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2023



13 May 2023 / 9 AM – 6 PM





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IoT Odyssey: From Device to Cloud

Filipe Teixeira



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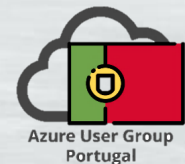
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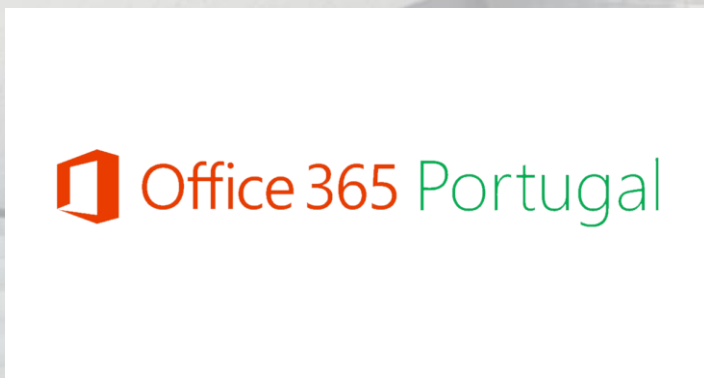
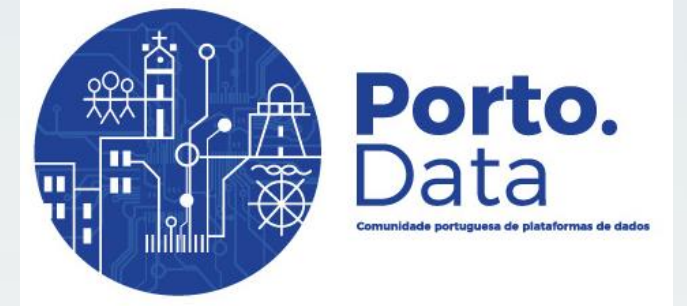
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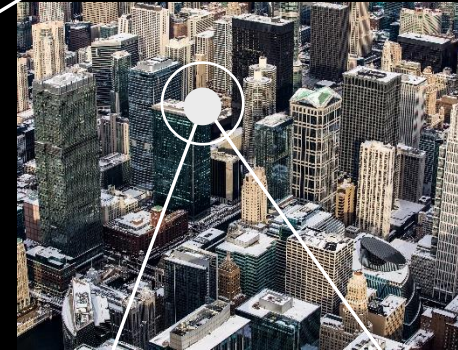
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IoT Odyssey

From Device to Cloud

Filipe Teixeira
Azure Cloud Engineer – Industry Solutions



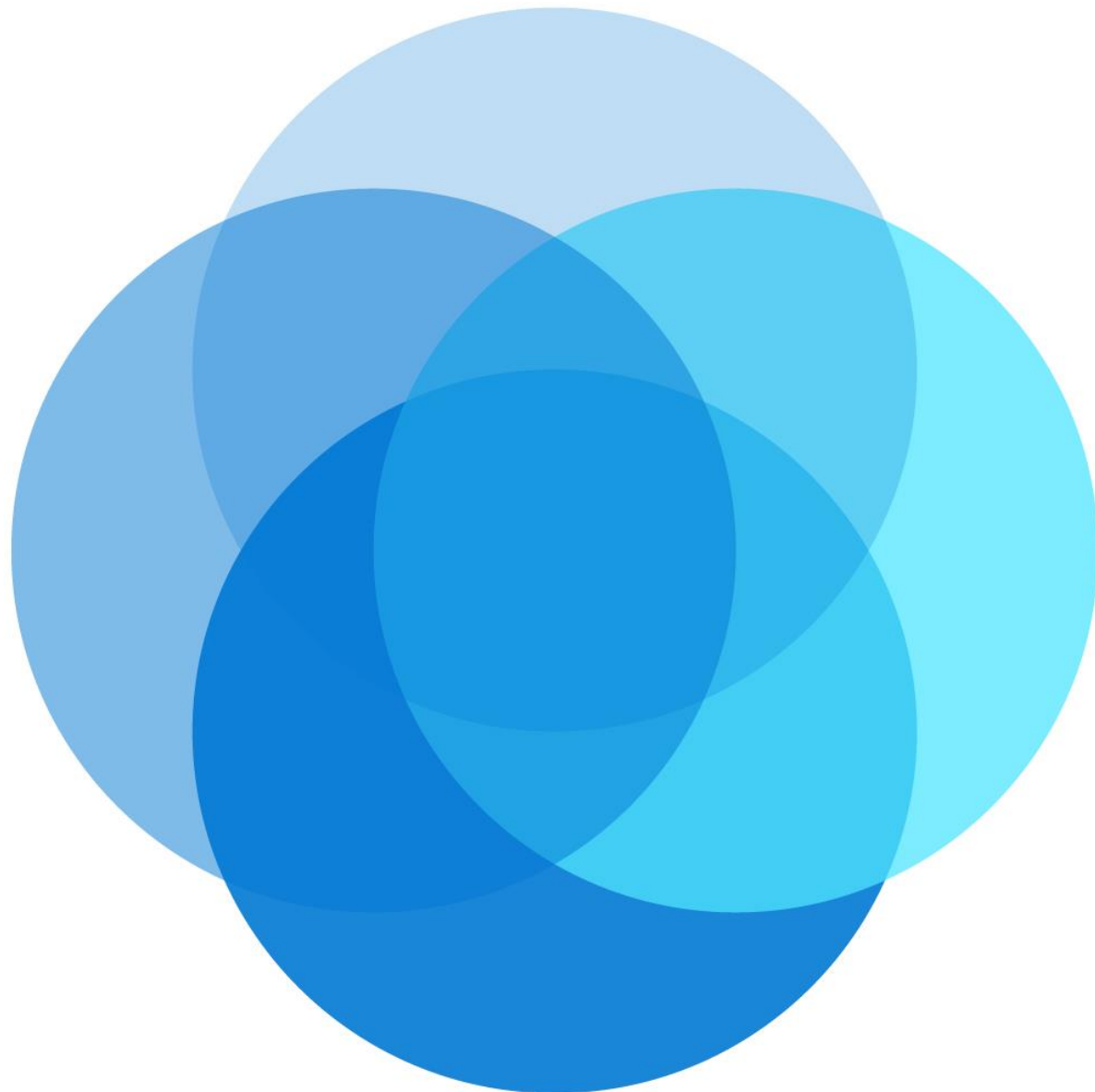
IoT Odyssey

Internet of Things

Architecture of an IoT Solution

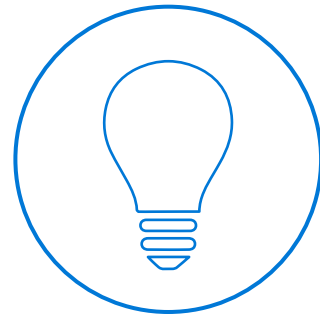
Demo: Empire Spaceship Management

Developer Resources

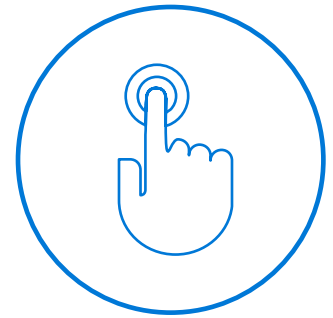




Things



Insights



Actions

The new era of digitization across industries



Manufacturing

Realize efficiency, automation, customer centricity and tap into new revenue sources



