



IoT in Action

#IoTinActionMS



Architecting the Intelligent Edge

Joe Lin
GCR Technical Sales Lead,
CDS IoT,
Microsoft

IoT in Action

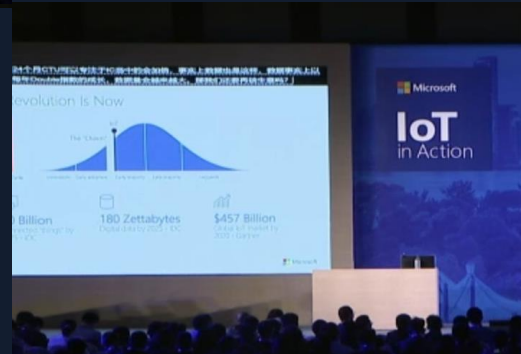


The Evolution of **IoT** in Action



Year 1 2017

The Evolution of IoT in Action



Year 2 2018

The Evolution of **IoT** in Action



Year 3

2019

IoT Signals

SUMMARY OF RESEARCH LEARNINGS
2019

Reasons for IoT adoption



IoT Signals

SUMMARY OF RESEARCH LEARNINGS
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%

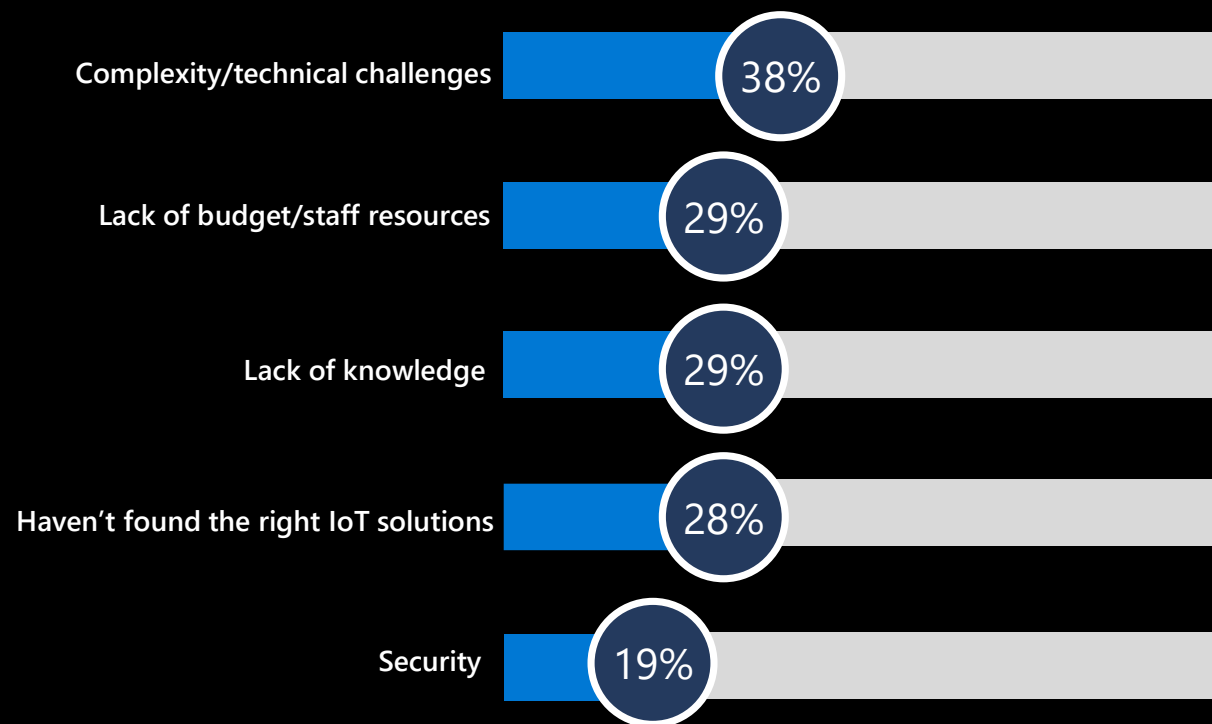
Safety, security, and compliance 53%

Facilities management 42%

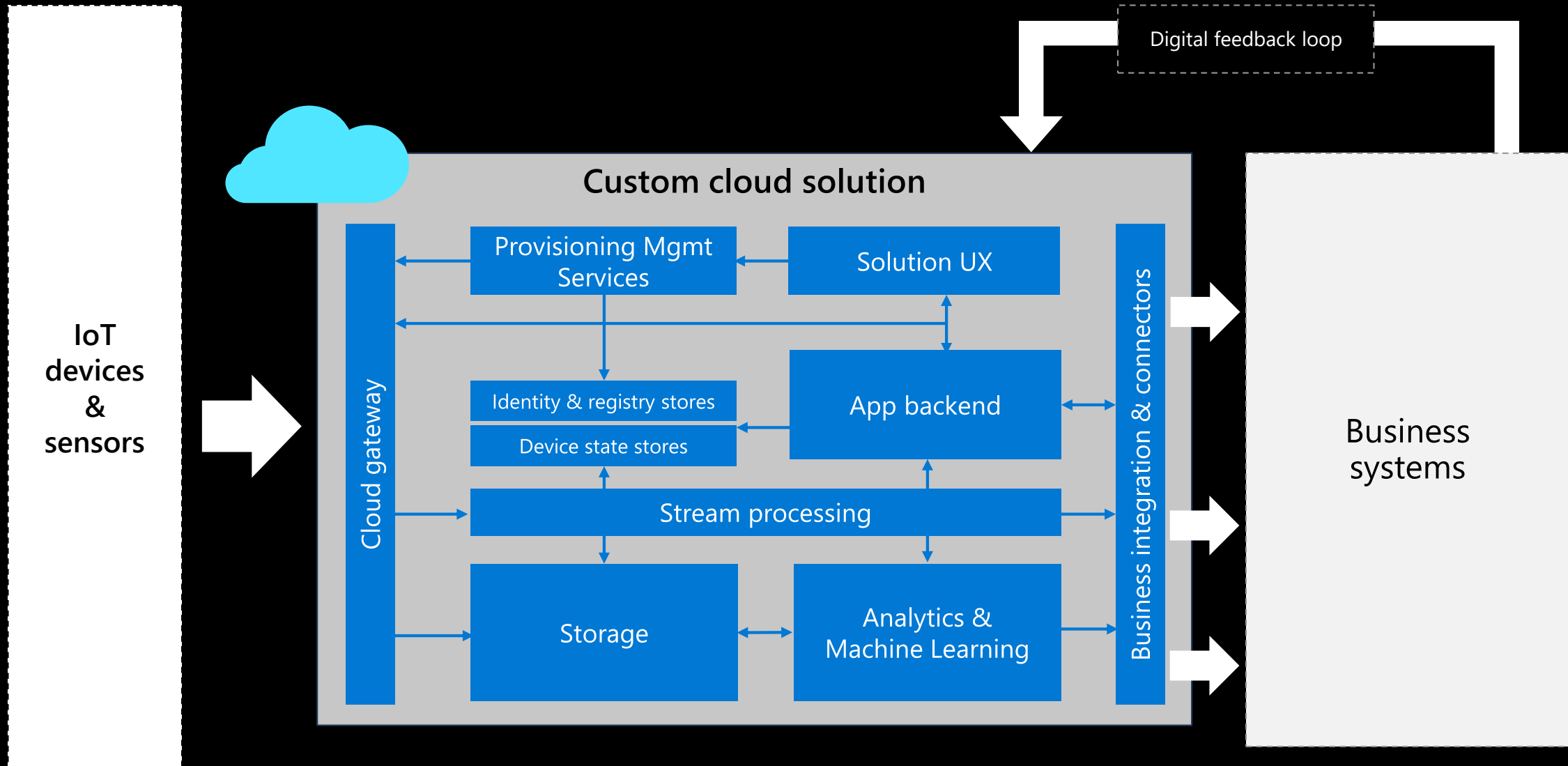
IoT Signals

SUMMARY OF RESEARCH LEARNINGS
2019

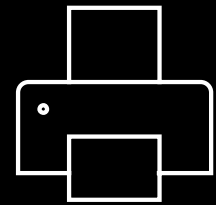
Top challenges



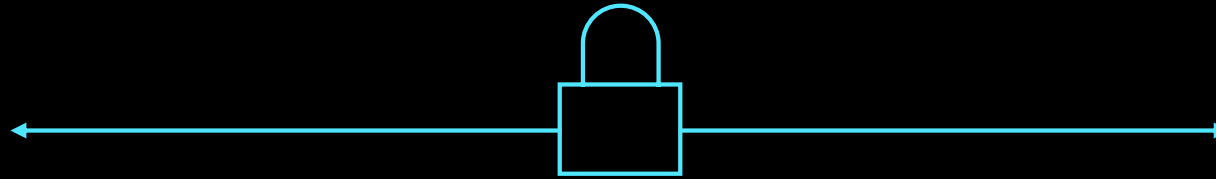
Solution architecture—DIY



We had a similar challenge in the past...

