

# Intelligent Edge Introduction

PPT at

[https://github.com/DittmannAxel/AI\\_IOT\\_Summit\\_Feb20](https://github.com/DittmannAxel/AI_IOT_Summit_Feb20)

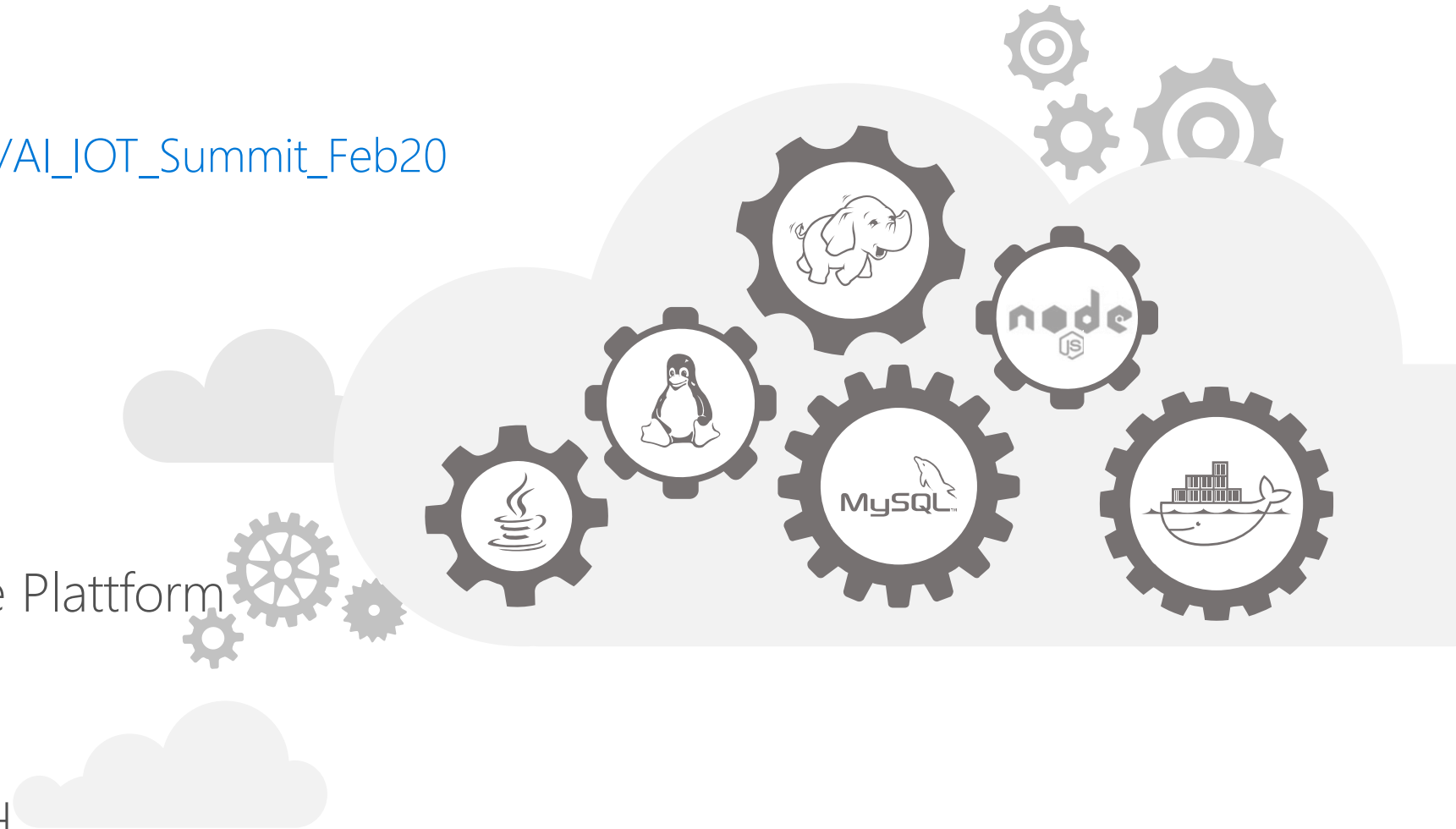
Alexander Ortha

GBB Technical Specialist Edge Plattform

C+E Blackbelt Team EMEA

Twitter [@AlexanderOrtha](https://twitter.com/AlexanderOrtha)

Microsoft Deutschland GmbH



The logo consists of a solid blue cloud shape with a horizontal base and a wavy top. The words "Microsoft" and "Azure" are centered within the cloud in white, sans-serif font.

