



# How the Internet of Things can be applied in the industry?

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Tech Evangelist – June 8, 2016





# How Microsoft can valorize your Things?

Gain insight  
and agility



By operating with the  
infrastructure that you have

Build  
competitive  
edge



By envisioning your  
potential over the years

Open new  
business  
opportunities



By defining new Business  
Models and Approaches

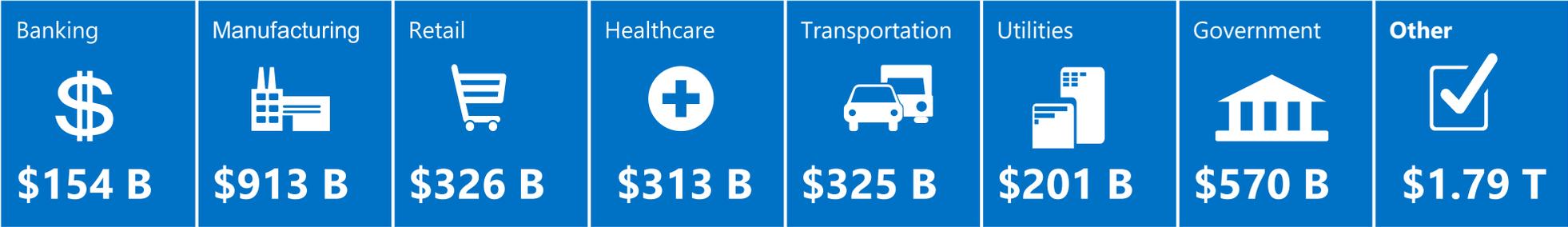
Redefine  
customer  
service



By introducing new way to  
do business

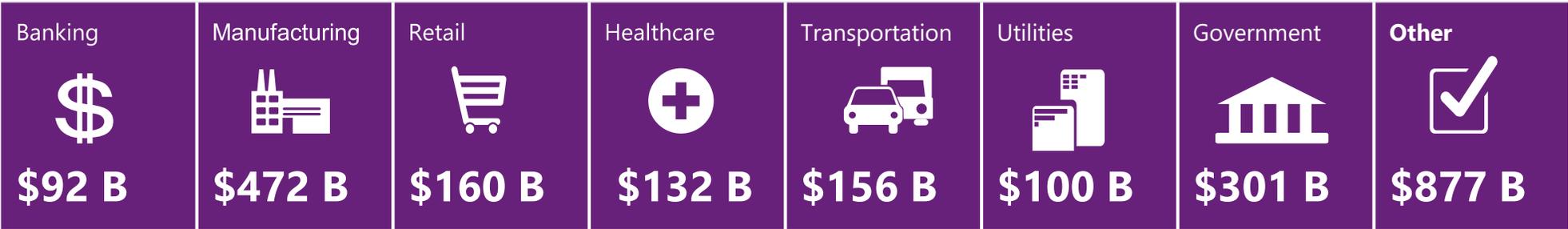
# Worldwide Internet of Things Revenue Opportunity

2018



**\$4.59T**

2014



**\$2.29T**



## Create the Internet of **Your Things**

When trillions of things can be connected, which things should you connect?

Empower your business and gain a competitive edge by connecting data from devices and sensors with the cloud and business intelligence tools.

- The Internet of Things is here today—and it starts with what matters most to you
- Optimize key areas of your business to help it thrive, starting small for big impact
- Harness a broad platform, services and ecosystem to transform your business



Just a moment to tell you our customer journey ...



<https://www.youtube.com/watch?v=SGXTWLQ76jI>

# Business Objective: Operation Excellence

## Increases reliability through predictive maintenance



[ThyssenKrupp](#)

ThyssenKrupp is a diversified industrial group with traditional strengths in materials and a growing share of capital goods and services businesses. Around 155,000 employees in nearly 80 countries work with passion and technological expertise to develop high-quality products and intelligent industrial processes and services for sustainable progress.