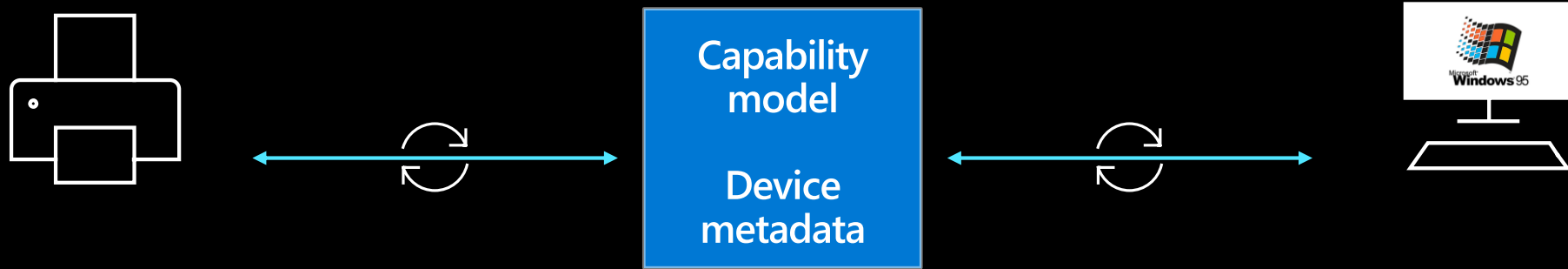


Peripherals



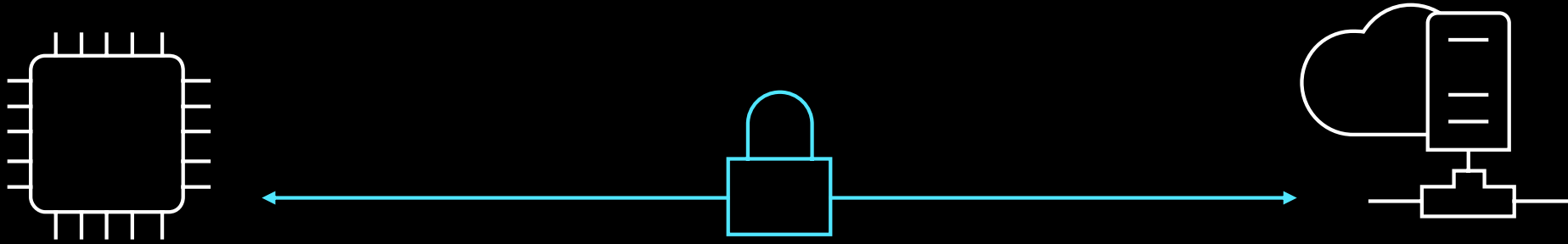
Windows OS

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



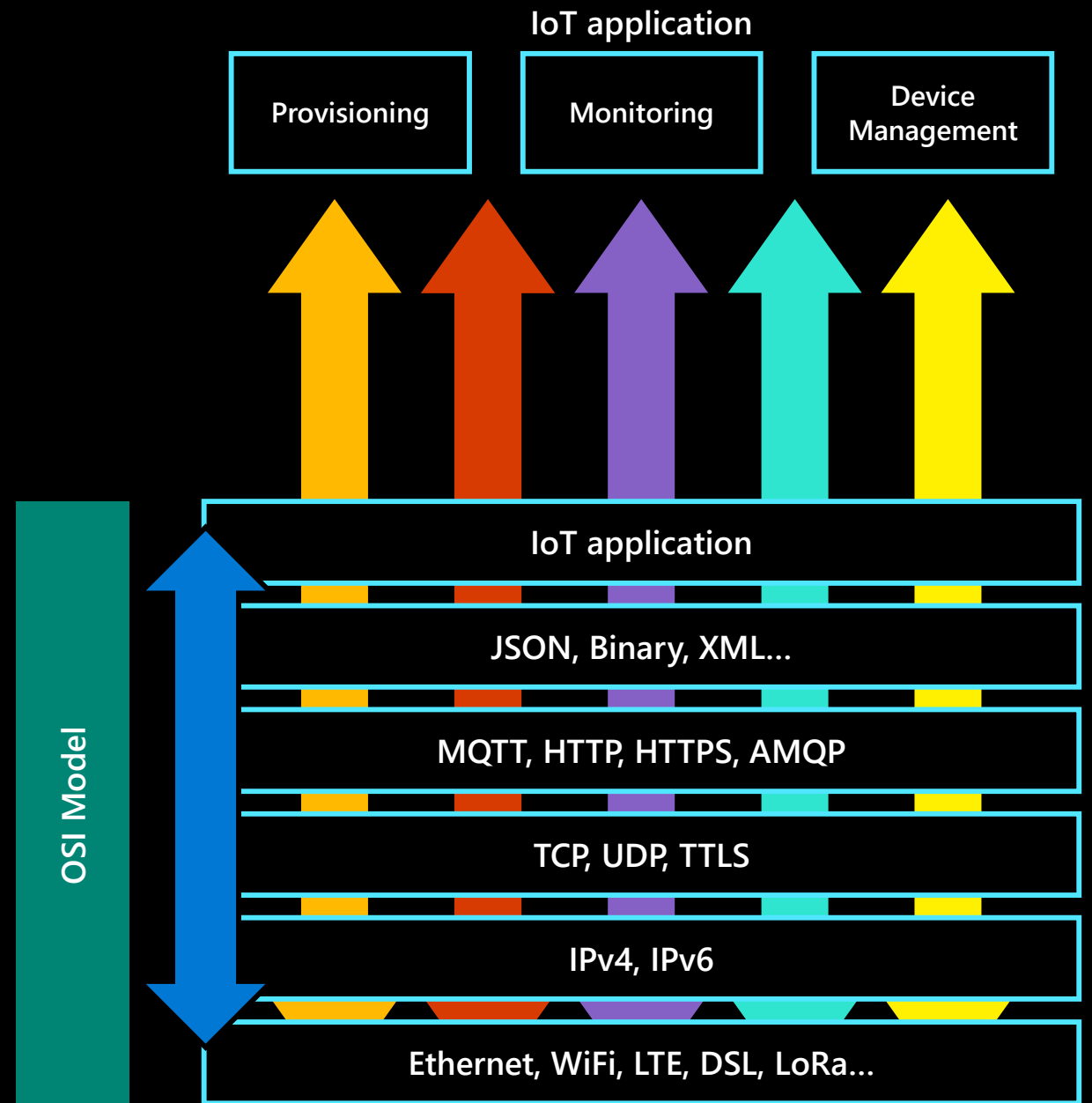
Tight coupling between software on device and IoT solution in the cloud

IoT Plug and Play + Azure IoT Central

Philip Chen
IoT Technical Specialist, CDS IoT, Microsoft

Connecting hardware is very “hard”

Provisioning
Configuration
Device management
Deployment
Monitoring

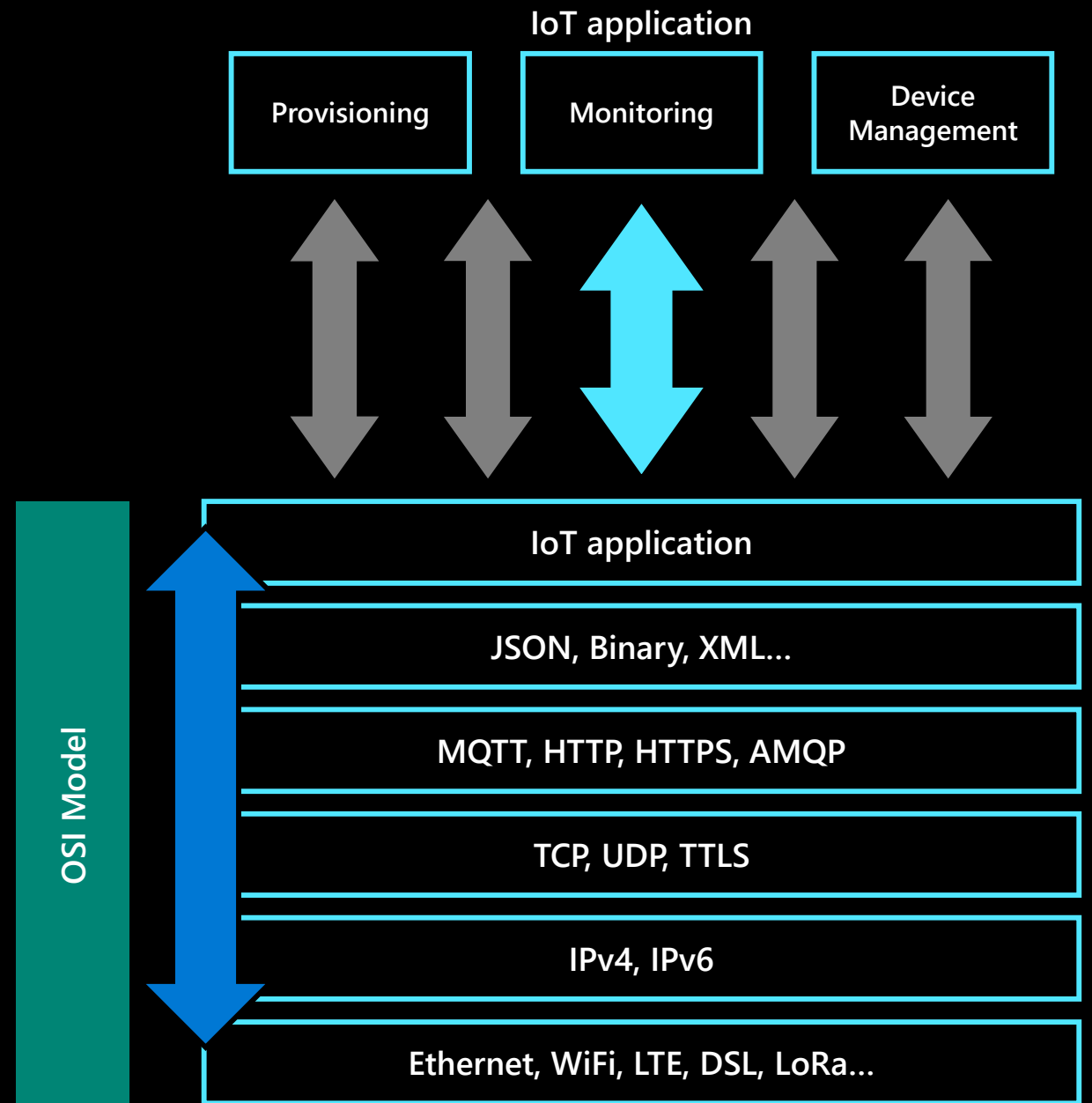


IoT Plug and Play defines common language

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

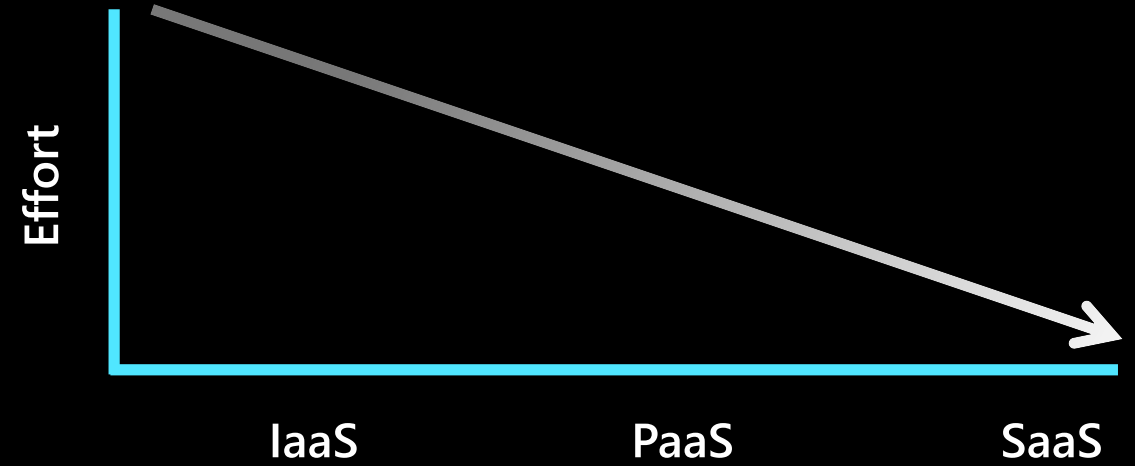
Certify your device for IoT Plug and Play and it can be used with thousands of Azure IoT solutions