Microsoft  
Azure



# Employee Safety

Flammable equipment  
near heat source

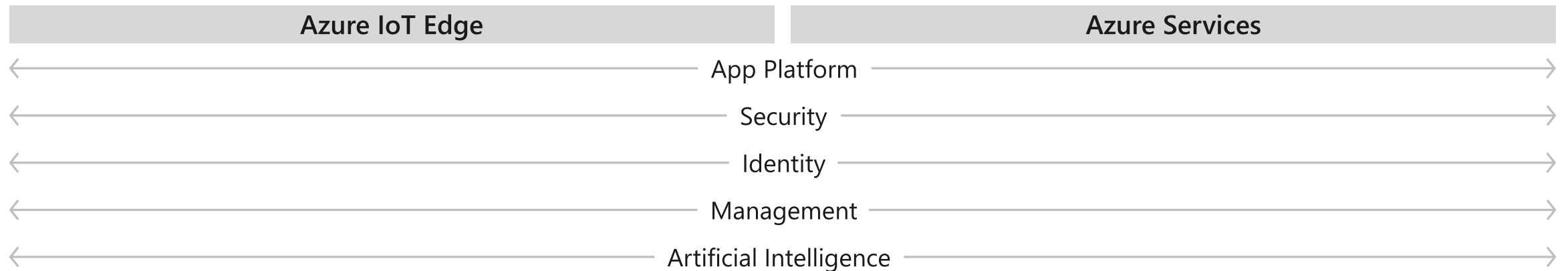
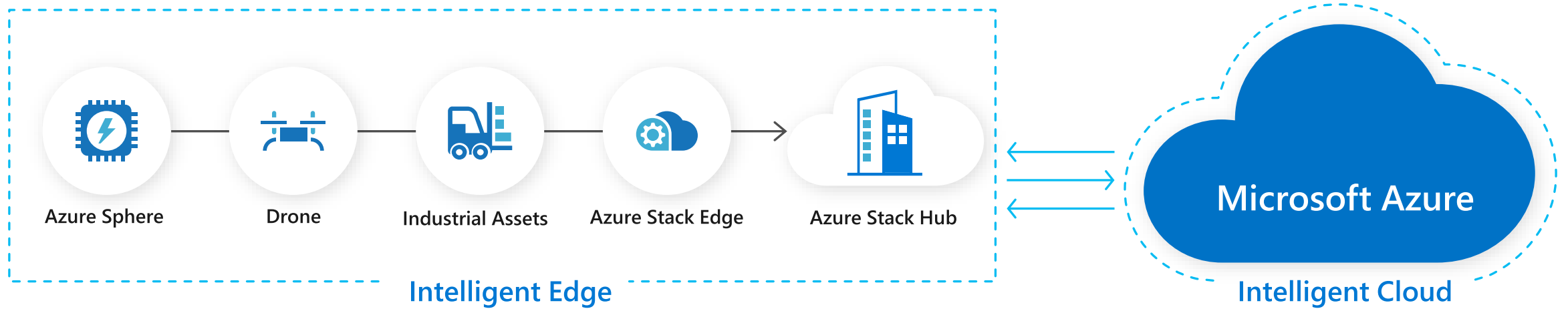
Missing equipment

No hat

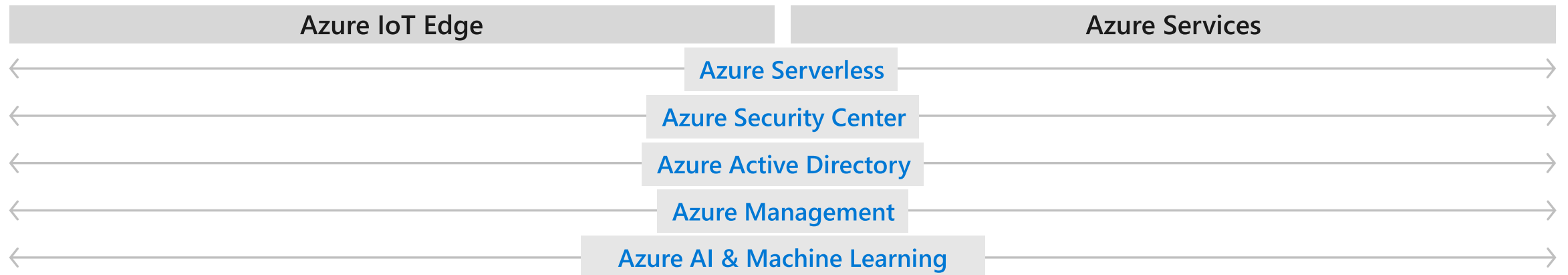
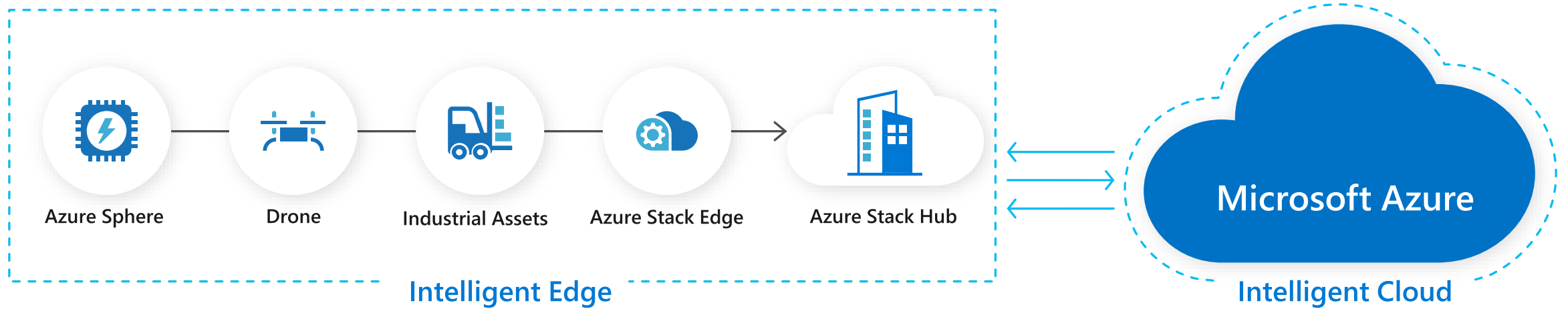