Energy

More efficient, cleaner power, and using less of it across industries



Transportation

People and goods moving reliably, more safely, and using less energy



Agriculture

Better yields and higher quality with fewer resources and less waste



Smart Cities

More sustainable, prosperous, and economically competitive cities



Healthcare

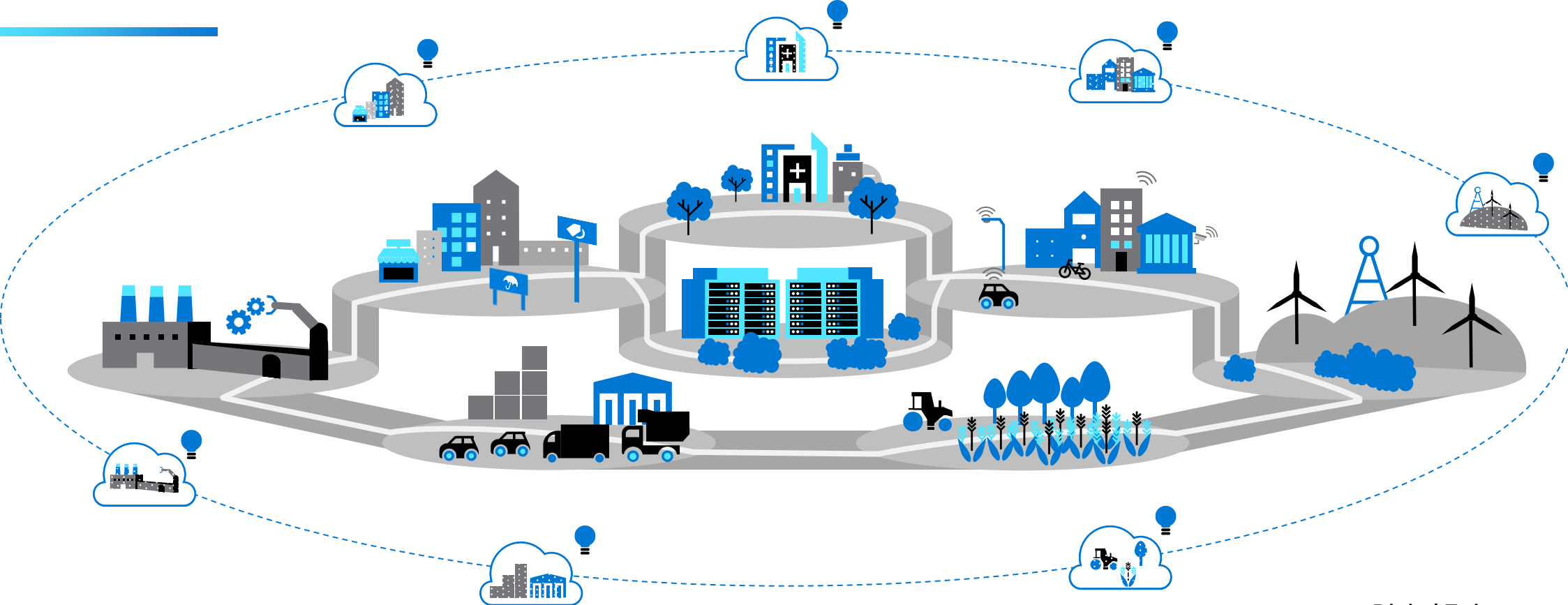
Improved quality and better outcomes for patients, anywhere



Retail

Better customer experiences, new market opportunity

Innovations enabling 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

AI
Breakthrough intelligence capabilities, in the cloud and on the edge

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

Thousands of Azure IoT customers

Microsoft IoT

Broadest portfolio

Industry Solutions



Manufacturing



Retail



Agriculture



Energy



Smart Cities



Healthcare



Transportation

IoT app services



Azure IoT Central



Dynamics Connected Field Service

IoT core services (PaaS)



Azure IoT Hub

Azure IoT Hub Device Provisioning Service

Azure Digital Twins

Azure Time Series Insights

Azure Maps

Azure Security Center for IoT

IoT Edge offerings

Azure IoT Edge

Azure Sphere

Azure RTOS

Windows IoT

Microsoft Azure

Infrastructure | Data | AI | App Dev

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



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 RTOS
 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

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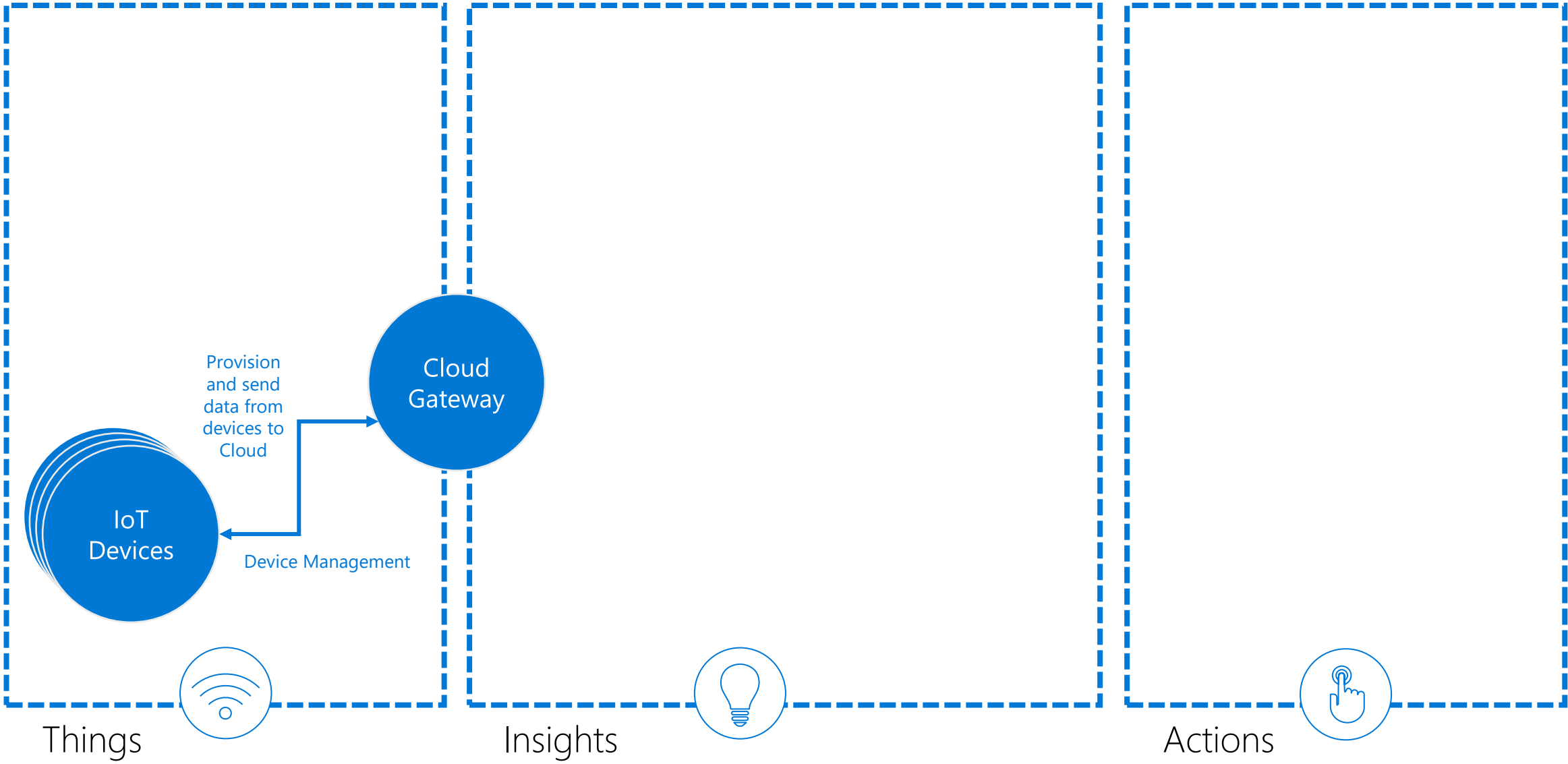
Architecture of an IoT solution



