



IoT in Action

#IoTinActionMS



Unlocking IoT's Potential

Sarah Maston

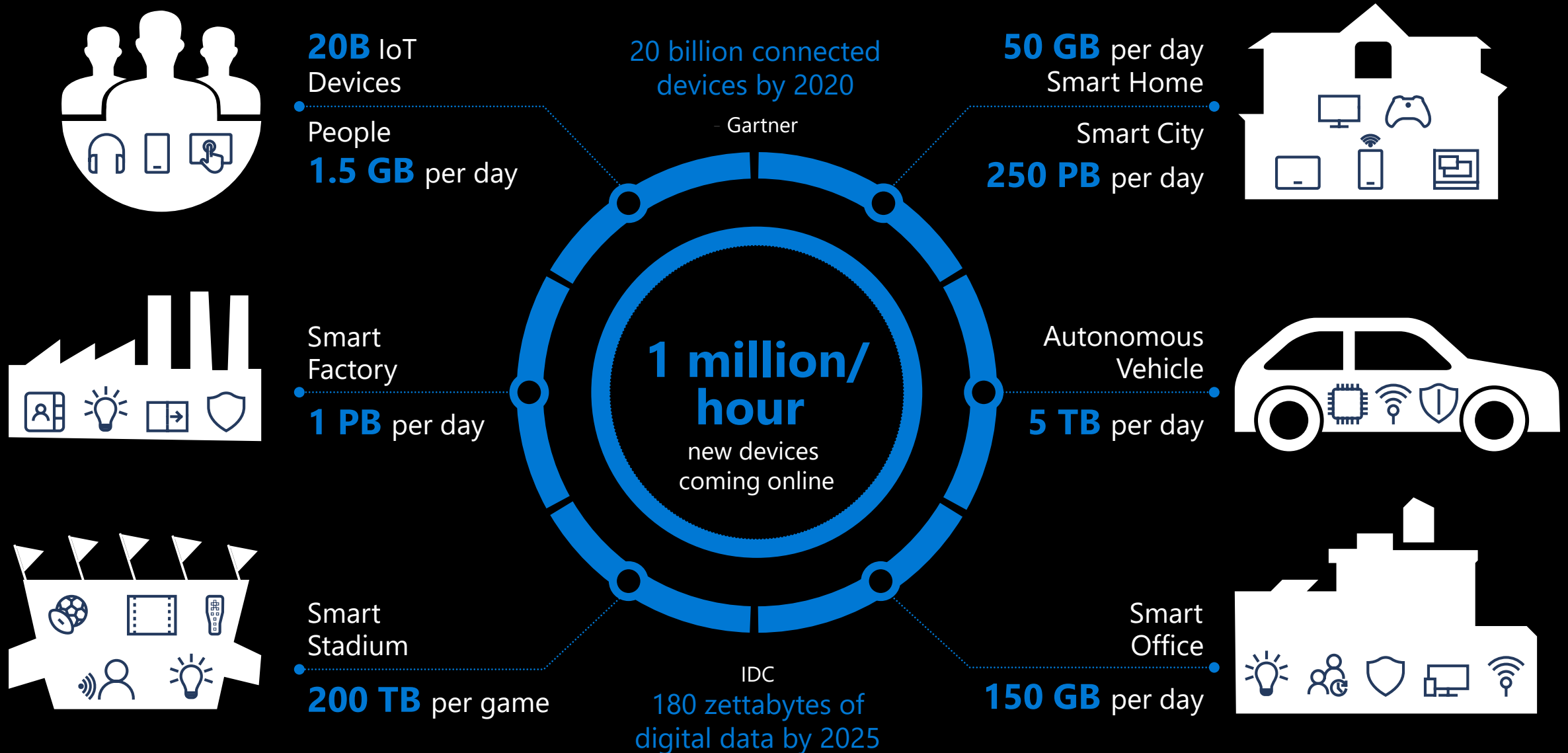
Senior Solution Architect, Microsoft

Daisuke Nakahara

Principal Solution Architect, Microsoft

IoT in Action

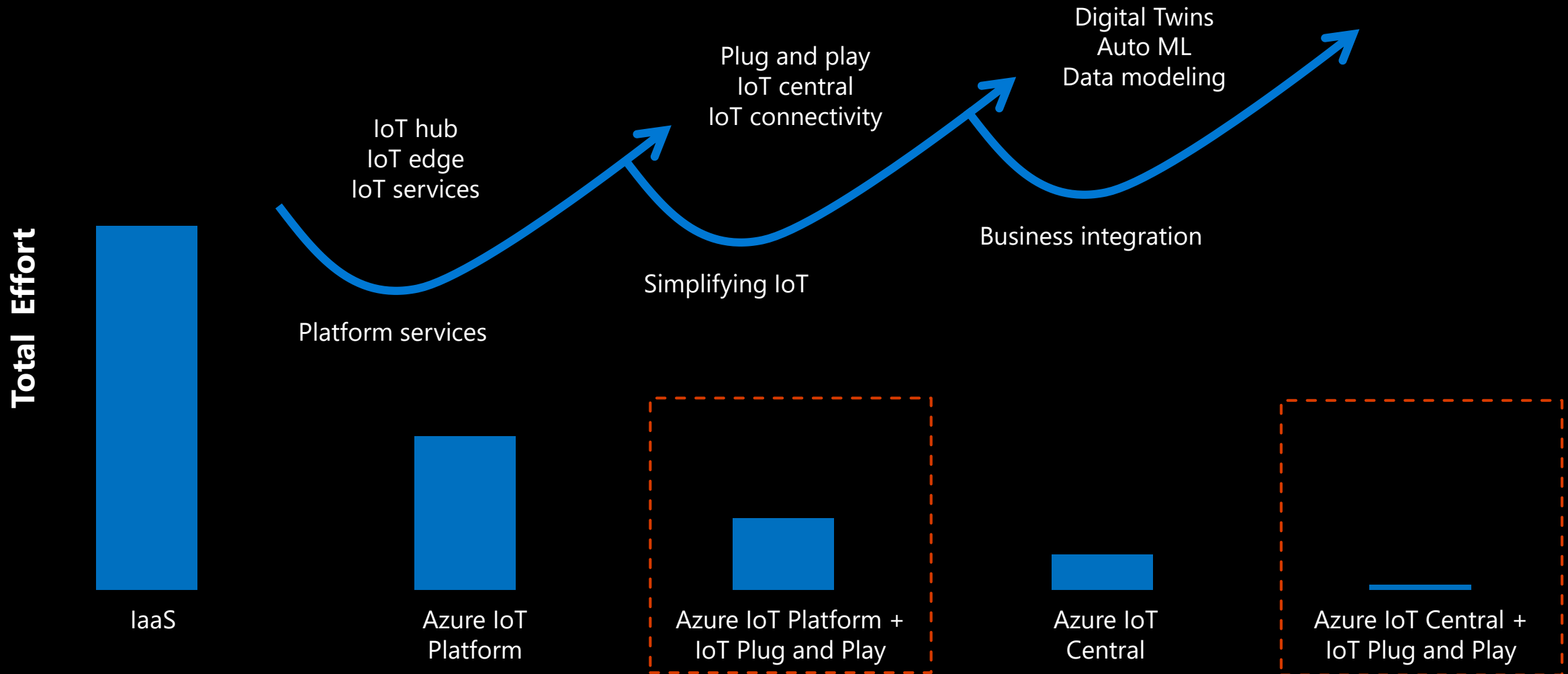
IoT fuels digital transformation



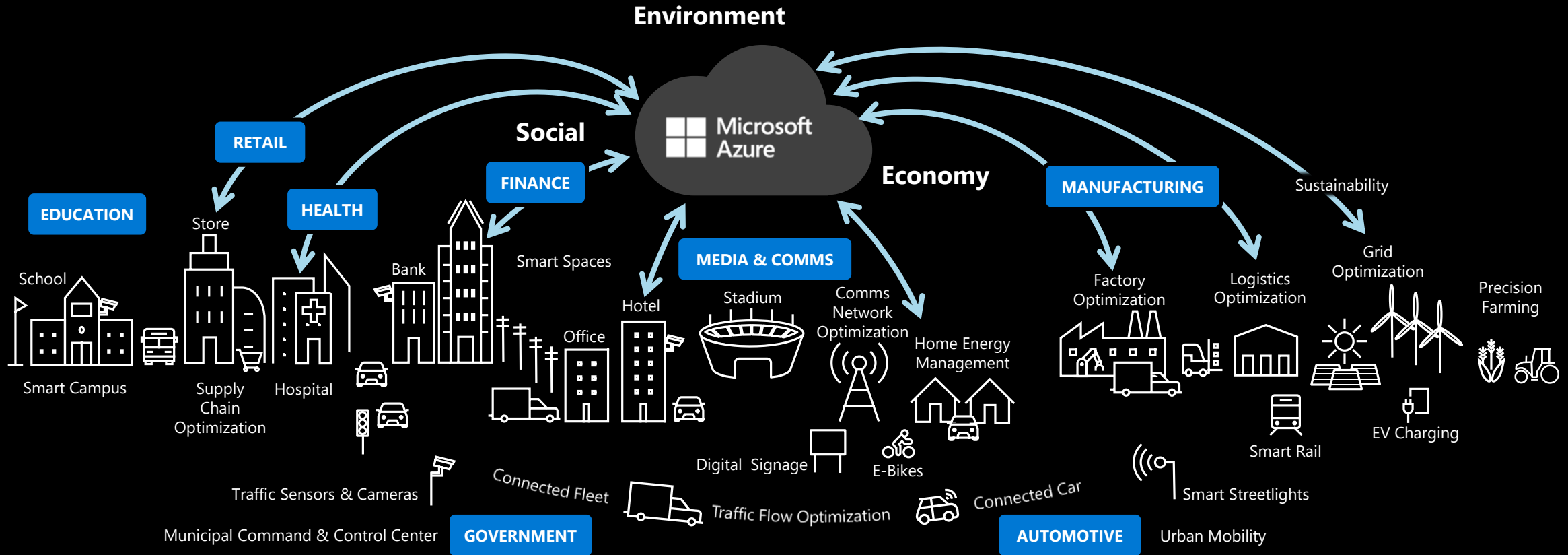
How can we make the blind see? It's disabled
How can we make the deaf hear? It's disabled
How can we make the dumb talk? It's disabled
How can we make the lame walk? It's disabled
How can we make the blind see from sensor values?

Accelerating IoT adoption

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

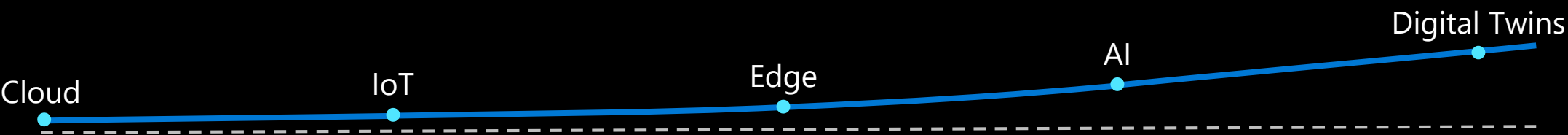















Microsoft invests \$5 billion in IoT



Our goal is to give every customer the ability to transform their businesses, and the world at large, with connected solutions

Microsoft's comprehensive IoT portfolio

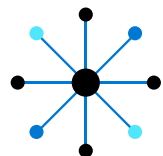


 Azure Security Center for IoT	Azure IoT priority verticals													
														
	Manufacturing		Retail		Agriculture		Energy		Smart Cities		Healthcare		Transportation	
	Azure IoT Solutions			Azure IoT Central (SaaS)			Azure IoT Reference Architecture & Accelerators (PaaS)			Dynamics Connected Field 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 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							