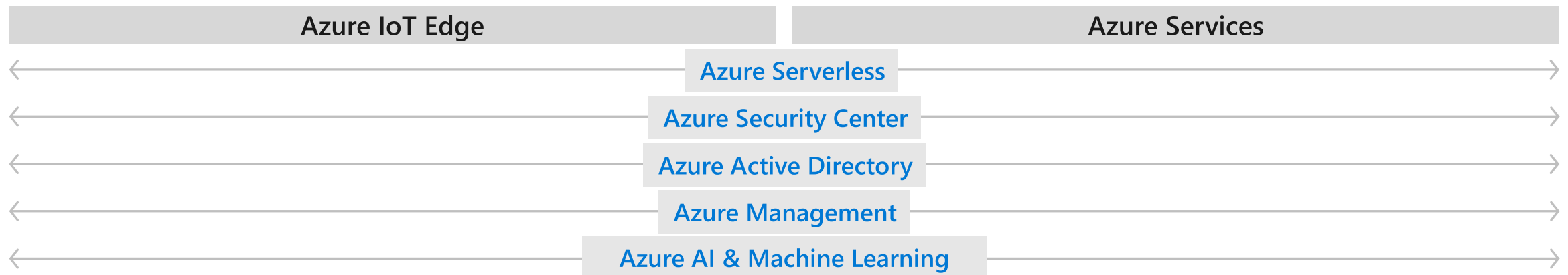
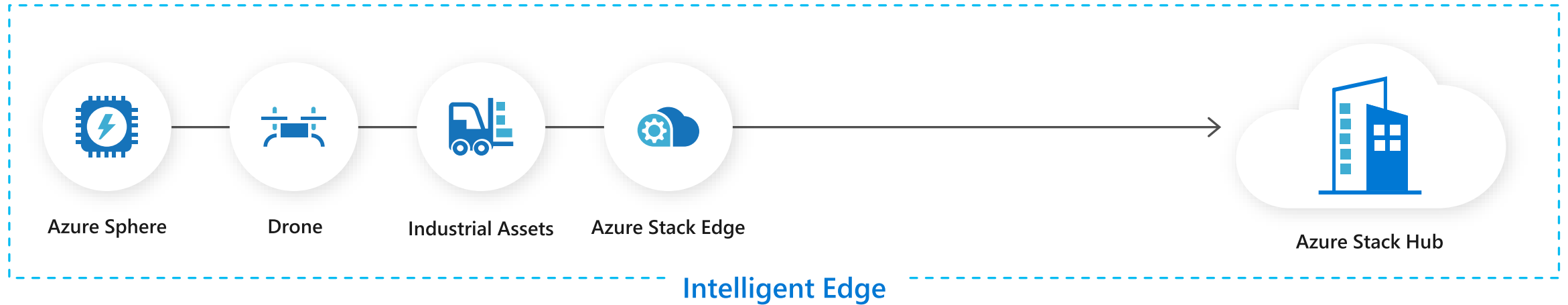
# Microsoft Azure approach



# Microsoft Azure approach



# Run the Edge locally and **disconnected** with Azure Stack Hub



# A consistent end-to-end Intelligent Edge



## Microcontrollers

### Azure Sphere

- Highly-secured, connected Azure Sphere MCU running our OS and services
- 3P Low-cost MCUs running FreeRTOS and our Azure Device Services

## IoT devices

### Azure IoT Device SDK

- Industry specific sensors and devices from partners
- 1000+ Azure IoT certified devices and growing

## Edge devices

### Azure IoT Edge

- AI, AzureML, Azure Stream Analytics and more
- RPi through Intel Xeon procs
- Windows, WinSvr, Linux

## Edge appliances

### Azure Stack Edge

- Azure Stack Edge: AI-Enabled, Storage and compute Azure Edge appliance
- 3P WinSvr or Linux plus IoT Edge