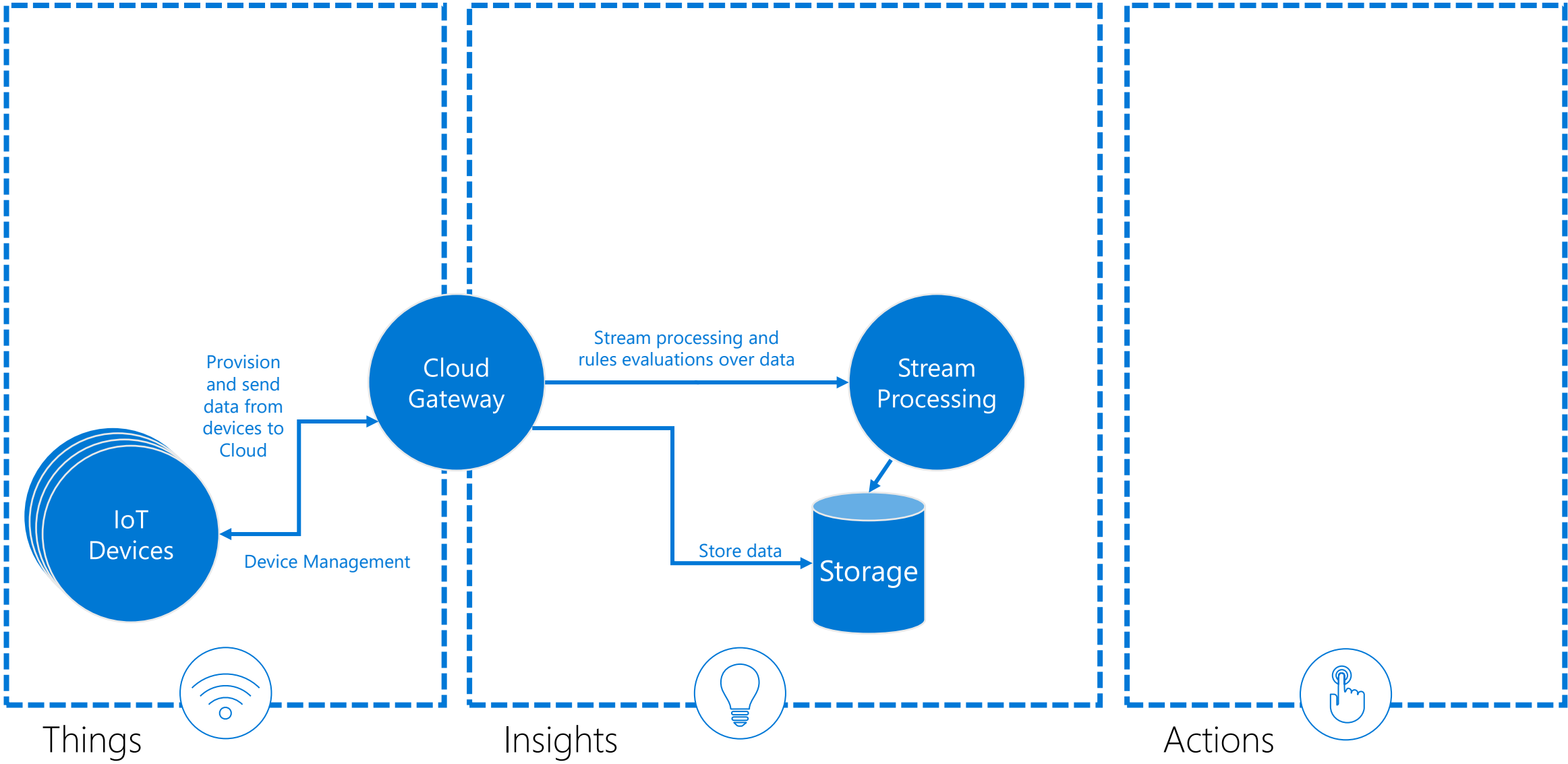
A More Realistic View...



