

O in Action

#IoTinActionMS



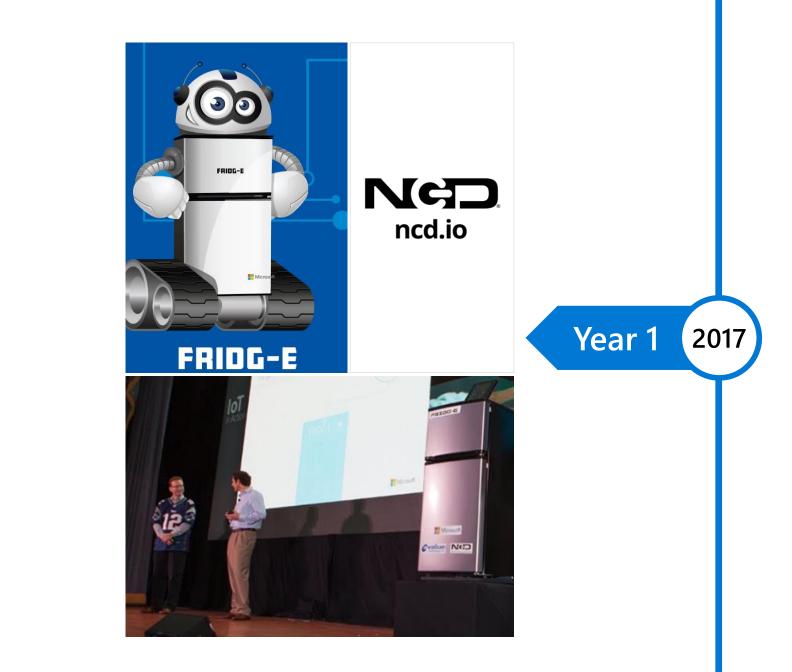
Architecting the Intelligent Edge

Carl Coken GM, Global Solutions Architect, Microsoft

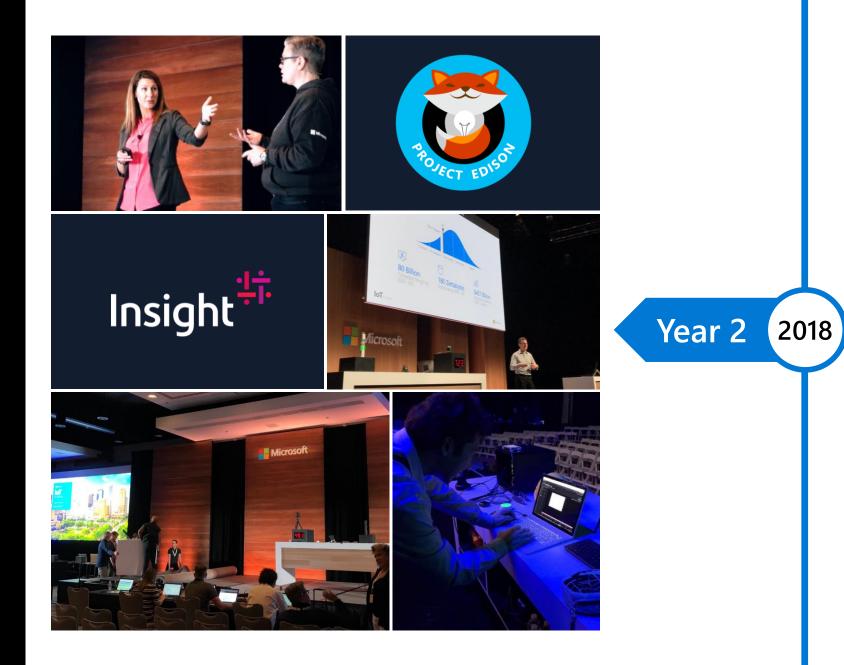
Sarah Maston Cloud Solution Architect, Microsoft