Intelligent cloud



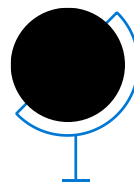
IoT Hub – Most Mature, Scalable, Secure Cloud Platform



Establish bi-directional communication with billions of IoT devices



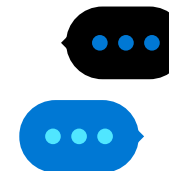
Enhance security with per device authentication



Provision devices at scale with IoT Hub Device Provisioning Service



Manage devices at scale with device management



Multi-language and open source SDKs

Connect, Manage and Monitor millions of devices at scale

Rockwell
Automation



Rolls-Royce

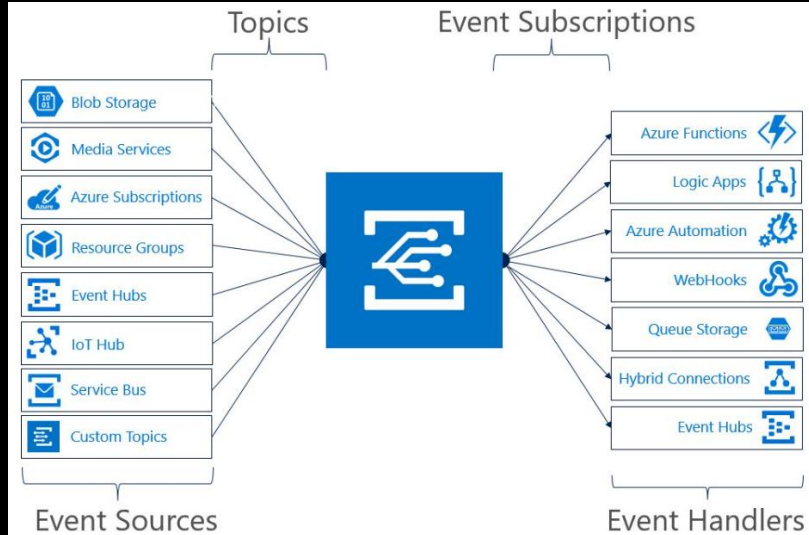
ECOLAB®

Schneider
Electric

IoT Hub

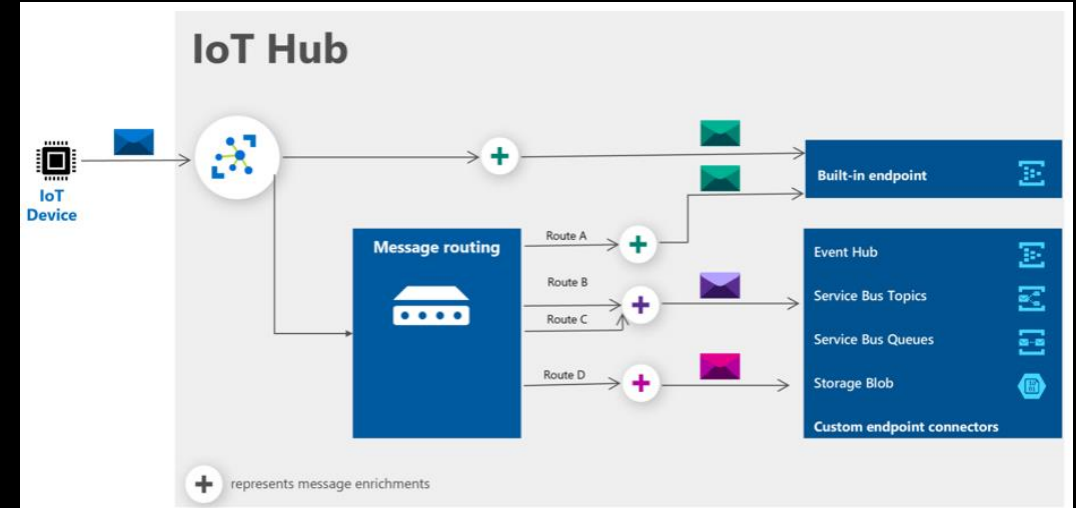
NEW Capabilities

Telemetry events on Event Grid



Easily integrate IoT device telemetry messages into serverless application via Event Grid

IoT Hub message enrichments

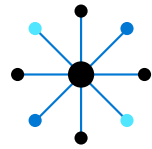


Add intelligence by enriching messages from IoT devices and simplify process to send them to different Azure services

Time Series Insights



Ingest, process, store, and query highly contextualized, time-series-optimized, IoT-scale data



Connect to a variety of data solutions using TSI's flexible data platform



Use rich analytics APIs and UX for ad-hoc exploration and operational intelligence



Use JavaScript control library for building custom analytics apps on the TSI platform