In public preview

<http://aka.ms/IoTPlugandPlay>

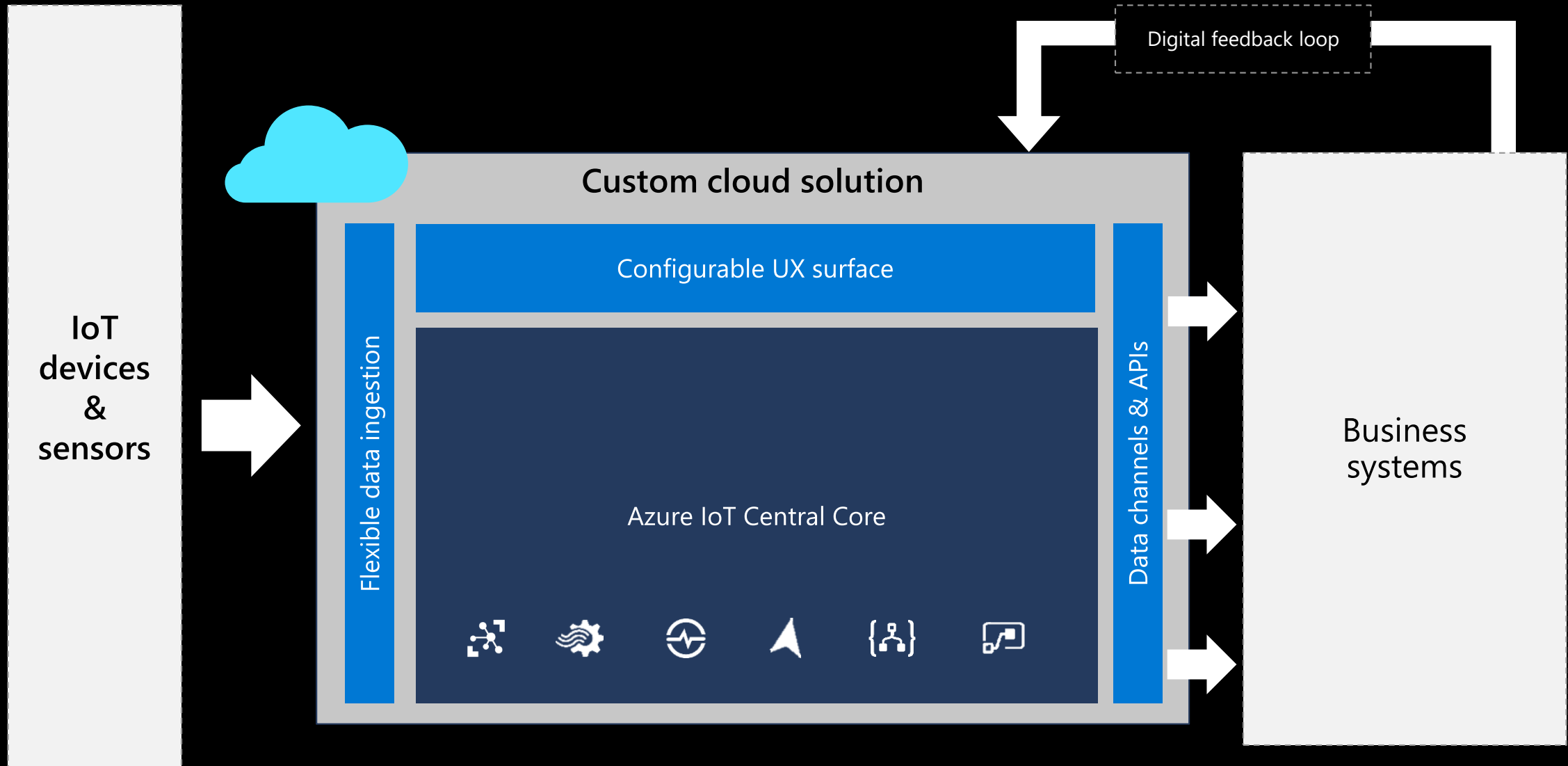


Making IoT seamless



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



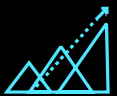
Telemetry ingestion and command and control



Monitoring rules & triggered actions



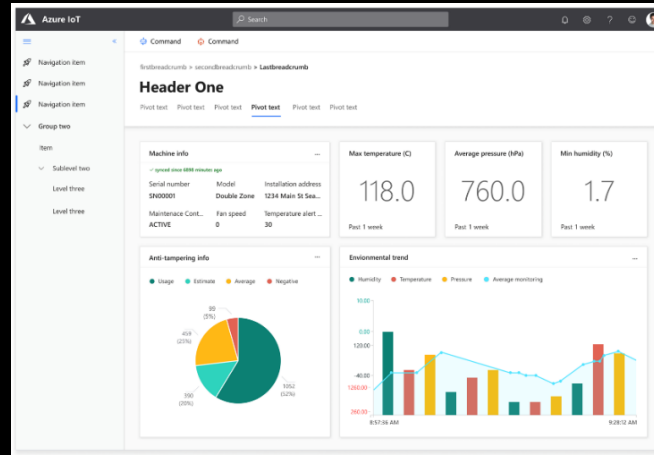
User roles and permissions



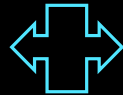
Dashboards, visualization and insights



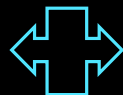
Fully hosted and managed by Microsoft



Maps, location telemetry and geofencing



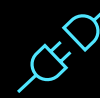
Device Bridge
Ingest data from other clouds



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”

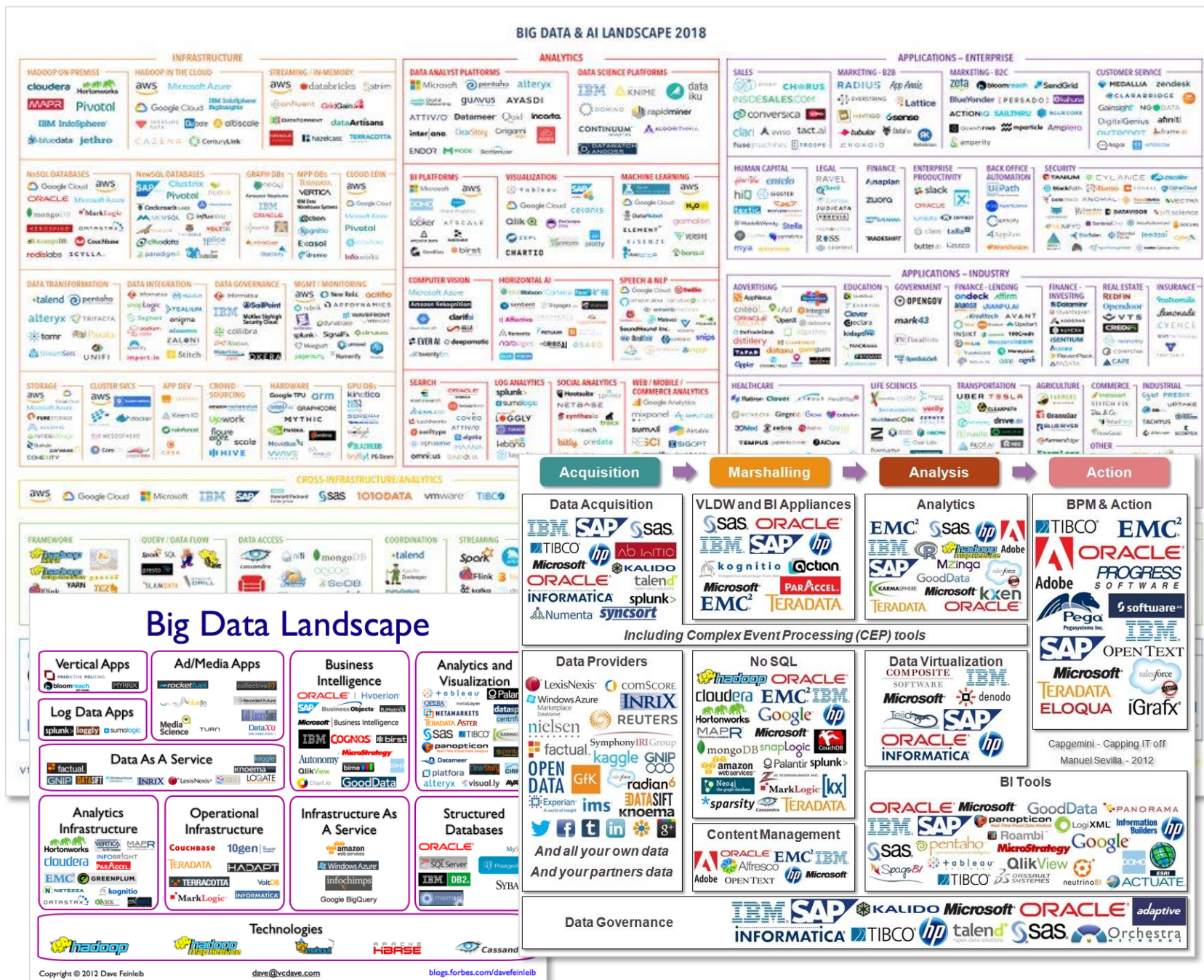


“Big Data” started with Web 2.0

Web 2.0 technologies

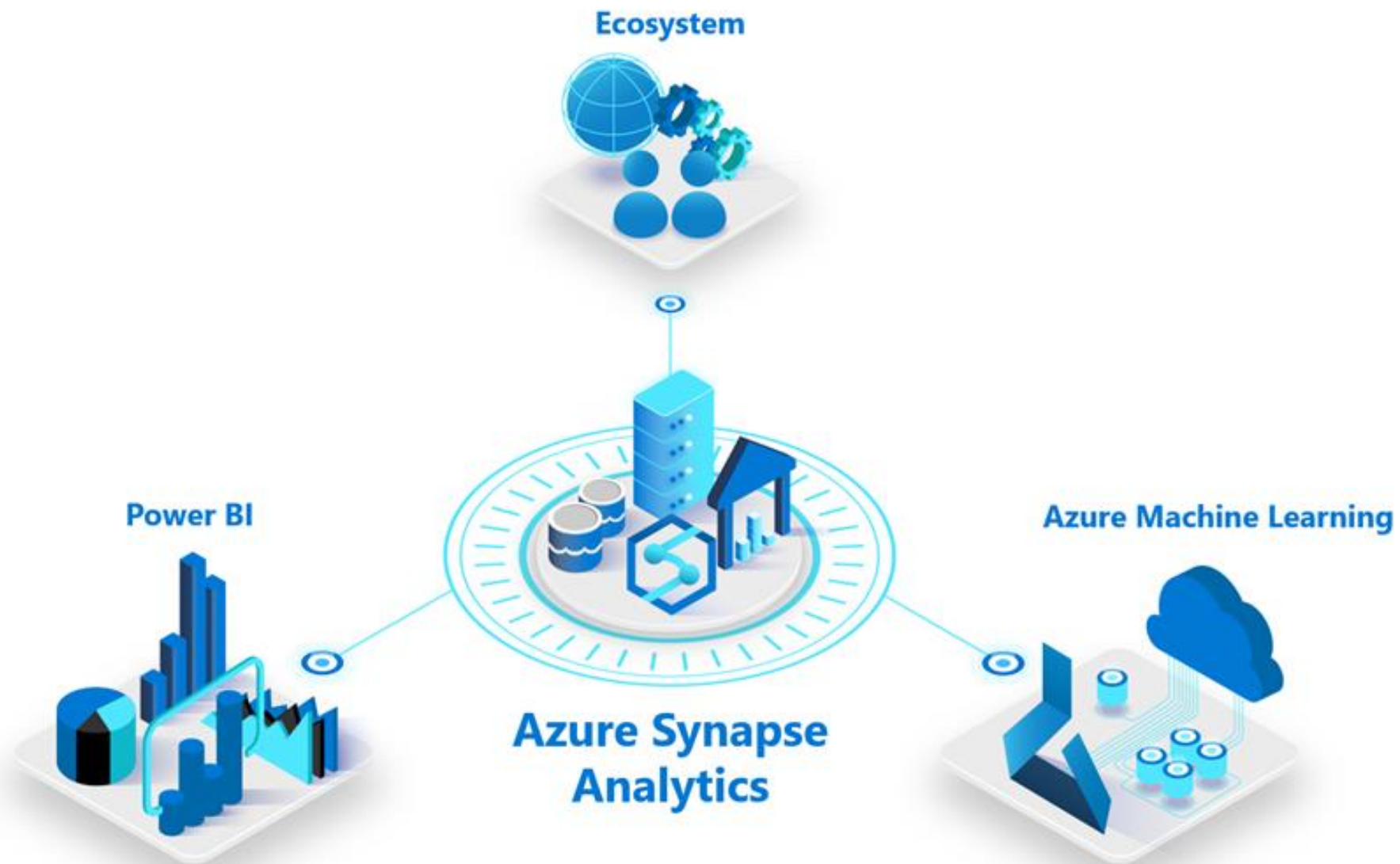


Remember these?

