# Microsoft's Approach to IoT
## Digital Transformation and The Internet of Things

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**Microsoft**

The Internet of Things isn't a technology revolution...

...IoT is a business revolution, enabled by technology

# Defining Internet of Things

## Connect Things
**30B** connected devices by 2020

## Control Anything
**$1.5M** average increase in operating income for digitally transformed enterprises

## Gain Insights
**10%** of the data on earth will come from IoT by 2020

## Take Action
**$10B** market for business process automation tools by 2020

# The Internet of Things is taking hold

## According to a recent IoT survey...

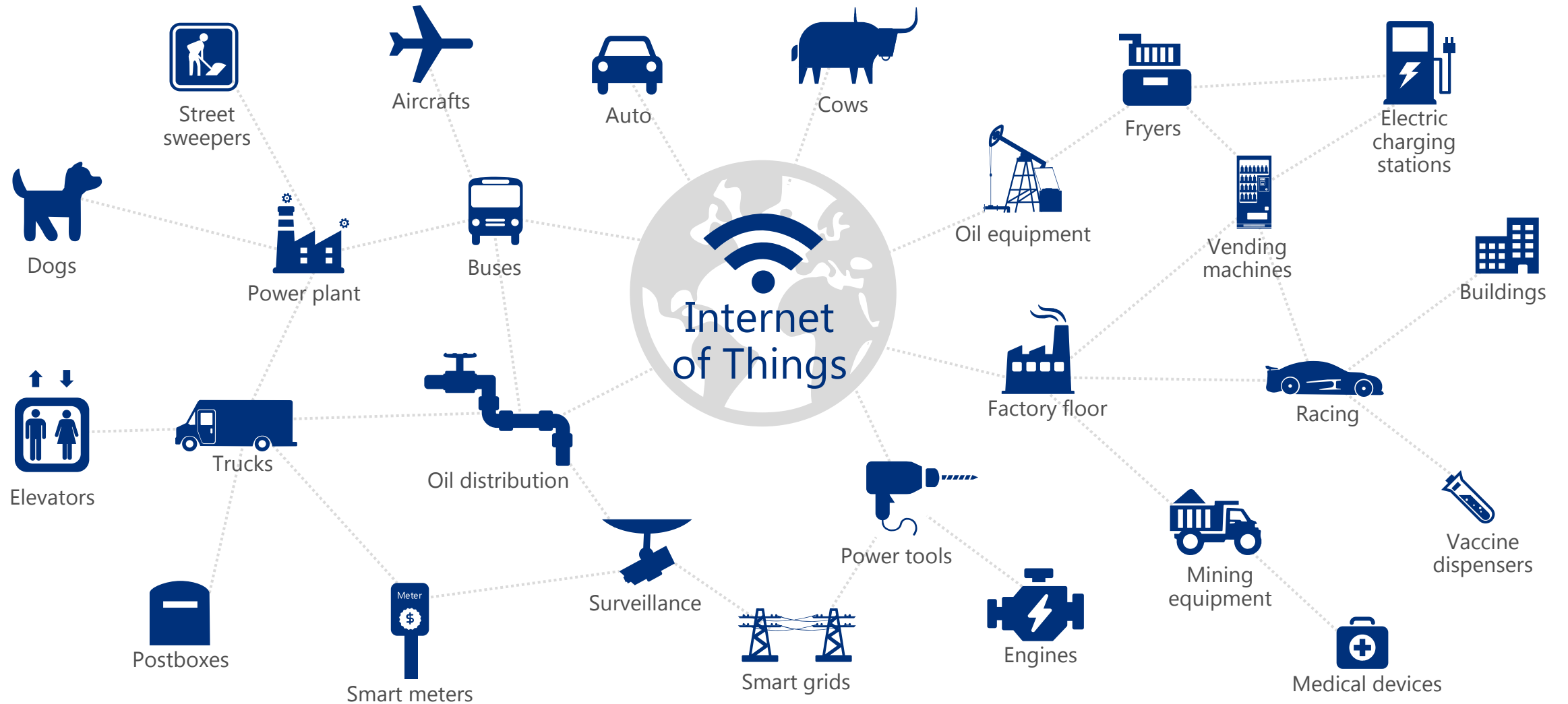| | |
|---|---|
| **73%** | Of the companies surveyed are currently active in IoT |
| **60%** | Of those working on IoT are aiming to grow revenue and profits |
| **50%** | Reduction in downtime with predictive maintenance |



Source: *Redefining the Connected Conversation*, IoT Trends, Challenges & Experience Survey. James Brehm & Associates, 2016.

