Microsoft

IoT in Action

#IoTinActionMS

Microsoft

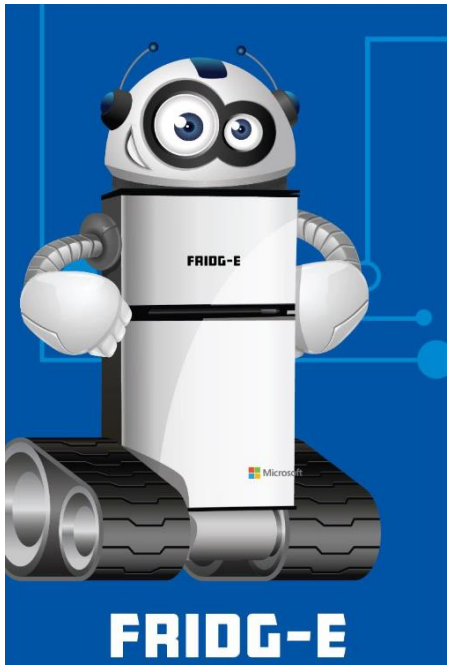
Architecting the Intelligent Edge

Analisa Roberts
Director, IoT Partner Marketing, Microsoft

Sarah Maston
IoT Solution Architect, Microsoft

IoT in Action

The evolution of IoT in Action

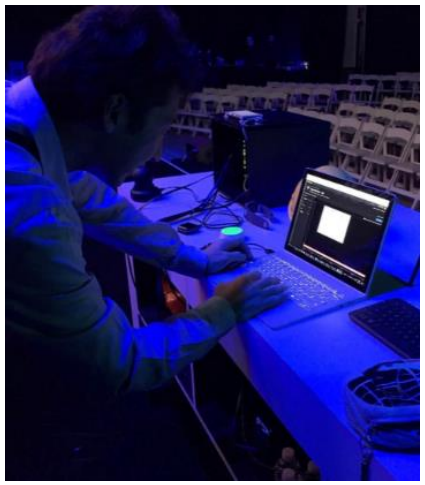


ncd.io

Year 1 2017

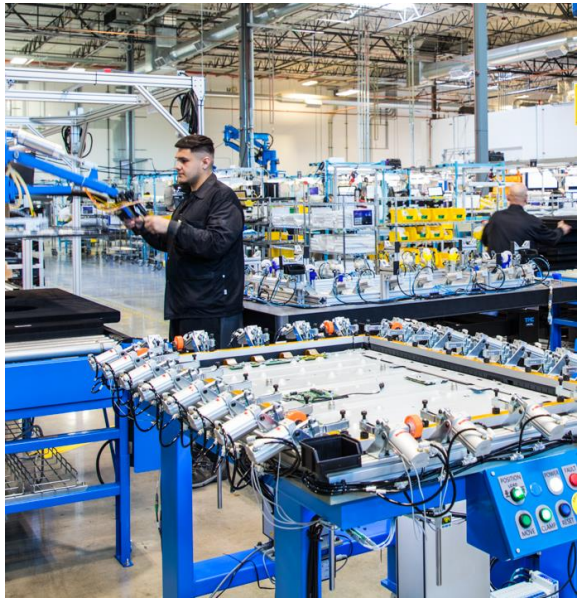
The evolution of IoT in Action

Insight



Year 2 2018

The Evolution of IoT in Action

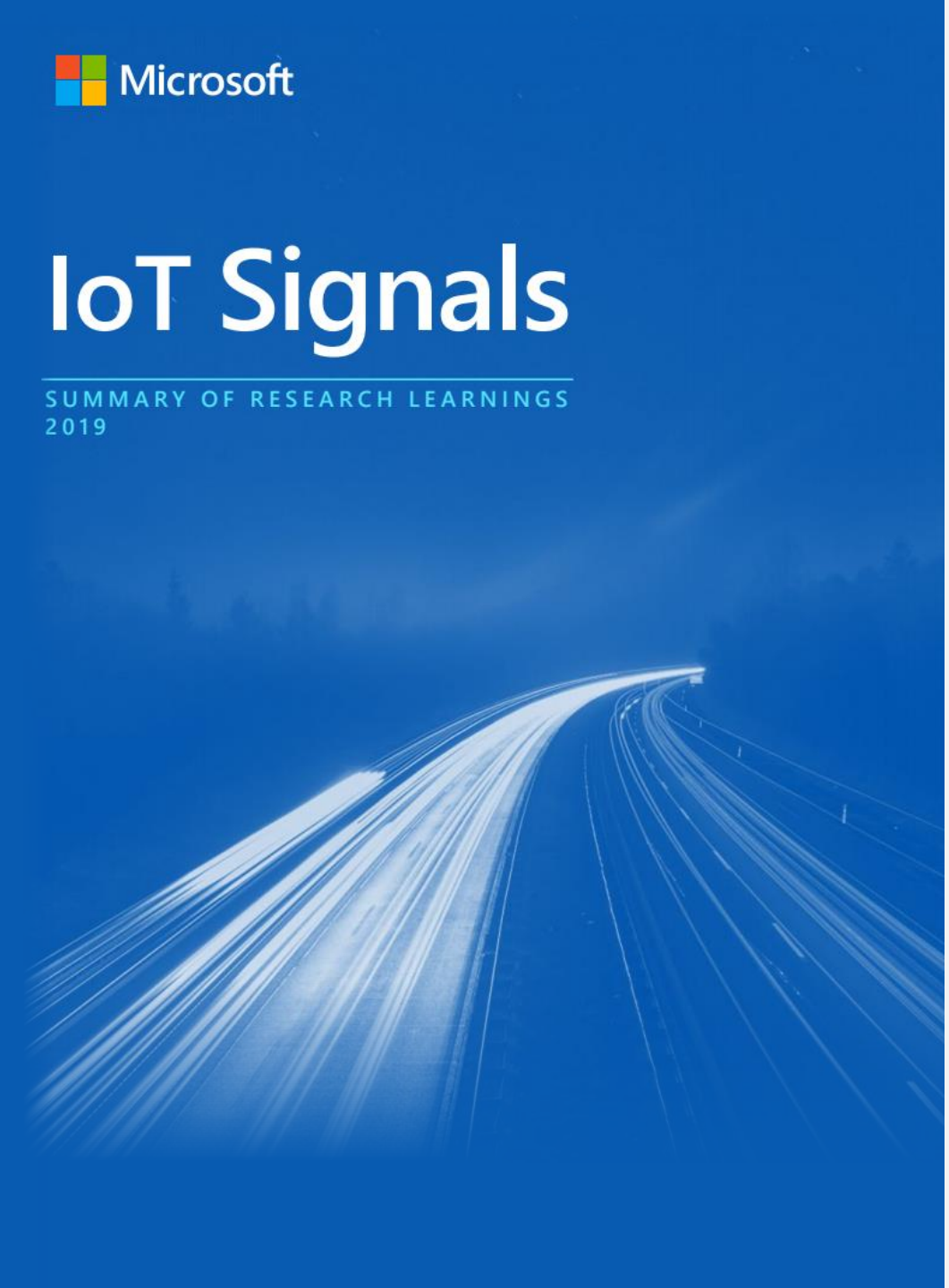


Year 3 2020

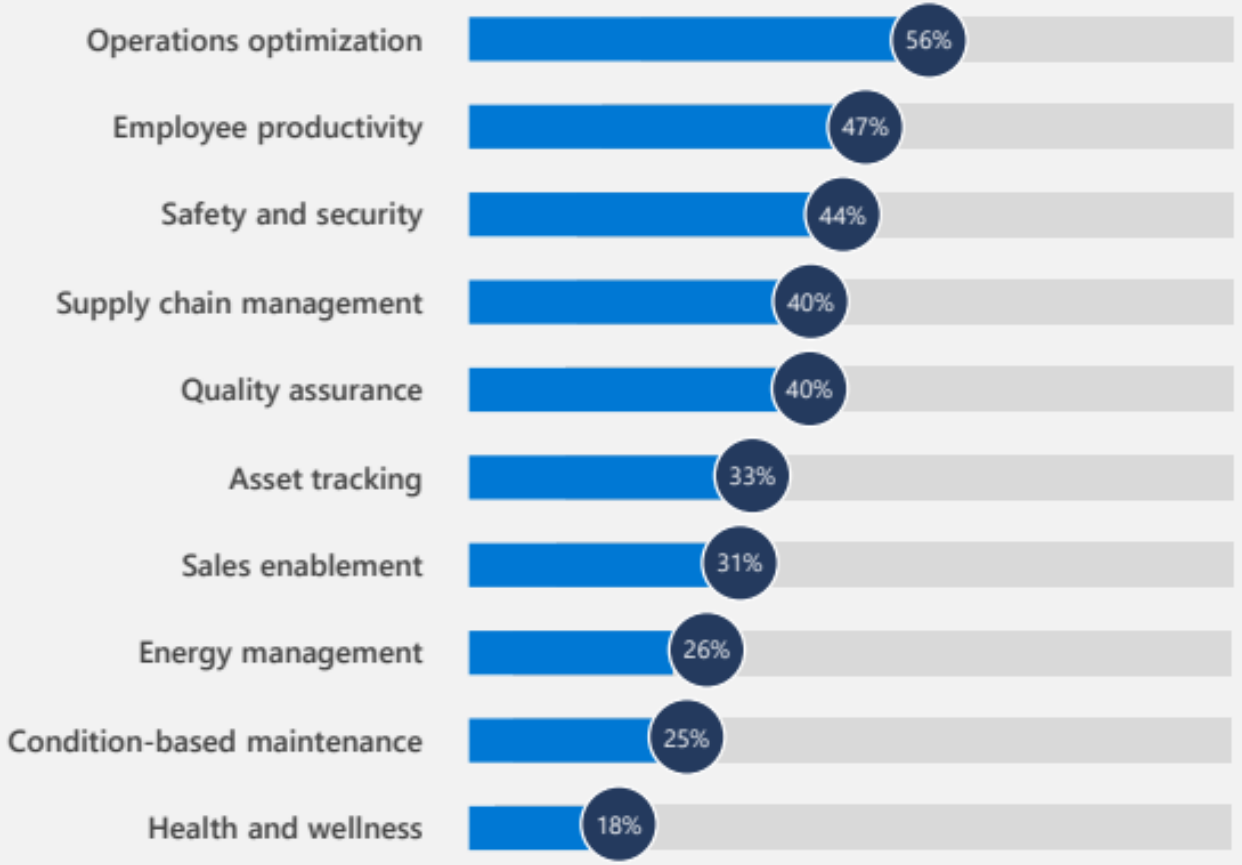
Microsoft

IoT Signals

SUMMARY OF RESEARCH LEARNINGS
2019



Reasons for IoT adoption



Microsoft

IoT Signals

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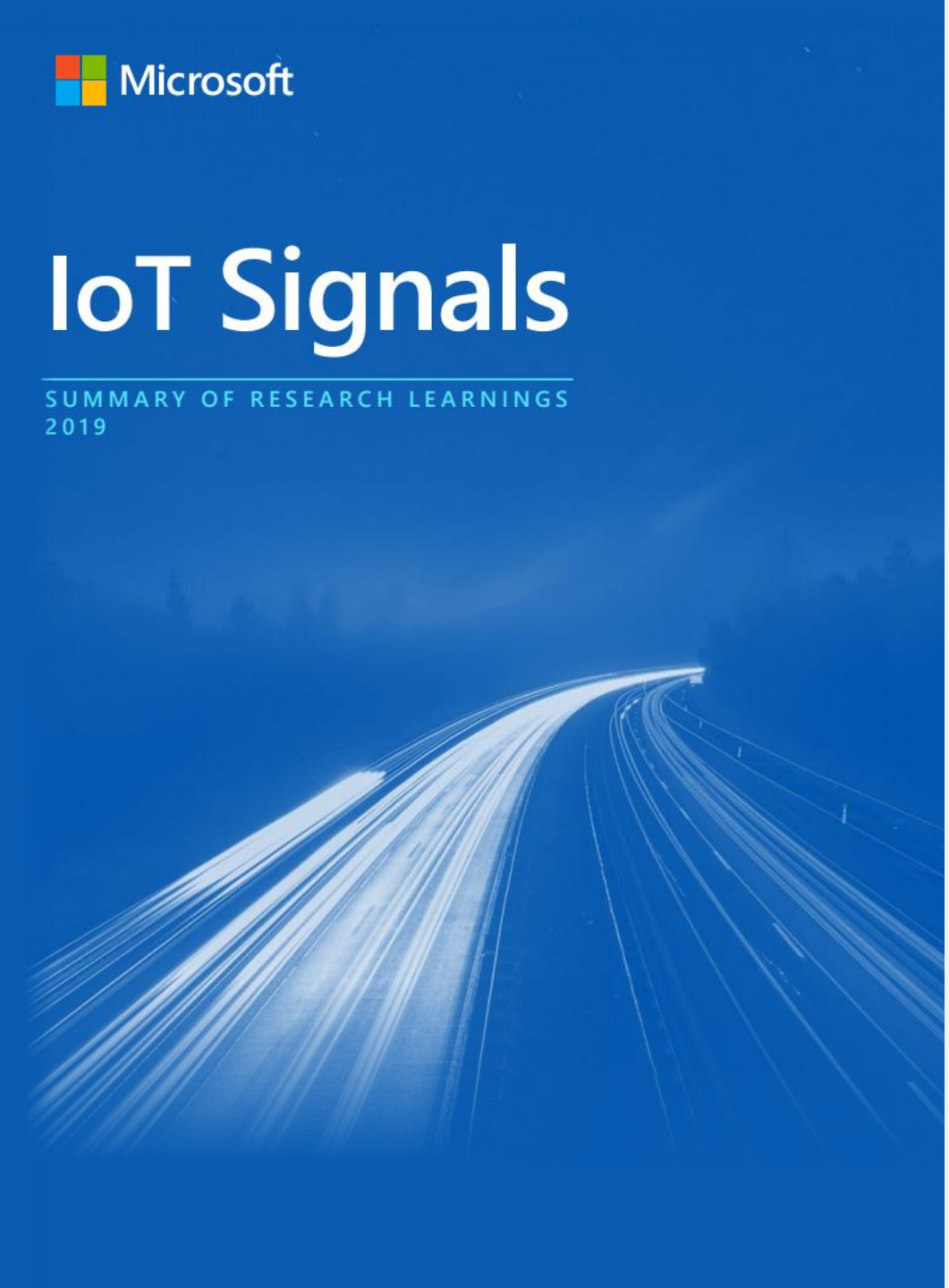
2019