## Edge cloud

### Azure Stack

- Cloud Consistent Edge
- Cloud app model on-premises

## Hyperscale cloud

### Azure Regions

- Full Range Hyperscale Cloud Services
- Open Source Based Services & Tools

← Azure Serverless →

← Azure Security Center →

← Azure Active Directory →

← Azure Management →

← Azure AI & Machine Learning →

# Azure Stack portfolio

Extend Azure to consistently build and run hybrid applications across cloud, datacenter, and edge



## Azure Stack Edge

Cloud-managed appliance

Machine learning at the edge

Edge compute and IoT solutions

Network data transfer to cloud



## Azure Stack HCI

Hyperconverged solution

Scalable virtualization and storage

Remote branch office

High-performance workloads



## Azure Stack Hub

Cloud-native integrated system

Disconnected scenarios

Data sovereignty

Application modernization



# Azure Stack Hub : a complete



## Complete autonomous cloud

Only consistent hybrid cloud that can run at the connected or disconnected



## Cloud application model

Common application model, tools and APIs with Azure simplifying DevOps



## Azure Services & Marketplace

Azure web services, containers, Azure Functions, & Azure Marketplace



## Integrated System

Cloud inspired infrastructure via integrated systems from major H/W partners



Edge & Disconnected



Regulatory & Data Sovereignty



Application Modernization



# Customer Scenarios: Azure Stack



## Financial services

Customer analytics

Financial modeling

Risk, fraud, threat detection



## Health and life sciences

Clinical and claims data

IoT device analytics

Social analytics



## Retail

Assortment optimization

Data-driven stock, inventory, ordering

Store design and ergonomics

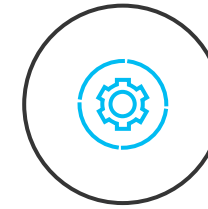


## Oil, gas, and energy

Digital field/production

Industrial IoT

Supply-chain optimization



## Manufacturing

Predictive maintenance

Safety and security

Quality assurance

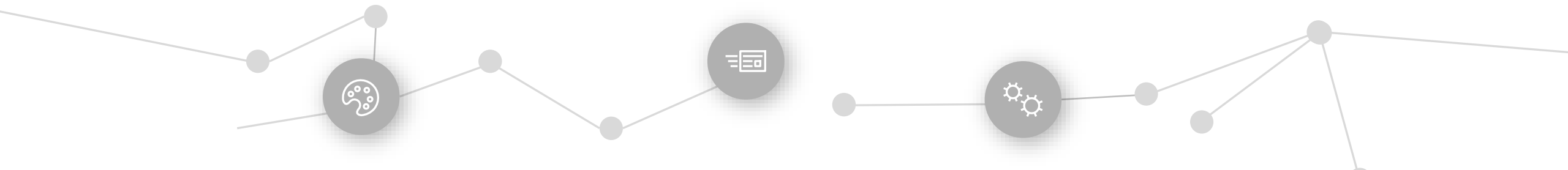


## Public Sector

Smart city

Revenue management

Citizen engagement



# Azure Stack Hub customers

**AIRBUS**



**Schlumberger**

**tieto**

**LIQUID**  
TELECOM



**telkomtelstra**

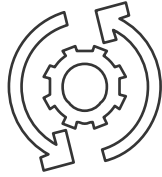


**BINBOX**

**KPMG**



# Azure Stack Hub: an extension of Azure



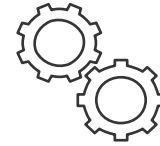
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Consistent application  
development



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Azure services  
available on-premises



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Purpose-built  
integrated system



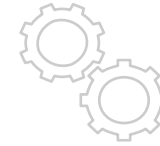
# Azure Stack Hub: an extension of Azure



Consistent application  
development



Azure services  
available on-premises



Purpose-built  
integrated system



Tools



Experiences



Deployments



Application  
patterns



Automations



Operations

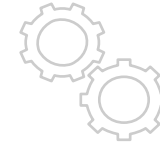
# Azure Stack Hub: an extension of Azure



Consistent application  
development



Azure services  
available on-premises



Purpose-built  
integrated system

## Available now



Virtual  
Machines



IaaS-based  
Containers



Networking



Storage



Key Vault



DBaaS



Service  
Fabric



Azure App  
Service



Azure  
Functions



Azure  
Marketplace

## Public Preview



Event Hubs



IoT Hub



Azure Stream  
Analytics



Cognitive Services



Azure API  
Management

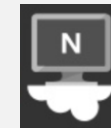
## Private Preview



Windows Virtual  
Desktop



Azure Arc



GPU-enabled  
VMs



Kubernetes  
(AKS-engine)