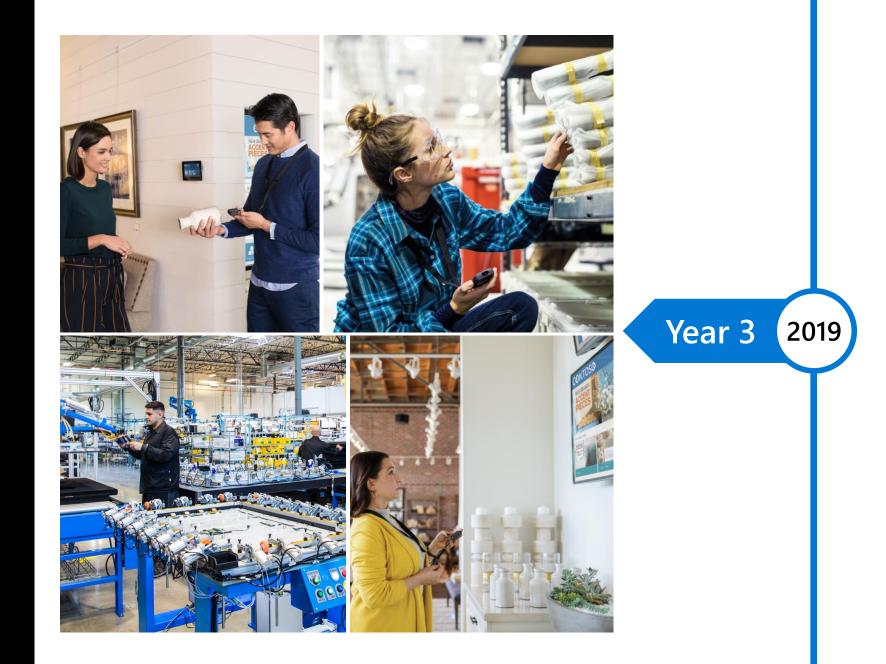
The Evolution of In Action



The Evolution of **O** in Action



The Evolution of In Action



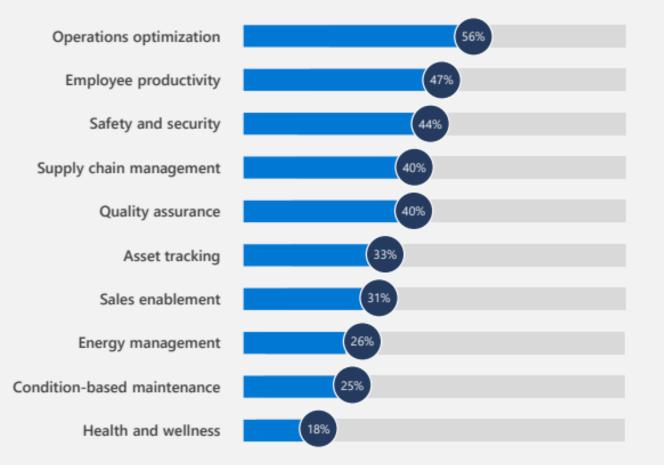


IoT Signals

SUMMARY OF RESEARCH LEARNINGS 2019



Reasons for IoT adoption





IoT Signals

SUMMARY OF RESEARCH LEARNINGS 2019



Additional top use case by industry

RETAIL/ WHOLESALE		TRANSPORTATION		>>)			
				GOVERNMENT		HEALTHCARE		
Supply chain optimization	64%	Fleet management	56%	Public Safety	48%	Tracking patient, staff, and inventory	66%	
Inventory optimization	59%	Security, surveillance, and safety	51%	Infrastructure and facilities management	40%	Remote device monitoring and service	57%	
Surveillance and security	48%	Manufacturing operations efficiency	40%	Regulations and compliance management	38%	Remote health monitoring and assistance	55%	
Loss prevention	44%	Vehicle telematics and infotainment	38%	Fleet and asset management	37%	Safety, security, and compliance	53%	
Energy optimization	40%	Predictive maintenance	33%	Incident response	29%	Facilities management	42%	



IoT Signals

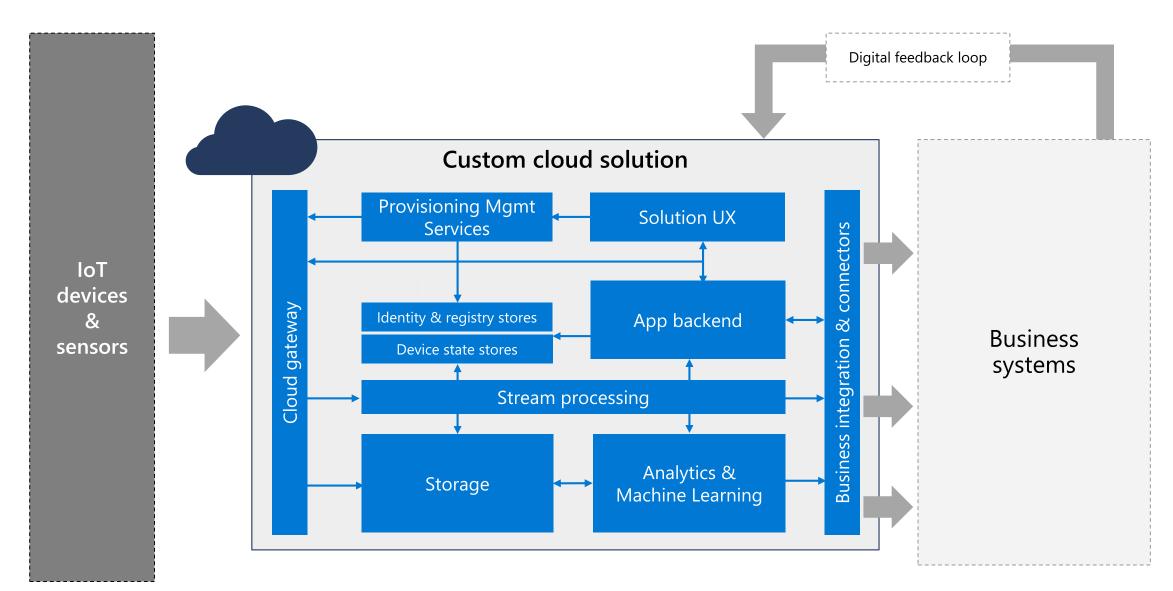
SUMMARY OF RESEARCH LEARNINGS 2019



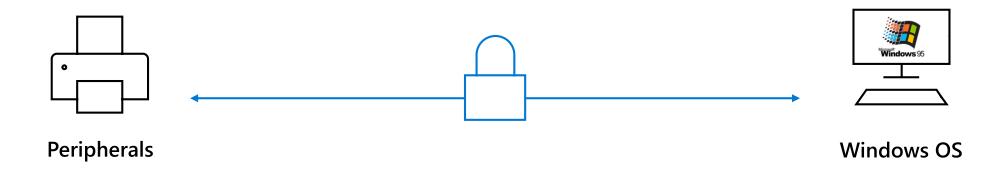
Top challenges



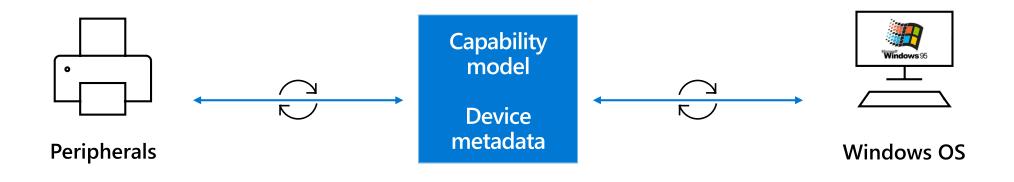
Solution architecture—DIY



We had a similar challenge in the past...