Additional top use case by industry

RETAIL/ WHOLESALE

Supply chain optimization	64%
Inventory optimization	59%
Surveillance and security	48%
Loss prevention	44%
Energy optimization	40%

TRANSPORTATION

Fleet management	56%
Security, surveillance, and safety	51%
Manufacturing operations efficiency	40%
Vehicle telematics and infotainment	38%
Predictive maintenance	33%

GOVERNMENT

Public Safety	48%
Infrastructure and facilities management	40%
Regulations and compliance management	38%
Fleet and asset management	37%
Incident response	29%

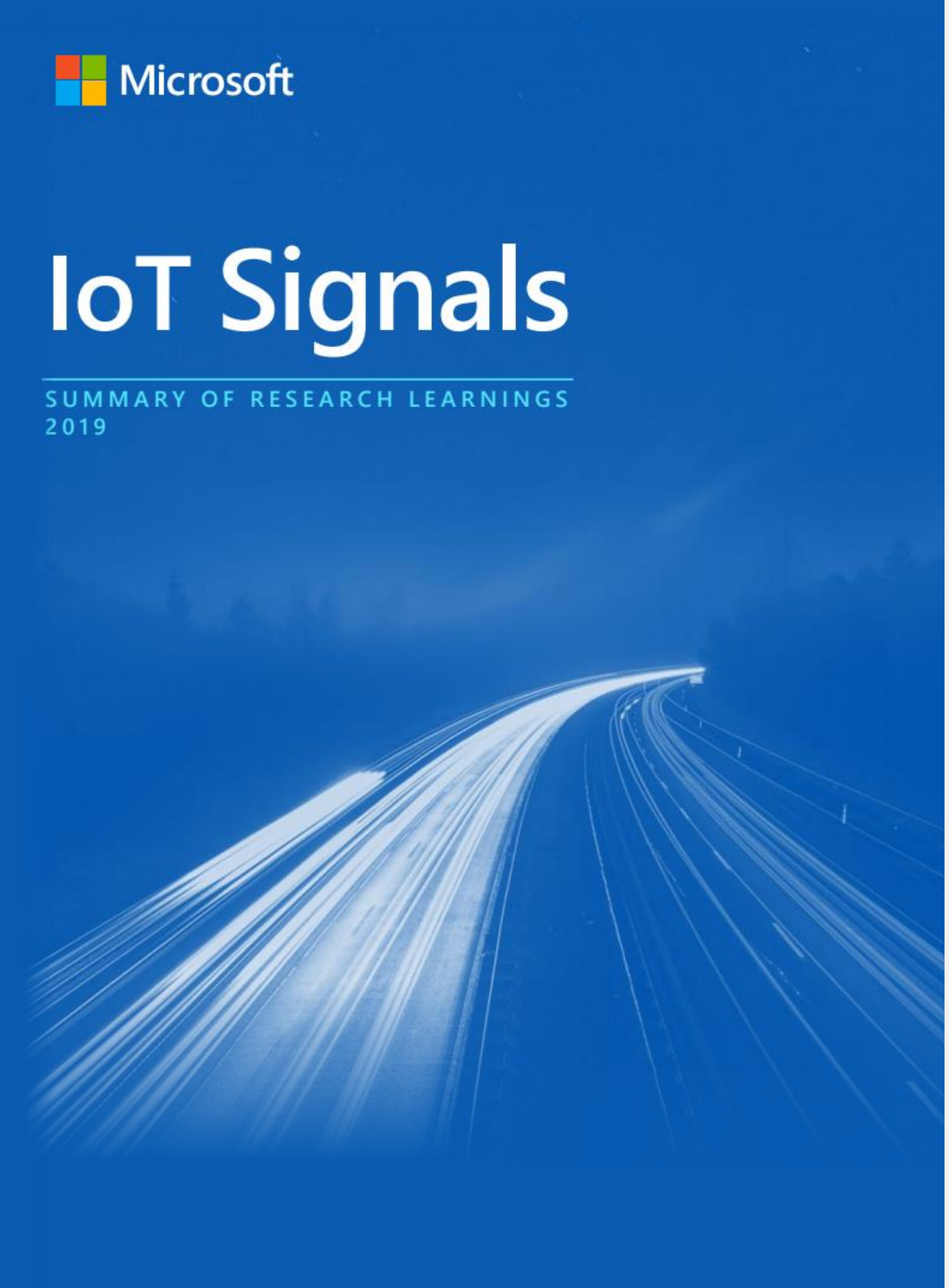
HEALTHCARE

Tracking patient, staff, and inventory	66%
Remote device monitoring and service	57%
Remote health monitoring and assistance	55%
Safety, security, and compliance	53%
Facilities management	42%