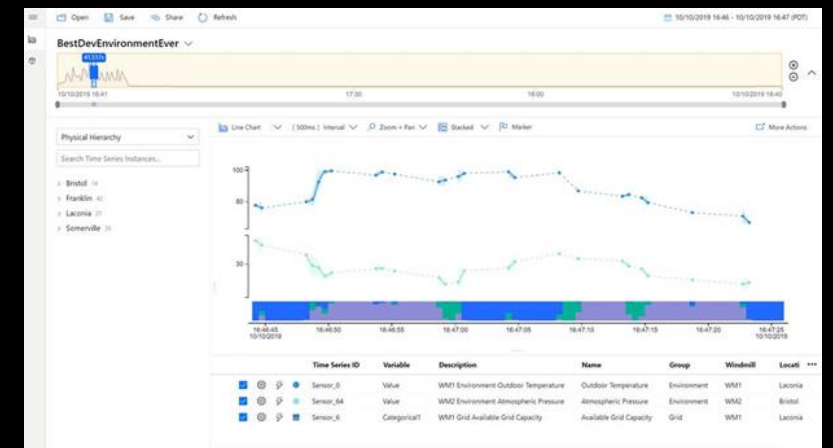
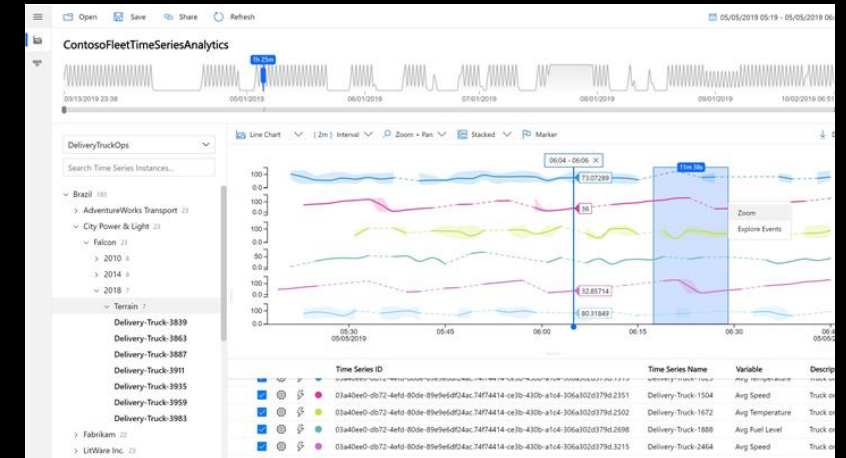
Turn data into decisions with actionable real-time IoT insights



Time Series Insights

NEW Capabilities

- ✓ Multi layered storage with warm and cold analytics
- ✓ Flexible data platform to take data stored in open source Apache Parquet to other advanced data solutions for predictive maintenance, machine learning and AI
- ✓ Rich query APIs and user experience to support interpolation, scalar and aggregate functions, categorical variables, scatter plots, and time shifting between time series signals for in-depth analysis
- ✓ Enterprise grade scale and performance at all layers of the solution to support customers' industrial IoT solution needs
- ✓ Rich extensibility through PowerBI connector for a unified BI and analytics view



IoT Central

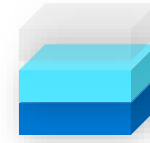
A fully managed IoT app platform

- ✓ Highly secure
- ✓ Enterprise-grade
- ✓ Predictable pricing
- ✓ Industry-focused



Get connected

Connect IoT devices to the cloud faster than any other platform.



Stay connected

Reconfigure and update devices with centralized device management.



Transform

Bridge the gap with connectors and extensibility APIs.

Existing solution builders

MESHSYSTEMS™

cradlepoint
Connect Beyond

sagegreenlife

flex



C.H. ROBINSON

umec

FOOTMARKS



jda.



BOSCH

QUEST
BORN TO ENGINEER

IoT Central

NEW

Capabilities



White labeling
your SaaS – your brand



App templates
for Industry Verticals



Azure IoT Edge
support



Multitenancy
Support



API
Support



IoT Plug and
Play Support



New 2-tiered pricing model
announced, based on
message volume

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

Benefits and outcomes


- 11 Industry-focused app templates across retail, healthcare, energy, and smart city for kickstarting solution builders
- Seamless device connectivity: Introducing Edge device management within IoT Central
- Extensibility to business applications to bring IoT insights to where decisions are made
- Scale: Connect millions of devices and manage ingress/egress of data from IoT Central

IoT Central REST API in Public Preview!

 Microsoft Azure

Overview Solutions Products ▾ Documentation Pricing Training Marketplace ▾ Partners ▾ Support ▾ Blog More ▾

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1400 XP

Manage IoT Central applications with the REST API

45 min • Module • 10 Units

★★★★★ 4.7 (27)

Intermediate Developer Solutions Architect Azure IoT Central

The IoT Central REST API lets you manage applications programmatically. For example, you can add device templates, create devices, set device properties, send commands to devices, and manage data exports.

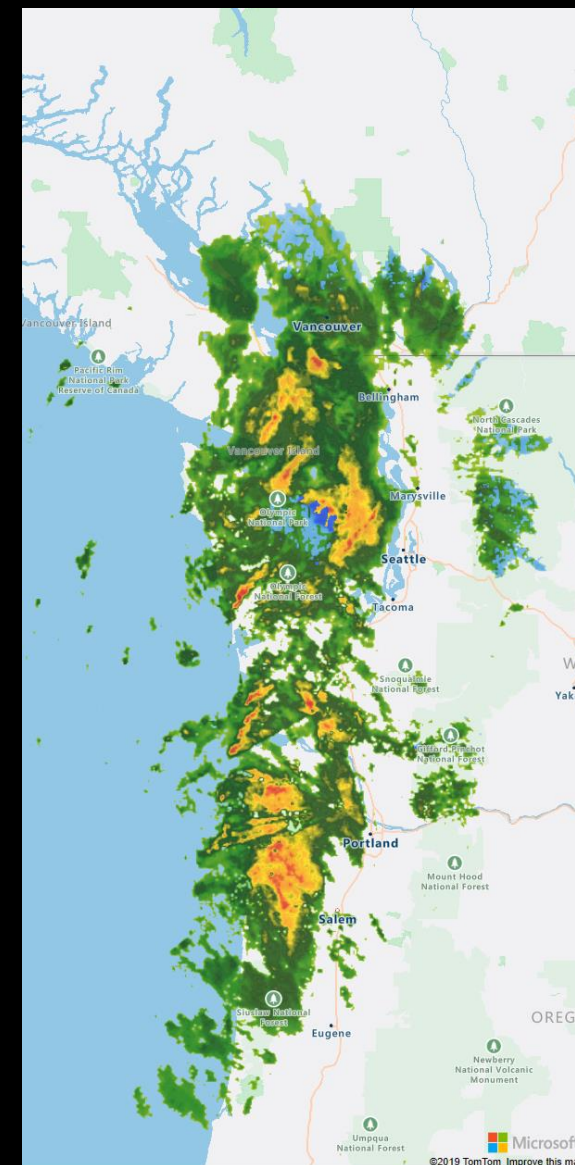
In this module, you will:

- Authorize a REST API call to connect to your IoT Central application
- Use the REST API to view templates and devices in your application
- Use the REST API to add real and simulated devices to your application
- Use the REST API to control devices connected to your application
- Use the REST API to query device telemetry
- Use the REST API to configure data export from your application