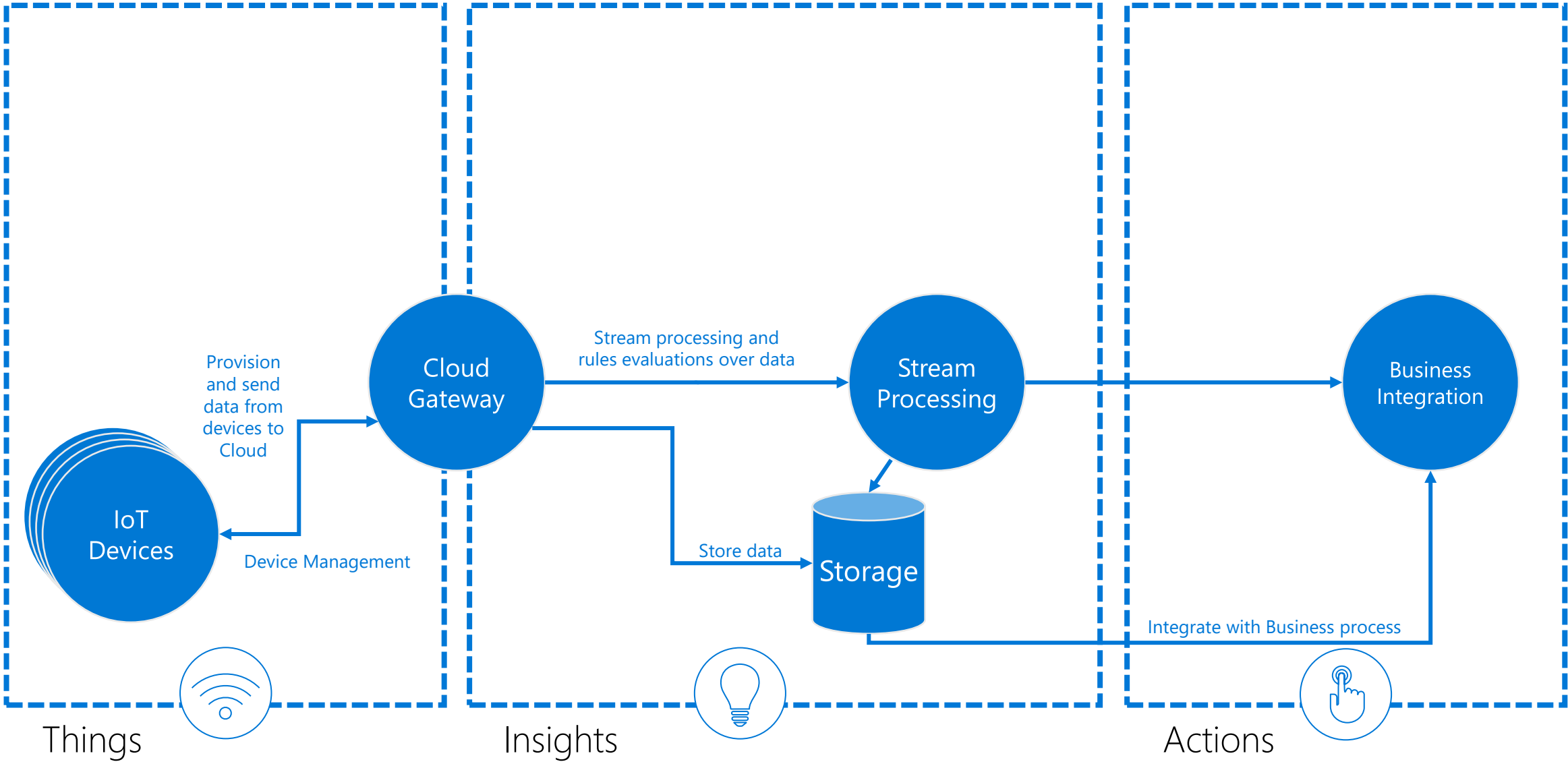
High-level IoT Architecture



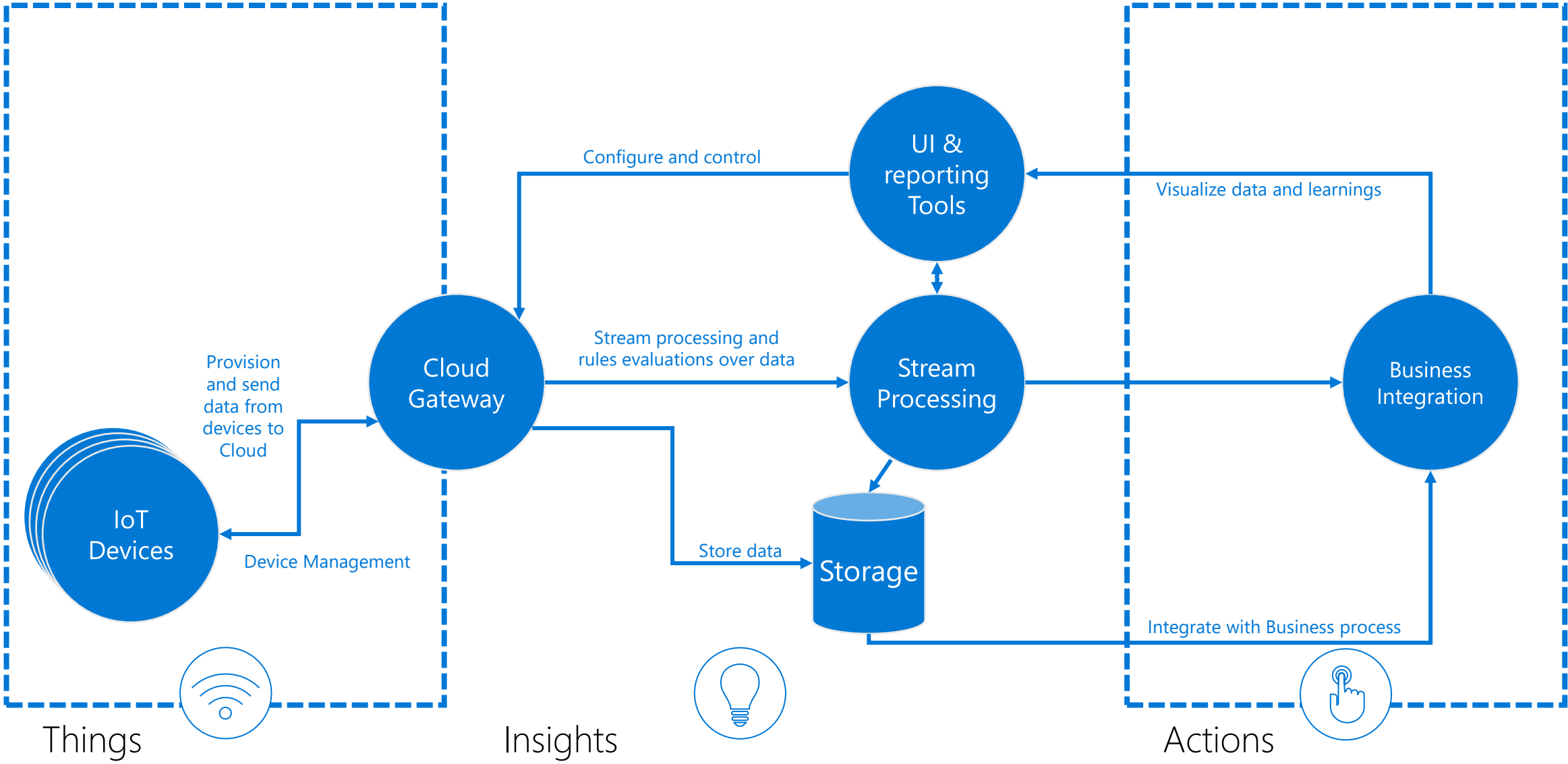
High-level IoT Architecture



High-level IoT Architecture

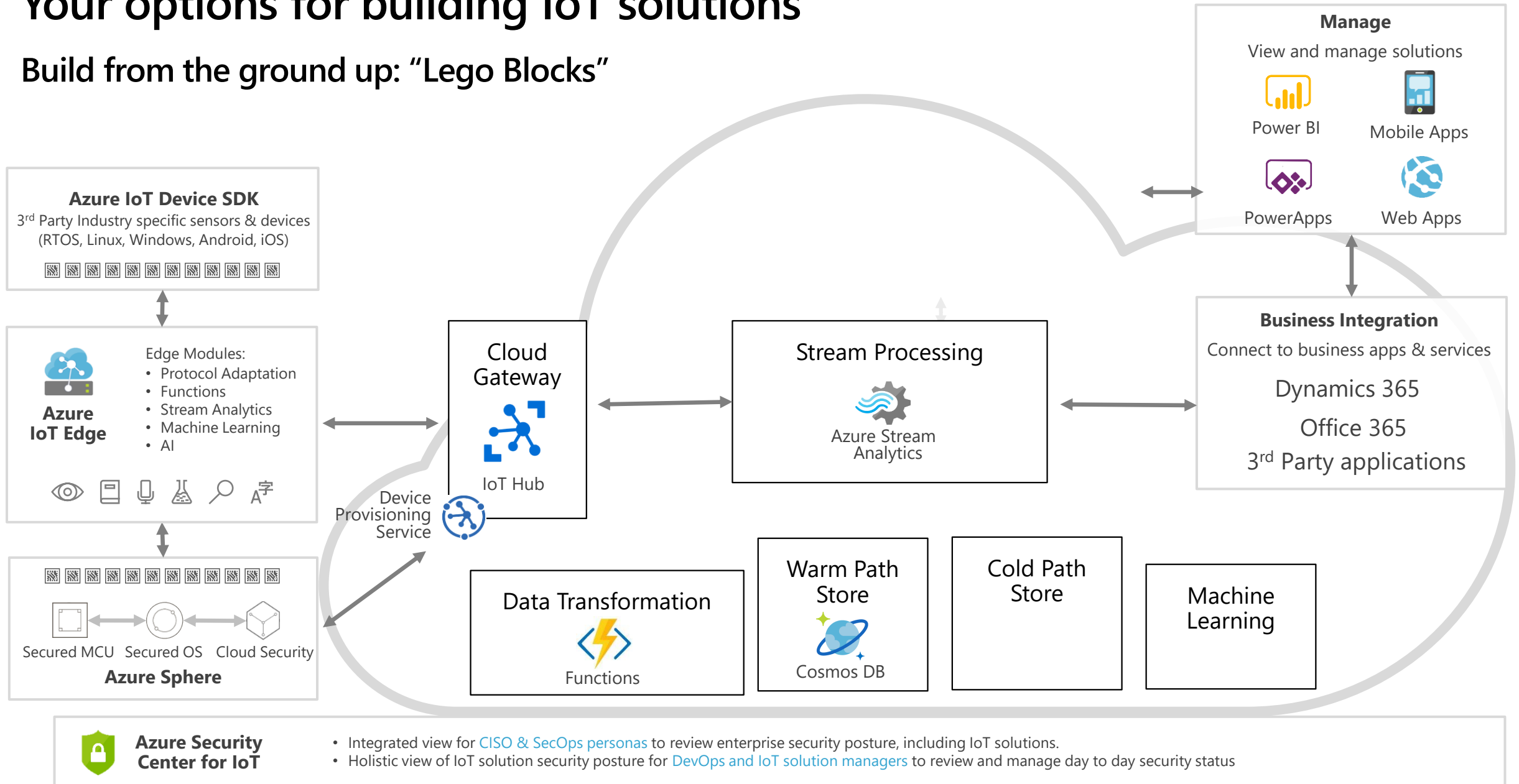


High-level IoT Architecture



Your options for building IoT solutions

Build from the ground up: "Lego Blocks"



Filter by title

Azure Architecture Center

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> DevOps

> Disaster recovery

> Enterprise integration

> High performance computing (HPC)

> Hybrid infrastructure


> Identity

Internet of Things (IoT)