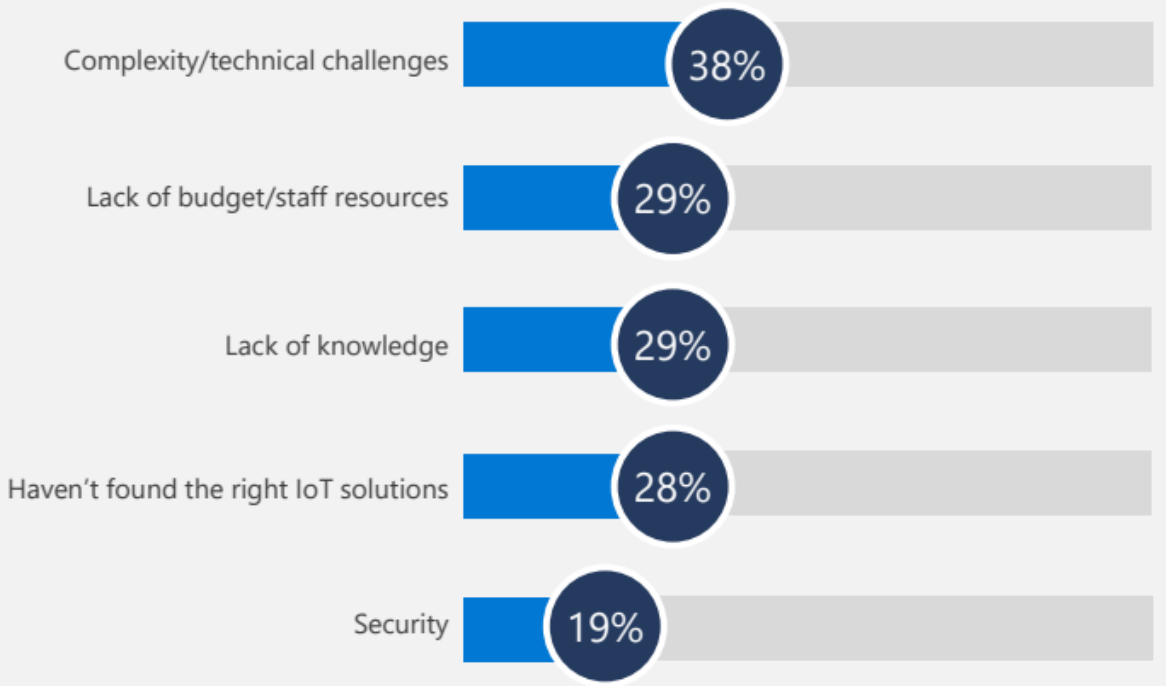
Microsoft

IoT Signals

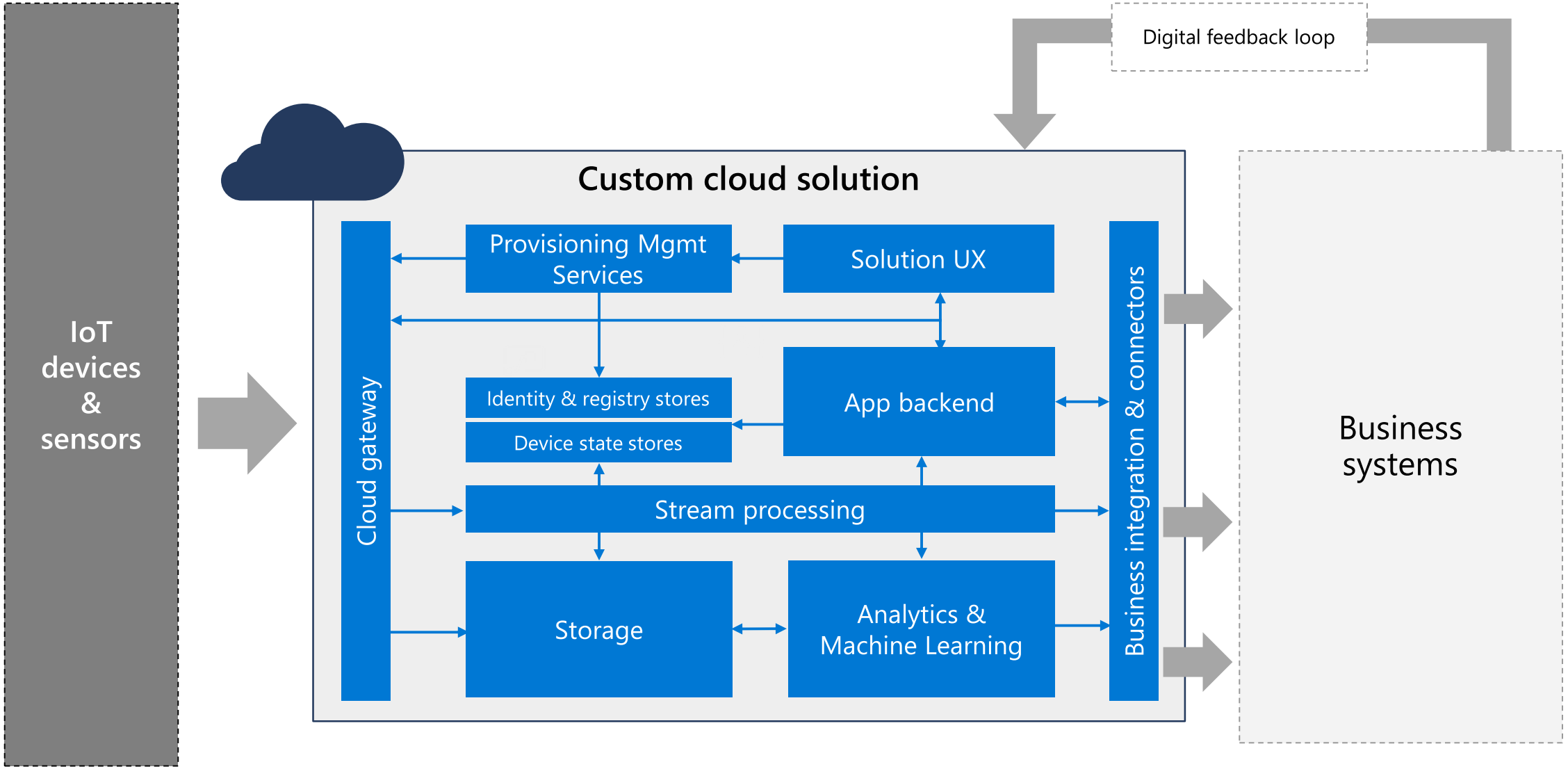
SUMMARY OF RESEARCH LEARNINGS
2019



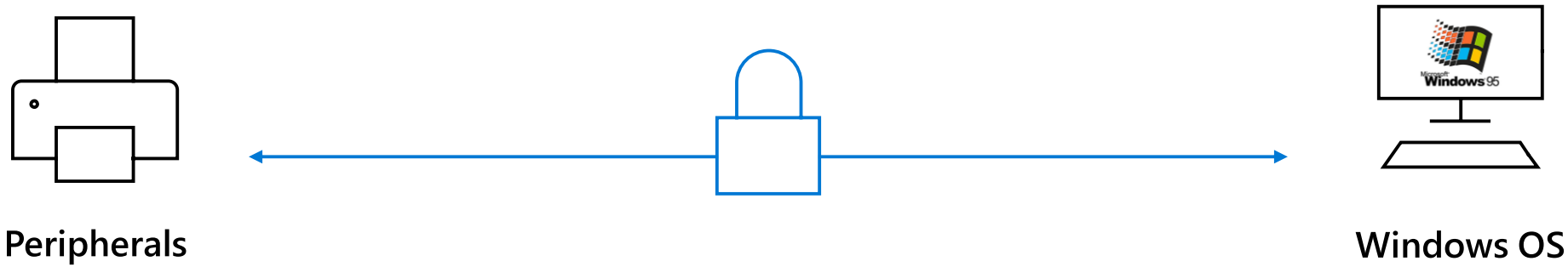
Top challenges



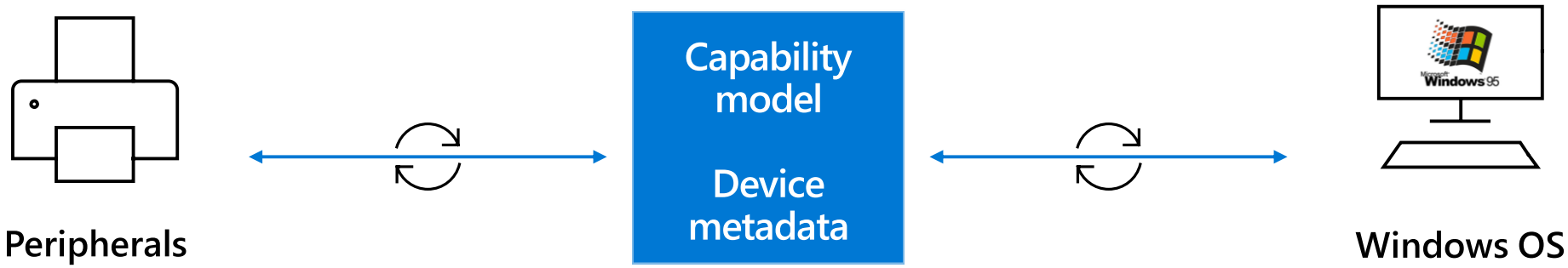
Solution architecture—DIY



We had a similar challenge in the past…

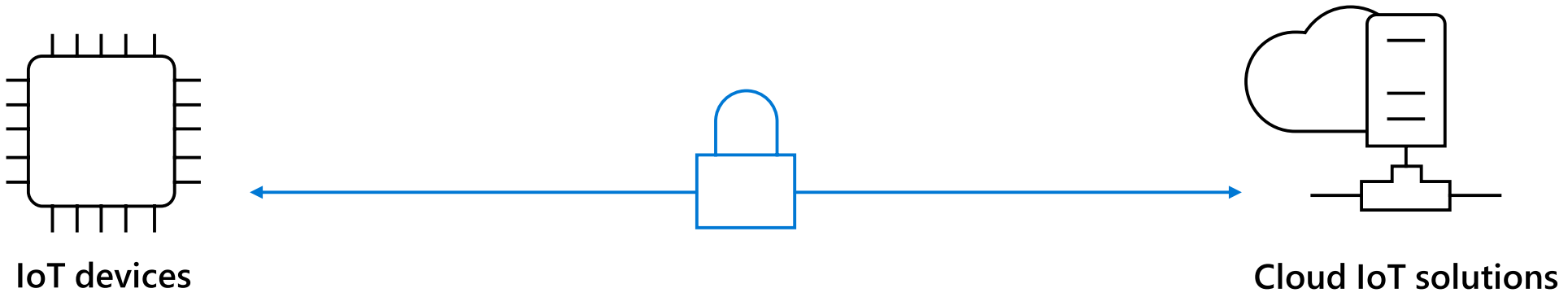


That was solved with Windows Plug and Play



Devices published their capability models and adhered to them
Windows used the capability model to know how to interact with them

IoT today



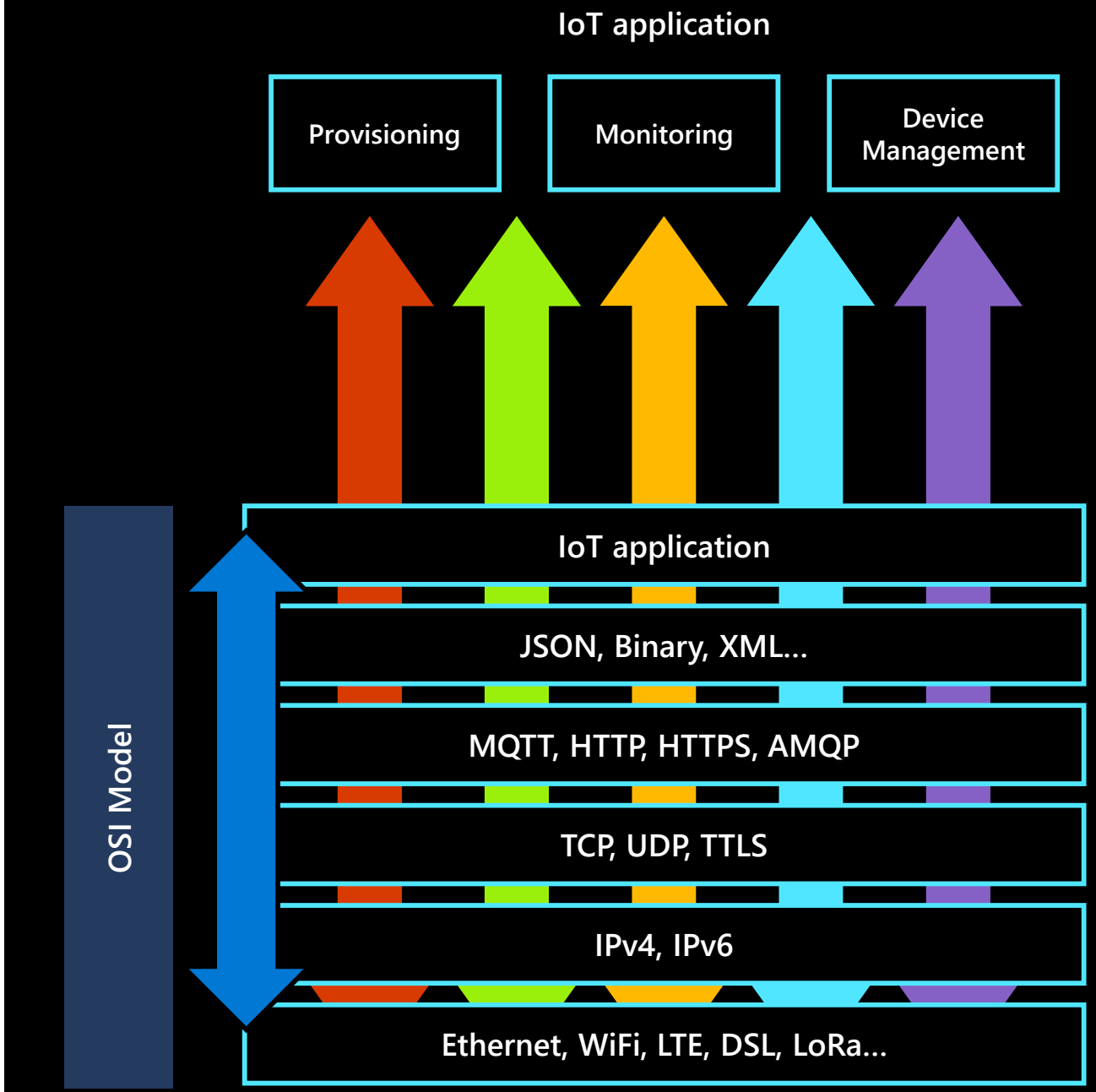
Tight coupling between software on device and IoT solution in the cloud

IoT Plug and Play + Azure IoT Central

Daisuke Nakahara, Principal IoT Solution Architect, Microsoft

Connecting hardware is very "hard"

Provisioning
Configuration
Device management
Deployment
Monitoring

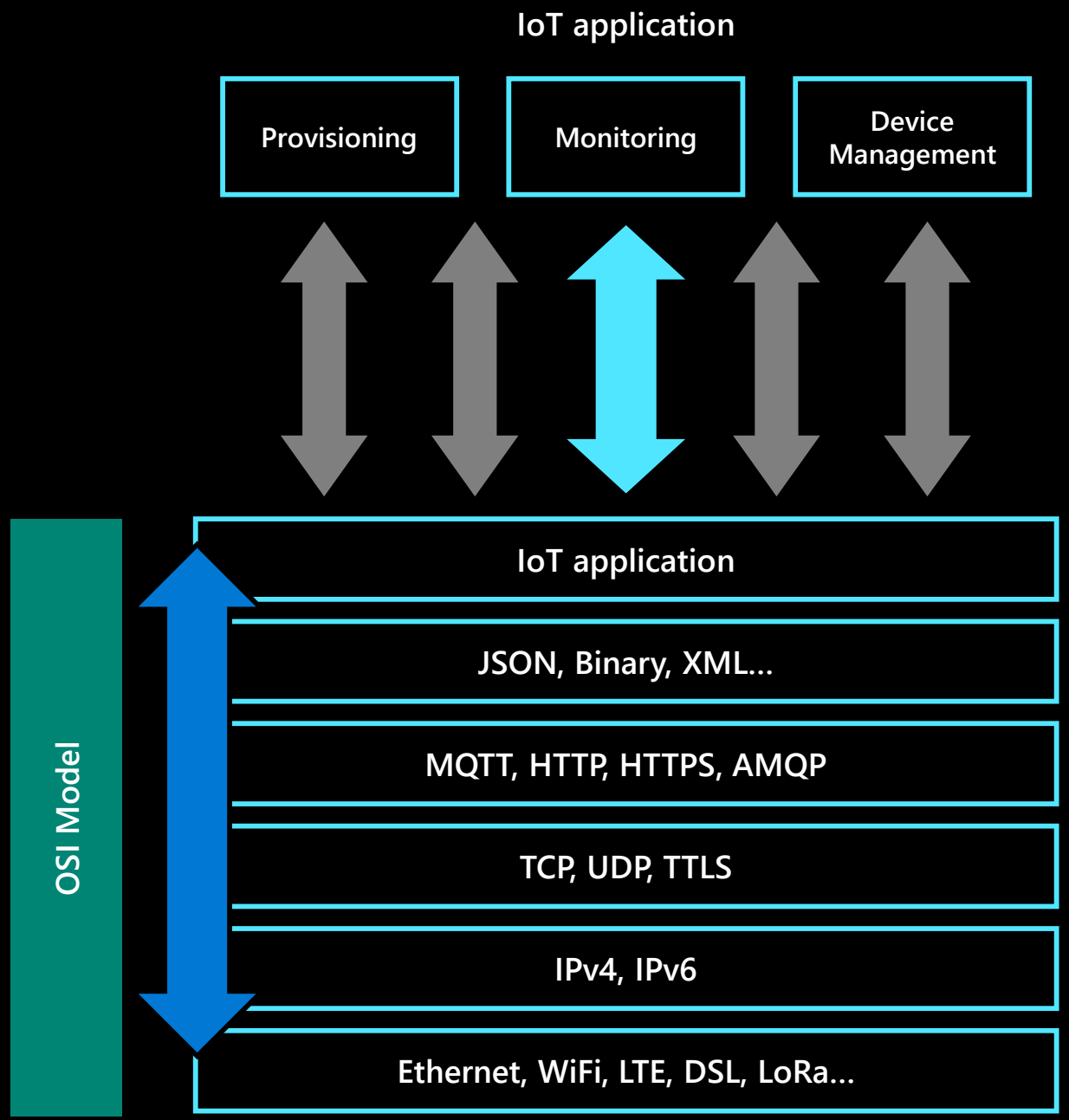


IoT Plug and Play defines common language

A platform feature
to describe models and
capabilities to cloud

Based on Digital Twin
definition language

Open source based on open standards
(JSON-LD, RDF)



Benefits

Solution developers

Dramatically reduces the effort needed to build software on devices

Customers and partners

Large ecosystem of devices that just work with Azure IoT solutions, without any development required

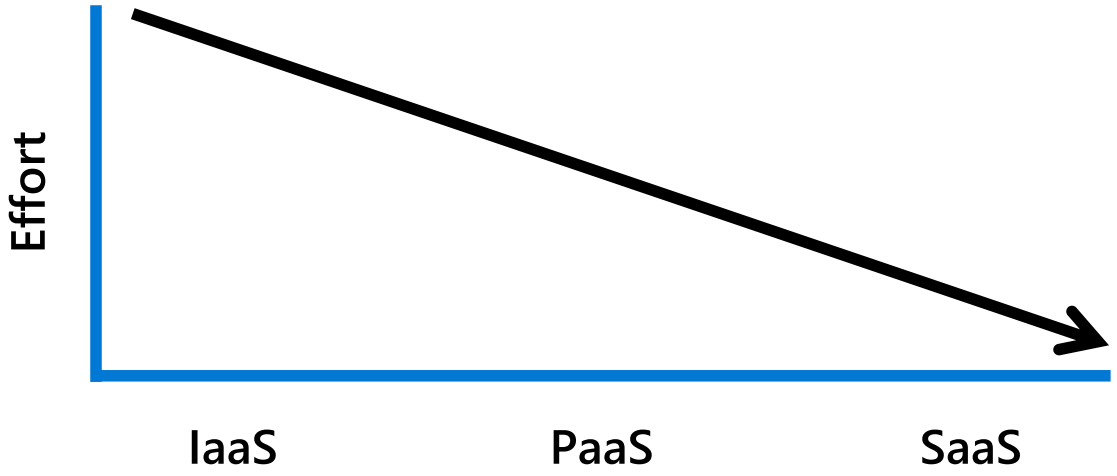
Device builders

Certify your device for IoT Plug and Play and it can be used with thousands of Azure IoT solutions