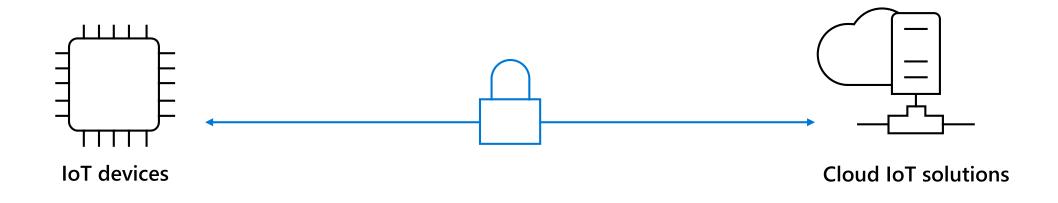


That was solved with Windows Plug and Play



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

IoT today



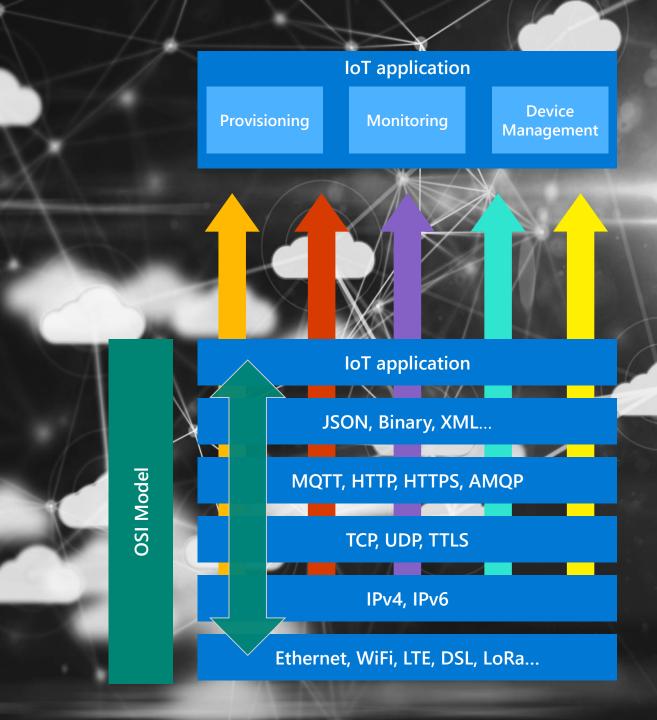
Tight coupling between software on device and IoT solution in the cloud

IoT Plug and Play + Azure IoT Central

with Daisuke Nakahara, Principal IoT Solution Architect, Microsoft

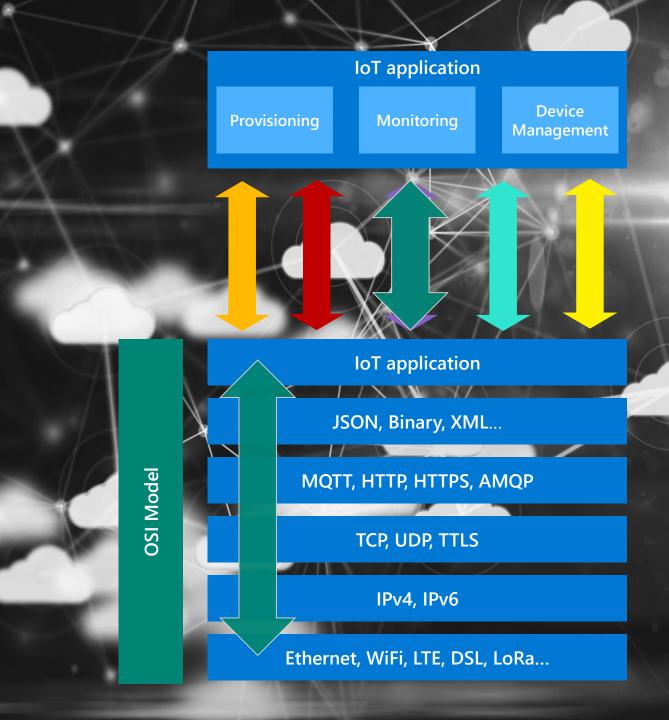
Connecting hardware is very "hard"