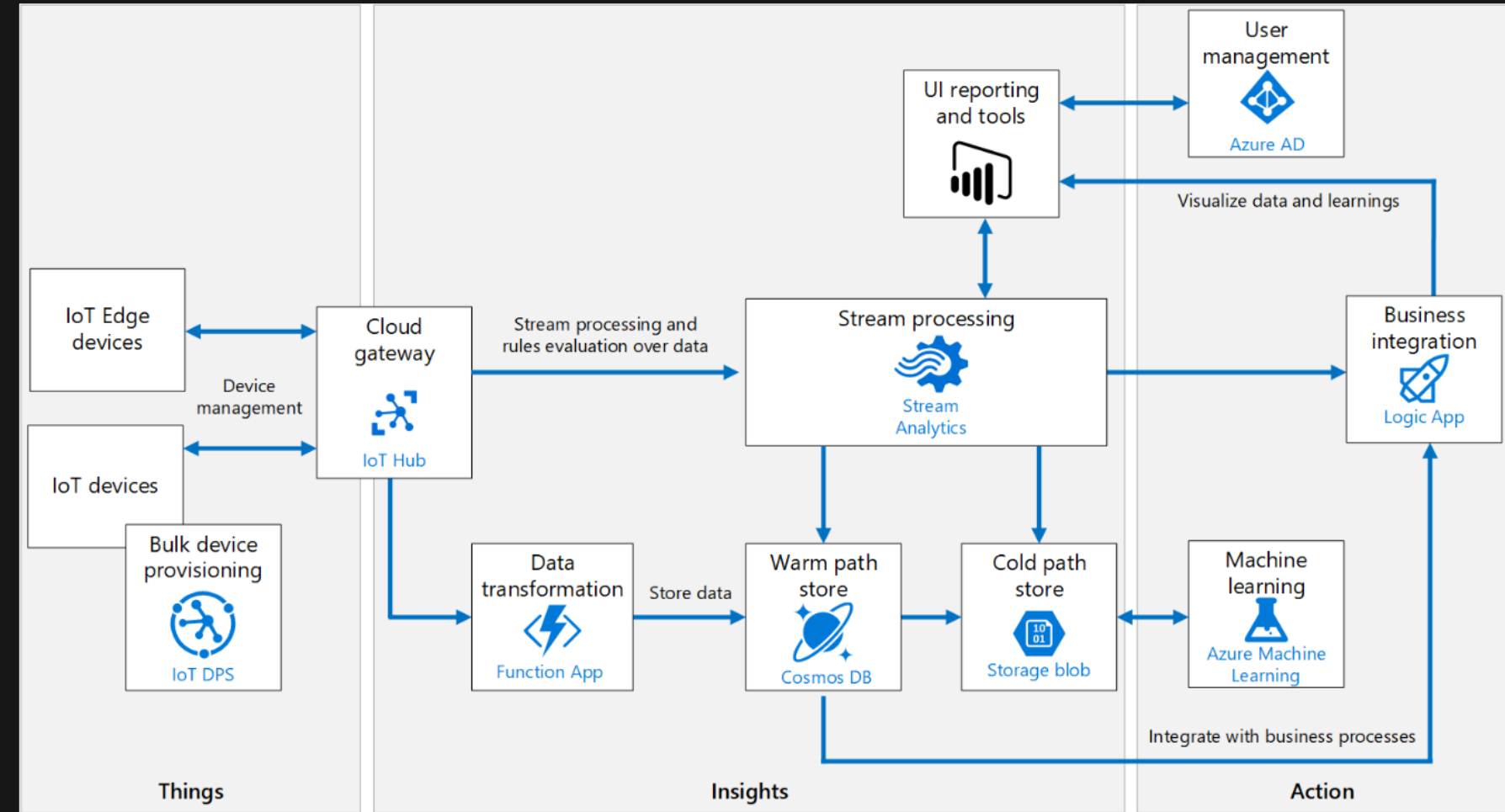
Reference architectures

Internet of Things (IoT)

Azure IoT reference architecture

01/08/2019 • 10 minutes to read •  +2

This reference architecture shows a recommended architecture for IoT applications on Azure using PaaS (platform-as-a-service) components.