In public preview

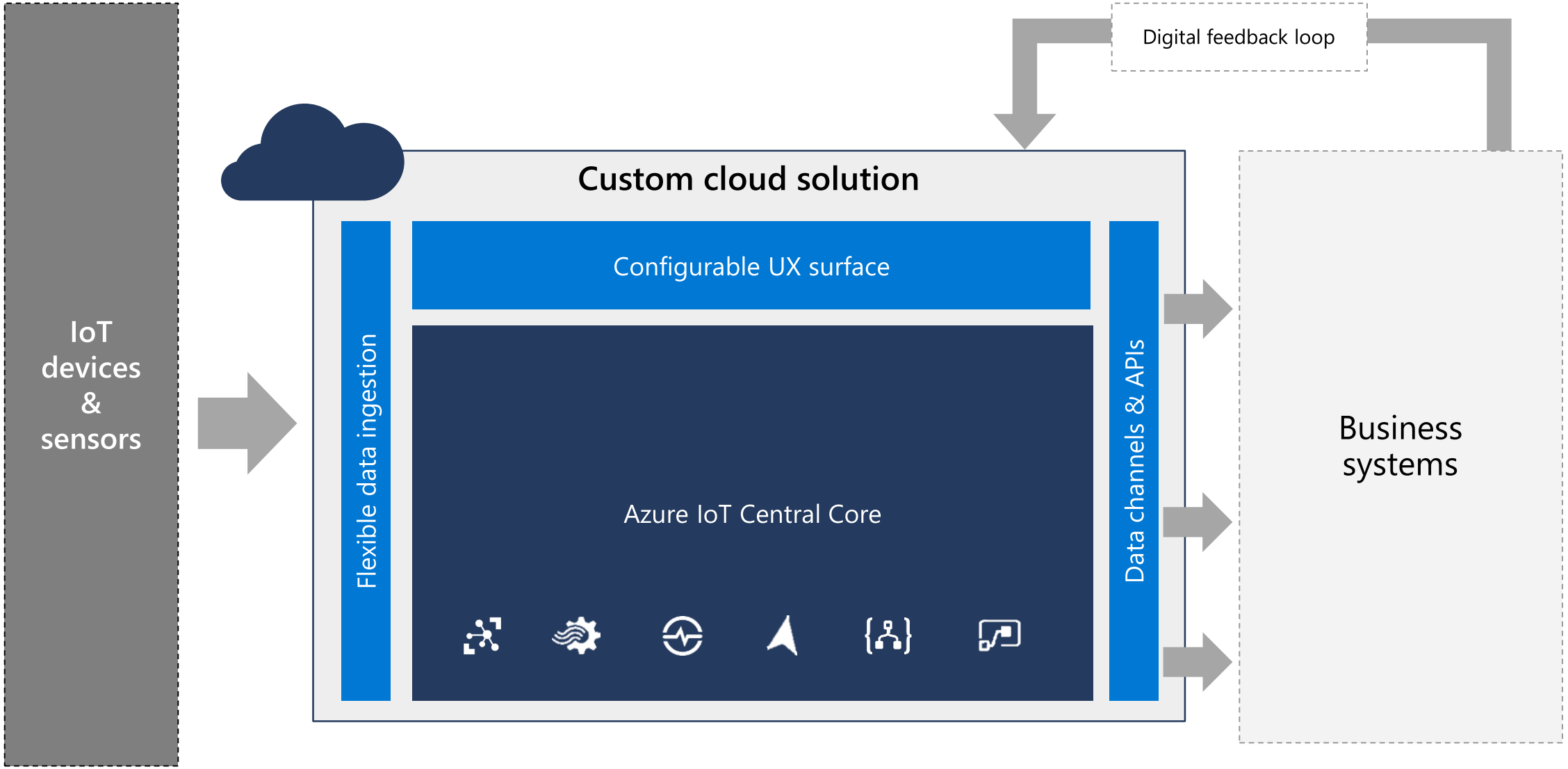
http://aka.ms/IoTPlugandPlay

Making IoT seamless



↓ The total effort to build and operate an IoT Solution is rapidly decreasing

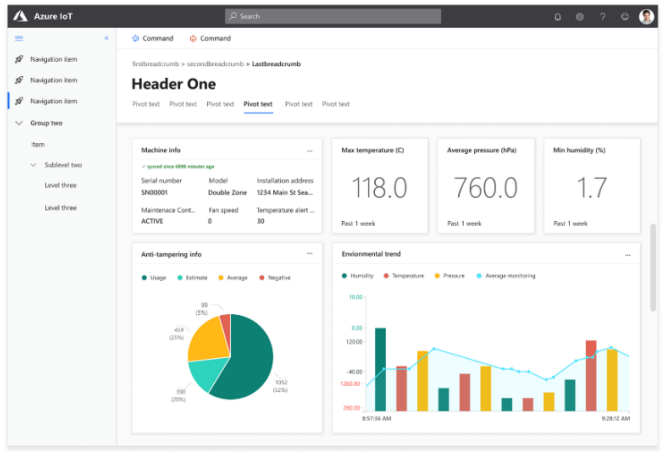
Solution architecture—IoT Central



Azure IoT Central

IoT app platform with security, global scale, high availability, disaster recovery built in

- Device connectivity and management
- Telemetry ingestion and command and control
- Monitoring rules and triggered actions
- User roles and permissions
- Dashboards, visualization and insights
- Fully hosted and managed by Microsoft



- Maps, location telemetry and geofencing
- Device Bridge
  Ingest data from other clouds
- Continuous Data Export
  Bring data into downstream business applications

- White labeling
  Your SaaS—your brand
- IoT Plug-and-Play
  Public Preview
- IoT Edge support
  Incl. Module Management
- Multi-tenancy & RBAC
- Extensibility
  APIs
- Solution Builder App Templates

IoT Central App Templates

App templates for Priority Industry Verticals

App Templates for Industries

Retail
Digital distribution center
In-store analytics
Checkout, Condition monitoring
Connected logistics
Smart inventory management

Healthcare
Continuous patient monitoring

Energy
Smart meter analytics
Solar power monitoring

Government
Water quality monitoring
Water consumption monitoring
Connected waste management

Challenge #1

Getting connected

Challenge #2

Making it easier to combine services to “do something”

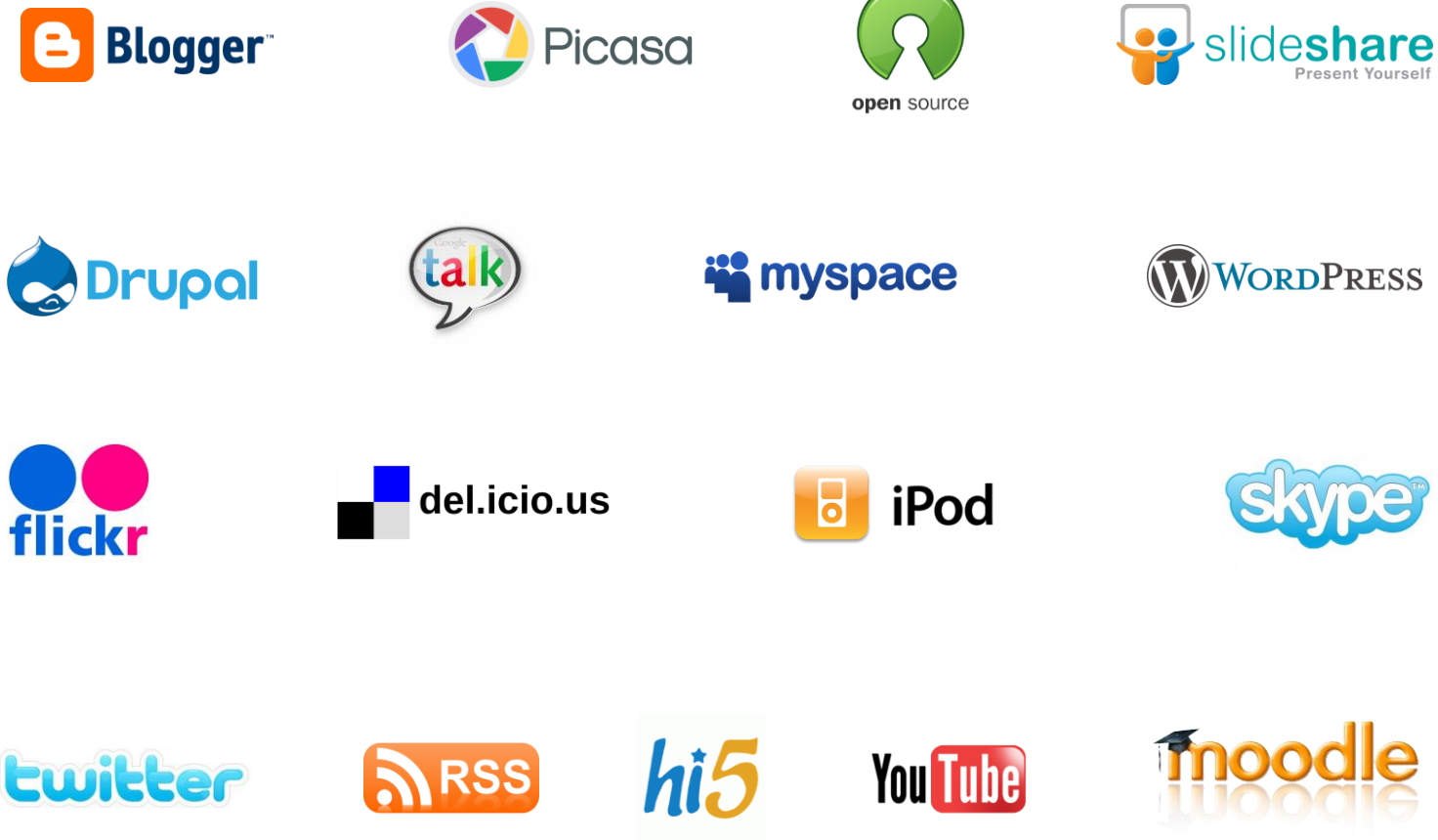
Challenge #3

Making it easier to use the data; it’s massive

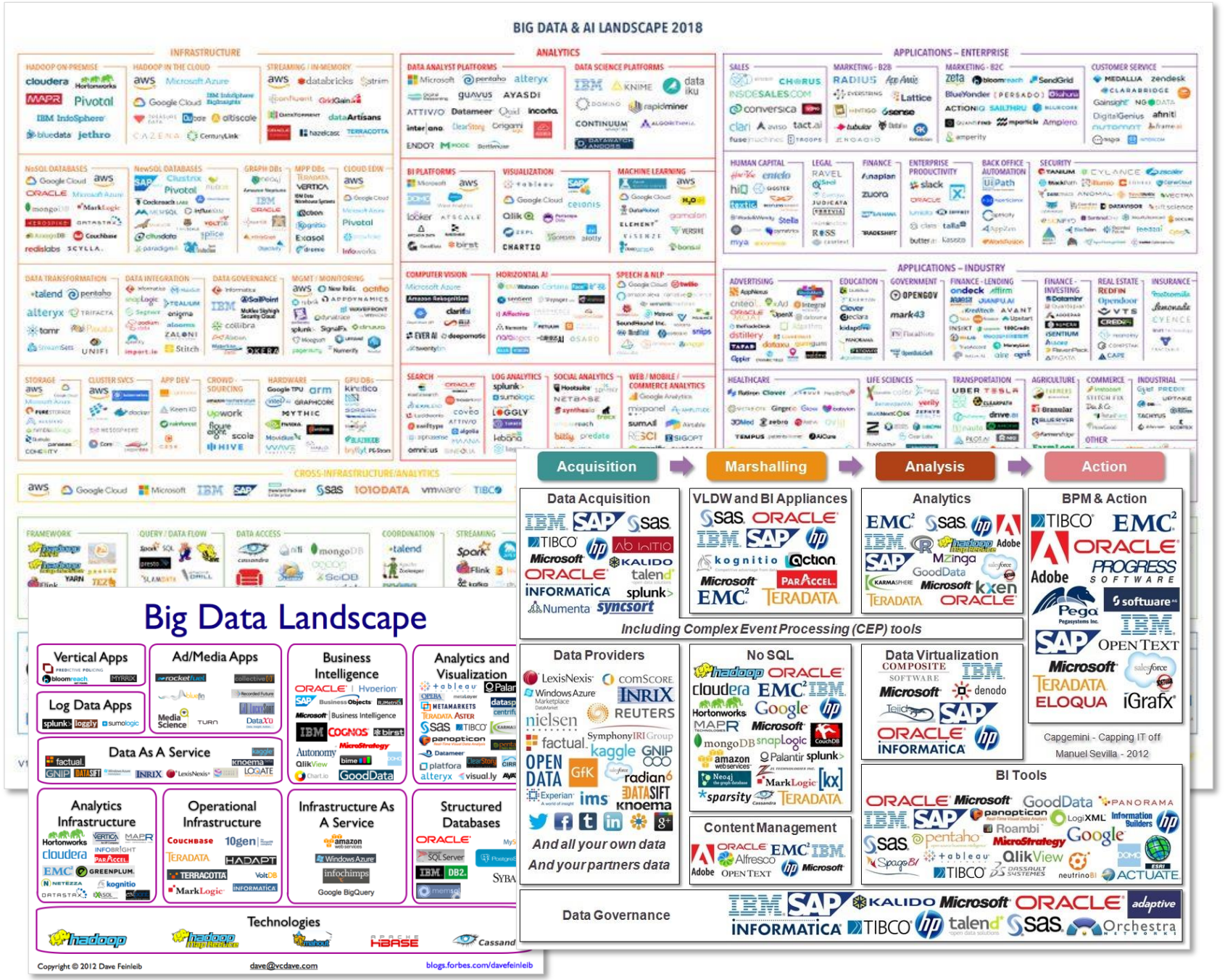
“We’ve been here before”