- 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

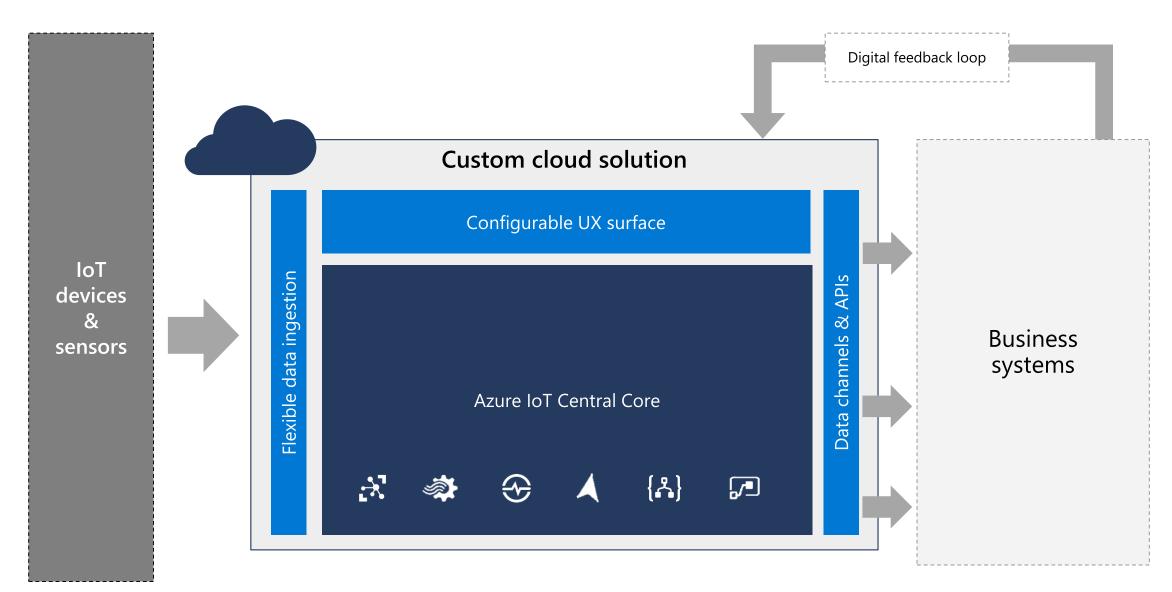
Device builders

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



Solution architecture—IoT Central



Azure IoT central

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

သို့

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

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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

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

Picasa 😑 Blogger slideshare open source (talk) Drupal **myspace** WORDPRESS del.icio.us iPod 0 skype flickr fnoodle hi5 You Tube RSS twitter

Web 2.0 technologies

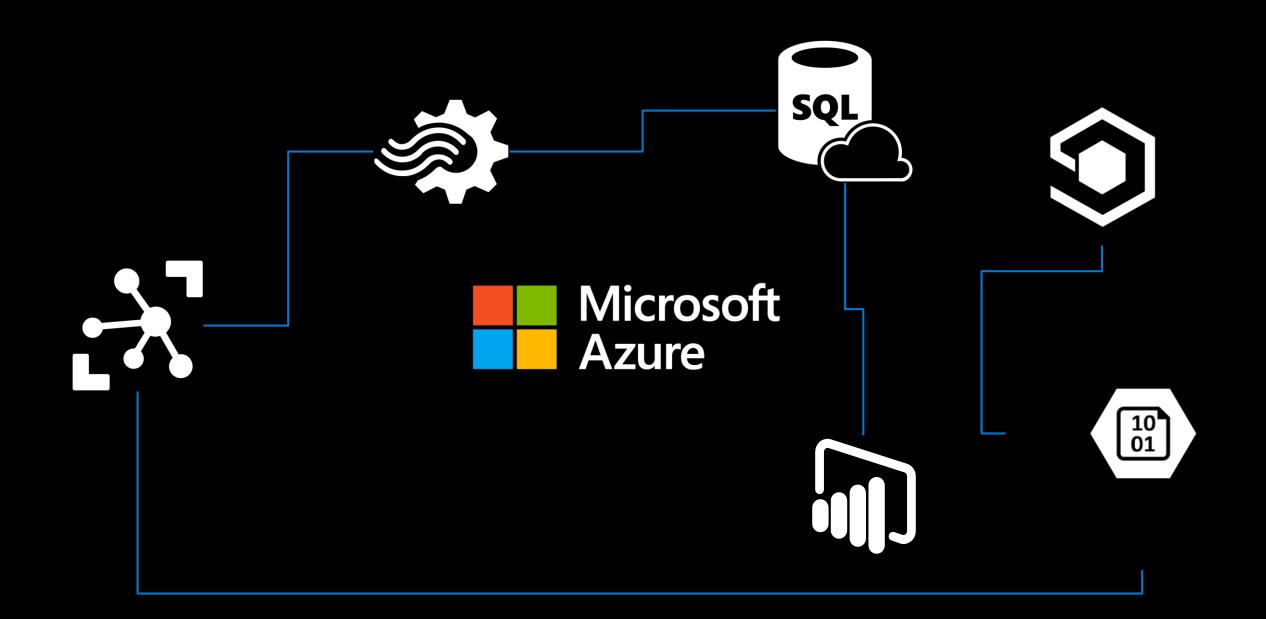
Remember these?

	INFRASTRUCTURE			ANALYTICS			ADDLICAT	IONS - ENTERPRISE -		
IBM InfoSphere		STREAMING / INAGEMORY WS edatabricks (strim Hondhamt Goldensia Ill navioner dataArtisans Ill navious TERRACOTA	DATA ANALYST PLATFORMS Microsoft @pentaha a pentaha gulayus AYA ATTIV/O Datameer Quid Inter ans. Electing Criggy ENDO? Micros pentahar	ASDI Incortos	E PLATFORMS KNIME Odta iku iku Marapidminer Marapidminer	CHORUS RA NSDESALESCOM Oconversica	ADIUS Ap Aniz eventues Elattice entres Generations	Zeta Obicommisch	CLA Galasight Consight	SERVICE LLIA Zende RABBIDGE NGODATA mius afiniti VOT &hame
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"Big Data" challenge 2.0