### CHALLENGE

Leading global manufacturer ThyssenKrupp Elevator maintains more than 1.1 million elevators worldwide, including those at some of the world's most iconic buildings. ThyssenKrupp wanted to better compete in their industry by offering dramatically increased uptime, taking preventative maintenance a step further to predictive and even preemptive service.

### SOLUTIONS

ThyssenKrupp teamed up with Microsoft and CGI to create a connected, intelligent asset monitoring system based on Microsoft Azure Intelligent Systems Service, Power BI for Office 365, and Microsoft Azure Machine Learning. The solution connects thousands of sensors and systems in its elevators to the cloud and draws this data into a dashboard available on PCs and mobile devices for a real-time view of key performance indicators.

### BENEFITS

- Increases reliability through predictive maintenance and rapid, remote diagnostic capabilities
- Reduces costs for ThyssenKrupp and their customers
- Rich, real-time data visualization
- Data continually feeds into dynamic predictive models
- Two-way flow of data enables diagnostics mode and remote elevator commands



# Business Objective: Customer Loyalty

Provide new consulting services or business process outsourcing



[Krones](#)

Worldwide, Krones employs 12,756 people. Approximately 90 per cent of its products are sold abroad. Consolidated sales in 2014 totaled 2.953 billion euros. The group includes not only Krones AG (M-DAX), but also more than 80 sales and service companies. Since being founded in 1951, Krones has become far more than a traditional-style machinery and line manufacturer: it has evolved into an all-round vendor for its clients.

## CHALLENGE

- No direct connection with majority of installed base which leads to a reactive customer service from the OEM with relatively inefficient resolution processes
- Equipment Maintenance schedules are based on defined time-intervals which is the reason that services are performed too often, too early or too late.
- Service costs grow linear to the number of installed machines. Similar learning curves like in production for service operation necessary.

## SOLUTIONS

- Monitoring – visualizing real time data
- Reporting – analysing historical data
- Prediction – predicted events
- Alerting – sending information to people
- Guidance – realtime communication
- Repair – sending controls to the machine
- Portal – information & collaboration platform
- Mobility – mobile access from anywhere
- Integration – Integration with other Enterprise Systems

## BENEFITS

- Optimise cost structure for service organization through new capabilities like e.g. Remote Monitoring and Reporting, Remote Support and Diagnostic
- Provide new consulting services or business process outsourcing
- Deepen customer relationship management and improve customer loyalty
- Improve overall equipment, machine and device performance and safety



# Business Objective: Manufacture a car body every 77 seconds

## 24 hours of production per day for over 8 years

**KUKA**

[KUKA](#)

KUKA is an internationally active group with sales of around € 2.1 billion and a global workforce of about 12,000. As one of the world's leading suppliers of intelligent automation solutions, KUKA offers its customers everything they need from a single source: from the core component – the robot – to cells and fully automated systems.

### CHALLENGE

KUKA—designer of the **first industrial robot in 1973** and one of the world's leading suppliers of robotics—sought to design an **automated manufacturing process** capable of producing **8** different **Jeep Wrangler** bodies on the same production line without interrupting production flow.

### SOLUTIONS

KUKA implemented a solution anchored by Windows Embedded and Microsoft SQL Server that connects **259** assembly-line robots with a controller, over **60,000** devices points, line-of-business applications, and back end systems to deliver continuous uptime and produce over **830** car bodies each day.

### BENEFITS

- Rapid adaptation supports multiple models and helps produce a car body every 77 seconds
- Continuous uptime enables 24 hours of production per day for over 8 years
- Familiar interface improves efficiency and reduces training time





## Create the Internet of **Your Things**

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Access to latest customer stories and multimedia content at [www.internetofyourthings.com](http://www.internetofyourthings.com)

# How Microsoft approaches the IoT?

The Internet of Things starts with your things.

- Build on the infrastructure you already have
- Add more devices to the ones you already own
- Get more from the data that already exists

Stop just running your business. Start making it thrive. Start realizing the potential of the Internet of Your Things.