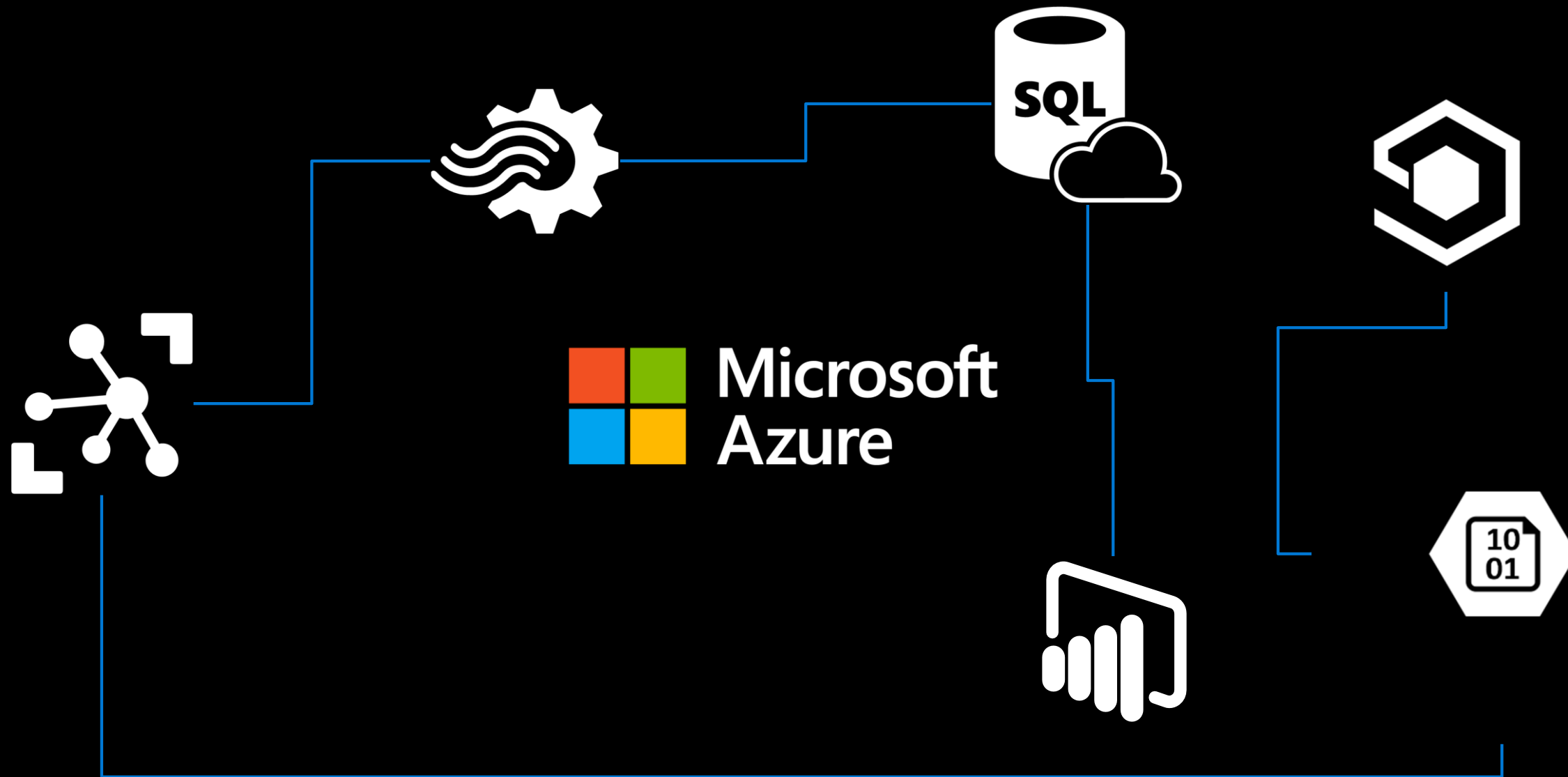


“Big Data” challenge 2.0



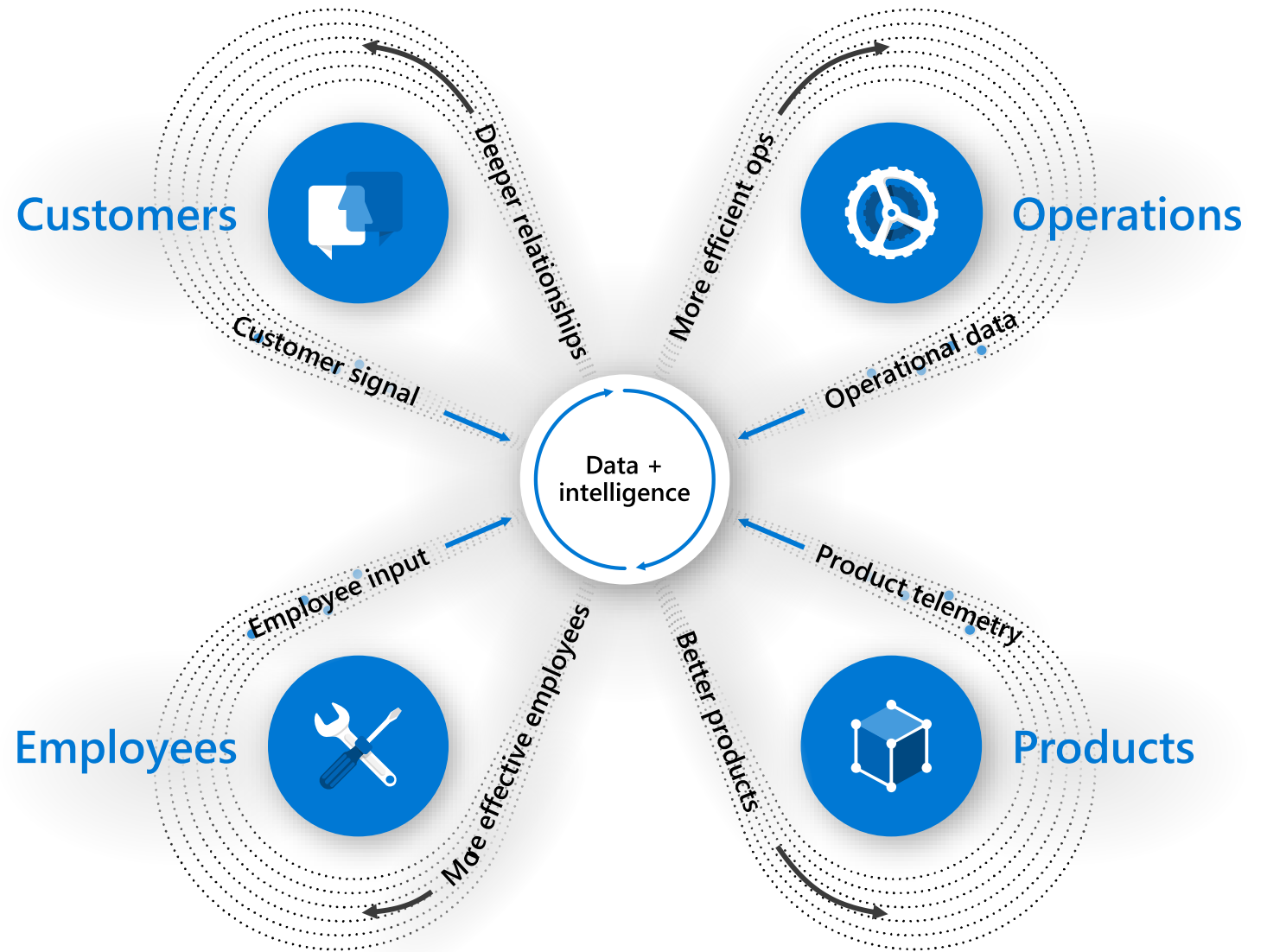






The digital feedback loop

- 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

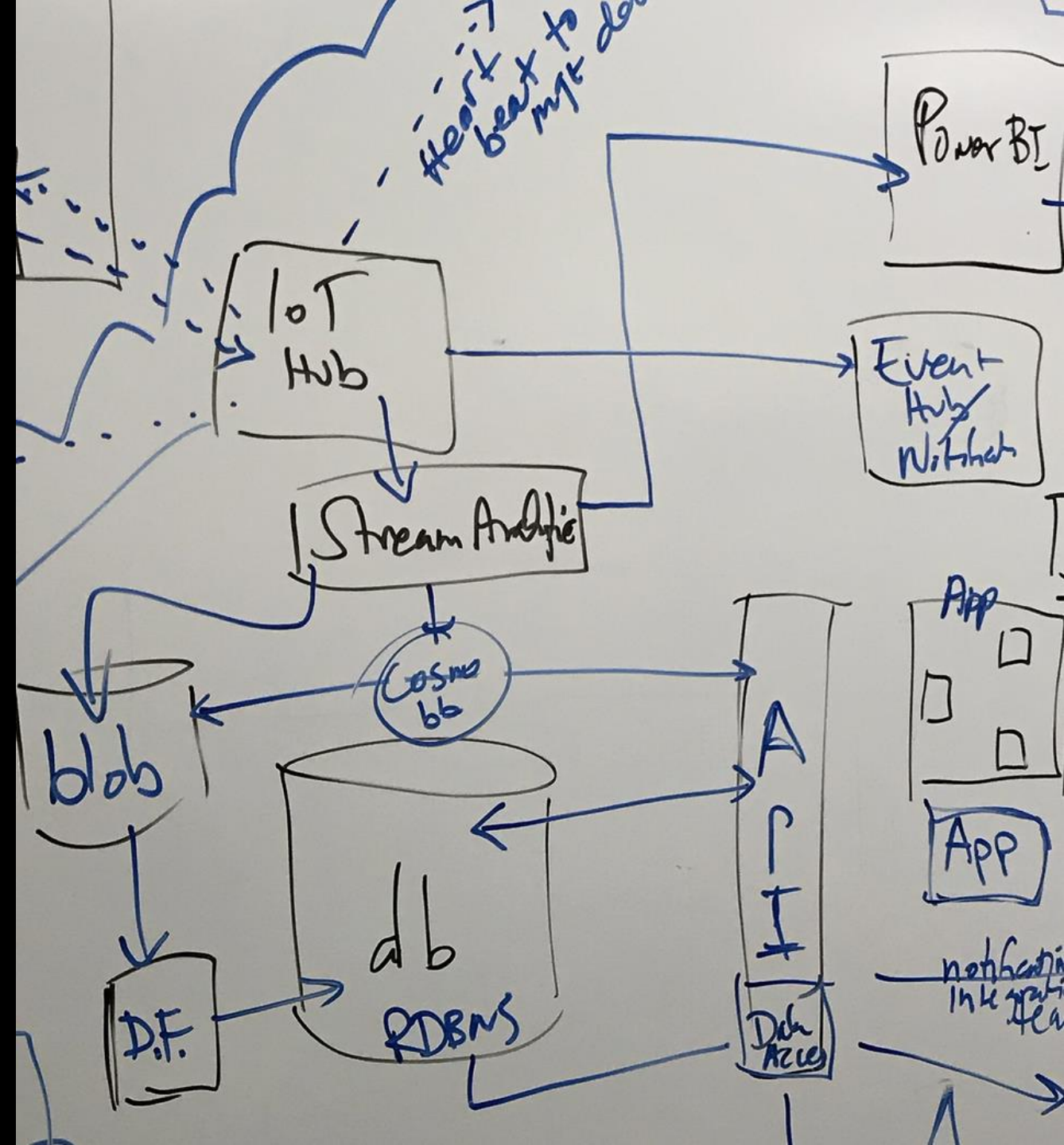
Events tracking e.g., violations for warranty management