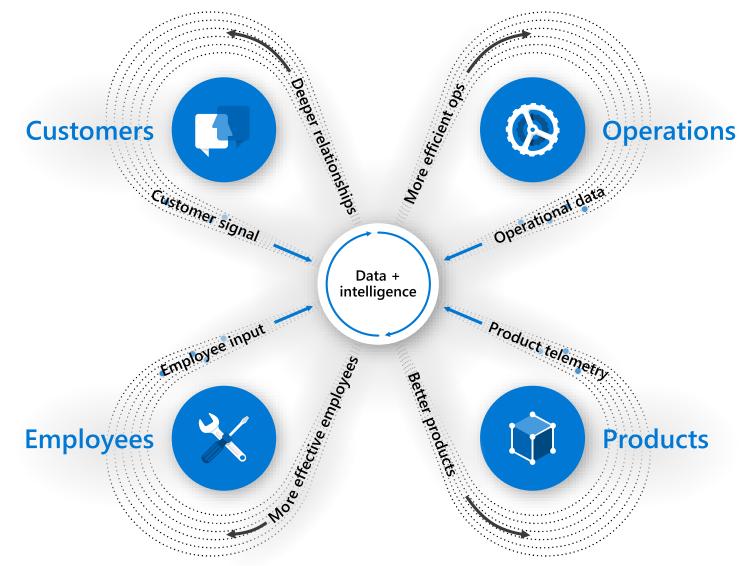




The digital feedback loop

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

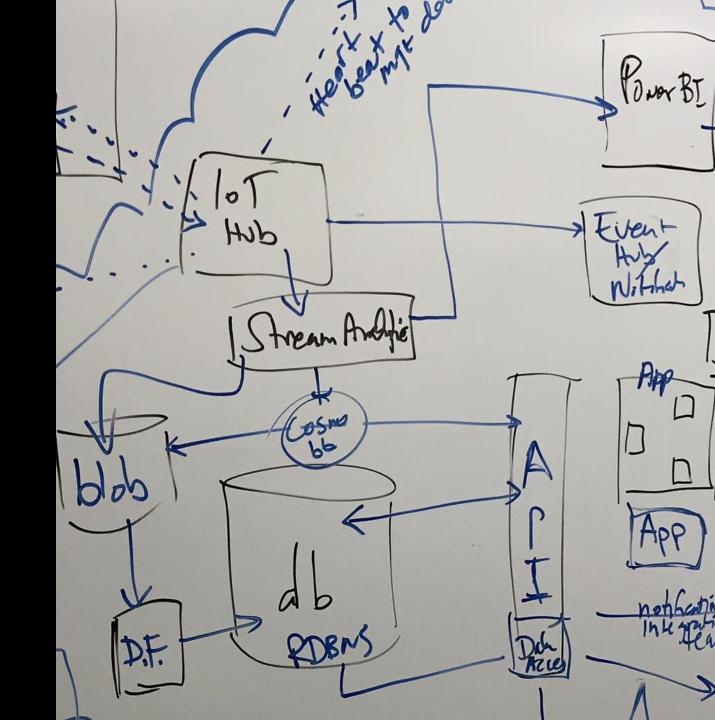
Proprietary code and algorithms Code and data r 🗉 confidentiality Sensitive data like patient information and ML models Safe actions from insights out of intelligent edge processing **Actions from** insights Trustworthy I/O for command and control of critical infrastructure Metering actions for billing Valued transactions Events tracking e.g., violations for warranty management