# Why Microsoft?

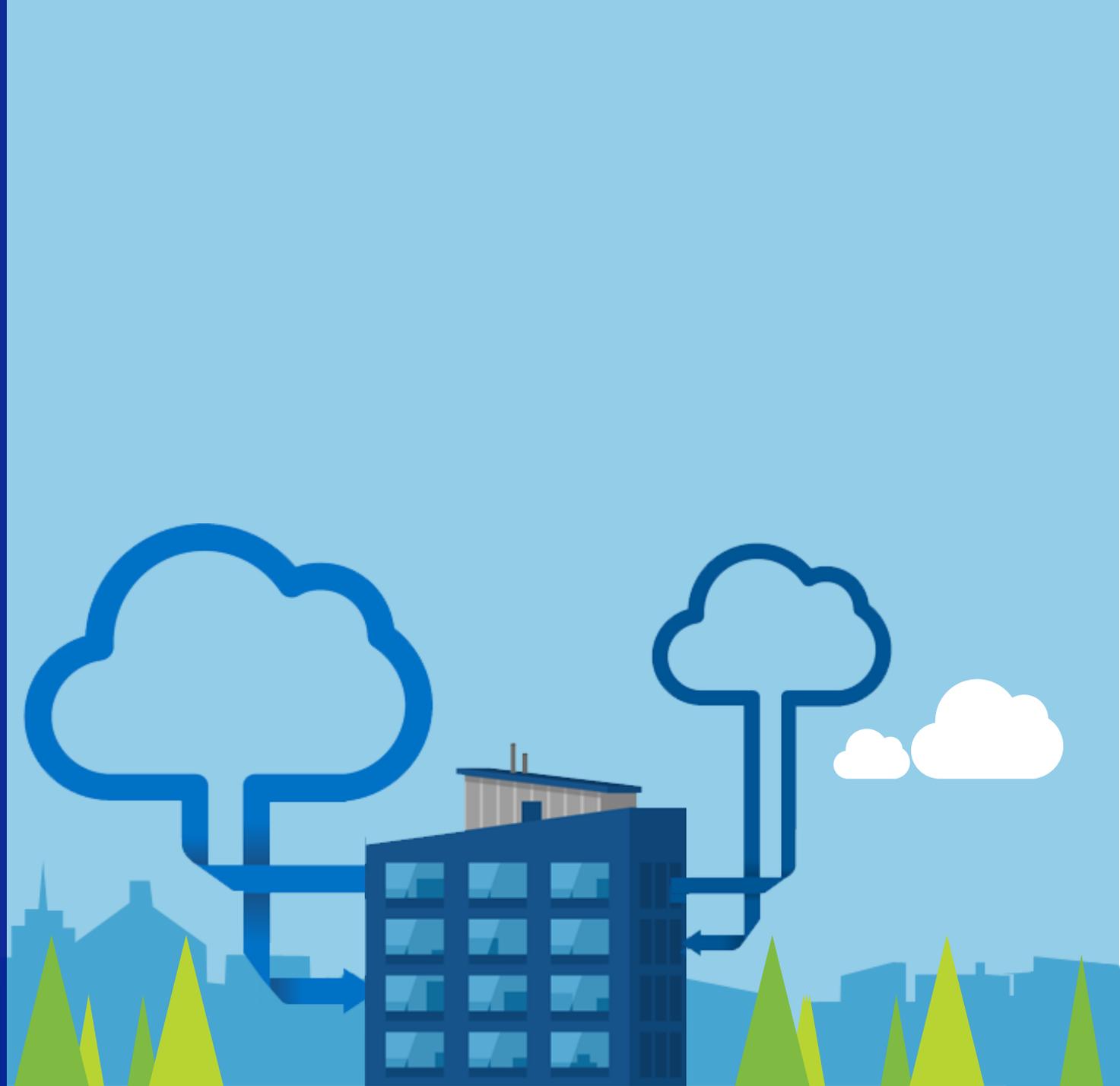
Microsoft has an enterprise grade cloud with global footprint