# Innovation at work – real world IoT use cases

# IoT is already delivering tangible results

**Johnson Controls**

Chillers now run **9x faster** than unconnected equipment, avoiding more than **$300,000** in hourly downtime costs

**thyssenkrupp**

Gathers data from sensors and systems to create valuable business intelligence and **reduce downtime by 50%**

**Rolls-Royce**

Cutting fuel usage by 1% could save **$250,000 per plane per year**

**Rockwell Automation**

Improves **access** to production and supply chain **data** worldwide, reducing downtime costs by as much as **$300,000 per day**

g-paws

M-KOPA SOLAR

SATALYST

NAV CANADA

Schlumberger

GRUNDFOS

LIEBHERR

coop

Mondelēz International

BMW

jtc
Breaking New Ground

ABB

JABIL

FUJITSU

CAT

Purell

esri

iav
automotive engineering

Henry Mayo
Newhall Hospital

SANDVIK

3M

WEIR

Schneider Electric

SoftBank

CAN TELEMATICS
EVOLVING VISIBILITY

URBAN
INSTITUTE
ELEVATE · THE · DEBATE

MITSUBISHI
HEAVY INDUSTRIES, LTD.

GOJO

# IoT in your industry

# Manufacturing (1 of 2)

## Moving from action to insights

Reduced development time and cost by 80% by gathering and analyzing data more efficiently and increasing automation across the company.

Click to learn more

## Building efficiency with IoT

Connected chillers are back online 9x faster than unconnected equipment, avoiding more than $300,000 in hourly downtime costs

Click to learn more

Demo

## Filtering the signal from the noise

Used analytics to discover actionable insights around fuel usage, predictive maintenance and stop unscheduled delays.

Click to learn more

Demo

# Manufacturing (2 of 2)



## Transforming the urban landscape

Gathered data from sensors and systems to create valuable business intelligence and shift from reactive to proactive maintenance.

Click to learn more



## Empowering global operations

Collected data from 40,000 sensors around the world to create a best-in-class forecast that helps customers make critical operational decisions.

Click to learn more

# Retail



## Connecting the unconnected

Gathered data from sensors and systems to create valuable business intelligence and shift from reactive to proactive maintenance.

Click to learn more

## Data transforms beverage business

Increased the actionable insight pulled from company data across all areas of the company by deploying Microsoft Azure Machine Learning.

Click to learn more

# Banking

## A growing bank's new approach

Leveraged company wide data to predict how likely customers are to go to other financial institution and drive better product features.

[Click](#) to learn more

## Fast, friendly, and reliable banking

Developed a complete business intelligence suite to track company data in under a week in order to drive up engagement and accounts holder satisfaction.

[Click](#) to learn more

# Government



## The Internet of (Farm) Things

Deployed IoT sensors in different farms to learn how to optimize use of Maryland's 93,000 acres of the farmland and maximize production.

Click to see more

## How Glasgow is reinventing itself

Developed apps to help citizens use services and business find growth opportunities using data from IoT sensors across the city.

Click to see more

# Health



## IoT-enabled Smart Fridge

Weka builds a life-saving smart fridge using Azure IoT Suite and Windows 10 IoT

[Click](#) to see more



## Transforming healthcare with faster access

By capturing and analyzing data recorded in medical charts, staff were able to improve treatments techniques by tracking return visits.

[Click](#) to see more



## Building a connected hospital

Reduce medication delivery times and inventory costs by connecting dispensary devices with electronic medical records.