Start >

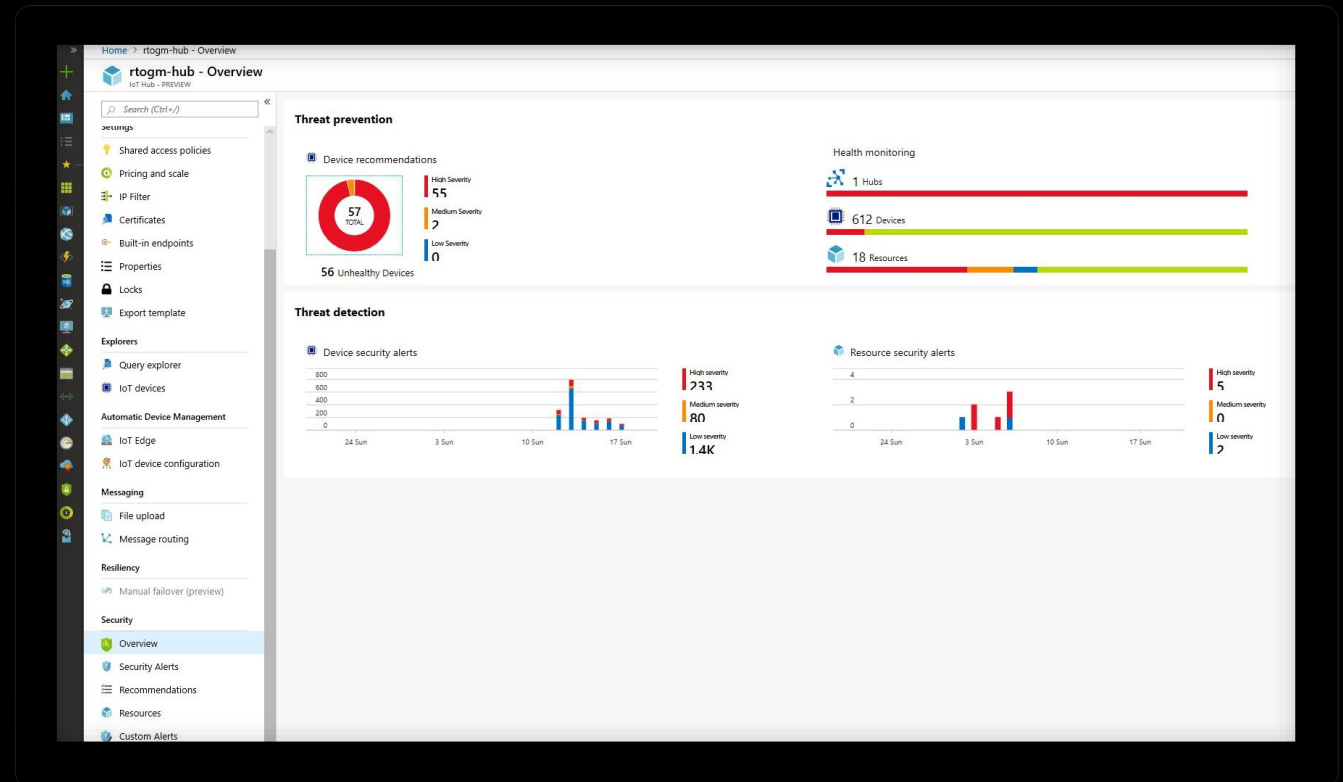
Azure Maps

- ✓ IoT spatial analytics using Azure Map
- ✓ **Real-Time Public Transit & Ride Share data** in partnership with Moovit
- ✓ Certified for the highest grade of Accessibility rating
- ✓ Azure Maps Spatial Operations (General Availability)
- ✓ New Cartography and styling updates
- ✓ Geopolitical view to see map boundaries based local country views
- ✓ Azure Maps Data feedback tool
- ✓ **Power BI Integration** (Public Preview)
- ✓ Availability on the Gov Cloud (Public Preview)
- ✓ **Azure Maps Weather Services** preview (with Accuweather)

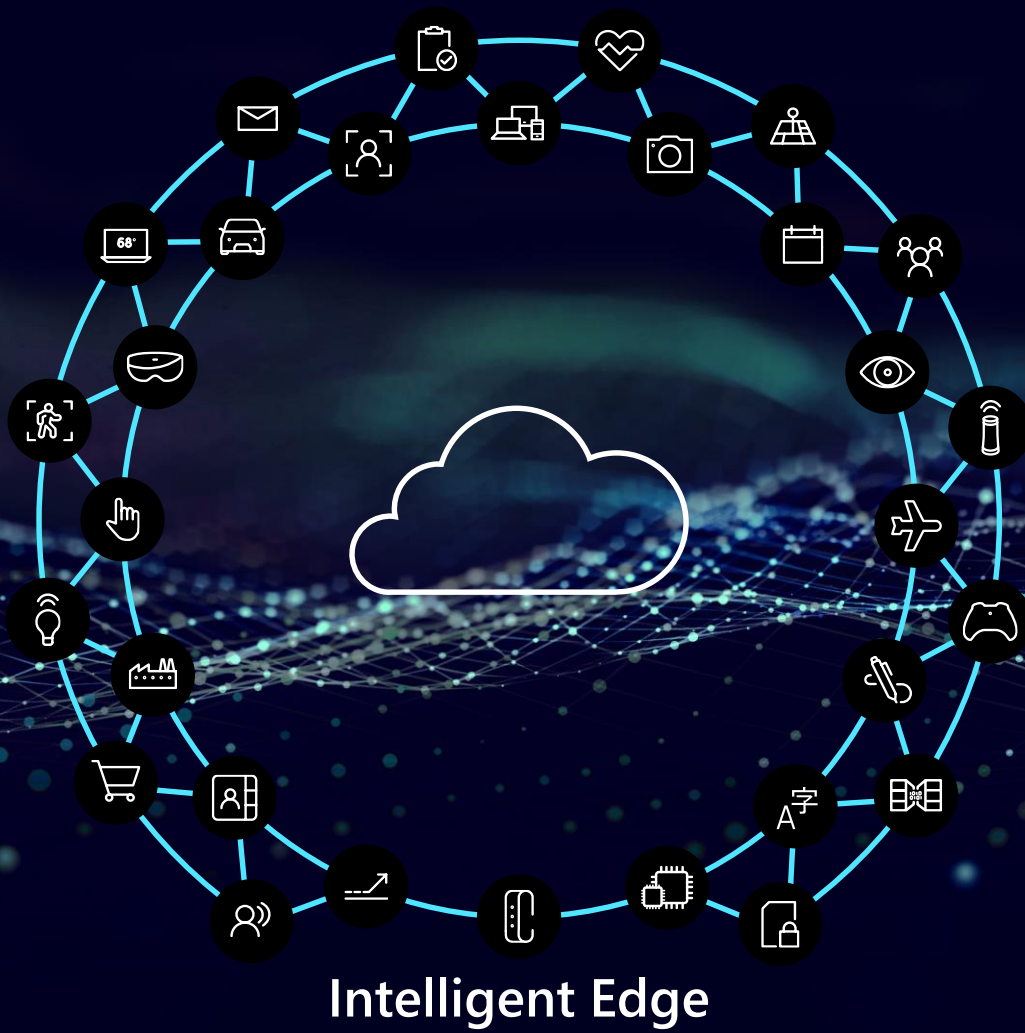


Azure Security Center for IoT

- ✓ Visibility into security posture and state of your IoT Solution
- ✓ Single pane of glass to manage IoT and hybrid cloud security infrastructure
- ✓ Actionable, prioritized alerts to respond to any potential compromises of your IoT solution
- ✓ Integrate with Azure Sentinel or other SIEMs to streamline threat mitigation
- ✓ Define custom alerts based on advanced queries



Intelligent Edge



Intelligent Edge

Intelligent edge devices require a new approach



Time

Many IoT solutions
require months
to set up



Security & trust

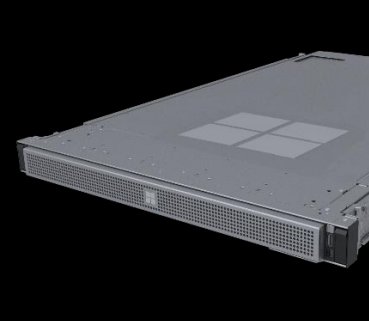
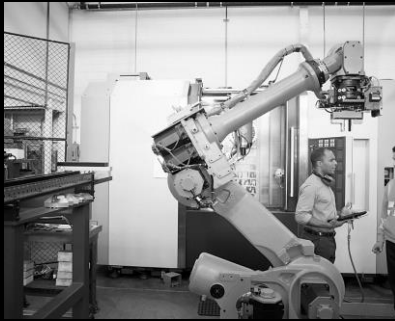
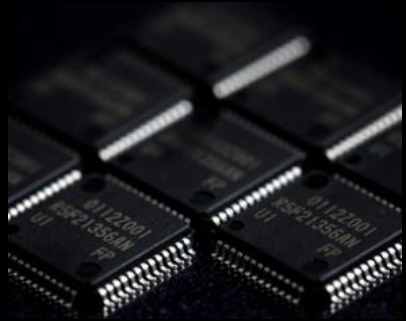
IoT poses unique
security, privacy
and, compliance
challenges