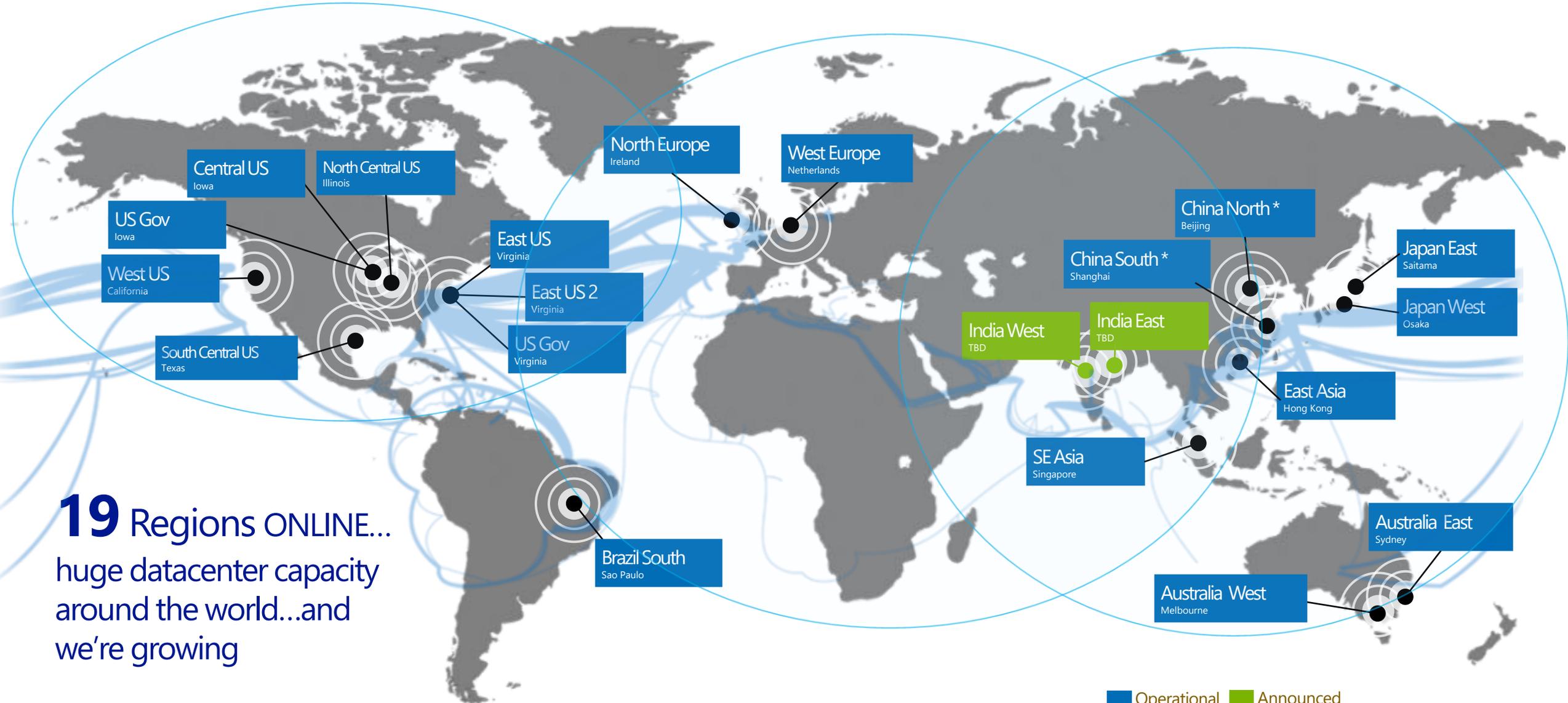
Microsoft has the technology that brings the Internet of Things to life