[Click](#) to see more

Connect
your things

Transform your
business

Capitalizing
on IoT

Turn data
into insights

# Connect your things

## The IoT Customer Journey

## Objective

Increase efficiency by reducing costs and eliminating bottlenecks

## Organizational readiness

This is a great place to start if you have:

- An identified business process you want to gain visibility into

- An understanding of the kind of data you need in order to support your business objective

- Devices capable of providing the type of data required

# Turn data into insights

## The IoT Customer Journey

## Objective

Drive innovation and increase revenue using your existing assets

## Organizational readiness

This is a great place to start if you have :

- The ability to interpret incoming data from devices
- An understanding of the impacted business groups and processes
- A plan for using data to drive business process improvements

# Transform your business

## The IoT Customer Journey

### Objective

Create new lines of business and new business models

### Organizational readiness

This is a great place to start if you have :

- A strong baseline of historical device data (e.g. usage trends, repair records)
- Visibility into real-time operational status
- Predictive capability from advanced analytics
- Stakeholder commitment to support change efforts

# Enabling IoT solutions in your business with Microsoft

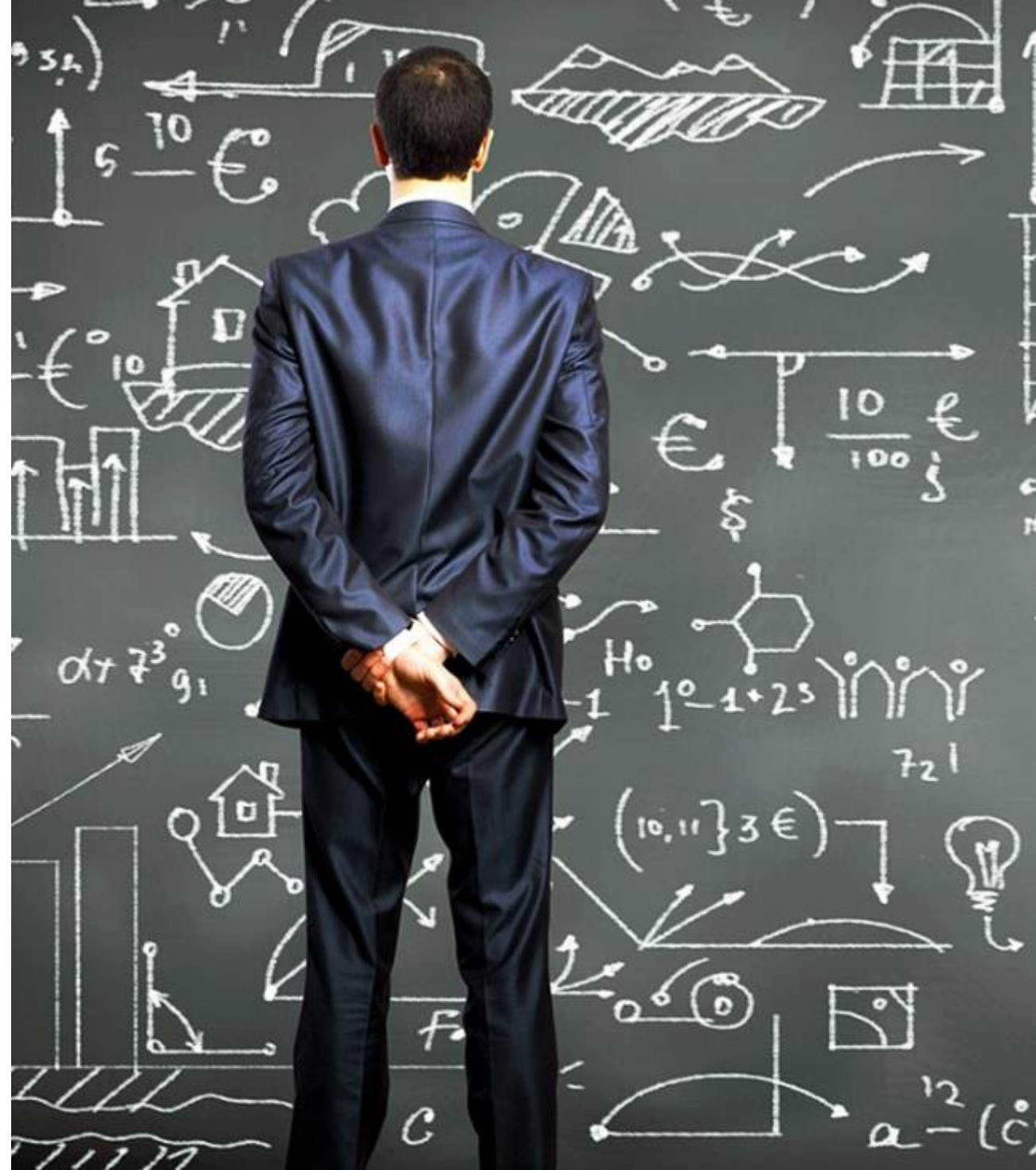# IoT projects are complex

**Difficult to maintain cohesive security**

**Time-consuming to stand up**

**Incompatible with current infrastructure**
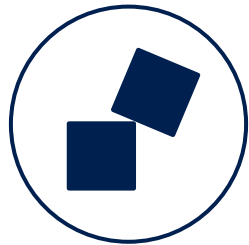
**Hard to scale**

# Azure IoT Suite

- Device Connectivity & Management
- Data Ingestion and Command & Control
- Stream Processing & Predictive Analytics
- Workflow Automation and Integration
- Dashboards and Visualization
- Preconfigured Solutions
  - Remote Monitoring
  - Predictive Maintenance

# Gain defense in depth with Azure IoT Suite security

**Securely connect millions of devices . . .**

**Over a secure internet connection . . .**

**To Microsoft Azure – built with security from the ground up**

## Device Security
Device Provisioning and Authorization

## Connection Security
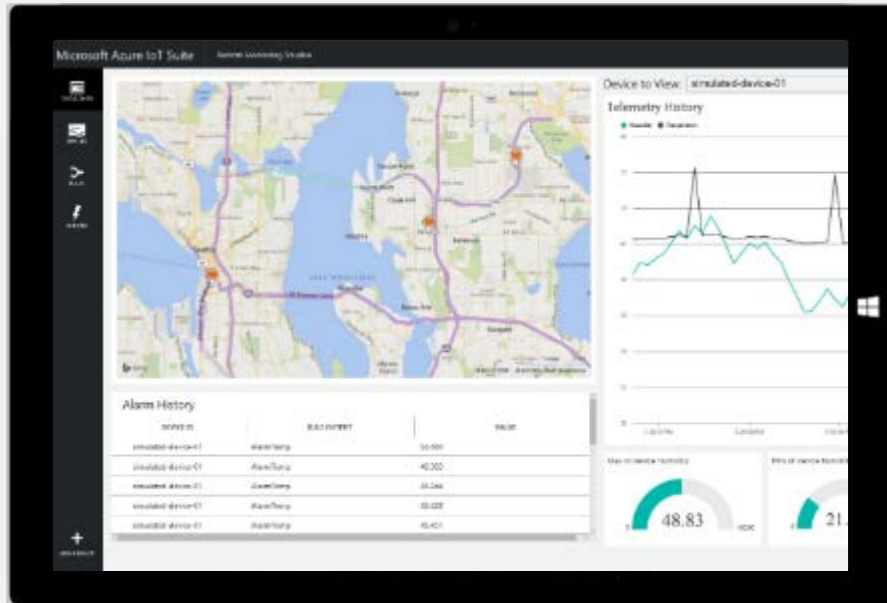X.509/TLS-Based Handshake and Encryption
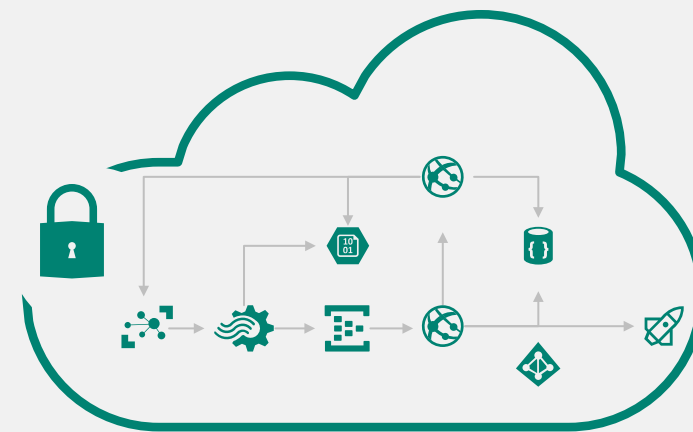
## Cloud Security
Azure Security Center
Azure Active Directory
Key Vault
Policy-Based Access Control