SQL Server  
2019



Blockchain  
Template

# Content & Marketplace Management

## Management



## Networking & Security



## Business Continuity



## App frameworks & Tools



## Middleware & Databases

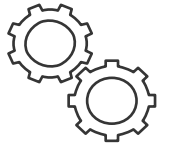


## Infrastructure

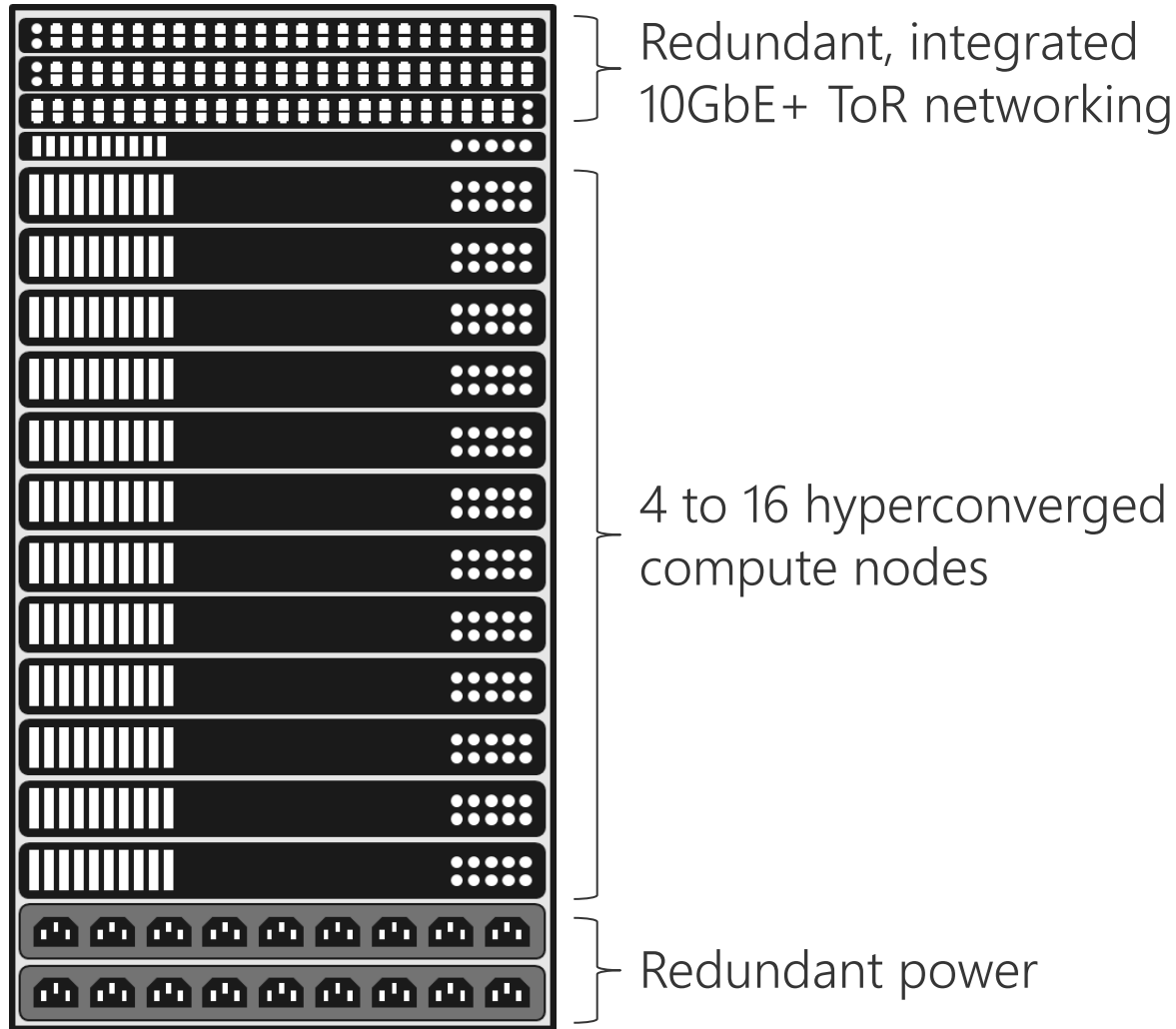


List of Azure Stack Marketplace offerings <https://docs.microsoft.com/en-us/azure/azure-stack/azure-stack-marketplace-azure-items>

# Azure Stack: an extension of Azure



Purpose-built  
integrated system



Architecture,  
hardware, and  
topology



Deployment,  
configuration,  
provisioning



Validation



Monitoring,  
diagnostics



Security and  
privacy



Business  
continuity



Patching and  
updates



Field replacement  
of parts



# Azure Stack Edge : an Azure Managed Edge Appliance



An Azure-managed, edge appliance that brings the compute, storage, and intelligence of Azure right to where you need it



## Hardware-accelerated machine learning

Accelerate ML inferencing using on-board GPU or FPGA to get results close to the data source



## Edge compute

Run VMs, containers, and Azure services at the edge locations



## Azure-managed appliance

Order and manage your appliance and workloads through the Azure portal



## Cloud storage gateway

Transfer data to Azure over the network while retaining local access to blobs and files

# Azure Stack Edge managed from Azure

**Priced as an Azure Service**

695\$/month

586€/month

Azure Consumption

Home > MyDataBoxEdge1

**MyDataBoxEdge1**  
Data Box Edge / Data Box Gateway - PREVIEW

Search (Ctrl+/)

+ Add share | Update device | Reset device password | Feedback | Refresh | Delete

**Overview**

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Settings
  - Locks
  - Properties
- General
  - Order details
  - Device setup
- Gateway
  - Get started
  - Users
  - Shares
  - Bandwidth
- Edge compute
  - Get started
  - Modules
  - Triggers

**Essentials**

**Device**

Device status: Online

Capacity: 11.89 TB

Software version: Data Box Edge 1903 (1.5.796.395)

**Shares**

No shares found. Click + **Add share** to add your first share.