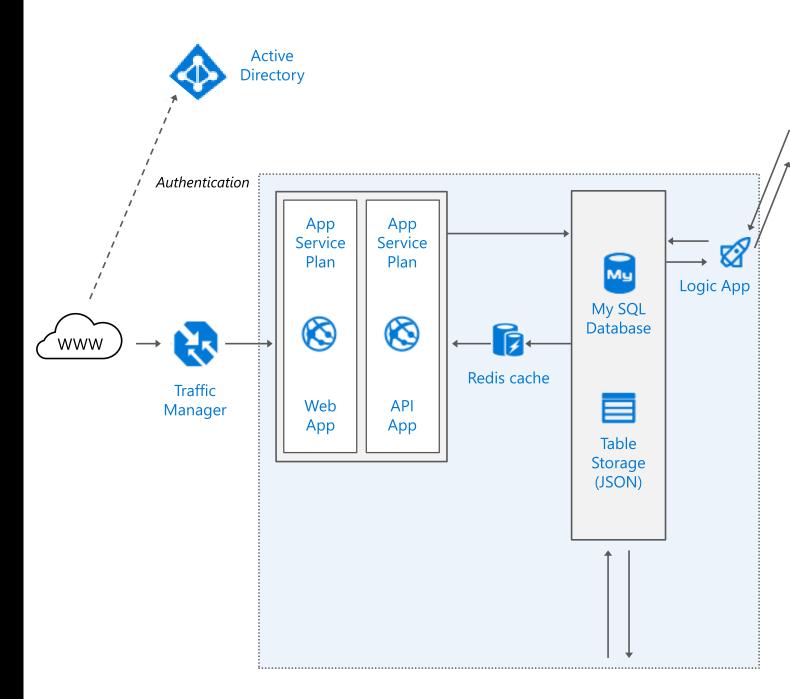
Partners make more possible



The anatomy of the architectural design session



The output





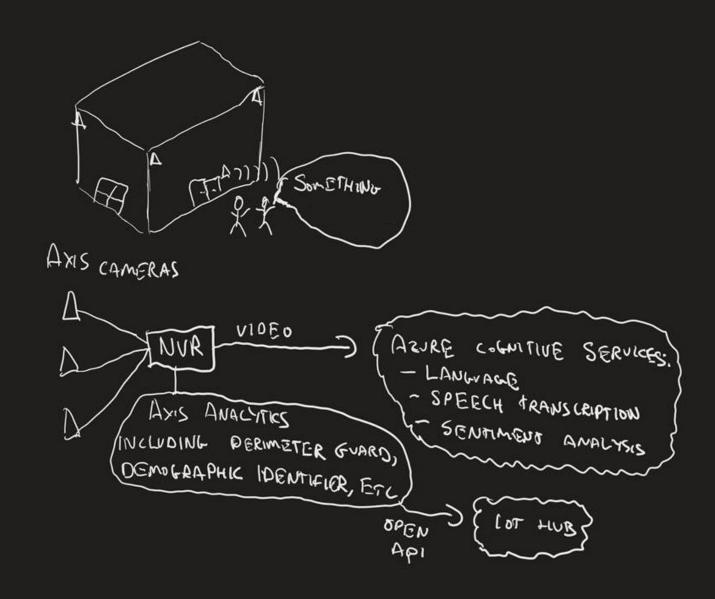
Ameer Jalal Field Tech Consultant





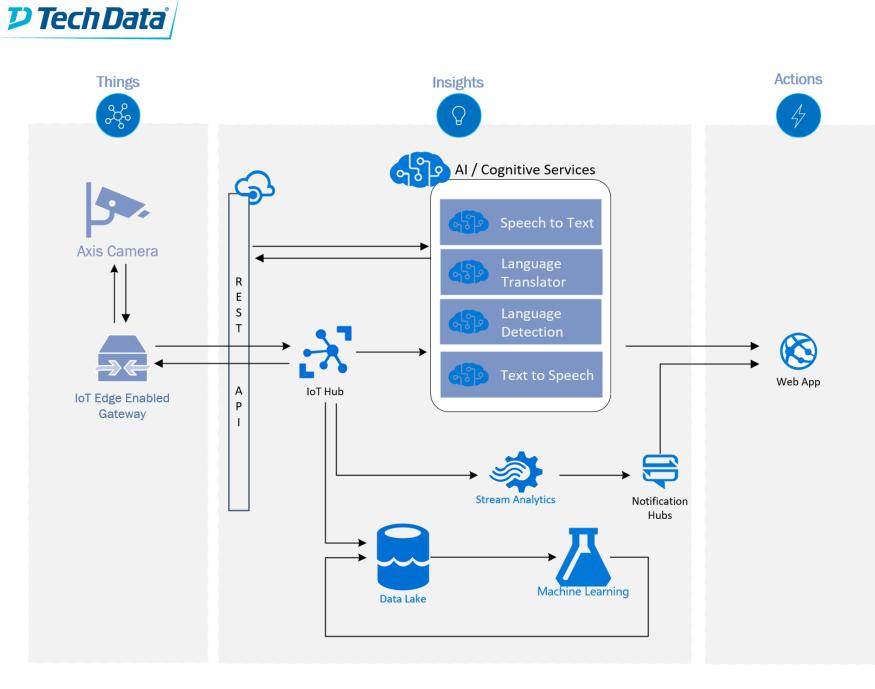
The problem we wanted to solve: How do we find better methods to communicate?

For example: You are in a hospital and need translation services





Reference architecture



Cognitive Services capabilities

Infuse your apps, websites, and bots with human-like intelligence

Vision

Object, scene, and activity detection

Face recognition and identification

Celebrity and landmark recognition

Emotion recognition

Text and handwriting recognition (OCR)

Video metadata, audio, and keyframe extraction and analysis

Explicit or offensive content moderation

Custom image recognition

<u>...</u>

Speech

Speech transcription (Speech-to-text)

Speech Synthesis (Text-to-speech)

Real-time speech translation

Speaker identification and verification

Custom Speech models for transcription and translation

Custom voice

25

Language

Language detection

Text sentiment analysis

Key phrase extraction

Entity recognition

Spell checking

Explicit or offensive text content moderation, PII detection

Text translation

Customizable text translation

Contextual language understanding

80

Knowledge

Q&A extraction from unstructured text

Knowledge base creation from collections of Q&As

Semantic matching for knowledge bases

Customizable content personalization learning

Search

Ad-free web, news, image, and video search results

Trends for video, news

Image identification, classification and knowledge extraction

Identification of similar images and products

Named entity recognition and classification

Knowledge acquisition for named entities

Search query autosuggest

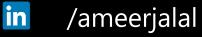
Ad-free custom search engine creation



Ameer Jalal Field Tech Consultant







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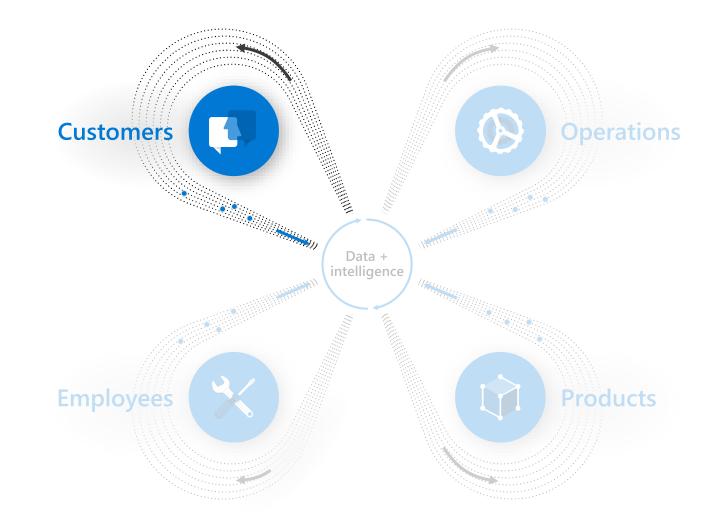


"We partnered with Girl Scouts to host an event called STEMapalooza, where I hosted a workshop helping girl scouts build their first "PC" by putting together a Raspberry Pi kit. This is a picture from one of these events."