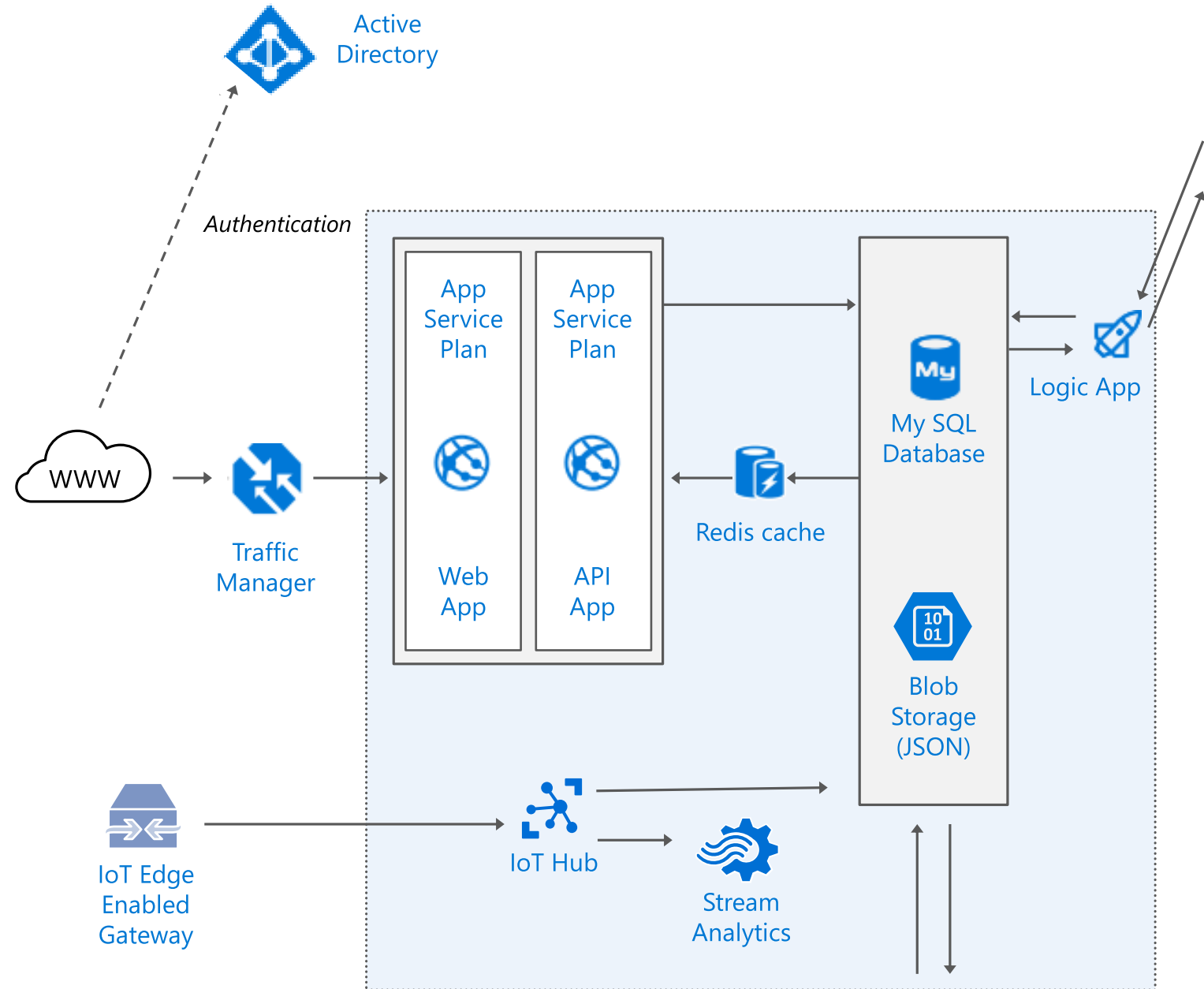
Partners make **more** possible



The anatomy of the architectural design session



The output



The Advantech logo, consisting of the word "ADVANTECH" in white, uppercase, sans-serif font, enclosed within a dark blue rectangular box.

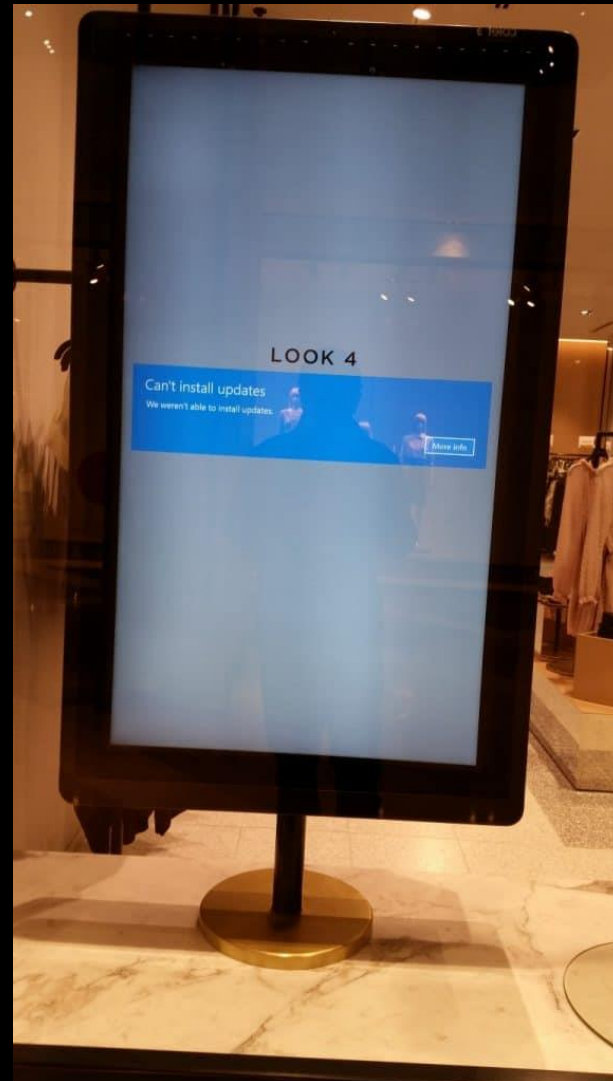
ADVANTECH

Enabling an Intelligent Planet

Louis Lu
SW Director of Embedded IoT

利用平台的威力加速AIoT的實現

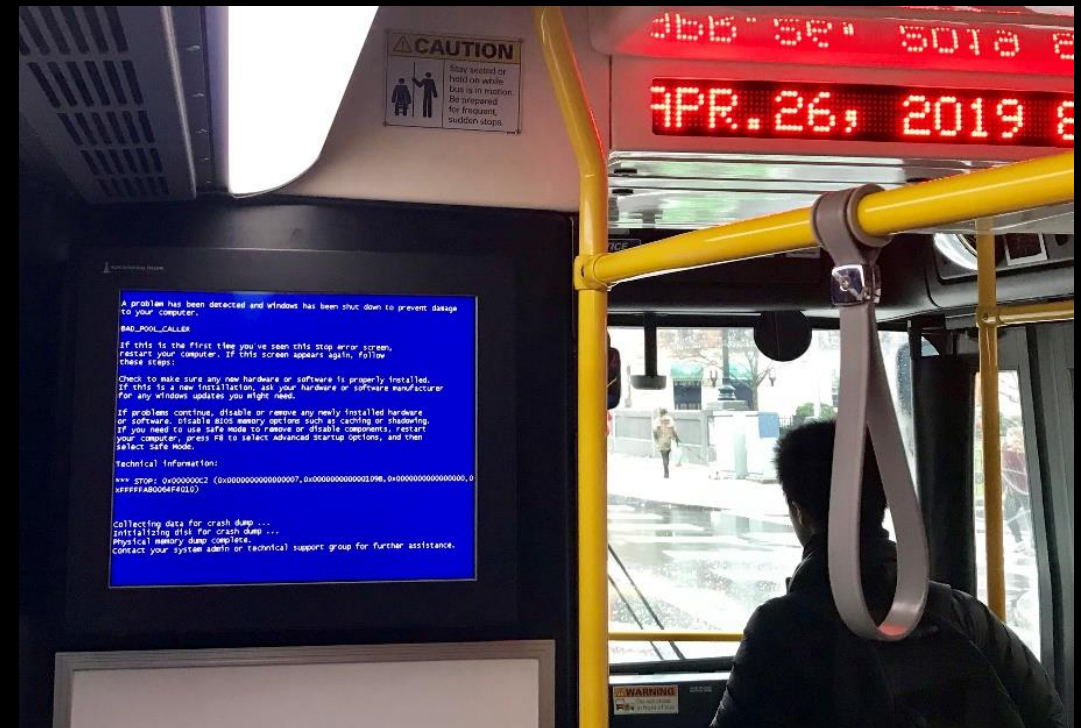
Pain Point-on top of pop up message



Pain Point-Content display error



Pain Point-Blue Screen



EIoT AI App Architecture



Object Detection Box

HW + SW + VPU + pre-trained
model optimized solution



FaceON

Anti-Spoofing (2D/3D)
Face Recognition



LPR

Object tracking
Traffic analysis



Window Anomaly
Detection

Window 10 freeze and
blocked detection



IoT Anomaly Detection

System abnormal detection
Sensor abnormal detection

Industrial APP (可集成之I.APP)

Core Technologies

Yolo V3

Azure ML

REST API

Azure Custom Vision

Intel
Deep learning suite (OpenVINO)

Azure Automated ML

Tensorflow, Caffe ...

Device Management and Operation management (DeviceOn on Kubernetes)

Azure / WISE-PaaS Cloud

Data Service Server / Virtual Machine

Data Collection

AI Deployment (OTA)

Edge.SRP (HW+SW)