Modernization

Newer technologies
like ML/AI require
new skill sets

The most comprehensive IoT and Edge offerings in the market



Devices + Sensors

Sensors to interactive

Integrated platform

Global scale processing

IoT devices

Azure IoT Device SDK

Device security

Azure Sphere

Edge devices

Azure IoT Edge

Edge appliances

Azure Data Box Edge

On-premises platform

Azure Stack

Hyperscale cloud

Edge Regions

Most specialization

Fewest services

Full spectrum of Cloud + Edge form factors

Intentional and appropriate Azure service availability

Fewest form factors

Most services

Bringing Plug and Play to IoT

Benefits

DEVELOPERS

Dramatically reduces the effort needed to build software on devices

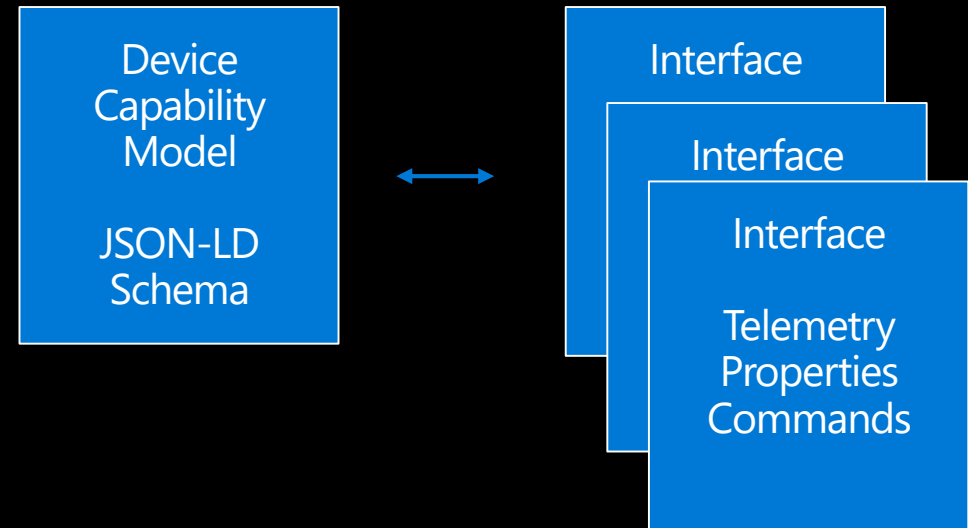
CUSTOMERS & PARTNERS

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

DEVICE PROVIDERS

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

Open source and using open standards

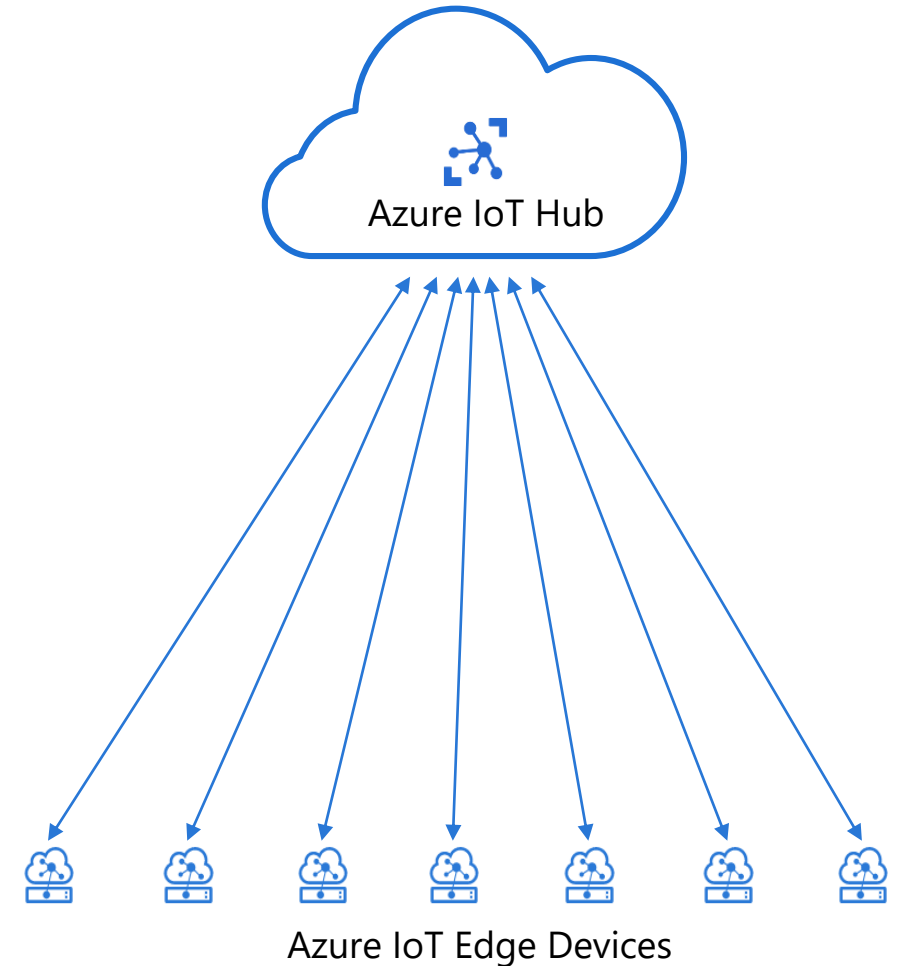


IoT Edge

Run Azure AI, Azure Services & Custom Services directly on IoT devices

Azure IoT Edge

- Open source, cross platform, container-based edge runtime
- Run Azure services & your own code on IoT class and larger devices – fully extensible
- Manage the devices and IoT Edge workloads centrally
- Supports offline operation
- Fully Visual Studio + Visual Studio Code developer support
- Azure DevOps + Jenkins CI/CD support
- **Over 80 Azure Certified for IoT, 3rd party IoT Edge devices**



Azure RTOS

ANNOUNCING

Azure RTOS ThreadX

Over 6.2 billion
deployments, making it
one of the most
deployed RTOS in the
world.

Partnership announcement



- Microsoft & Renesas combine forces to simplify the Device-to-Cloud experience
- Integration of Azure RTOS ThreadX with the Renesas Flexible Software Package
- Seamless and easy out-of-box support for Azure RTOS

IoT attacks put businesses at risk



Devices bricked or held for ransom



Devices are used for malicious purposes



Data and IP theft



Data polluted and compromised



Devices used to attack networks



The cost of IoT attacks

Stolen IP and other highly valuable data

Compromised regulatory status or certifications

Brand impact (loss of trust)

Recovery costs

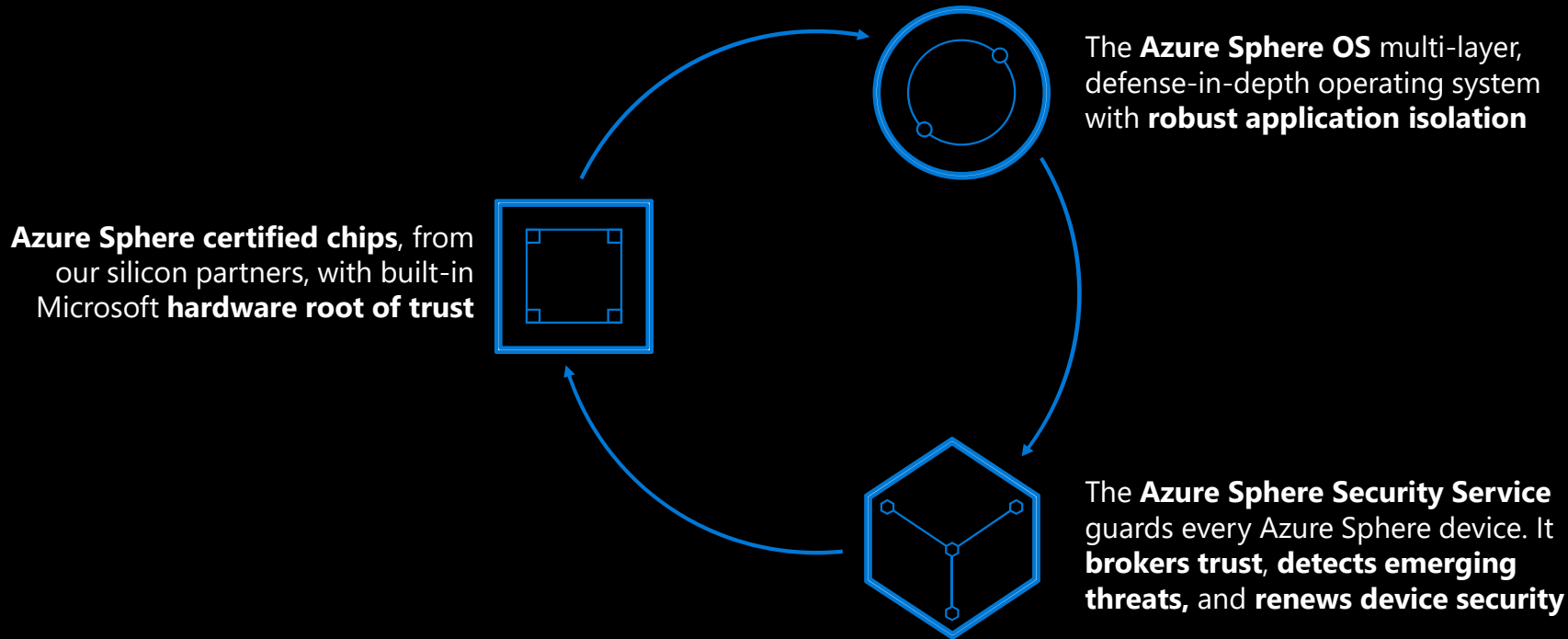
Financial and legal responsibility

Downtime

Security forensics

Azure Sphere

An end-to-end solution for securing IoT devices. Integrated hardware, software, and cloud services work seamlessly together and deliver active security by default.