“Big Data” started with Web 2.0

Web 2.0 technologies

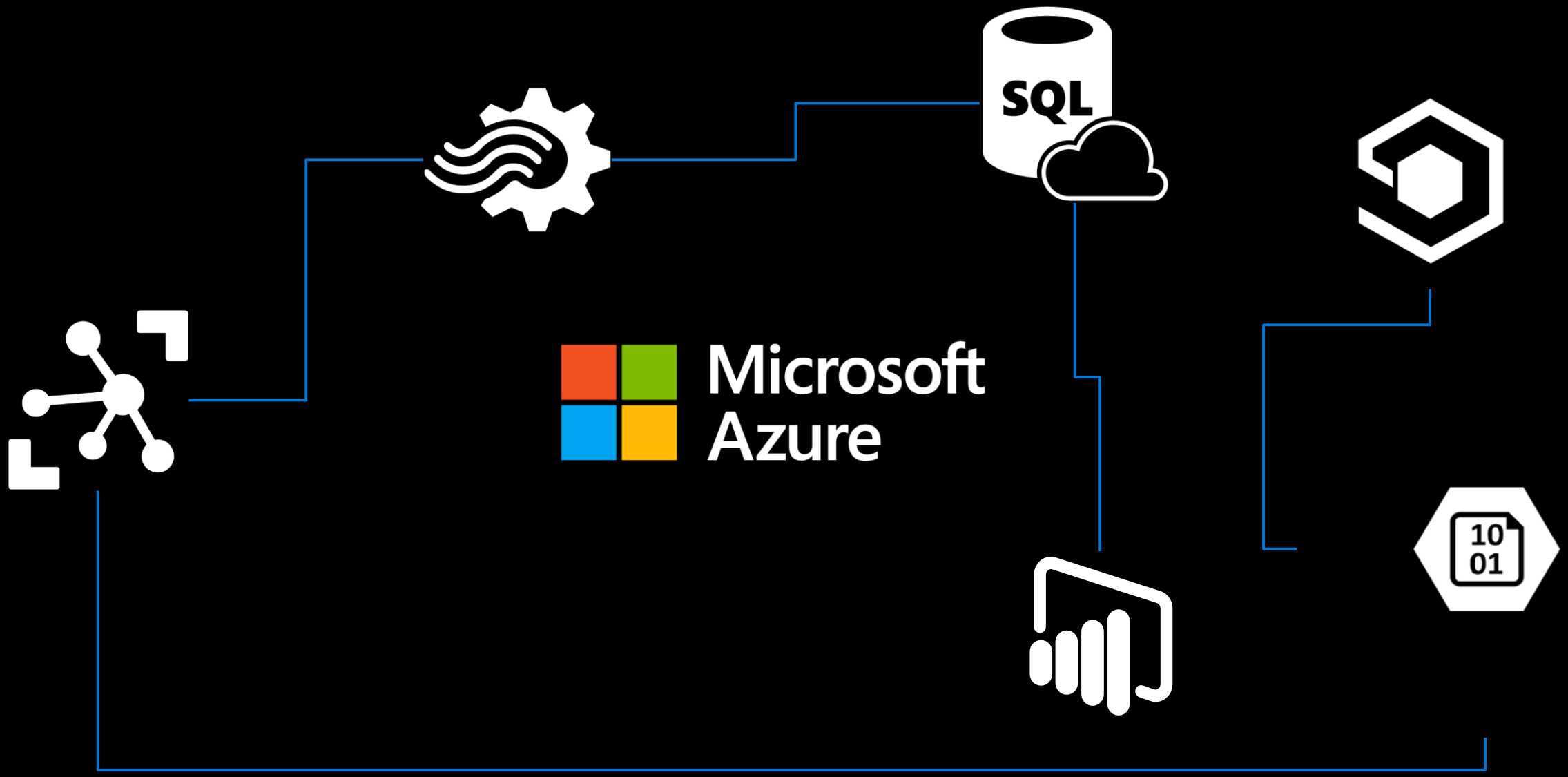


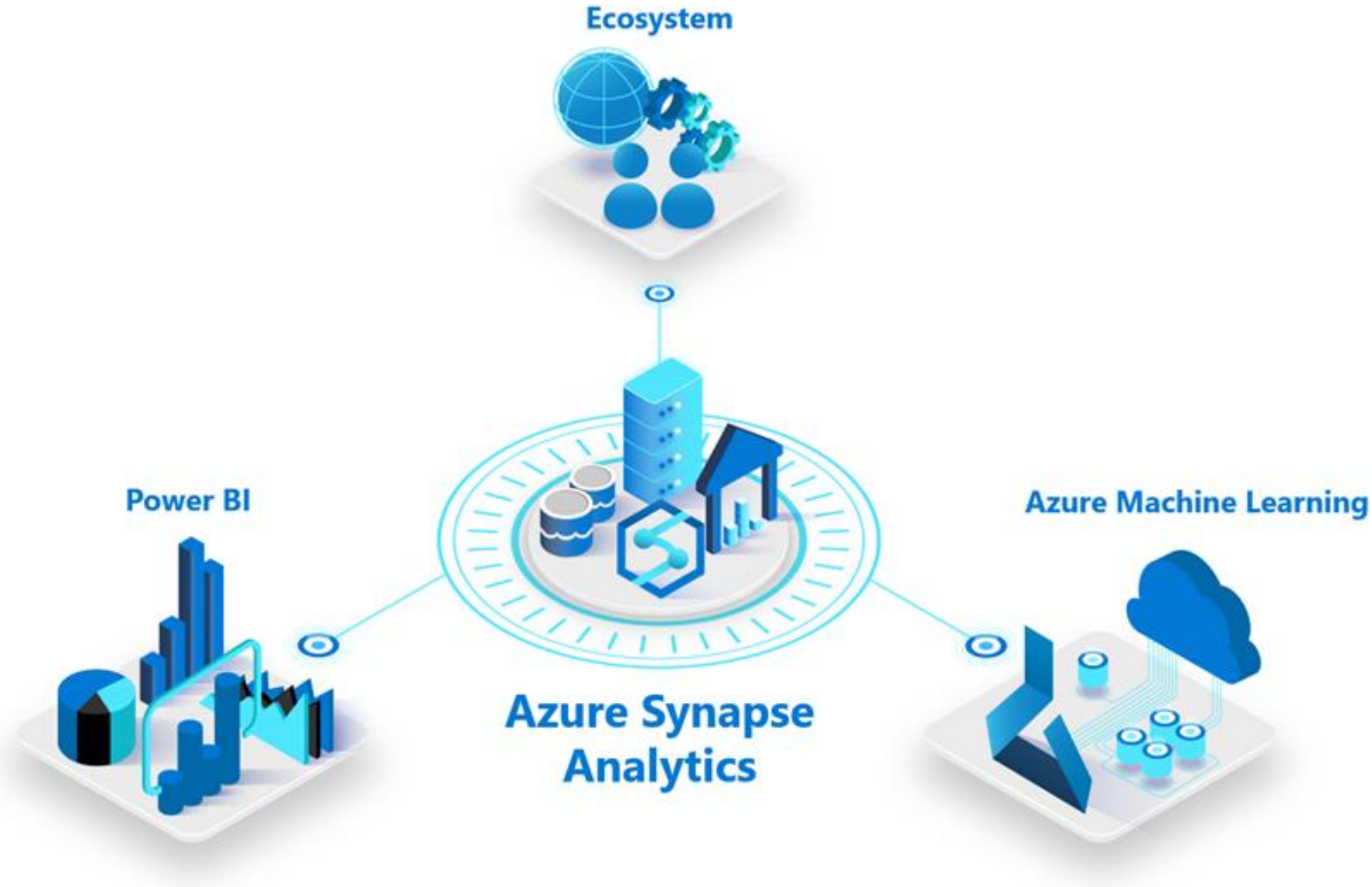
Remember these?



“Big Data” challenge 2.0

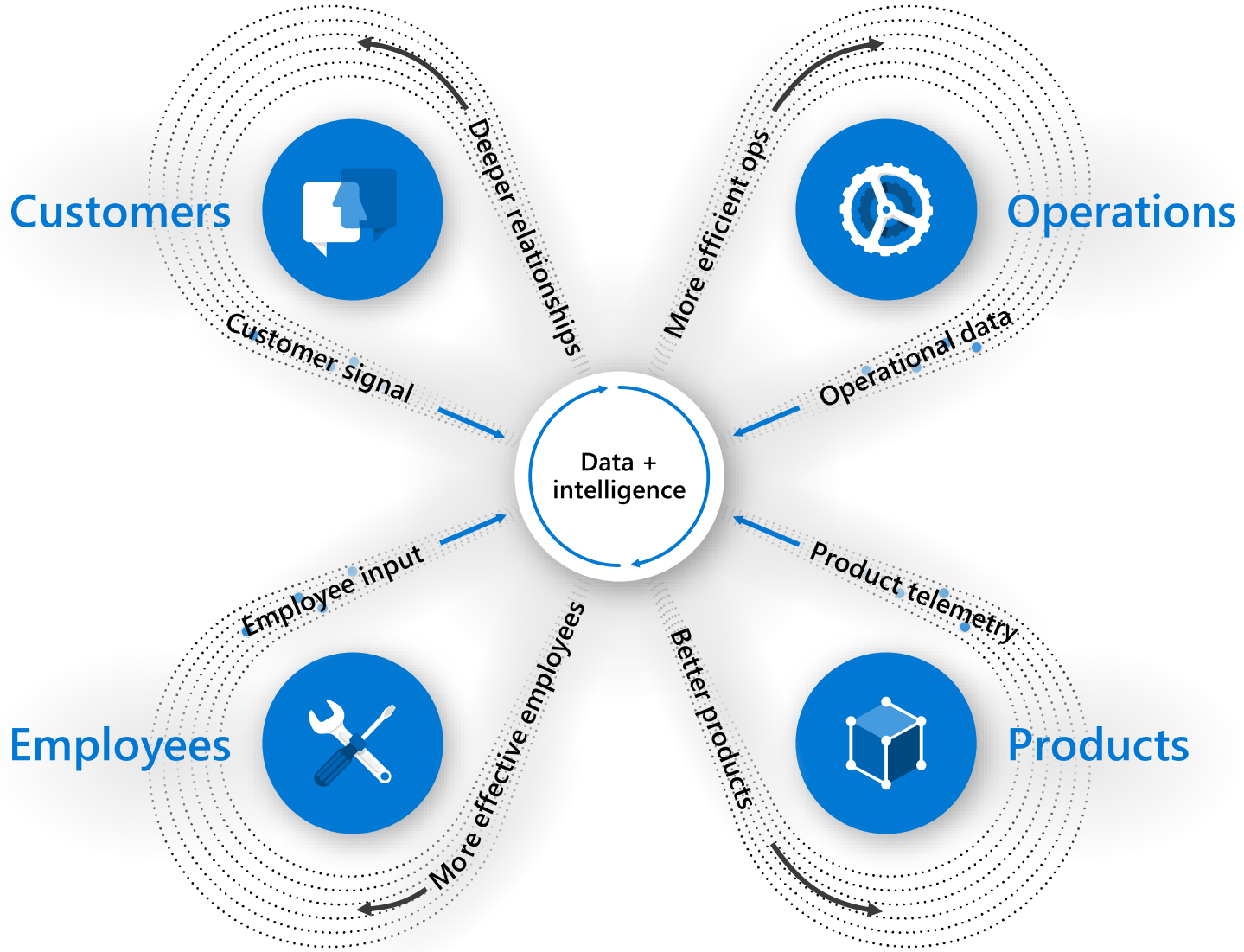

Microsoft
Azure


SQL
Microsoft
Azure
10
01


Ecosystem
Power BI
Azure Machine Learning
Azure Synapse Analytics

The digital feedback loop

1. Data: Capture digital signal across business
2. Insight: Connect and synthesize data
3. Action: Improve business outcomes



What is confidential computing?