Movidius
an intel company



VEGA-320
M.2



VEGA-330
miniPCle



VEGA-340
PCIe4



AIR-200
Low Power Inference
System



ARK DS series with Win10 and DeviceOn bundled

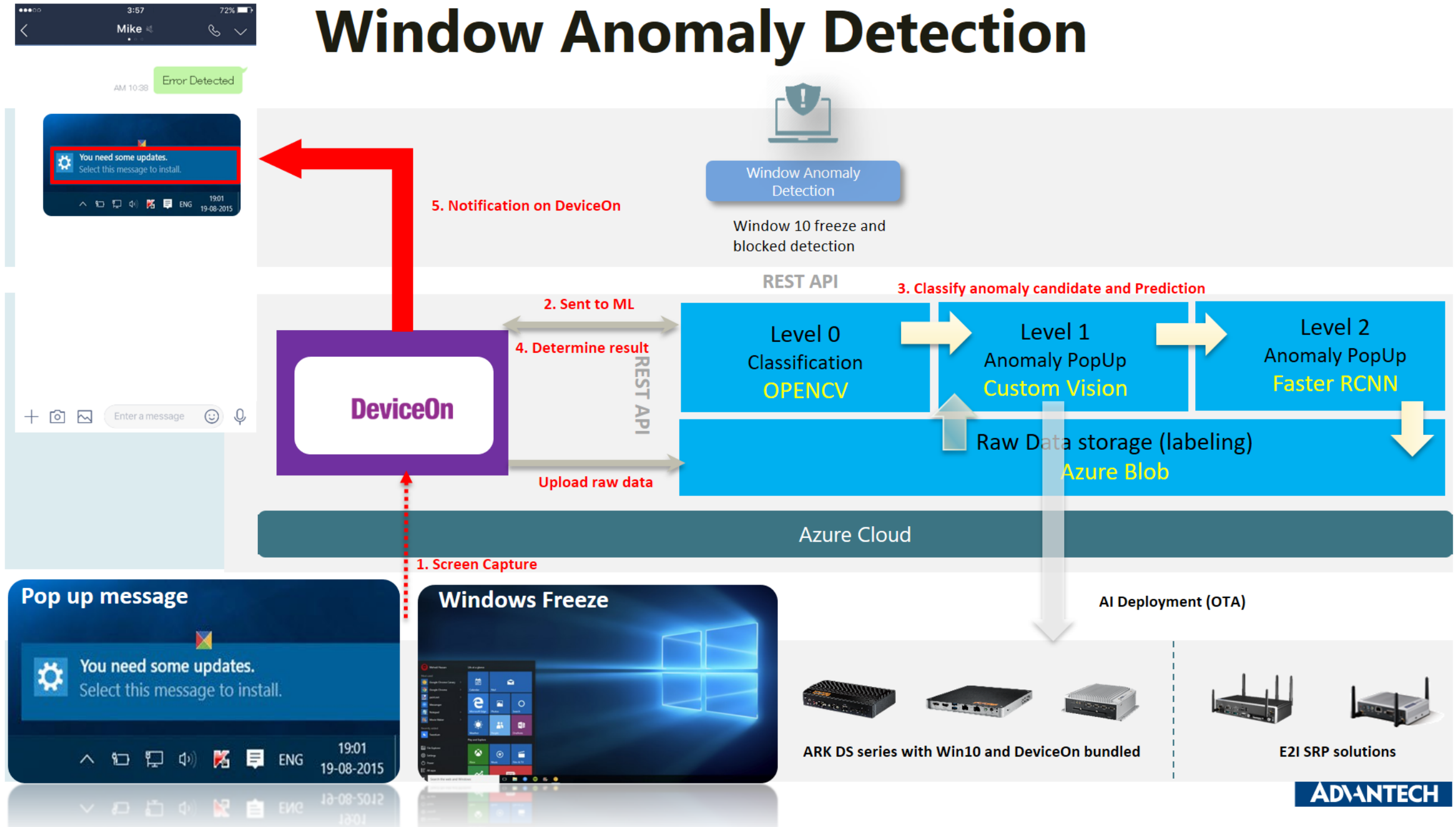


E2I SRP solutions

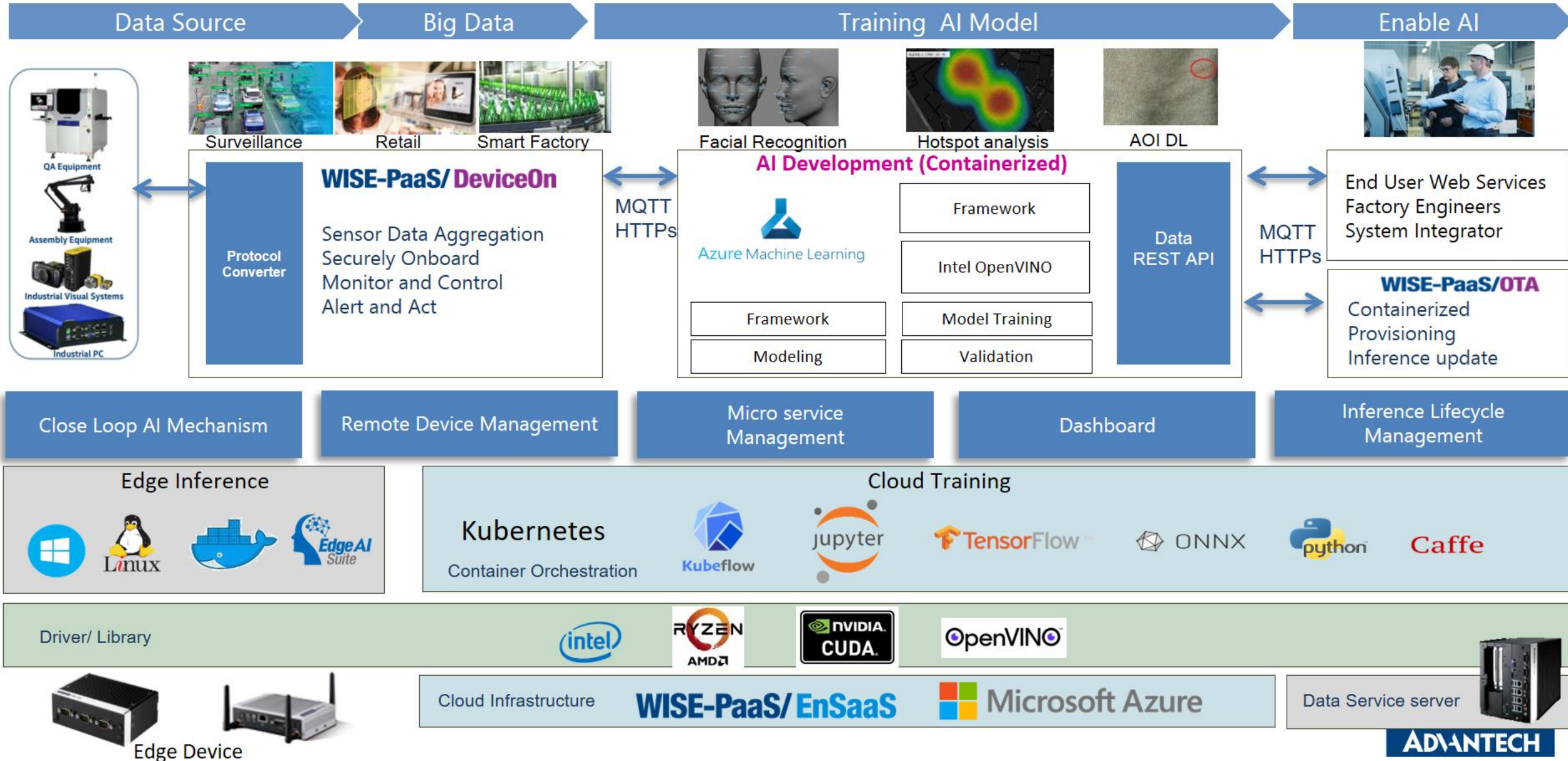
Demo

The background is a dark, deep blue gradient. A complex, glowing network of white and light blue lines and dots forms a wave-like pattern that flows from the left towards the right. The dots are of varying sizes and brightness, creating a bokeh effect. The lines are thin and connect the dots, forming a mesh-like structure. The overall impression is one of digital connectivity and data flow.