Ongoing servicing with over 10 years of security and OS updates delivered directly to each device by Microsoft

Customers



Giving Starbucks the confidence to connect their mission-critical equipment to streamline operations and to deliver quality customer experiences.



Ensuring Gojo's data integrity while monitoring hygiene compliance in hospitals.

LEONI

Helping Leoni secure their intelligent cable systems that manage energy and data

Azure Sphere

Silicon partners



Secured, WiFi-enabled MCU,
available in volume today



Secured crossover application
processor; samples available
Q4 2020



First cellular-enabled Azure Sphere chip,
samples available Q4 2020

Ecosystem partners



Wi-Fi Module
MT3620 Starter Kit
Guardian Module



Dual Band Wi-Fi +
Bluetooth Module



Wi-Fi module
Guardian device



MT3630 Dev Board
MT3630 Mini Dev Board



Wireless I/O Module

Innovation that delivers durable value

- Growing silicon choice to support customers in the diversity of their use cases
- Enable unlocking value from existing/legacy equipment with guardian modules
- Rich hardware ecosystem with development kits & modules to streamline prototyping and implementation
- Developer tools and integration with Visual Studio to accelerate time to market

Windows IoT family—fast, safe, smart

Windows 10 IoT Core

For small-footprint, smart devices

Enabling lower cost devices

Windows 10 IoT Enterprise

For fixed-function, smart devices

Locked down, full edition of Windows 10

Windows Server IoT 2019

Advanced data analysis and storage

Enhanced security capabilities



10 years of OS Support, security & manageability

Windows IoT

Smart, Secure, Fast

NEW

- ✓ Availability of NXP SOC

- General Availability of NXP i.MX SOC
- Increased silicon choice for device and solution builders
- Industrial grade silicon

NEW

- ✓ Windows ML Container

- Public Preview of new Windows ML Container
- Fast and agile platform to build enterprise-grade IoT solutions
- Hardware acceleration can take advantage of any DirectX 12 compliant GPU

NEW

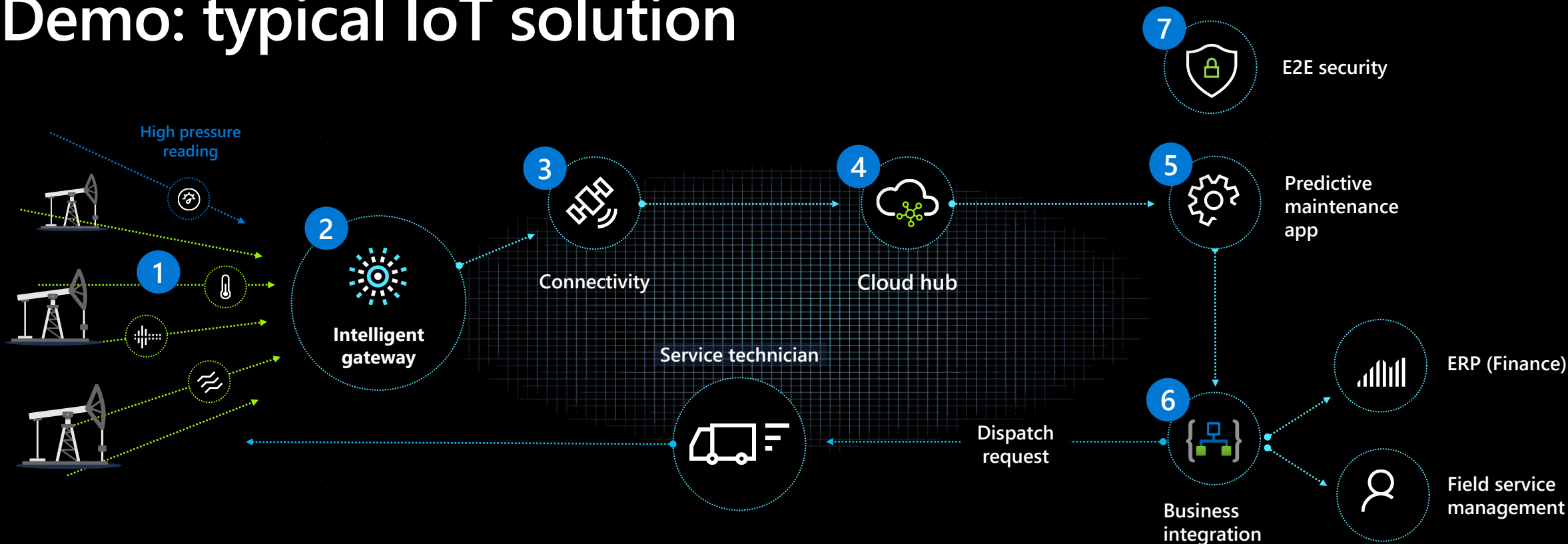
- ✓ SQL Server IoT 2019

- Addresses latency and connectivity requirements
- Maintains data on-premises
- Securely stores and analyzes large amounts of data

Demo

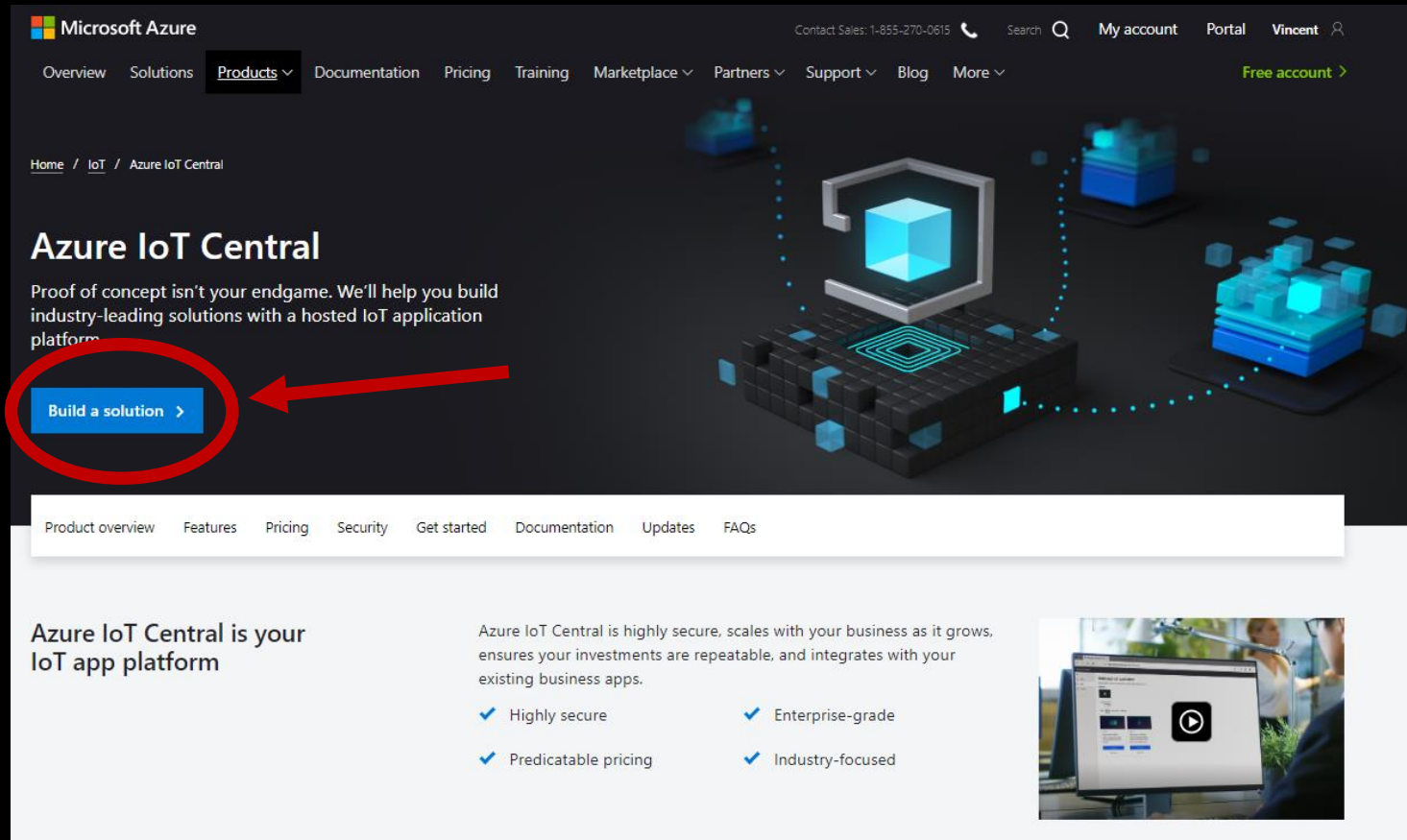
Vincent Hong
Azure IoT Global Black Belt
Microsoft Corporation