**Modules**

No modules deployed. To deploy your first module, configure compute.

**Transfer data**

This cloud storage gateway sends data to and from Azure using NFS and SMB protocols.

**Get started**

**Compute**

AI-enabled compute on Data Box Edge helps analyze, process, or filter data as it moves to blobs, Azure page blobs, or Azure F

**Get started**

- Storage accounts (classic)
- Data Lake Storage Gen1
- Storage Sync Services
- Azure NetApp Files
- Recovery Services vaults
- Storage explorer
- Data Box Edge / Data Box Gateway
- API Management services

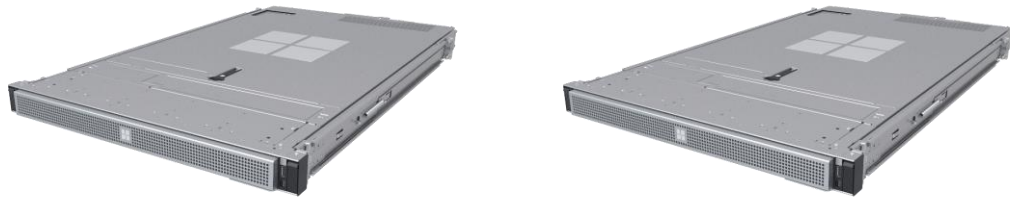
**Data Box Edge / Data Box Gateway** ☆

+ Create | View

# Choose the appliance model best suited for the job

## Commercial (C) series

Enterprise-ready form factors for use within a traditional business setting



## Rugged (R) series

Ruggedized, portable, battery-operated form-factors for harsh field conditions



# Coming Soon for Azure Stack Edge



## Services



Virtual Machines



Multi-Access Edge Compute