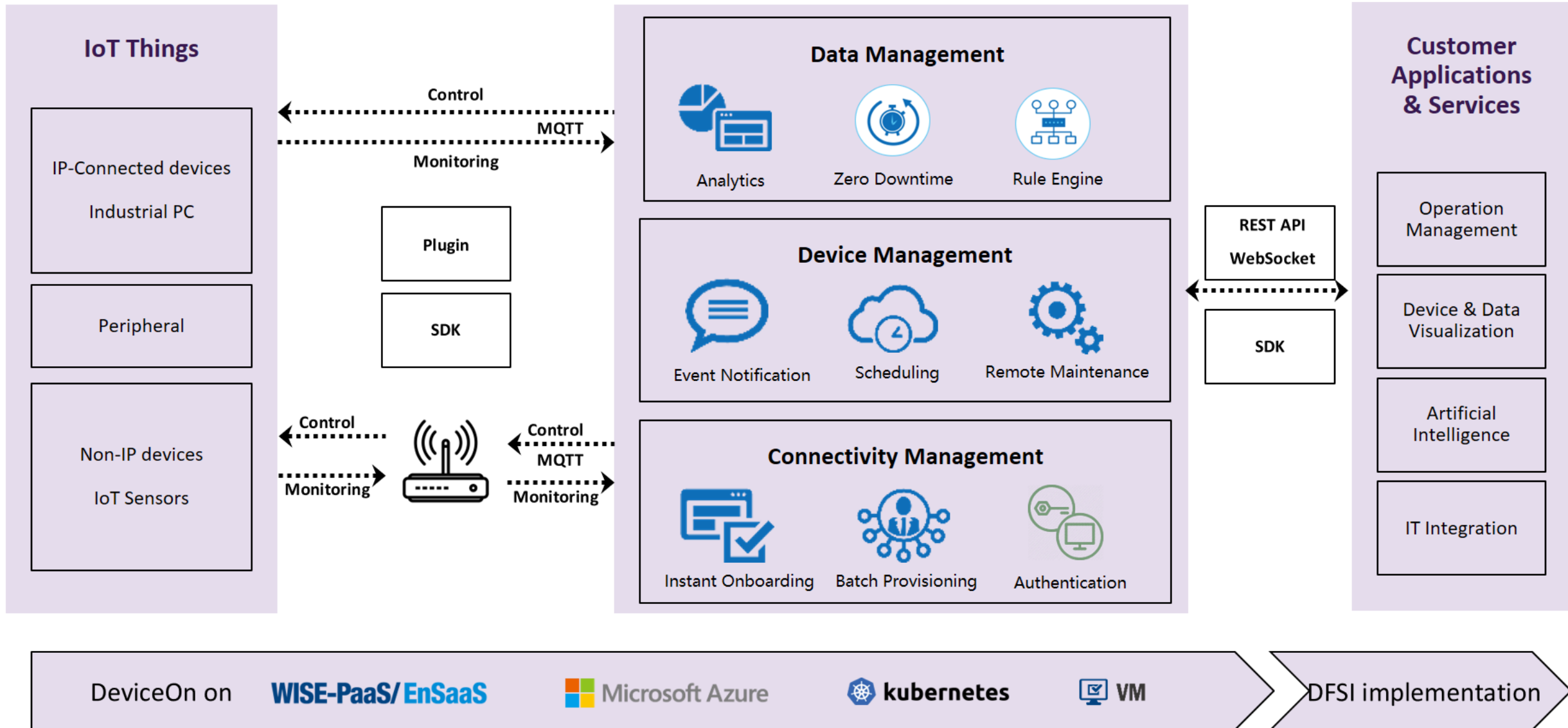
Window Anomaly Detection



EIoT Edge AI Software Architecture



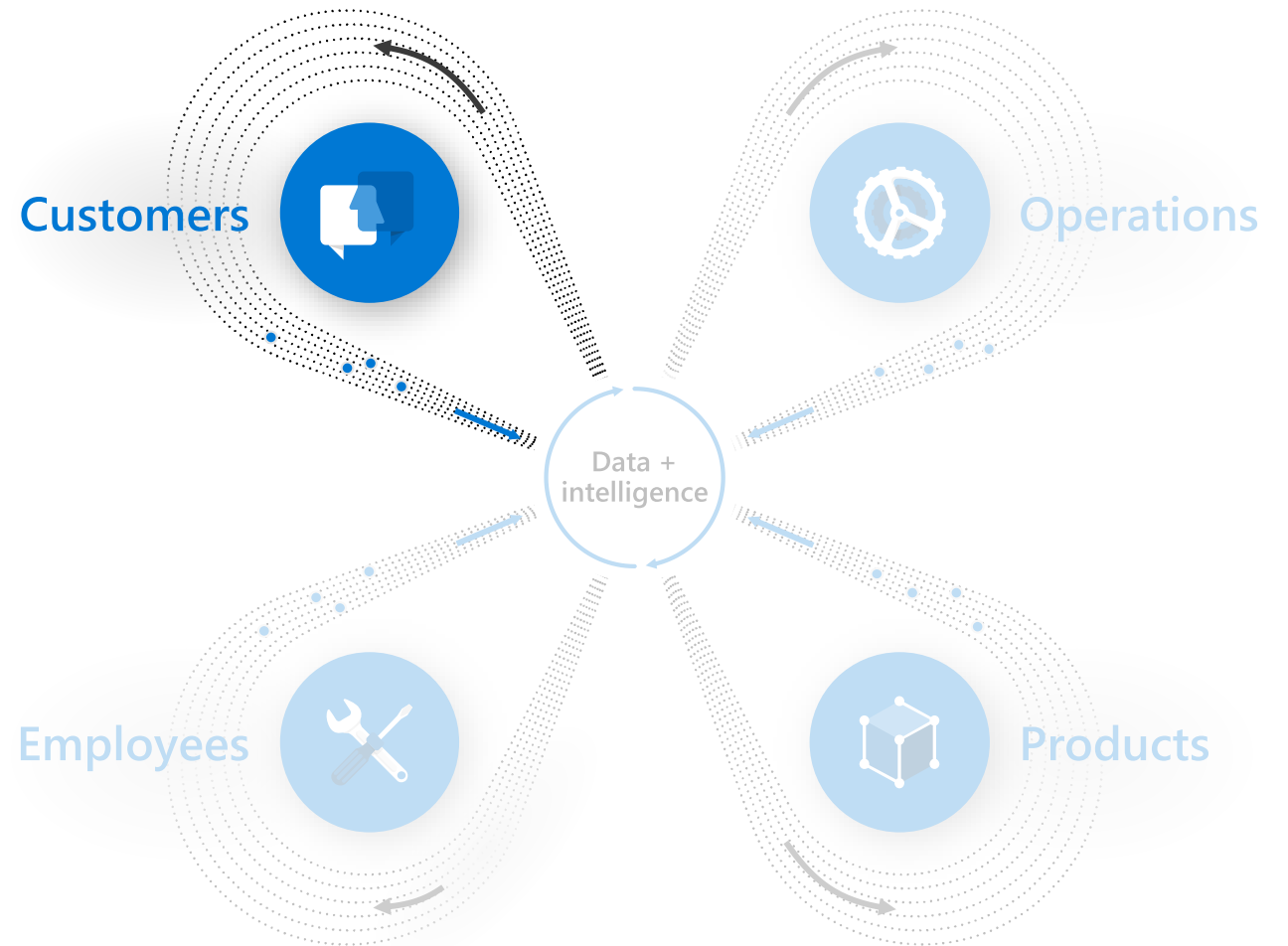
DeviceOn Value Proposition



We iterate on it with our partners

This is what we mean by our
greatest strength is our ecosystem

We can help create the better
process this way together





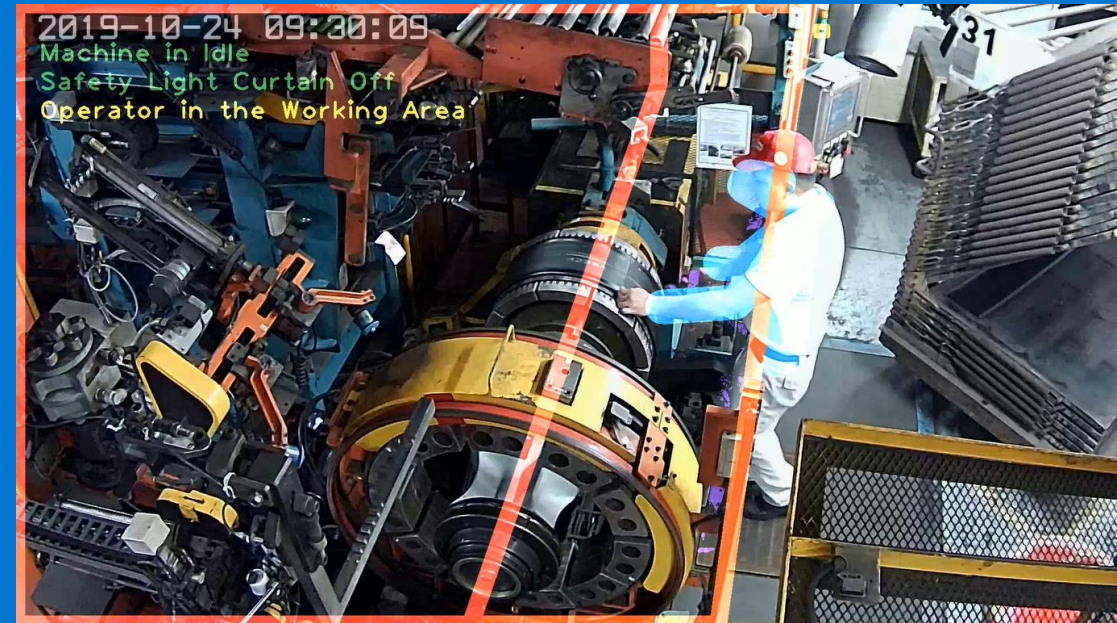
AI Safety Keeper

打造一個安全無死角的工作環境

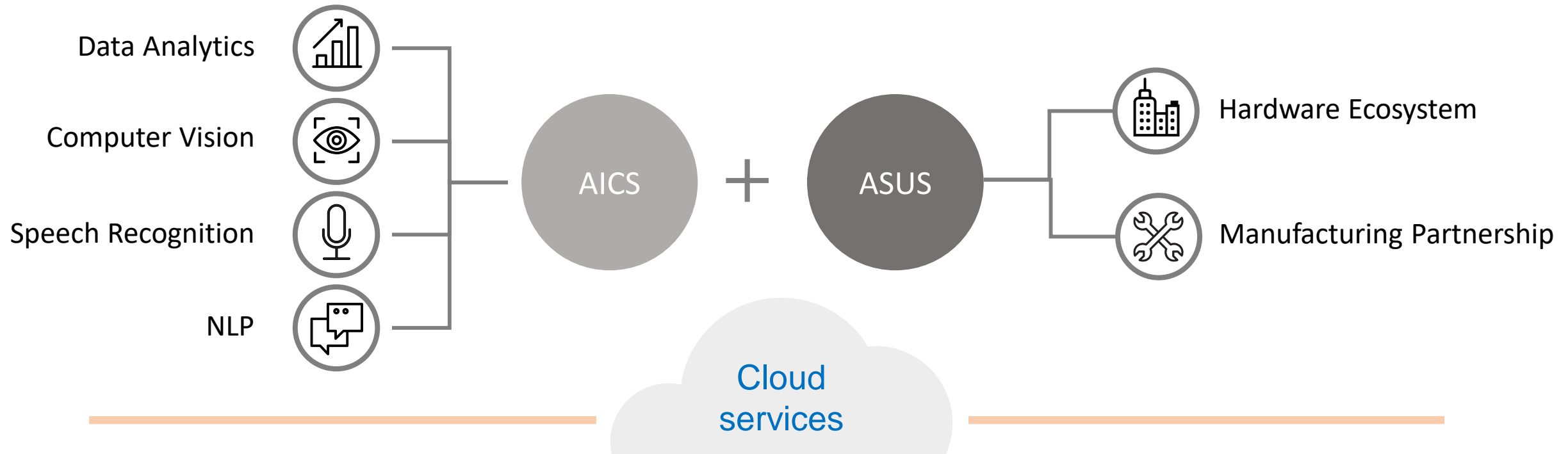
Jackie Yang

Principal Product Manager

ASUS AICS



AICS



AICS team is a new group with a mission to develop AI-enabled intelligent cloud services with core technology in the areas of Data Analytics, Speech Recognition, NLP, and Computer Vision to deploy into new products and services at scale.



普利司通「安心,安全」輪胎領導品牌

“Safe, Reliable” The largest Tire Company-Bridgestone

Our Way to Serve

以行動貢獻社會

Process Safety
Management



Quality
Assurance



Transportation
Safety



前進偏鄉小學推行
交通安全講座

台灣普利司通

隸屬總公司位於日本的普利司通集團，創立於1982年，在台灣同時擁有製造與銷售單位，主要生產轎車胎、輕型卡客車胎。走過近40個年頭，始終秉持「以最高品質貢獻社會」的集團使命向前邁進；一直以來，除提供顧客最佳品質的輪胎，同時視安全為產業價值為最重要的一環，從製程到消費者的行車安全一路守護，致力於提供大眾「安心、安全」的生活環境。