Demo: typical IoT solution



- | | | | | | | |
|---|--|--|---|--|---|---|
| Need to source and integrate sensors | Need to filter data and run safety workloads on the edge | Need to provision devices and get data back to the cloud | Need OT to have intuitive dashboard to manage and work with devices | Need to extract valuable insights from devices data in real time | Need to integrate into the business processes | Need to secure the solution from silicon to Cloud |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| A rich catalog of Plug and Play devices enables device ingestion | IoT Edge manages and executes intelligent workloads | Connectivity partners offer global Azure access | IoT Central makes it seamless to monitor and manage devices | Azure ML brings the power of AI into your application | Logic Apps connects to hundreds of business applications | Azure Security Center brings Microsoft's decades of experience in security |

Create your IoT Central app now



The screenshot shows the Microsoft Azure IoT Central website. The top navigation bar includes the Microsoft Azure logo, contact information (1-855-270-0615), a search bar, and links for 'My account', 'Portal', and 'Vincent'. Below this is a secondary navigation bar with links for 'Overview', 'Solutions', 'Products' (highlighted), 'Documentation', 'Pricing', 'Training', 'Marketplace', 'Partners', 'Support', 'Blog', and 'More'. The main heading is 'Azure IoT Central', followed by the text 'Proof of concept isn't your endgame. We'll help you build industry-leading solutions with a hosted IoT application platform'. A blue button labeled 'Build a solution >' is circled in red, with a red arrow pointing to it from the right. Below the main content is a horizontal menu with links: 'Product overview', 'Features', 'Pricing', 'Security', 'Get started', 'Documentation', 'Updates', and 'FAQs'. The bottom section features the heading 'Azure IoT Central is your IoT app platform', a paragraph describing its security and scalability, and a list of four benefits: 'Highly secure', 'Enterprise-grade', 'Predicable pricing', and 'Industry-focused'. A small image of a person at a computer is also present.

Microsoft Azure

Contact Sales: 1-855-270-0615 Search My account Portal Vincent

Overview Solutions **Products** Documentation Pricing Training Marketplace Partners Support Blog More

Free account >

Home / IoT / Azure IoT Central

Azure IoT Central

Proof of concept isn't your endgame. We'll help you build industry-leading solutions with a hosted IoT application platform


Build a solution >

Product overview Features Pricing Security Get started Documentation Updates FAQs

Azure IoT Central is your IoT app platform

Azure IoT Central is highly secure, scales with your business as it grows, ensures your investments are repeatable, and integrates with your existing business apps.

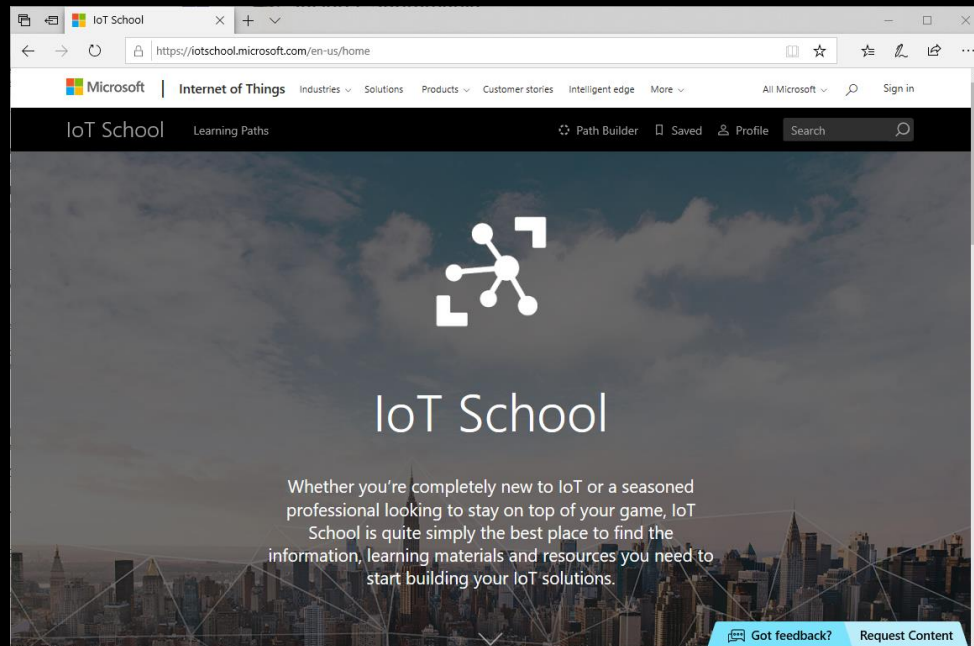
- ✓ Highly secure
- ✓ Enterprise-grade
- ✓ Predicable pricing
- ✓ Industry-focused



[www.AzureIoTCentral.com](https://www.azureiotcentral.com)