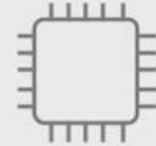
## Features



K8S



High Availability



## Hardware



GPU Options



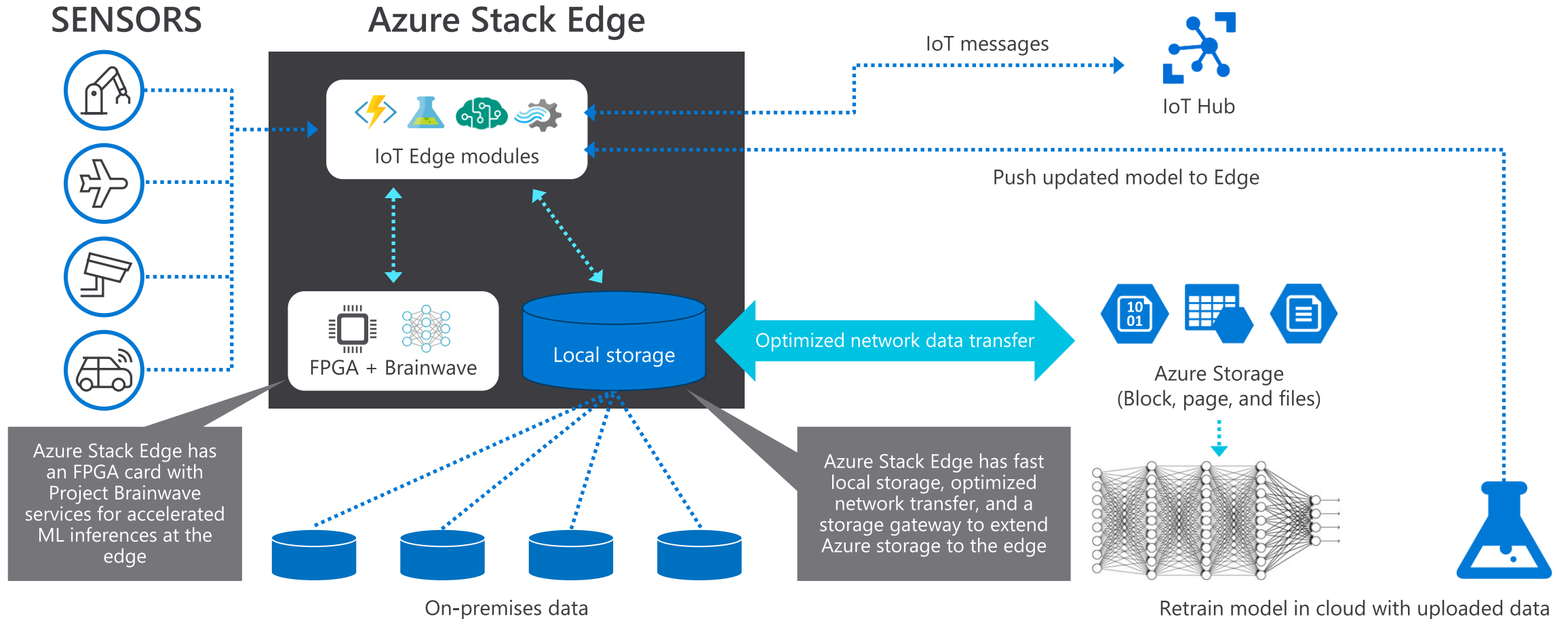
Ruggedization



<https://aka.ms/StackEdgePreviewWS>



# Azure Stack Edge with IoT Edge and Brainwave



# Amplify your industry with Edge to Cloud solutions



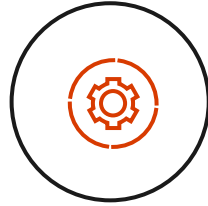
## Retail

Unstocked shelves  
detection

Predict customer patterns  
and behavior

Smart customer  
interactions

VIP Hosting



## Manufacturing

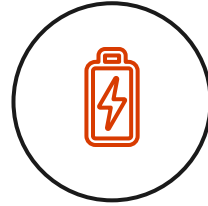
Quality control

Predictive Maintenance

Employee safety

Supply Chain Management

Old machinery upgrade



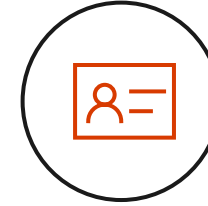
## Energy

Anomaly detection

Access Control

Smart Building

Smart Grid



## Public Sector

Law enforcement field  
operations

Improve safety, such as  
traffic patterns and  
crosswalks

Parking Management

Air Quality Control

Traffic flow control

Public Transport  
Management

Identity Management



# Employee Safety

Flammable equipment  