AI Safety Keeper

Create the Safest Workplace

Challenges

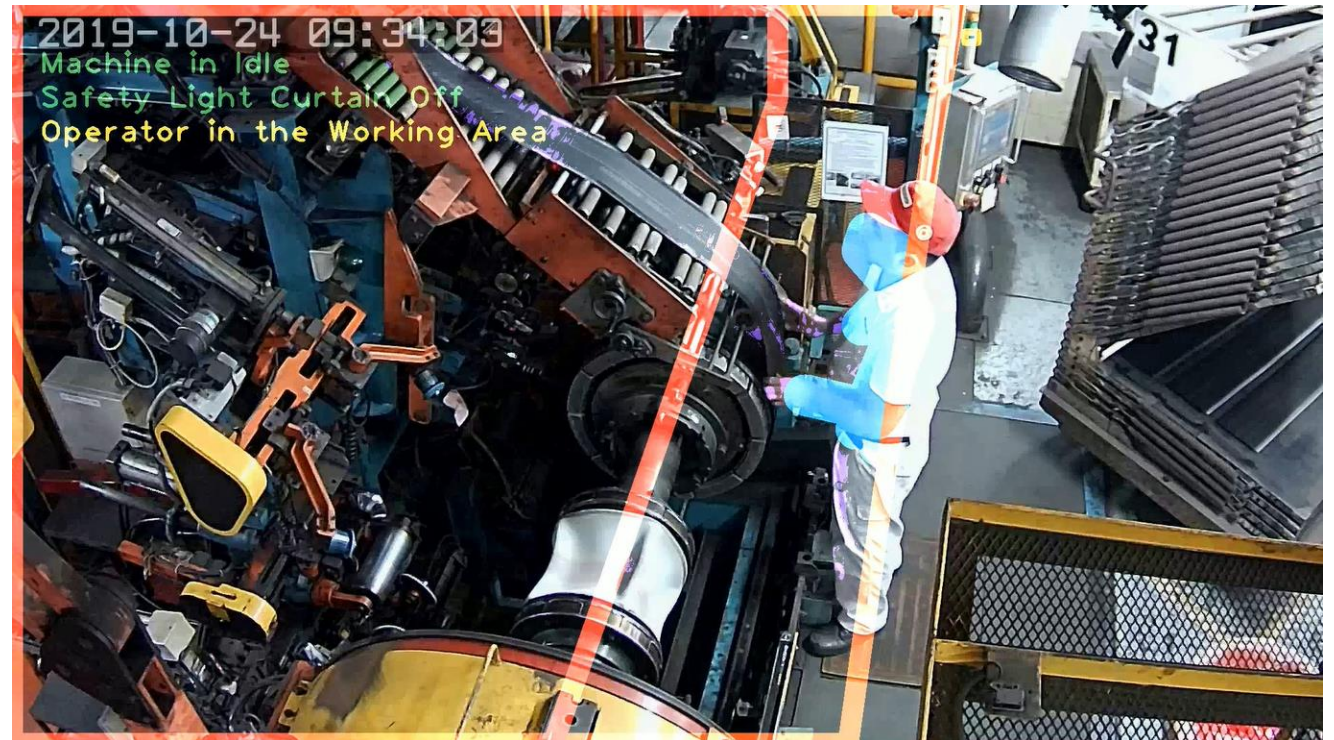
Prediction
Low Latency
Failsafe service

Solution

Scene Understanding

ROI

31 suspicious behaviors



ASUS | AICS





Accelerate building AI Solutions by Azure



Multiple Sites & Devices Management

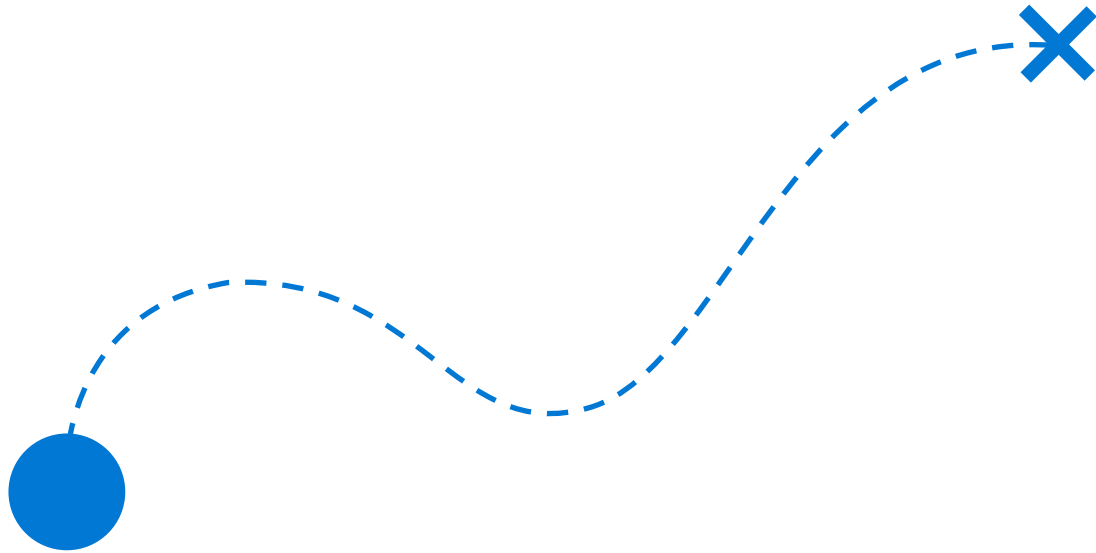


Continuous Learning & Deployment

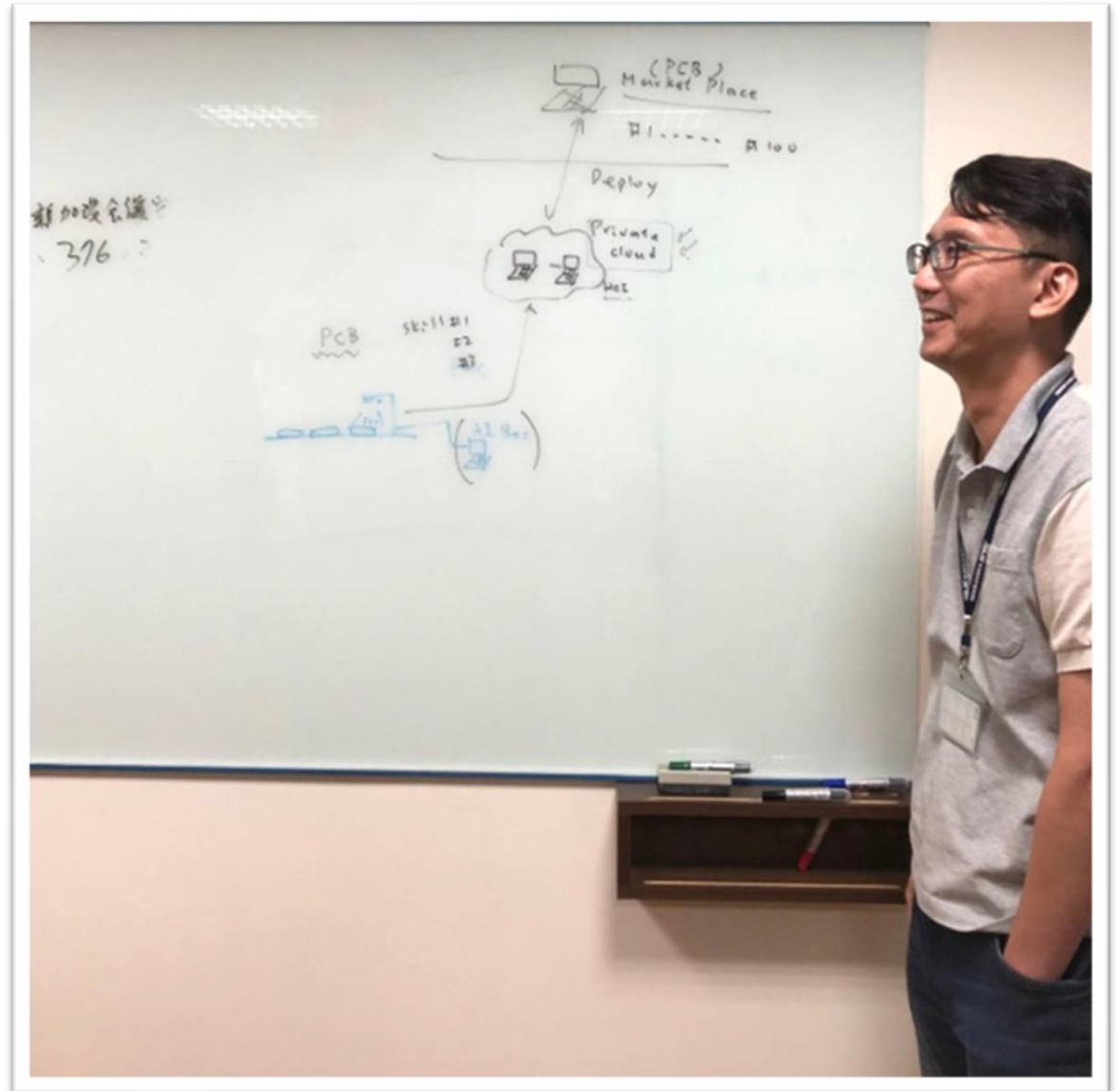


24x7 non-stop Service

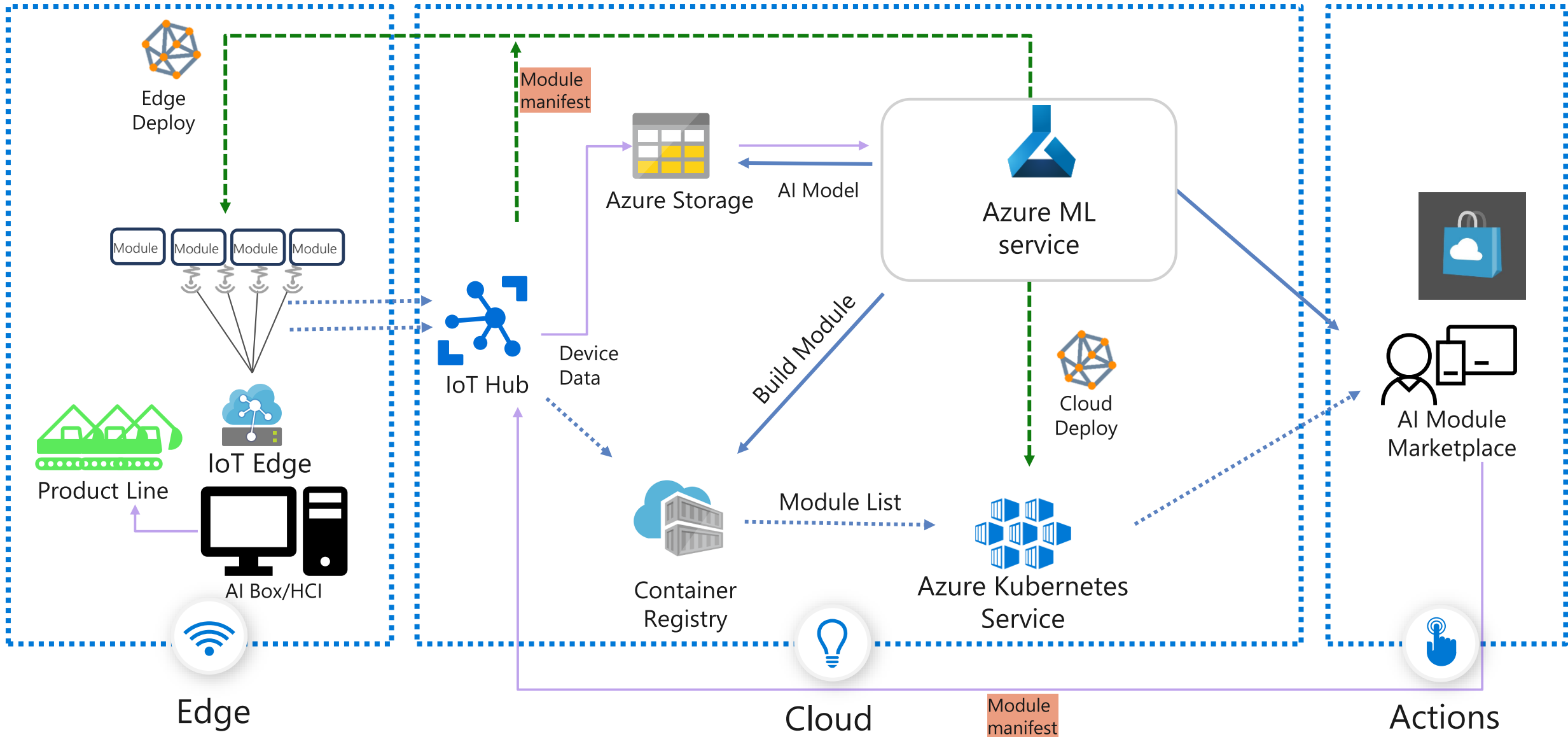
Whiteboarding the Solution



It's a journey...



AI Safety Keeper Building Blocks





**Principal Product Manager
Smart Factory
AICS**

(E) Jackie_Yang@asus.com

(O) +886-2-28943447 ext. 21494

(M) +886-920-316-358

Skills
currently have



SKILLS GAP

Skills
needed




Welcome to Microsoft Learn

[Microsoft.com/learn](https://microsoft.com/learn)



Microsoft.com/learn

Time
investment
expectation



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

12300 XP

Modules in this learning path



Cloud Concepts - Principles of cloud computing

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 ▾

1100 XP

Microsoft.com/learn



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Total XP=12,300

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Microsoft.com/learn



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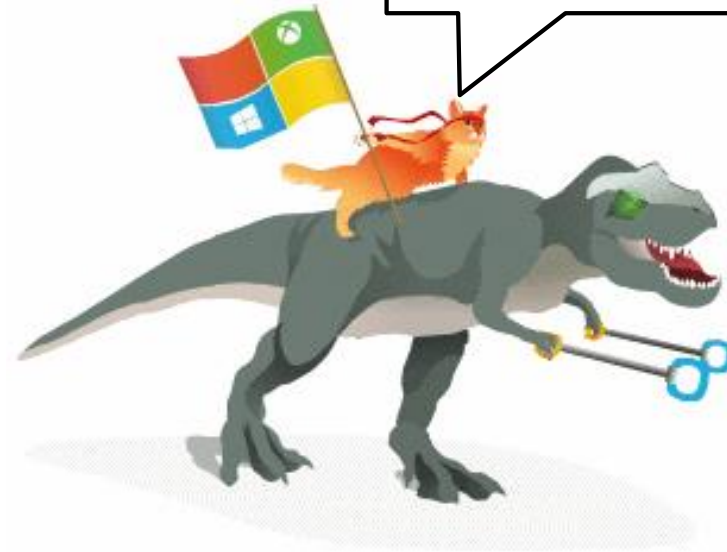
Module XP=
1,100

✓ 1100 XP

Leveling up your Azure skillz with Microsoft Learn



I can haz **ALL**
the badgez!





Top Challenges

Complexity
IoT PnP, IoT Central

Knowledge
MS Learn

Security
Confidential Computing

Solution == Partners

IoT in Action



