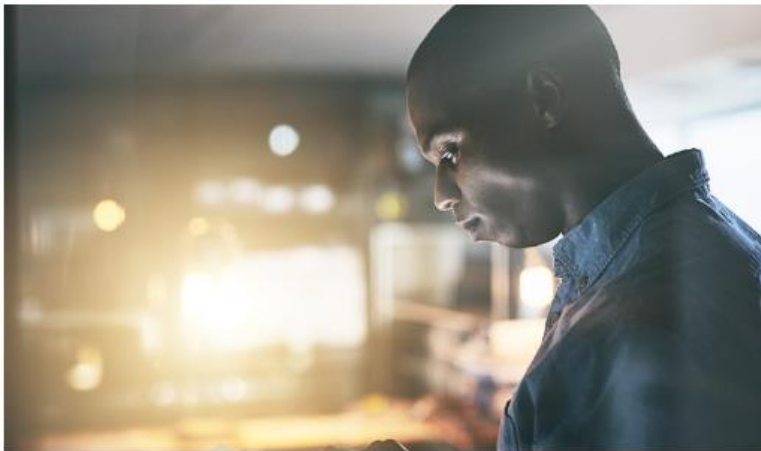
Free AI online training & certification



AI Business School



Business leaders can use AI Business School to gain specific, practical knowledge to define and implement your AI strategy. Hear directly from industry experts on how to foster an “AI-ready” culture and learn how to use AI responsibly and with confidence.



Define an AI strategy to create business value

8 MODULES 4 HR 16 MIN BEGINNER > INTERMEDIATE

[Learn More >](#)



Discover ways to foster an AI-ready culture in your business

6 MODULES 3 HR 10 MIN INTERMEDIATE

[Learn More >](#)



Identify guiding principles for responsible AI in your business

3 MODULES 55 MIN INTERMEDIATE

[Learn More >](#)



So... what's stopping
you from making
things happen?