The ability to store, transport, **and act** on compute workloads without compromising privacy of data and intellectual property

Why confidential computing in IoT

Intelligent edge computing creates the need to protect code and data in use in addition to protection in storage and transit

Code and data confidentiality

Proprietary code and algorithms

Sensitive data like patient information and ML models

Actions from insights

Safe actions from insights out of intelligent edge processing

Trustworthy I/O for command and control of critical infrastructure

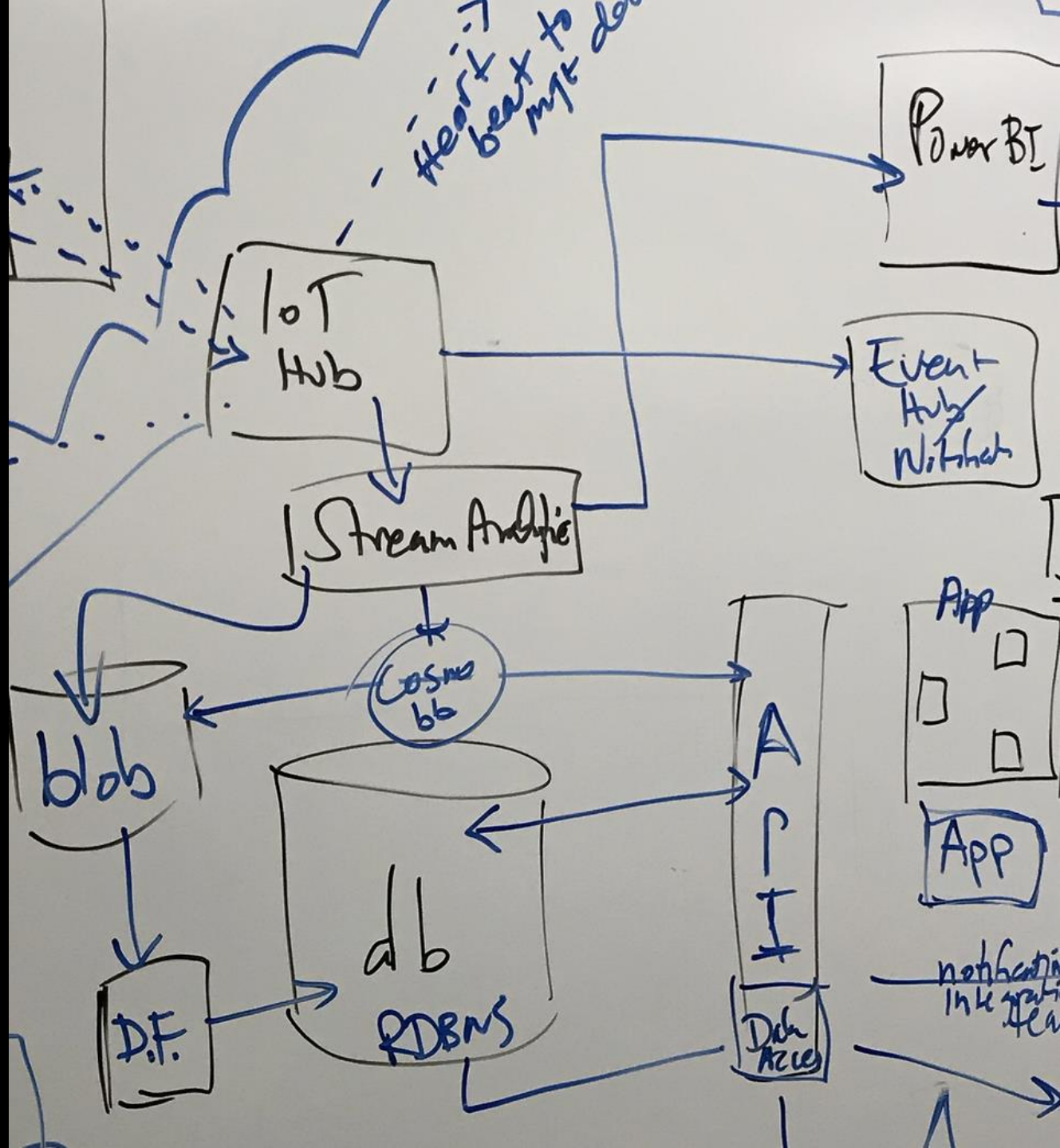
Valued transactions

Metering actions for billing

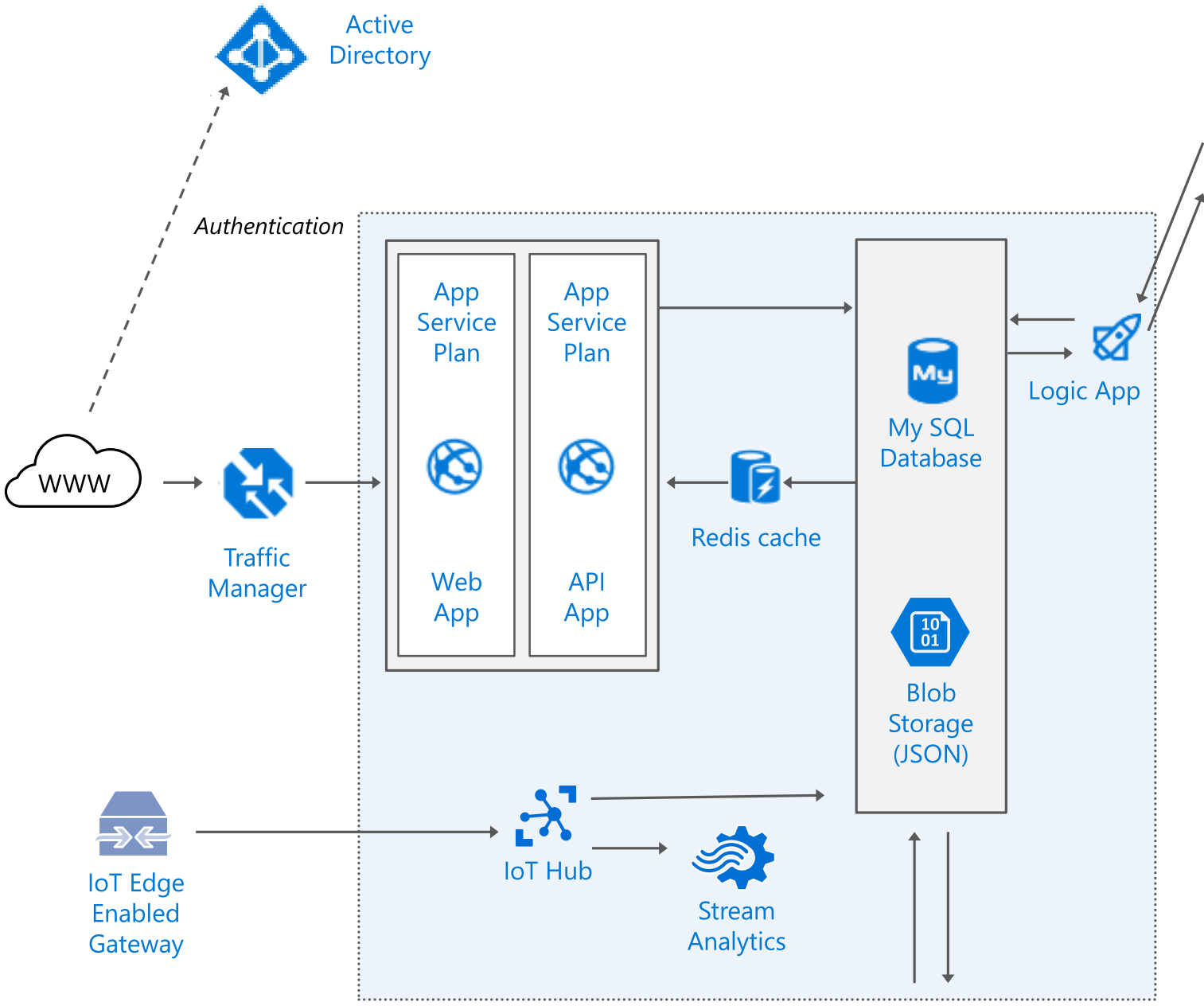
Events tracking e.g., violations for warranty management

Partners make more possible

The anatomy of the architectural design session



The output


Active Directory
Authentication
WWW
Traffic Manager
App Service Plan
Web App
App Service Plan
API App
Redis cache
My SQL Database
Logic App
Blob Storage (JSON)
IoT Edge Enabled Gateway
IoT Hub
Stream Analytics


Bryan S. Hamilton
Cloud Architect

Losses in the supply chain

22.8 billion

global shipments are damaged, delayed, or lost every year[2]

30%

of perishable goods spoil before they reach their destination[3]

$60 billion

in goods are stolen each year worldwide; $35 billion in the U.S. alone[5]


intel
Microsoft

Intel® Connected Logistics Platform

Automate shipment tracking and gain visibility into the logistics chain*

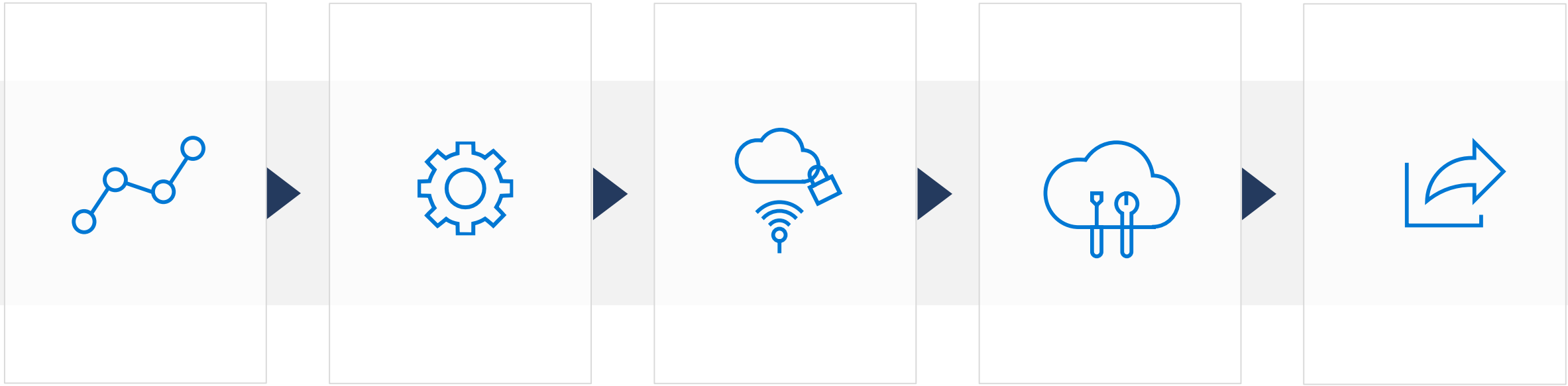
Edge connectivity
Multifunction IoT tags measure a variety of conditions

Continuous communication
A mesh sensor network helps ensure comprehensive asset visibility

Gateway interface
Gateways efficiently send aggregated data to the cloud via Wi-Fi or cellular connections

Powerful cloud
Microsoft Azure connects, monitors, authenticates and automates data transmission

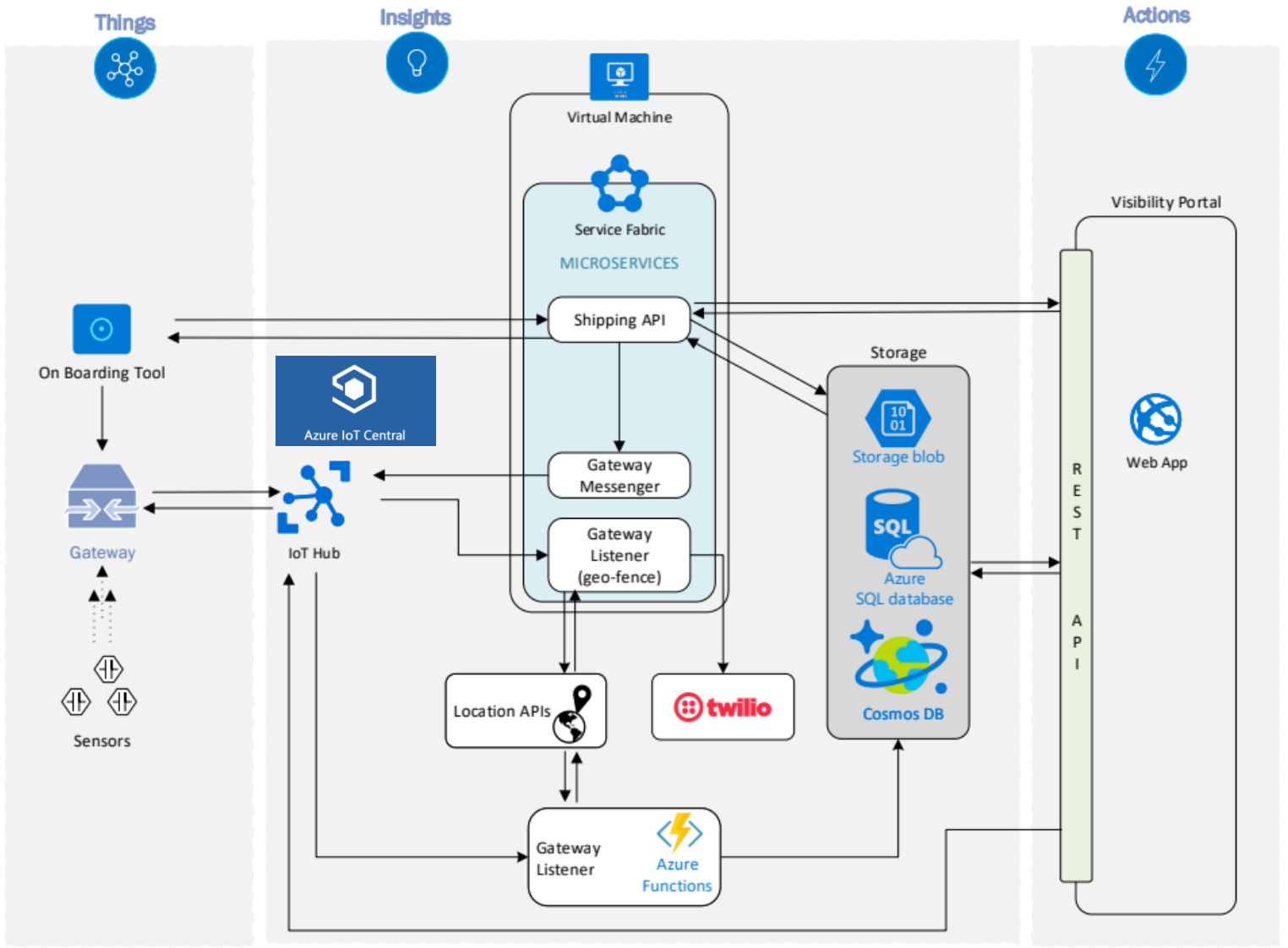
Meaningful insights
Insights are visualized and delivered through mobile apps or online dashboards