# Accelerate time to value

## Start quickly for common IoT scenarios



- Get started in minutes
- Modify existing rules and alerts
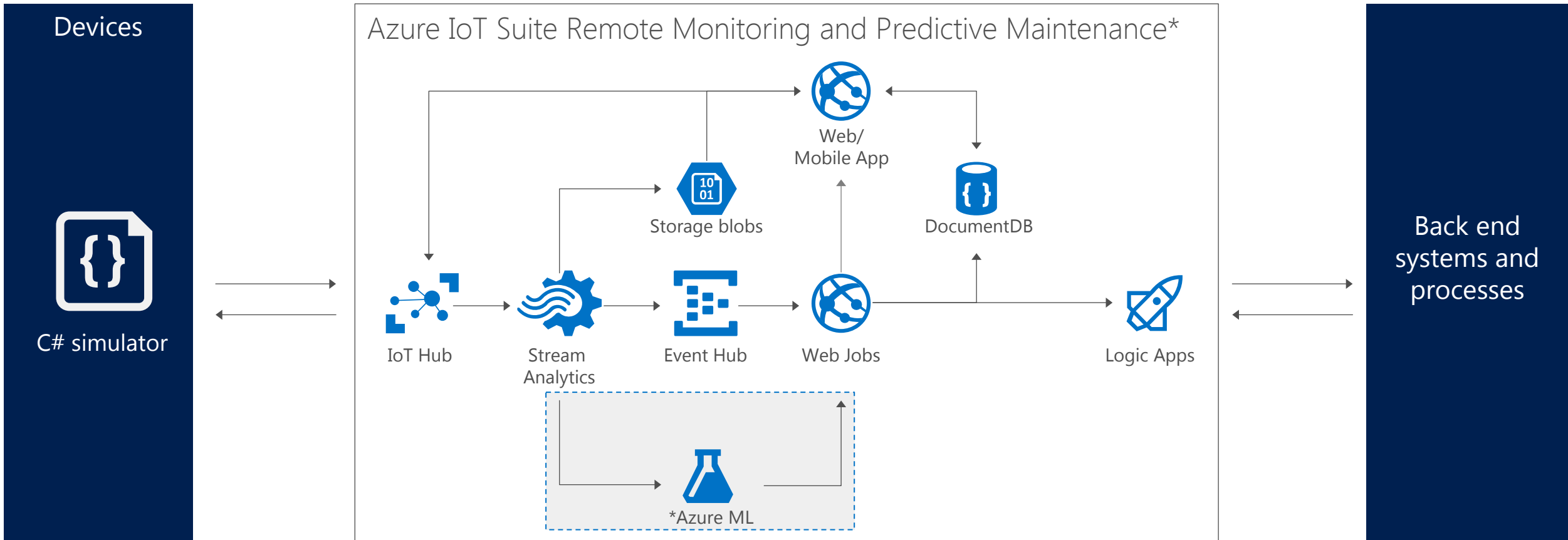- Add your devices and begin tailor to your needs

## Finish with your Internet of Things application



- Fine-tuned to specific assets and processes
- Highly visual for your real-time operational data
- Integrate with back-end systems
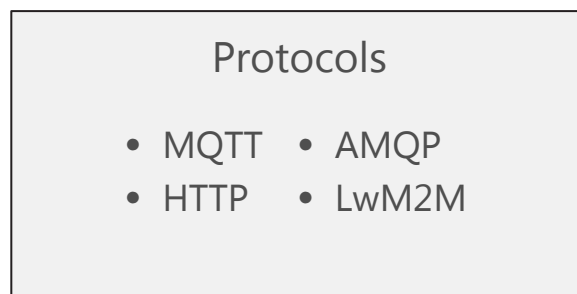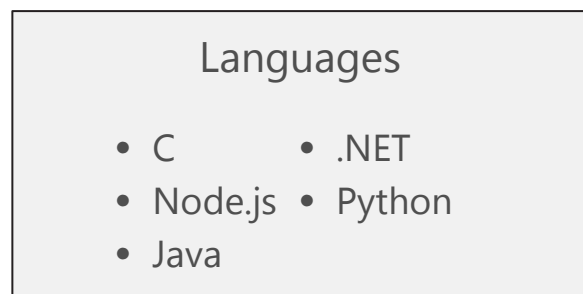
# What you get with a preconfigured solution