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



WDW

Bryan S. Hamilton Cloud Architect

Losses in the supply chain

22.8 billion

global shipments are damaged, delayed, or lost every year² 30%

of perishable goods spoil before they reach their destination³

\$60 billion

in goods are stolen each year worldwide; \$35 billion in the U.S. alone⁵



Intel[®] Connected Logistics Platform

Automate shipment tracking and gain visibility into the logistics chain*

Edge	Continuous	Gateway	Powerful	Meaningful		
connectivity	communication	interface	cloud	insights		
Multifunction IoT	A mesh sensor network	Gateways efficiently send	Microsoft Azure connects,	Insights are visualized and		
tags measure a	helps ensure comprehensive	aggregated data to the cloud via	monitors, authenticates and	delivered through mobile		
variety of conditions	asset visibility	Wi-Fi or cellular connections	automates data transmission	apps or online dashboards		
	Ę		TP			

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

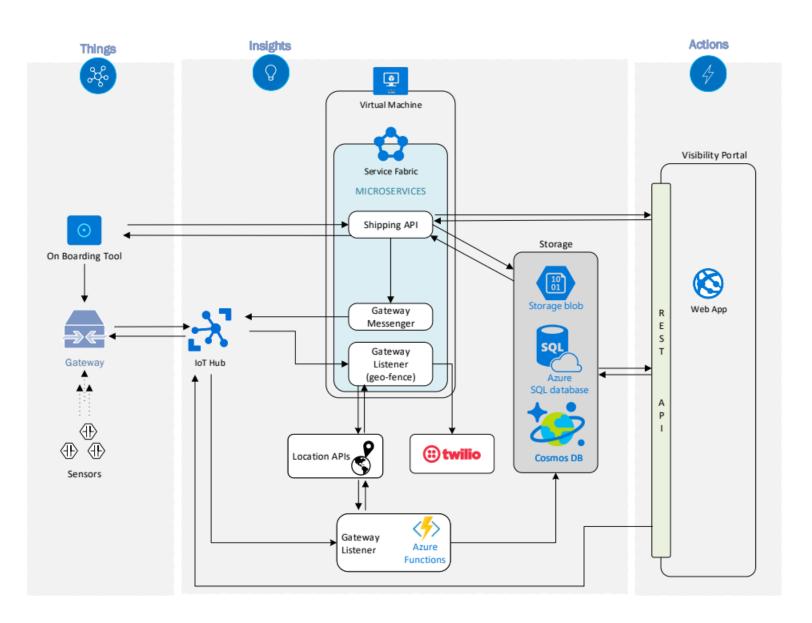


Reference architecture

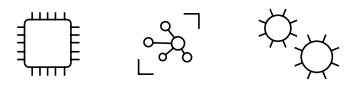
wow







Digital transformation requires partnerships



Operational technology (OT)

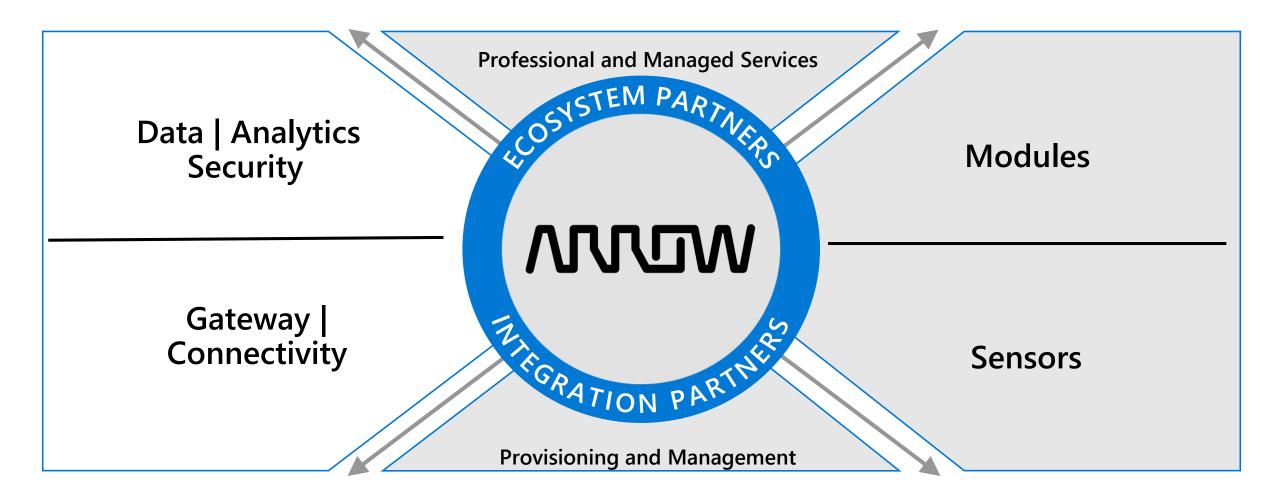
Knowledge

is hardware and software that detects or causes a change through the direct monitoring and/or control of physical devices, processes and events in the enterprise.



Information technology (IT) is the application of computers to store, study, retrieve, transmit, and manipulate data, or information, often in the context of a business or other enterprise.

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: <u>iot@arrow.com</u>
- → Learn more about the Intel Connected Logistics Platform at <u>https://www.arrow.com/en/campaigns/iot-intel-connected-logistics-platform</u>
- → Learn more about Microsoft Azure at <u>azure.microsoft.com</u>

Bryan S. Hamilton Cloud Architect



- in /<u>bryan-s-hamilton</u>
 - Øbryincolo





Welcome to Microsoft Learn

Microsoft.com/learn





Time investment • expectation

Microsoft.com/learn

Azure fundamentals

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

Beginner	Developer Solution Architect		t Administ	Administrator		Busin	ess Analyst	Business User	
Data Engineer	Data Sci	ientist	Azure	Azure Portal	Az	ure Resource N	lanager	Storage	Virtual Machine

12300 XP

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

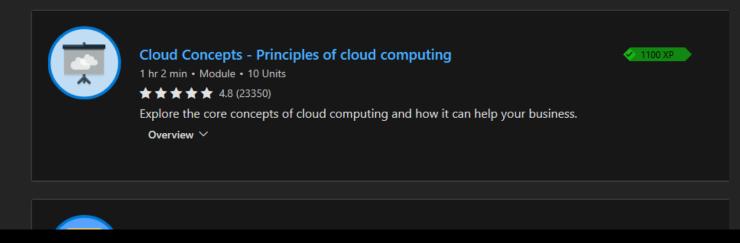
In this learning path, you will:

- 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 <u>AZ900 Microsoft</u> <u>Azure Fundamentals Exam</u>.