IoT Odyssey

Internet of Things

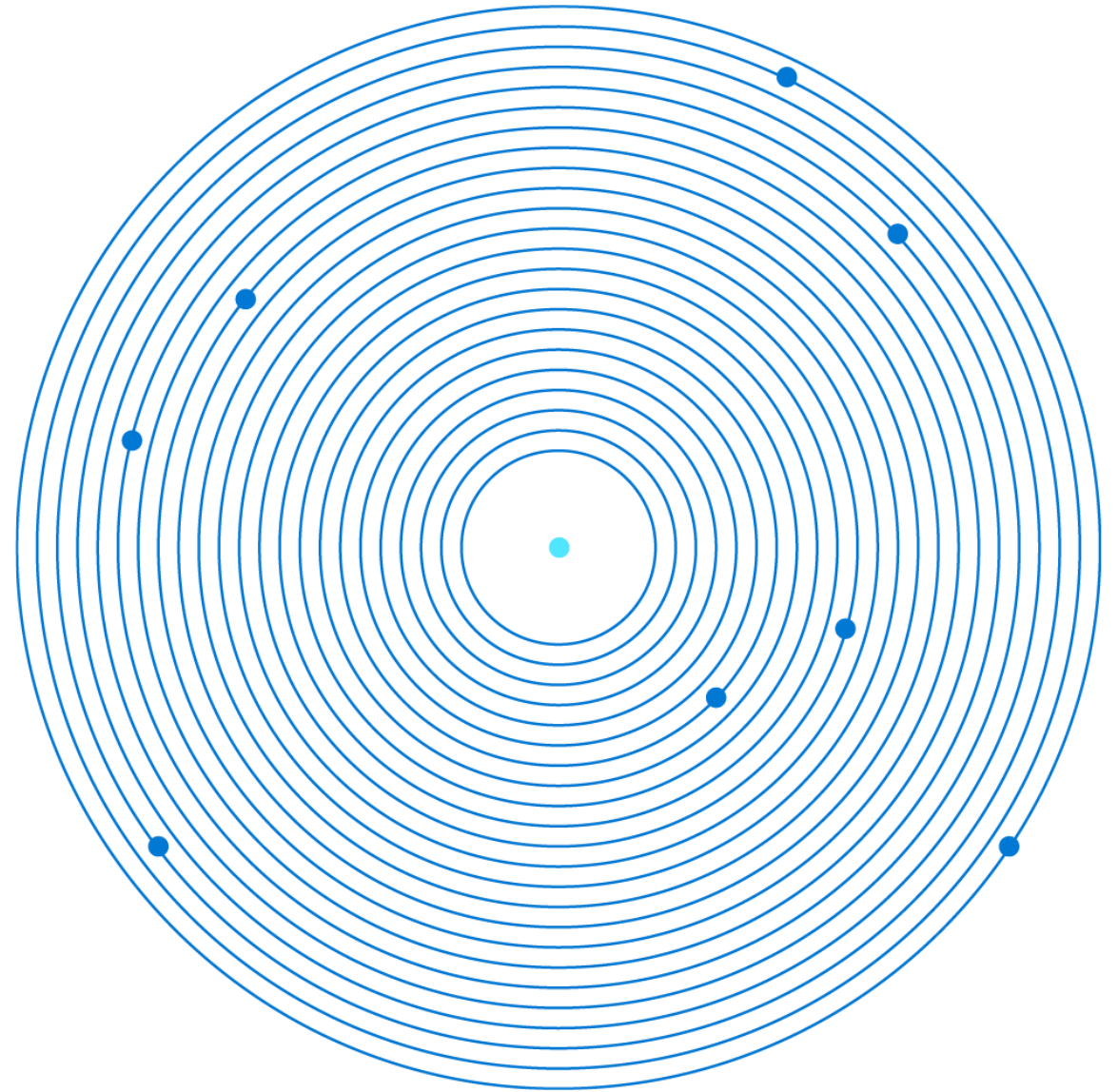
Architecture of an IoT Solution

Demo: Empire Spaceship Management

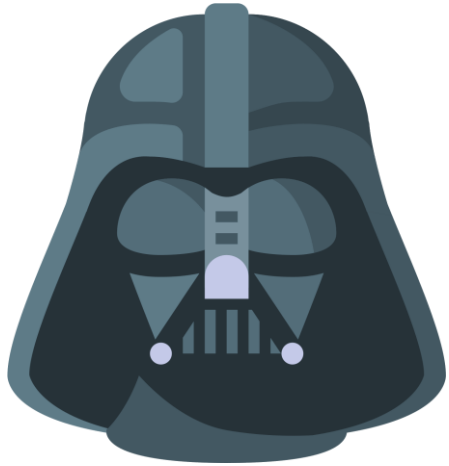
Developer Resources



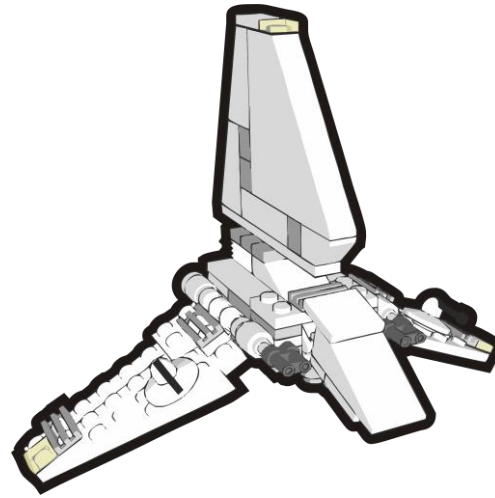
Domain



Space Odyssey: Business



Business Owner



Devices

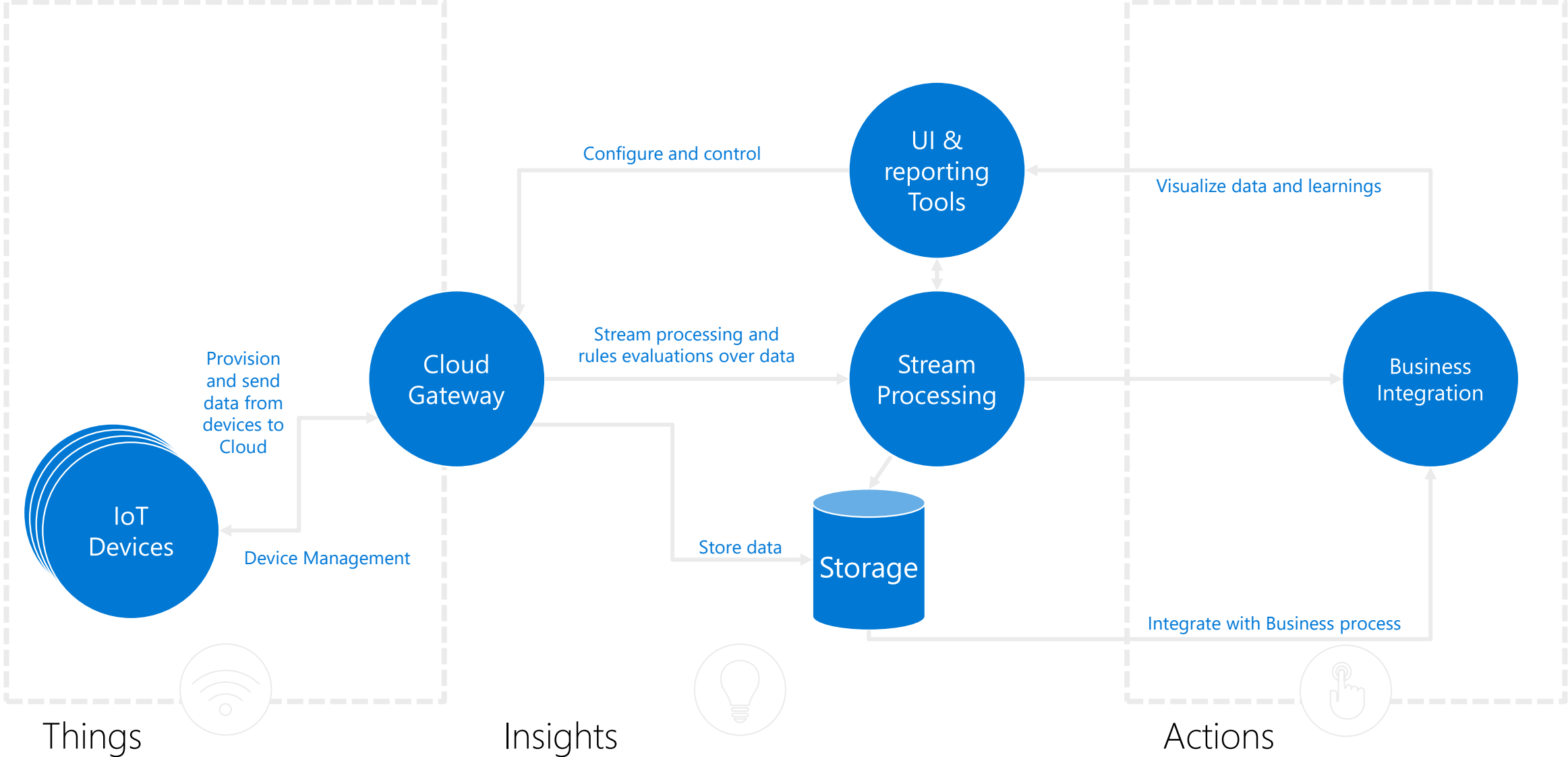


Users