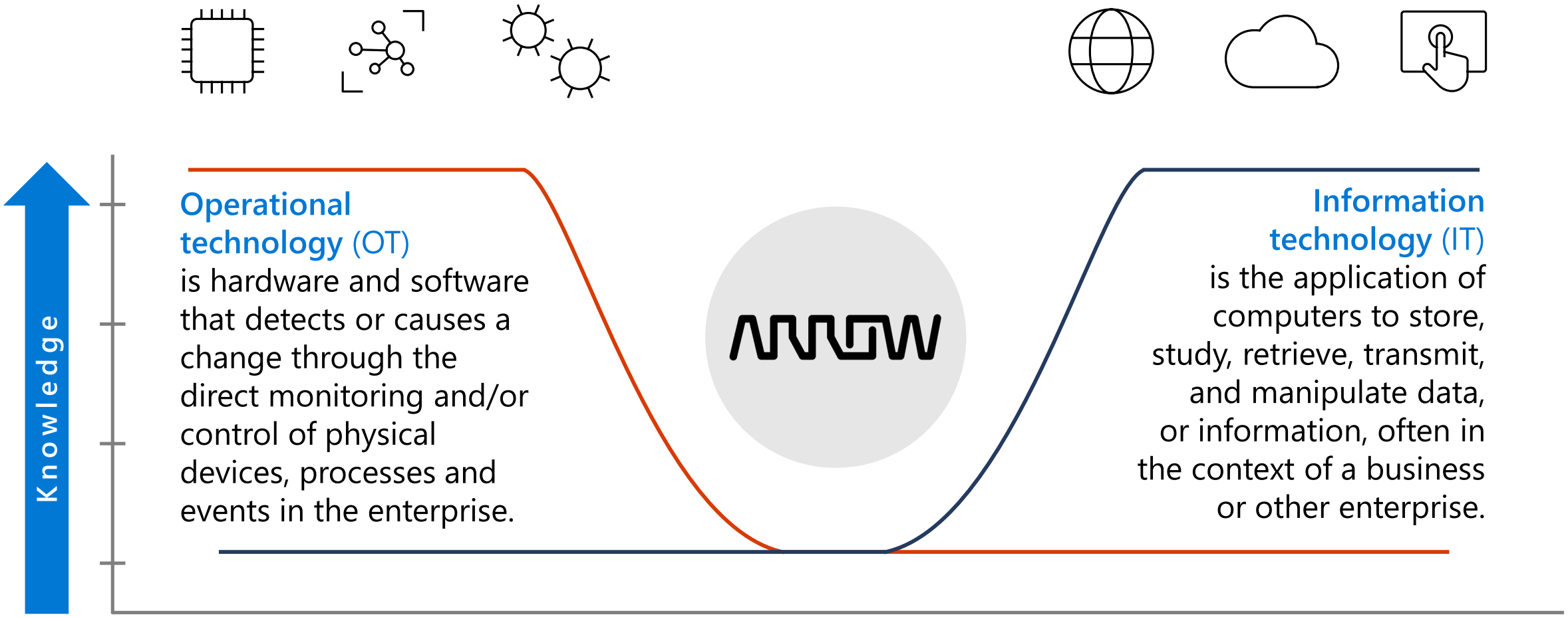
*The Intel® Connected Logistics Platform is fully implemented with the help of an experienced Microsoft Systems Integrator


Demo

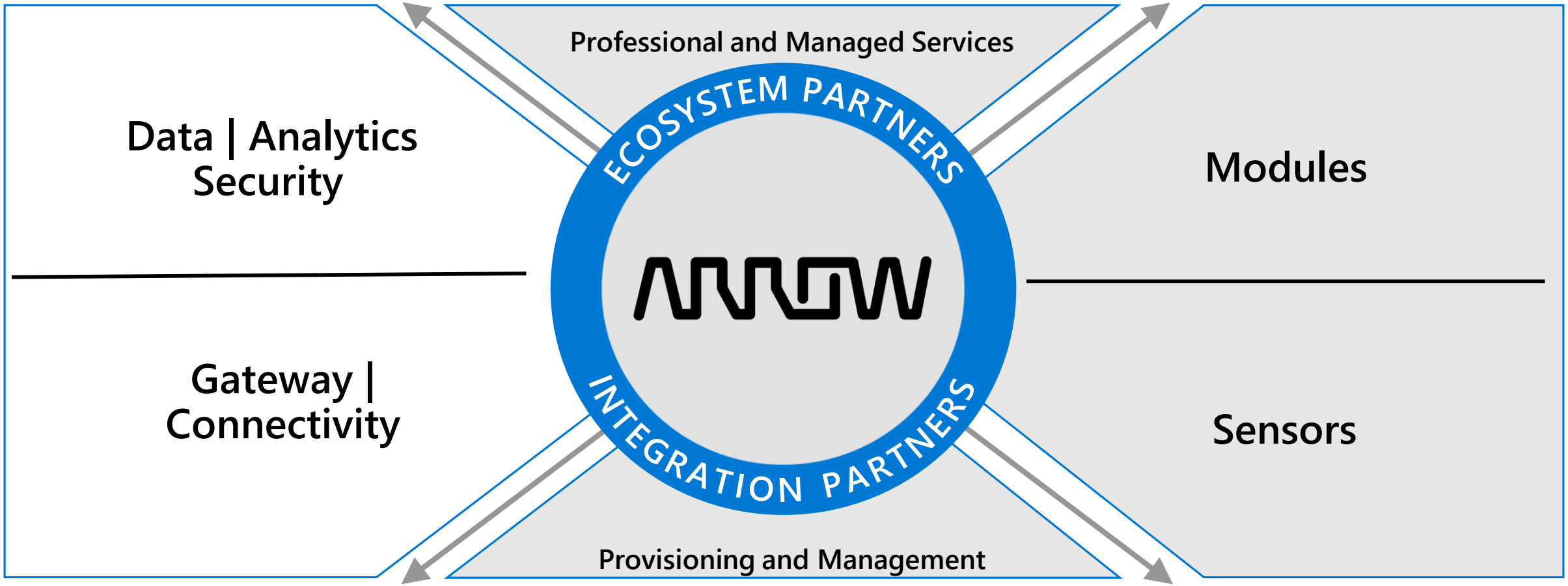
Reference architecture



Digital transformation requires partnerships



Our partnerships scale digital transformation projects



Next steps

- We'll connect you with the Arrow team to find out how easy it is to adopt the Intel Connected Logistics Platform: iot@arrow.com
- Learn more about the Intel Connected Logistics Platform at https://www.arrow.com/en/campaigns/iot-intel-connected-logistics-platform
- Learn more about Microsoft Azure at azure.microsoft.com

Bryan S. Hamilton

Cloud Architect

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Cognizant

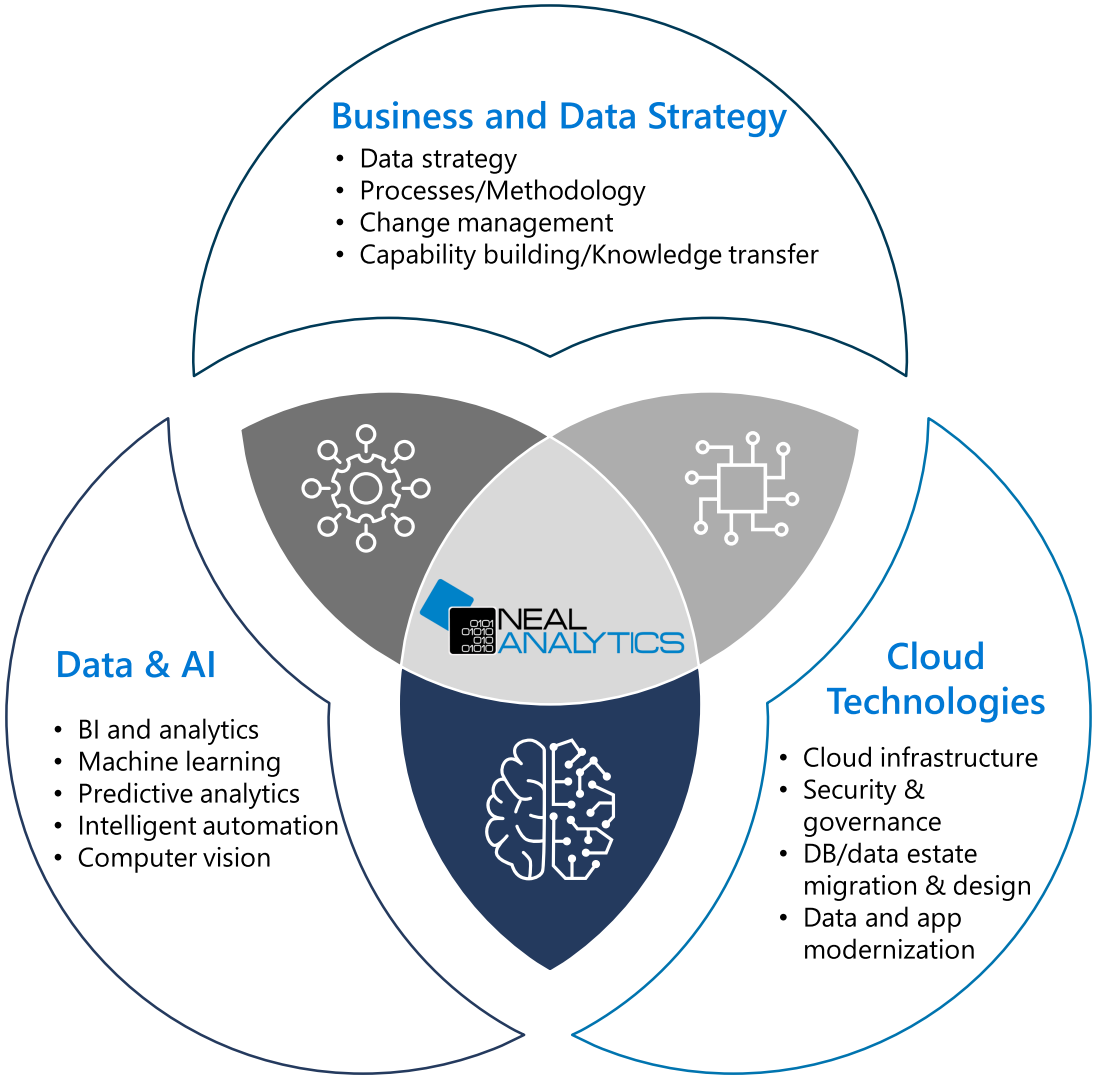
avanade

L SQUARED
DIGITAL SIGNAGE


NEAL
ANALYTICS
David Brown
Director Technical Sales

Who is Neal Analytics?

Seamless digital transformation consulting, bringing together AI, Cloud, and Strategy



Neal Analytics has the unique ability to address these multi-dimensional needs "under one roof" to companies of all sizes

	Cloud Tech	Data & AI	Strategy	Audience
VARs/SIs	✓	—	✗	All
AI/ML boutiques	✗	✓	—	All
"Big 4" Consultants	✓	✓	✓	Fortune 100
Neal Analytics	✓	✓	✓	Fortune 5000

Retail operations

What can be done to optimize operations and drive revenue using intelligent edge in Retail?

$1 trillion

In **retailer sales missed** because of stockouts!