near heat source

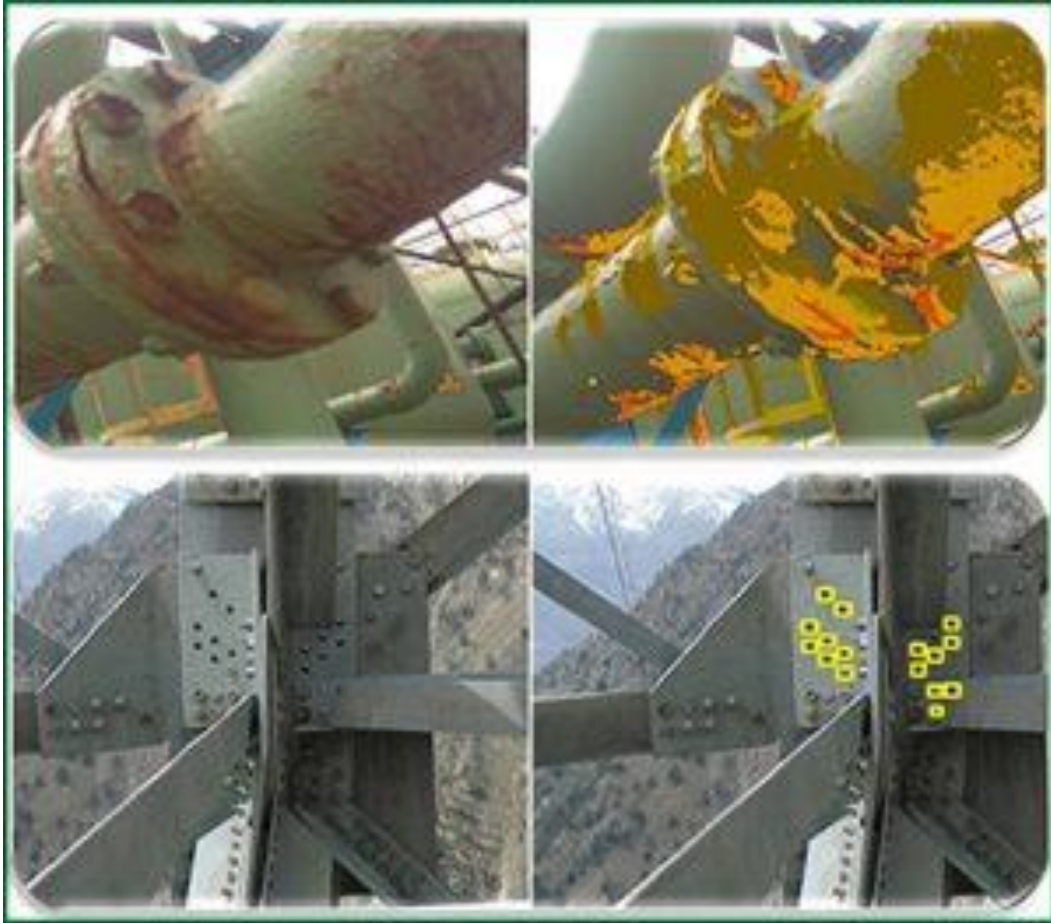
Missing equipment

No hat





# Anomaly Detection

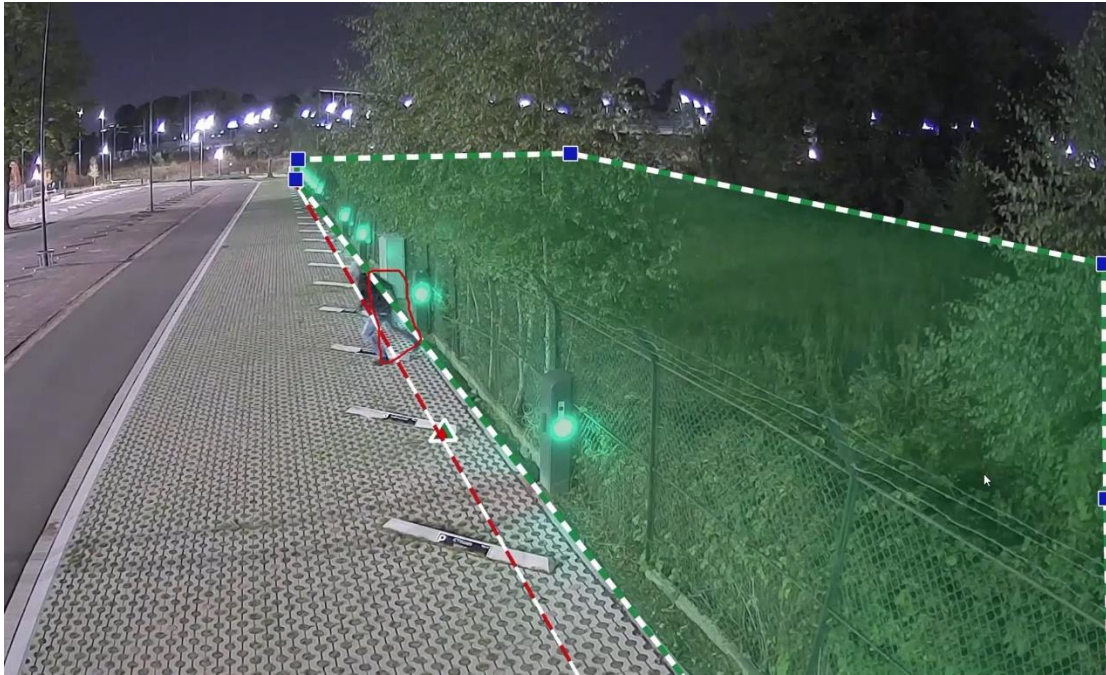


# Quality Control

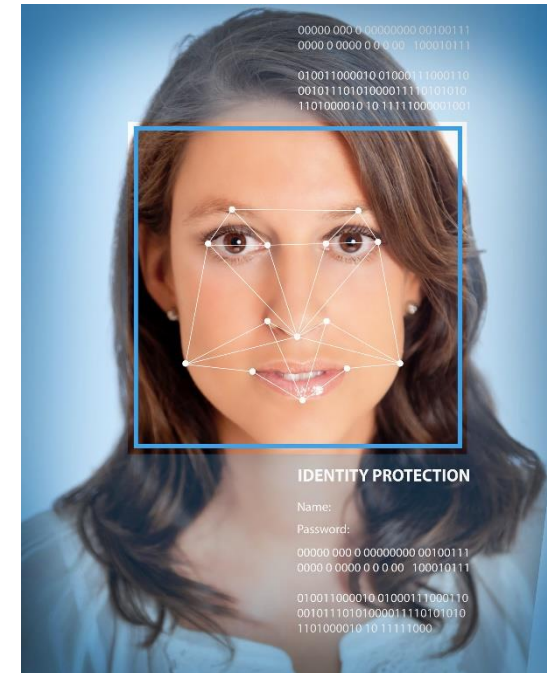




# Perimeter Protection



# Access Control





# Further Links

[New investments in Azure Stack extend Microsoft's hybrid cloud leadership](#)

[Azure ISVs expand the possibilities with Azure Stack](#)

[Customers are using Azure Stack to unlock new hybrid cloud innovation](#)

[The importance of Azure Stack for DevOps](#)

# Getting started With Azure Stack

Azure Stack Development kit: <http://aka.ms/asdk>

Azure Stack QuickStart templates: <https://github.com/Azure/AzureStack-QuickStart-Templates>

End-to-End Hybrid Application Sample: <https://aka.ms/azshybridsample>

Hybrid Tutorials: <https://aka.ms/azsdevtutorials>



1

Develop

Develop applications  
in Azure



2

Validate

Download Azure Stack  
Development Kit



3

Deploy

Order Azure Stack  
integrated systems for  
production deployment