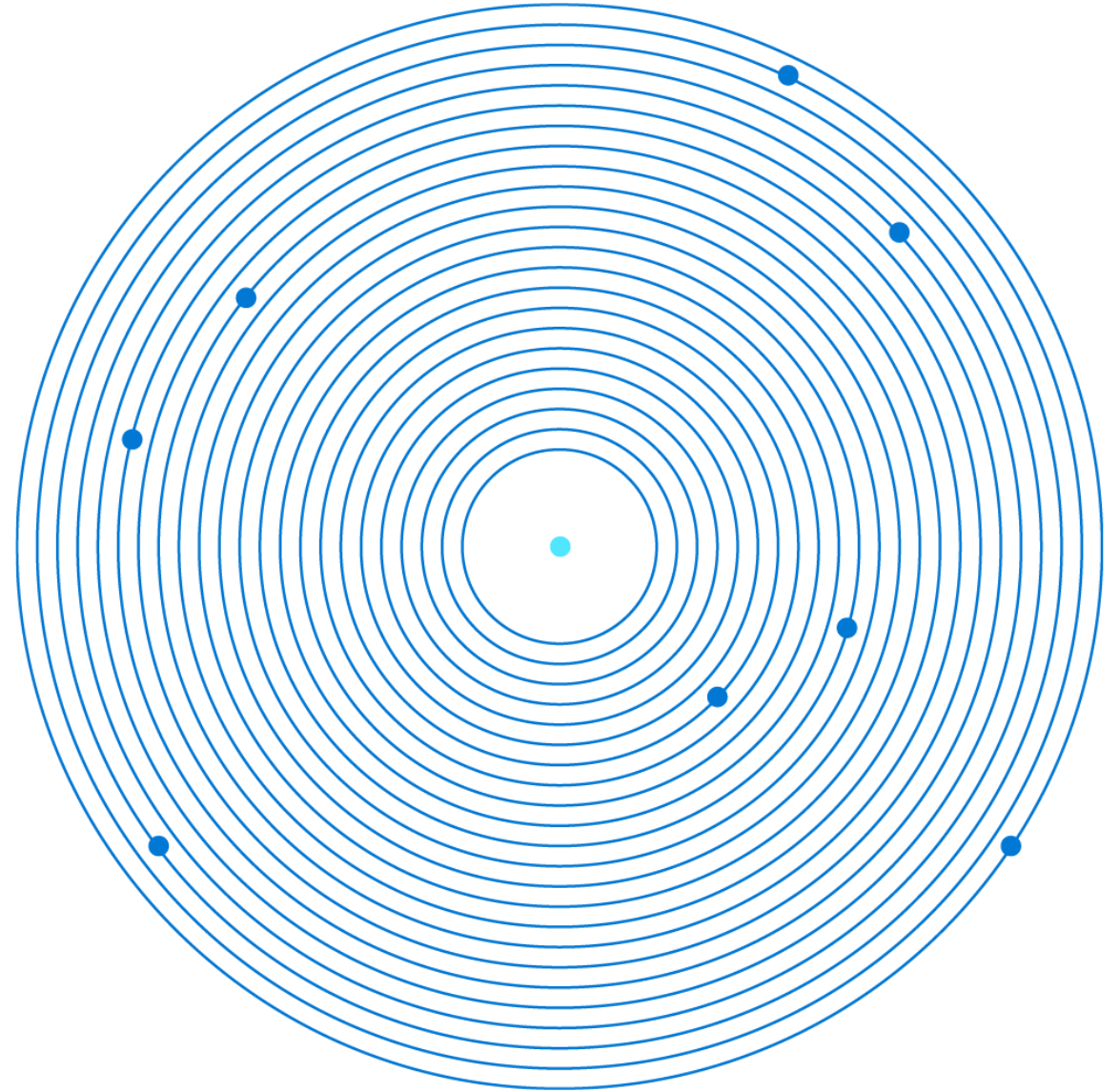
Space Odyssey: Requirements

Reliable
Scalable
Near-Realtime

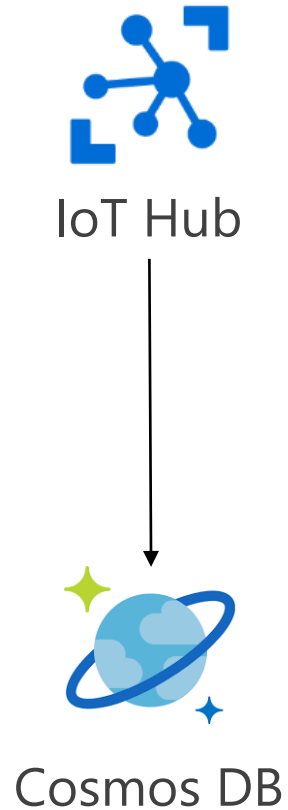
High-level IoT Architecture



Architecture

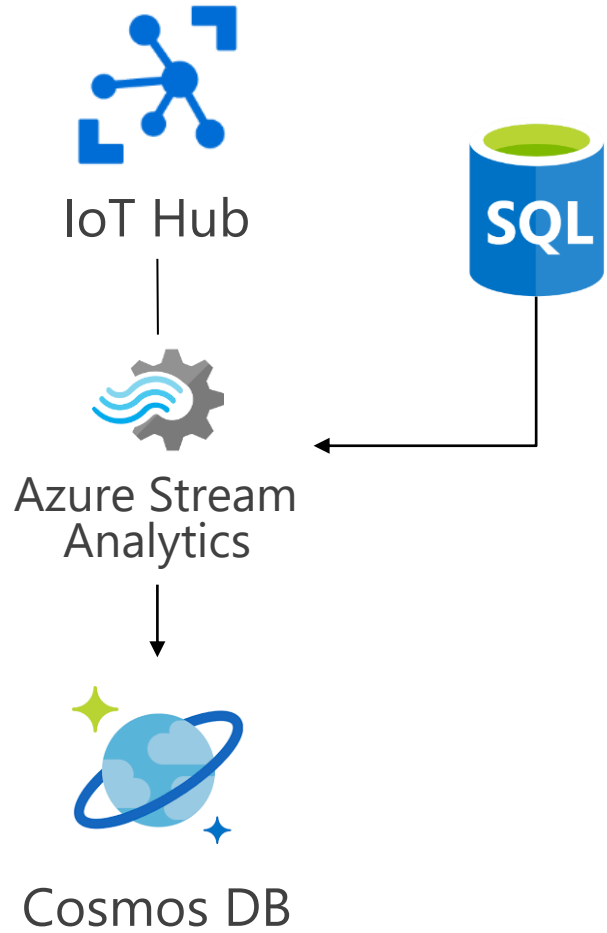


Architecture Solutions



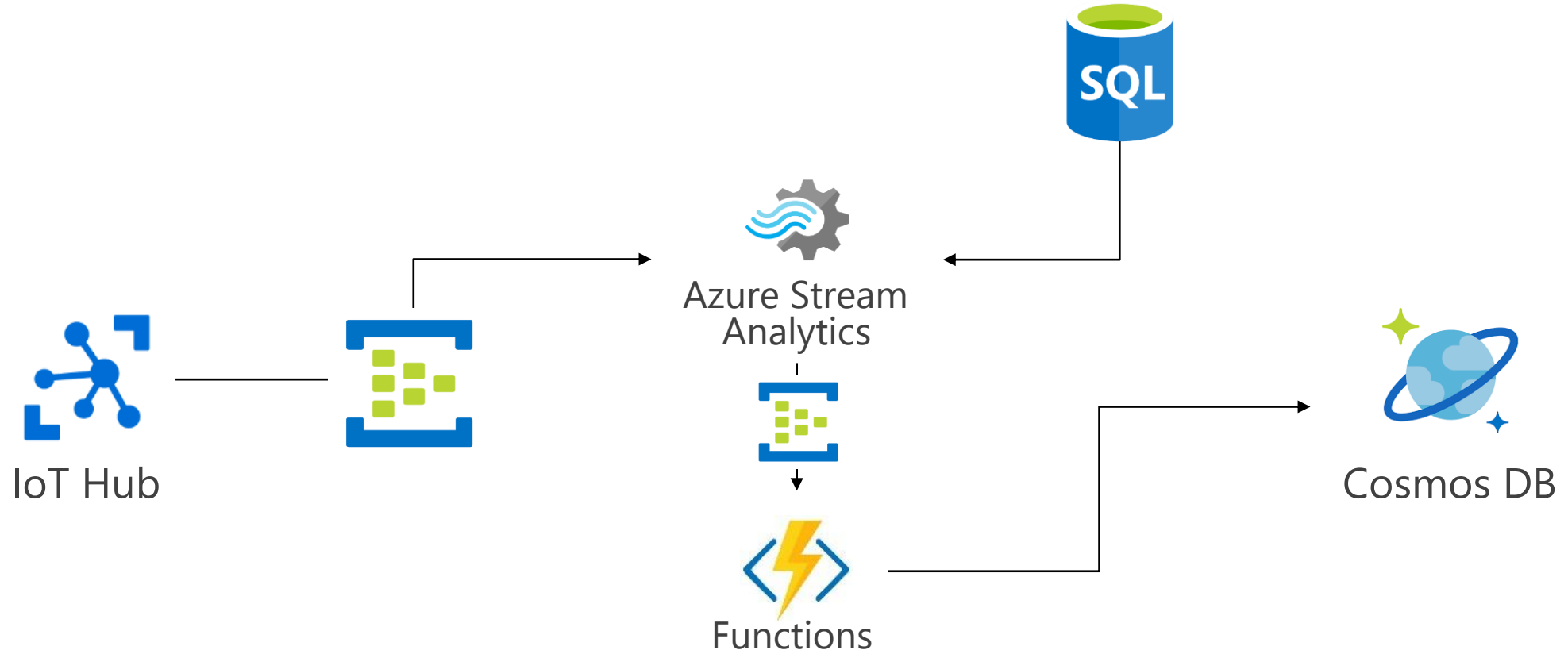
- No Stream Processing
- No Data Transformation
- Where is my stationary data?