**Devices**

C# simulator

## Azure IoT Suite Remote Monitoring and Predictive Maintenance*

Web/ Mobile App

Storage blobs

DocumentDB

IoT Hub

Stream Analytics

Event Hub

Web Jobs

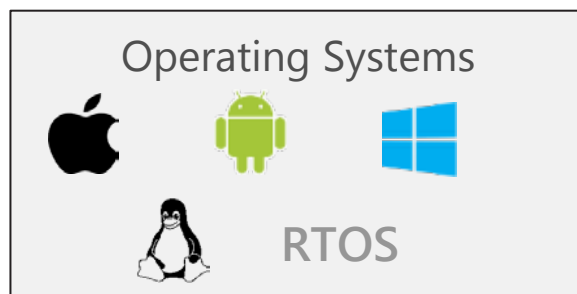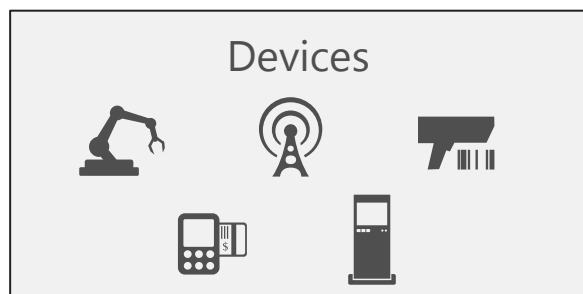Logic Apps

*Azure ML

**Back end systems and processes**

*Machine Learning is available with Predictive Maintenance

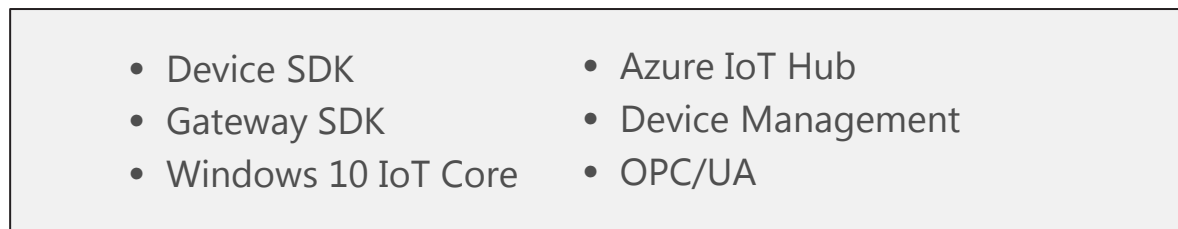# Obtain flexibility with an open approach

## Work with any device

### Devices



### Operating Systems



RTOS

### Languages

- C
- .NET
- Node.js
- Python
- Java

### Protocols

- MQTT
- AMQP
- HTTP
- LwM2M

Using…

- Device SDK
- Gateway SDK
- Windows 10 IoT Core
- Azure IoT Hub
- Device Management
- OPC/UA