Prerequisites None

Modules in this learning path





Azure fundamentals

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

Beginner	Developer	Solution Architect		Administrator		Al Engineer	Busin	Business Analyst		Business User	
Data Engineer	Data Scie	entist A:	zure	Azure Portal	Azu	re Resource M	anager	Storage	Virtu	al Machines	

12300 XP

Total XP=

12,300

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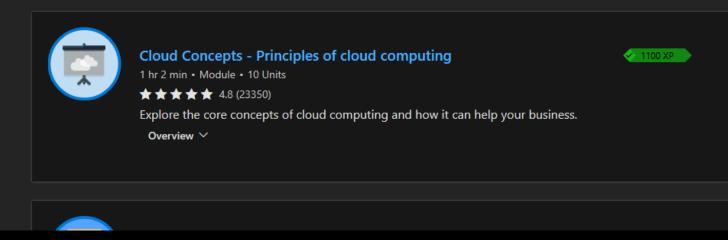
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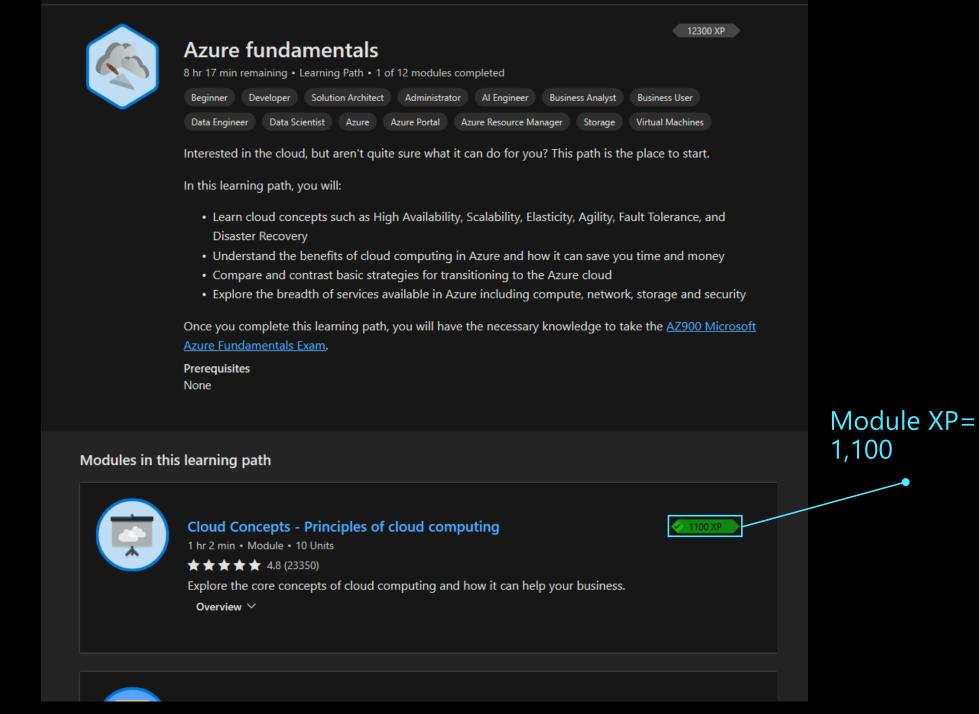
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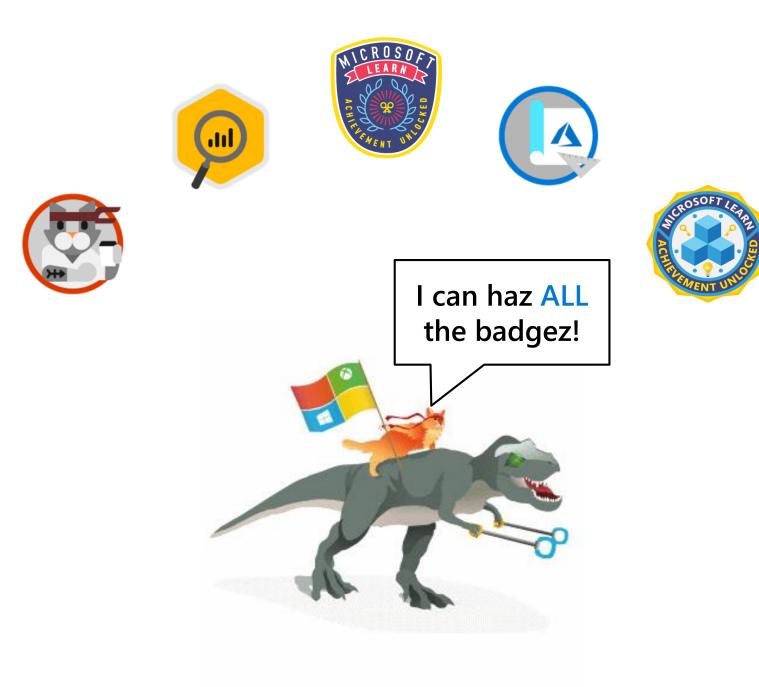


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Leveling up your Azure skillz with Microsoft Learn





Top Challenges

Complexity IoT PnP, IoT Central

Knowledge MS Learn

Security Confidential Computing

Solution == Partners

OT in Action