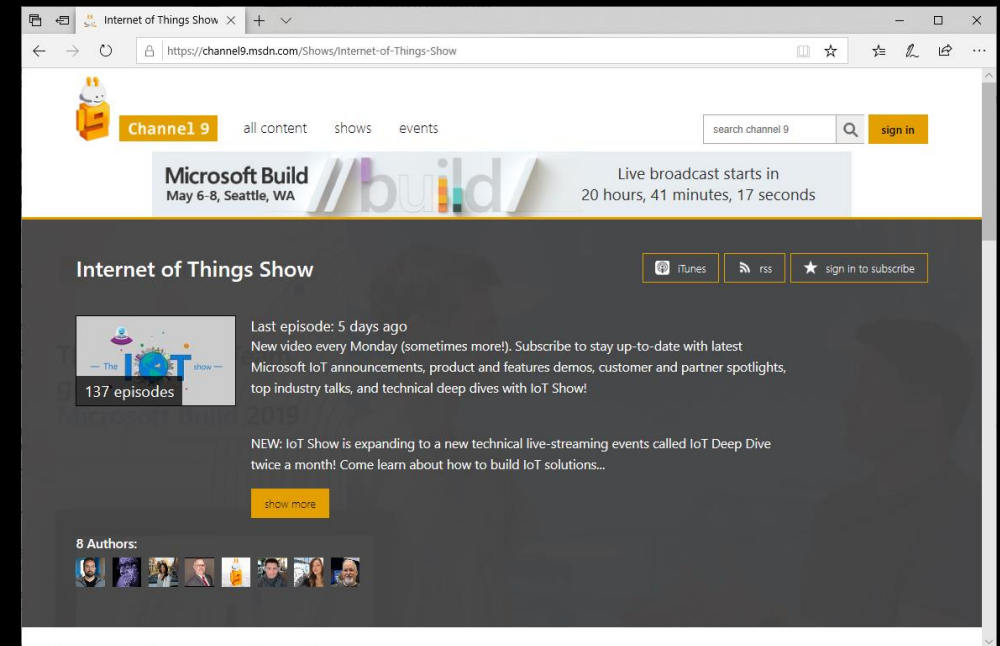
Great resources for developers

Learn IoT



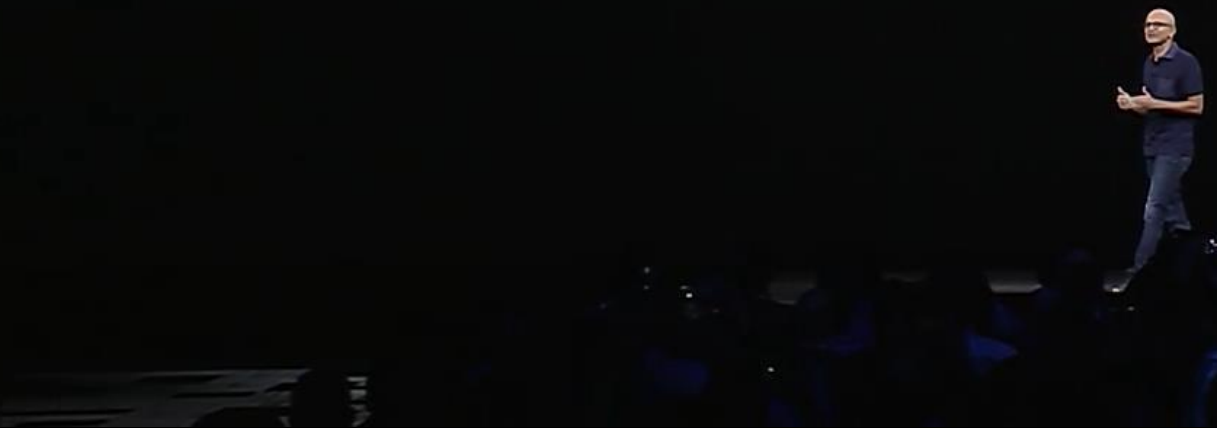
<http://aka.ms/learn/iot>

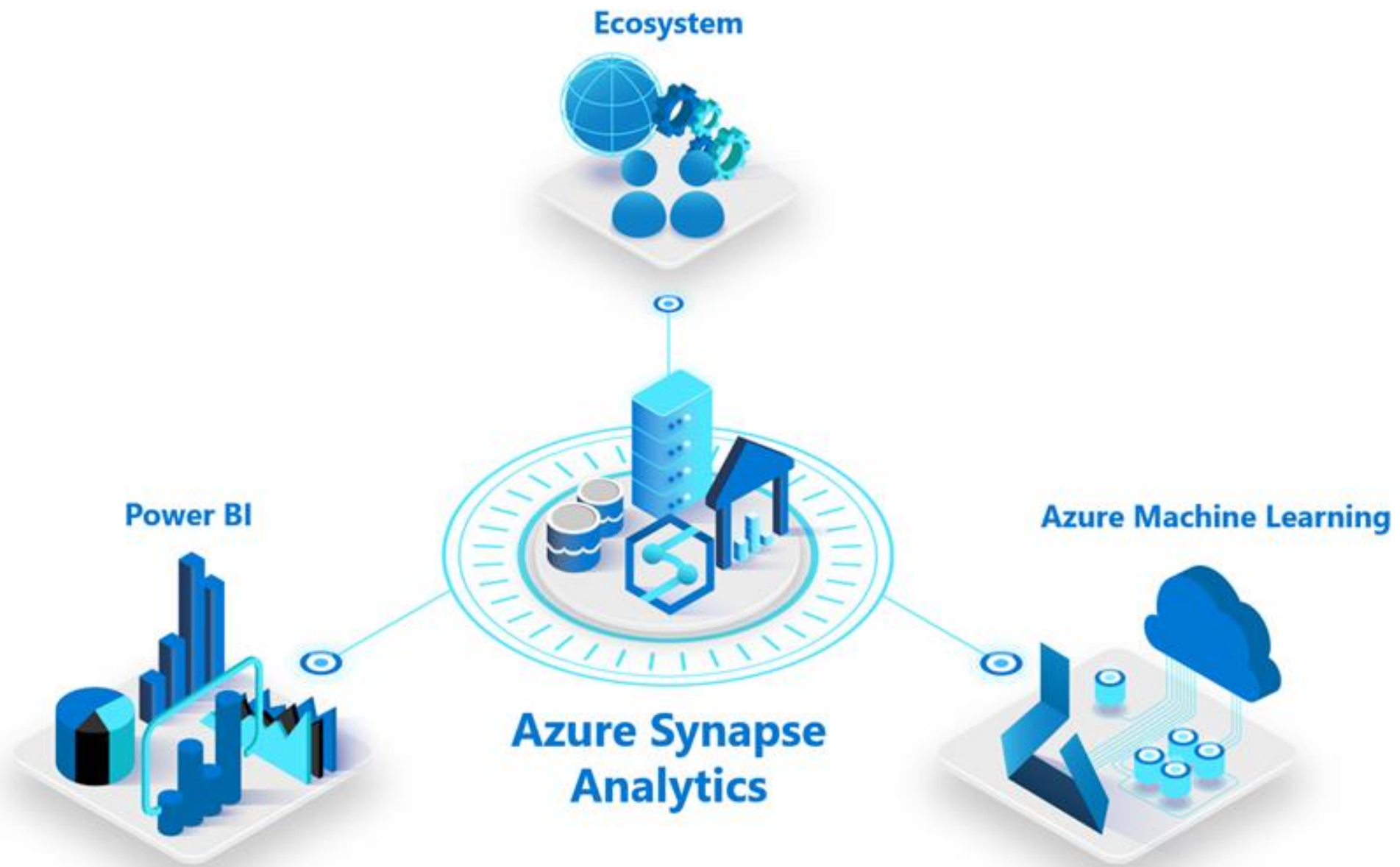
IoT Show



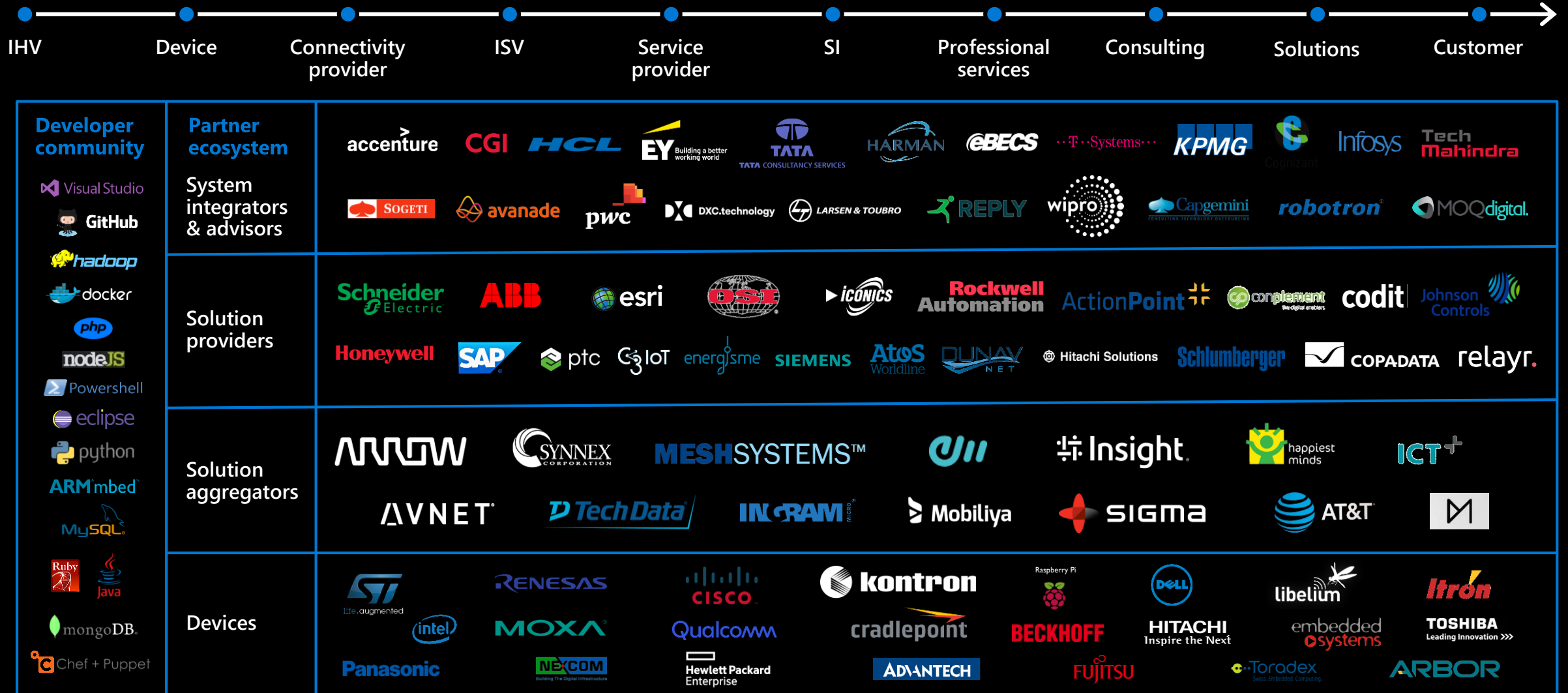
<http://aka.ms/iotshow>

Tech intensity = (Tech adoption x Tech capability)^{Trust}





Ecosystem momentum





Thank you