1 in 3

Shopping trips encounter **out of stocks**

24%

Of **ecommerce retail sales result** from stockouts

45%

Reduction in customer loyalty from out of stocks

20-90%

Reduced out of stock **lost sales**

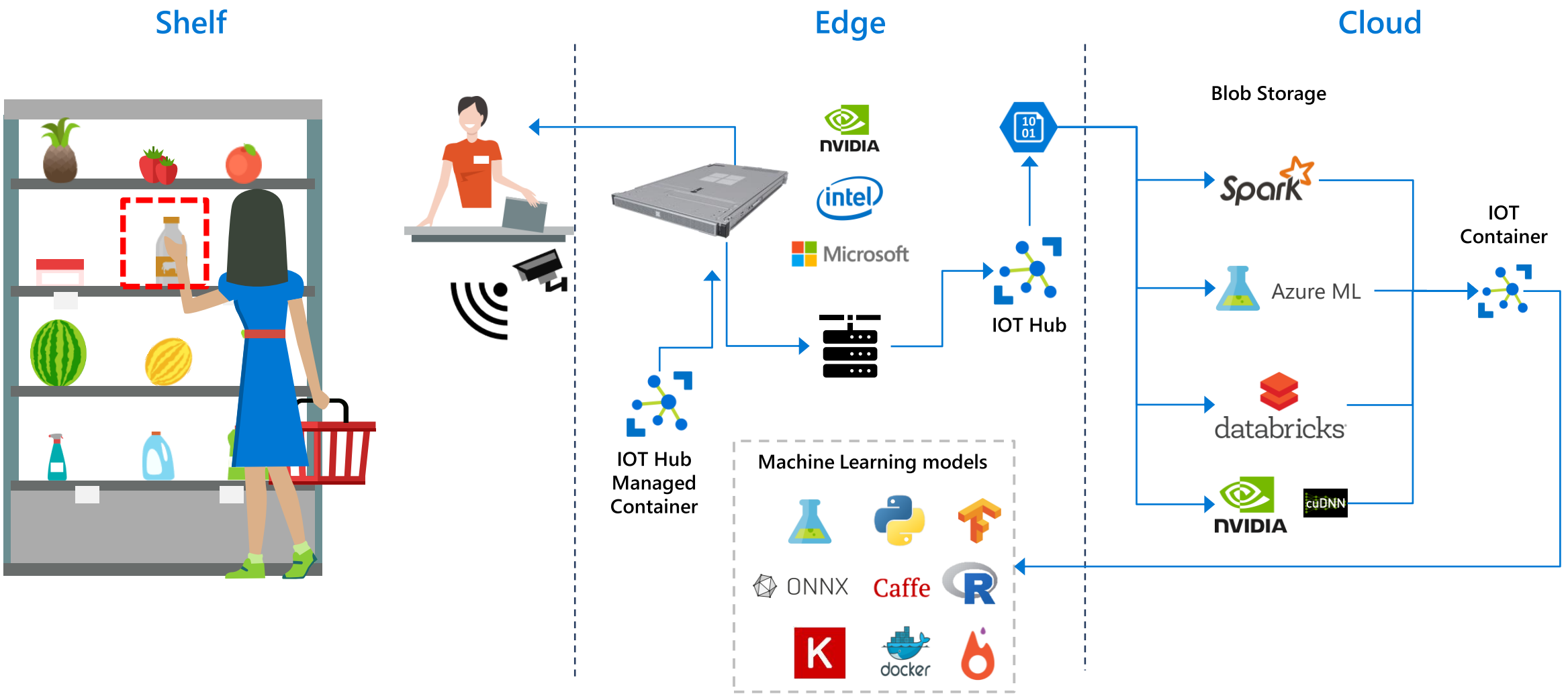
5-15%

Increased revenue


Demo

Intelligent Edge in action

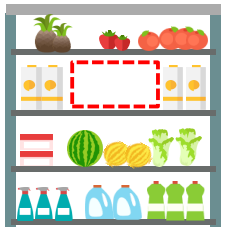
Capability showcase: Retail—Smart Shelf



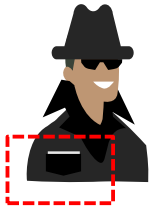
Intelligent Edge use cases

Where else can this technology make a difference?

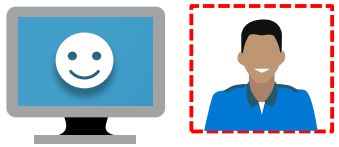
Retail



Out of stock detection



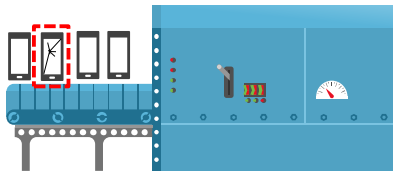
Loss prevention



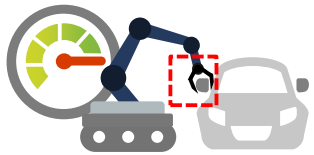
Intelligent display

Manufacturing

Health & safety/remote asset inspection



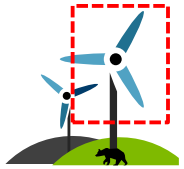
Visual inspection automation



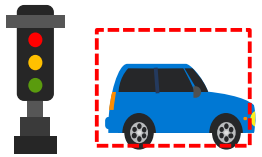
Autonomous systems

Public Sector

Data aggregation



Remote AI processing

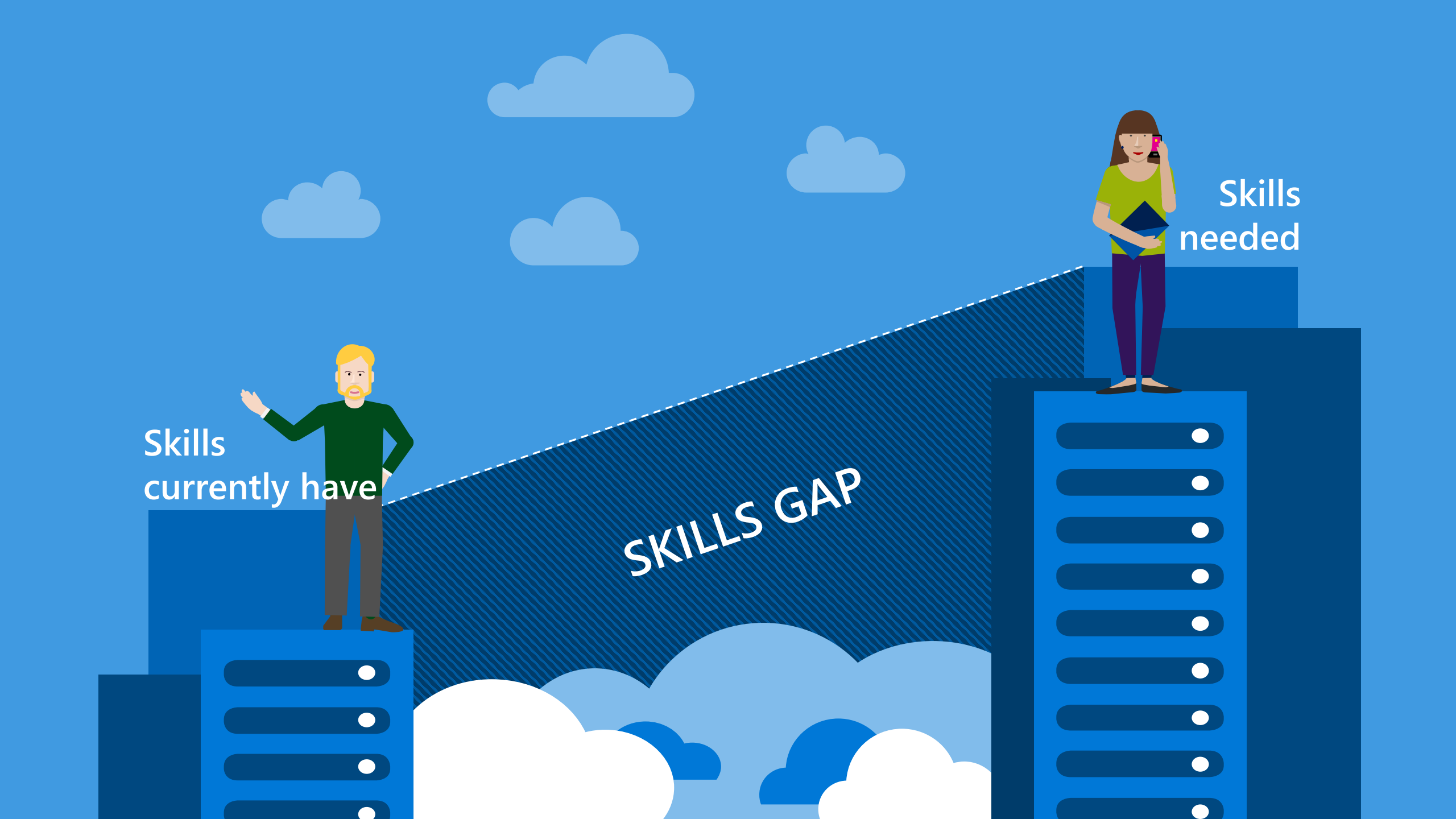


Traffic and toll systems

David Brown
Director Technical Sales

Davidb@nealanalytics.com
425-283-6842
https://nealanalytics.com/
Aka.ms/intelligentedge

Distributor & SI	»	AppSource Entry
ISV	»	AppSource Entry
Solution Provider & OEMs	»	AppSource Entry
CSP	»	AppSource Entry
Architect or Developer	»	Check out open-source codebase
Business Decision Maker	»	Read our whitepaper


Skills needed
Skills currently have
SKILLS GAP

Welcome to Microsoft Learn

Microsoft.com/learn

Time investment expectation

Microsoft.com/learn

12300 XP

Azure fundamentals

8 hr 17 min remaining • Learning Path • 1 of 12 modules completed

Beginner | Developer | Solution Architect | Administrator | AI Engineer | Business Analyst | Business User | Data Engineer | Data Scientist | Azure | Azure Portal | Azure Resource Manager | Storage | Virtual Machines

Interested in the cloud, but aren't quite sure what it can do for you? This path is the place to start.

In this learning path, you will:

- Learn cloud concepts such as High Availability, Scalability, Elasticity, Agility, Fault Tolerance, and Disaster Recovery
- Understand the benefits of cloud computing in Azure and how it can save you time and money
- Compare and contrast basic strategies for transitioning to the Azure cloud
- Explore the breadth of services available in Azure including compute, network, storage and security

Once you complete this learning path, you will have the necessary knowledge to take the AZ900 Microsoft Azure Fundamentals Exam.

Prerequisites
None

Modules in this learning path

Cloud Concepts - Principles of cloud computing

1100 XP

1 hr 2 min • Module • 10 Units

★★★★★ 4.8 (23350)

Explore the core concepts of cloud computing and how it can help your business.

Overview

Microsoft.com/learn

Azure fundamentals

12300 XP

8 hr 17 min remaining • Learning Path • 1 of 12 modules completed

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Total XP= 12,300

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1100 XP

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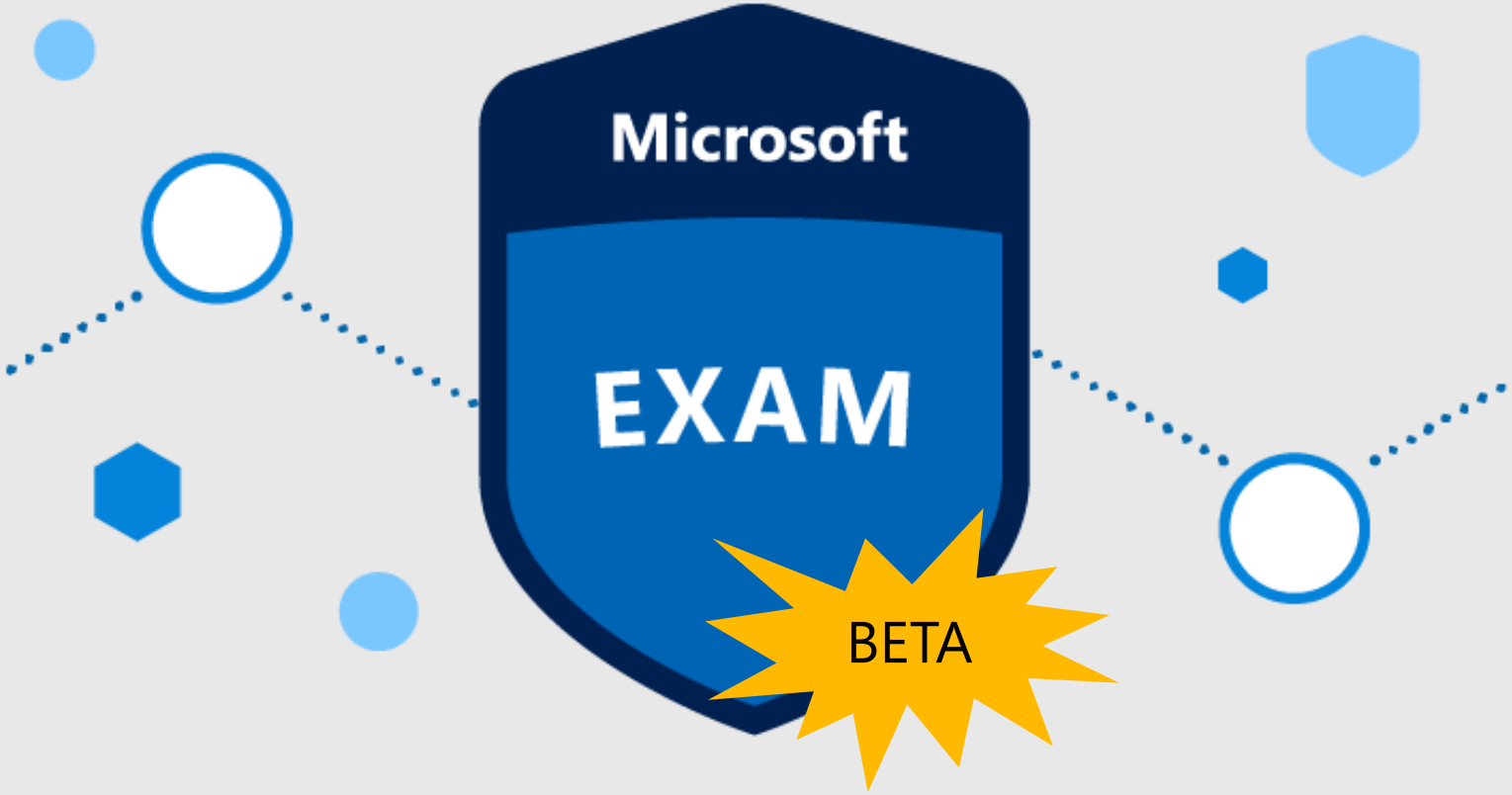
Overview

Leveling up your Azure skillz with Microsoft Learn

ANNOUNCEMENT!

Microsoft Certified: Azure IoT Developer Specialty



Exam AZ-220: Microsoft Azure IoT Developer

Top challenges

Complexity
IoT PnP, IoT Central

Knowledge
MS Learn

Security
Confidential Computing

Solution == Partners

Project 15 from Microsoft

An Animal Conservation Initiative


00:15:00