## Work with business processes

### Business solutions and processes



Dynamics 365



And other business systems

Using…

- Power BI
- Azure App Service
- Azure Mobile Apps
- Azure API Management
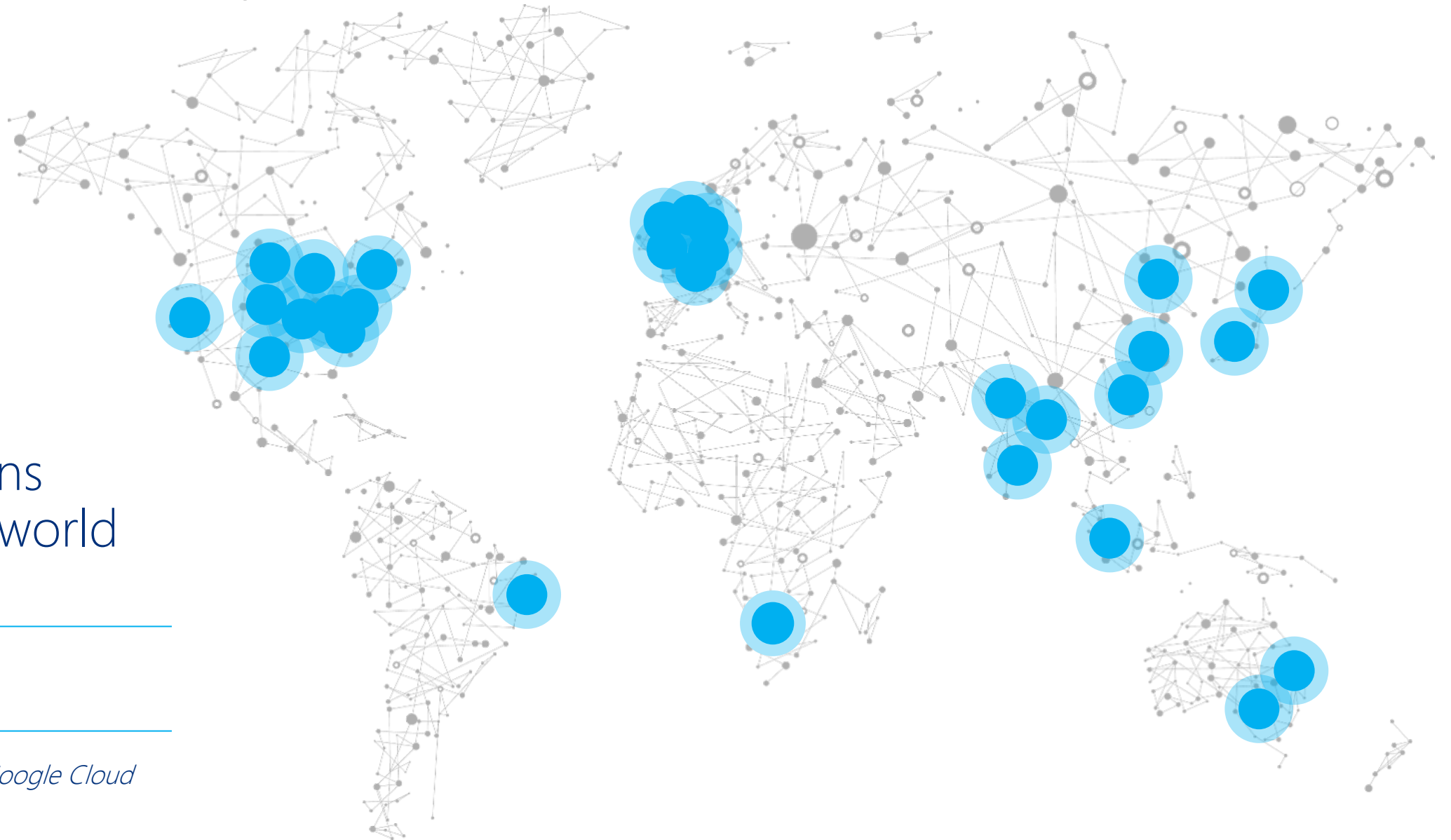- Azure Logic Apps
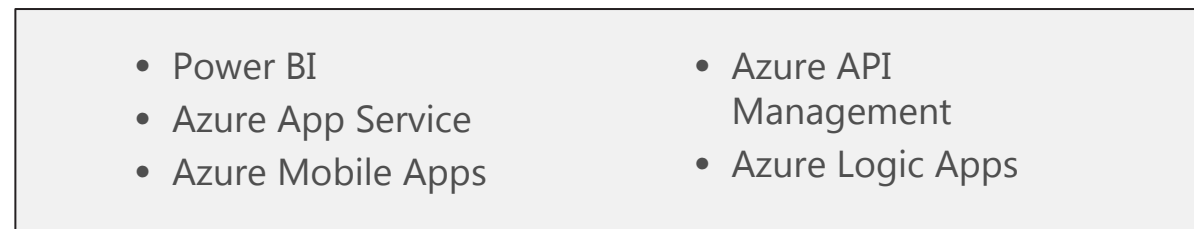
# Benefit from a hyper-scale footprint



## 39

Azure regions
around the world

⬤ **AZURE REGIONS**

*More than AWS and Google Cloud
combined*

# Azure IoT: Ready for the enterprise

## Secure
**End-to-end**

From the endpoint, through the connection, to data, applications, and the cloud

## Fast
**Start in minutes**

Preconfigured solutions for the most common IoT scenarios

## Open
**Connect anything**

Any device, OS, data source, software, or service

## Scalable
**Grow effortlessly**

Millions of devices, terabytes of data, on-premises, in the cloud, in the most regions worldwide

Things → Control → Insights → Action

From endpoint to insight to action, across the enterprise, and around the world

Recognized as a **leader in Business Intelligence and Analytics Platforms**
Recognized as a the **leading visionary for Internet of Things platforms**

Built on the **industry's leading cloud**