Architecture Solutions

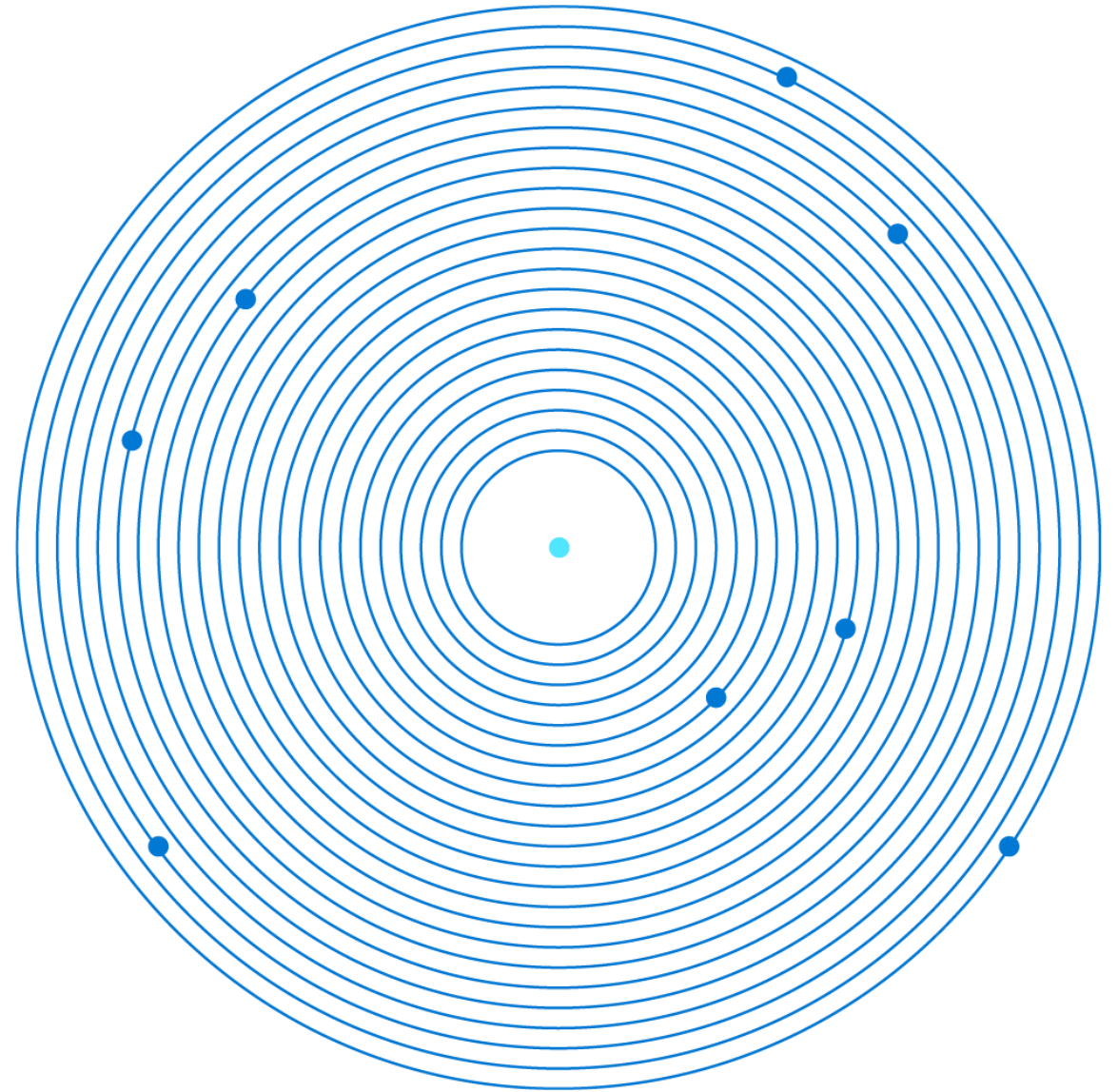


- Low Capabilities on Data Transformation

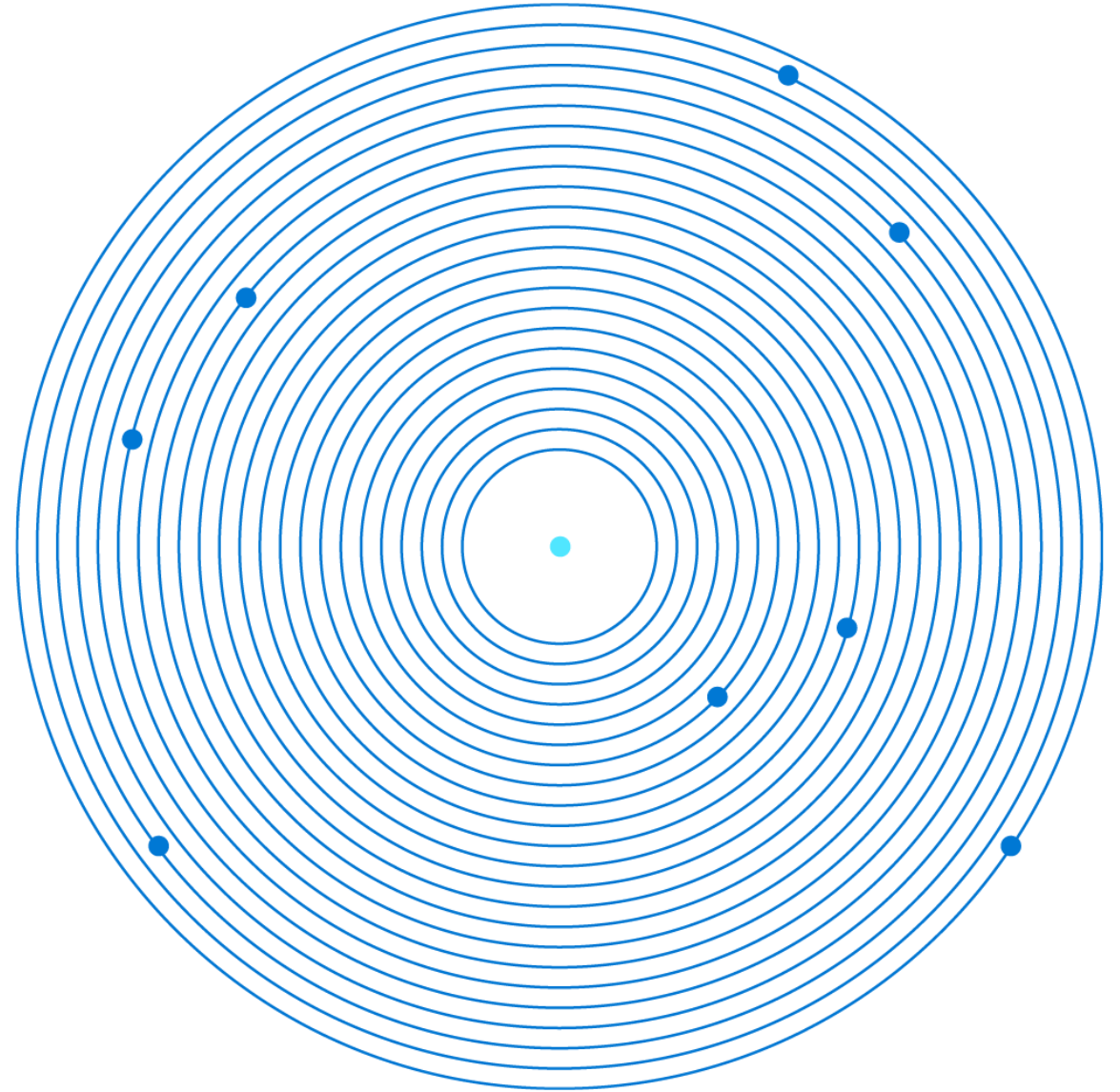
Architecture Solutions



Solution



Notes



Development

Governance

Security

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[Developer Resources](#)



Get Started Now!



<https://aka.ms/IntroAzureIoTLearningPath>

Sign-up for Build end-to-end IoT solutions – Workshop Series

<https://aka.ms/IoT-online-workshop>

- Transform your business with IoT
- Devices and device communication – *IoT Hub*
- Device provisioning at scale – *Device Provisioning Service*
- Messaging processing, analytics, & business integration – *Time Series Insights, Event Grid, Azure Stream Analytics*
- Work with Azure IoT Edge – *IoT Edge*

Microsoft Build 2023

<https://aka.ms/build>



[Build IoT solutions with MQTT in Azure Event Grid](#)



[Optimizing Azure Cosmos DB: Strategies for cost efficiency and elasticity](#)

Reach out



<https://filipelteixeira.com>

References

- [Azure IoT Telemetry Simulator](#)
- [Azure IoT Device SDK](#)
- [Quick Start: Send Telemetry from an IoT Plug and Play device to Azure IoT Hub](#)
- [Azure IoT Hub Deployment](#)

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