Microsoft supports a diverse ecosystem of partners and solutions



# Scale with Microsoft



**19** Regions ONLINE...  
huge datacenter capacity  
around the world...and  
we're growing

Operational Announced  
\* Operated by 21Vianet

# Why Microsoft?

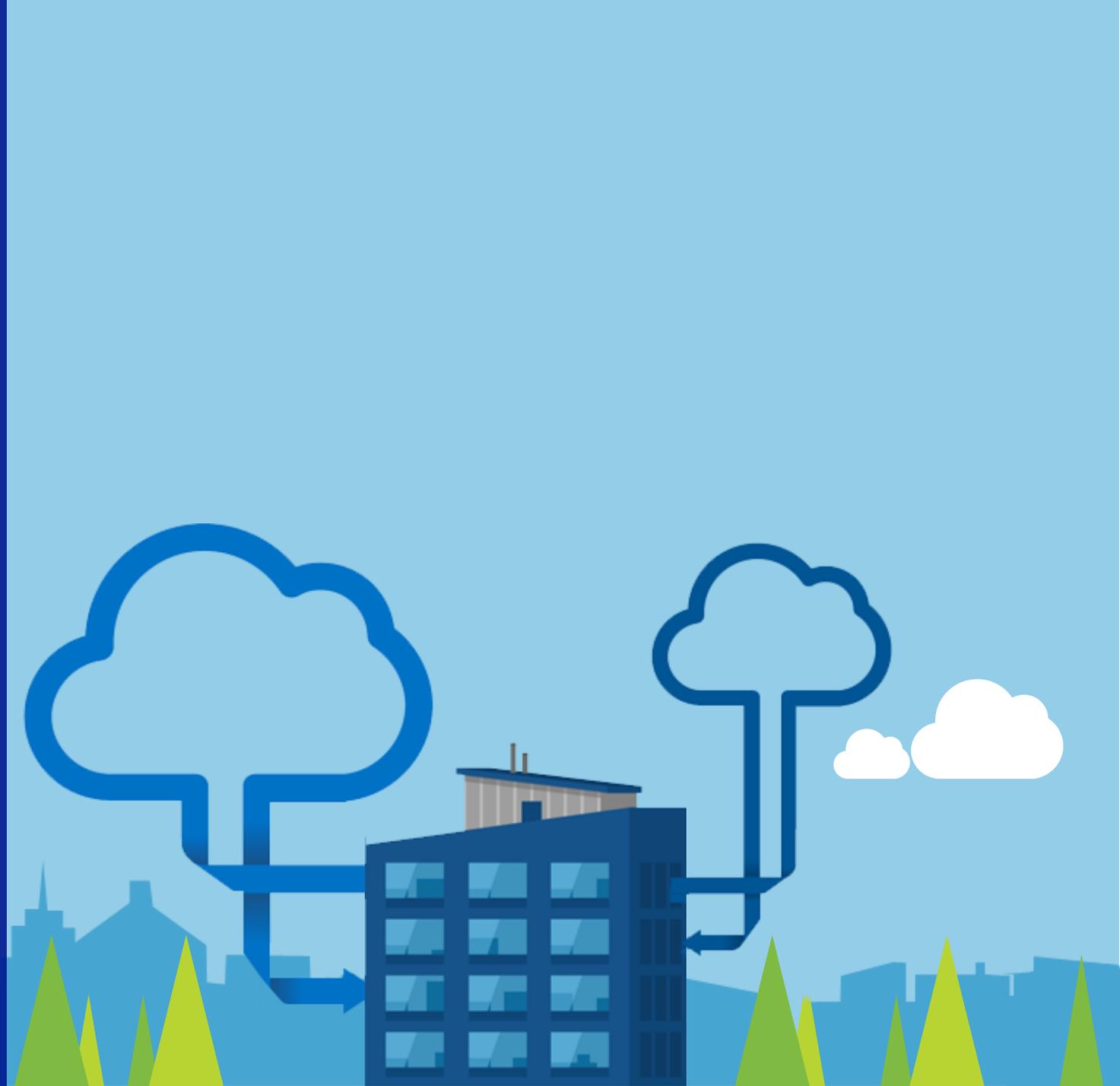
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Microsoft has the technology that brings the Internet of Things to life



Microsoft supports a diverse ecosystem of partners and solutions



# Microsoft has the technology that brings IoT to life

## Improve efficiency

Monitor and track the health of your assets to reduce costs



## Enable innovation

Analyze data from multiple sources in real time to drive revenue



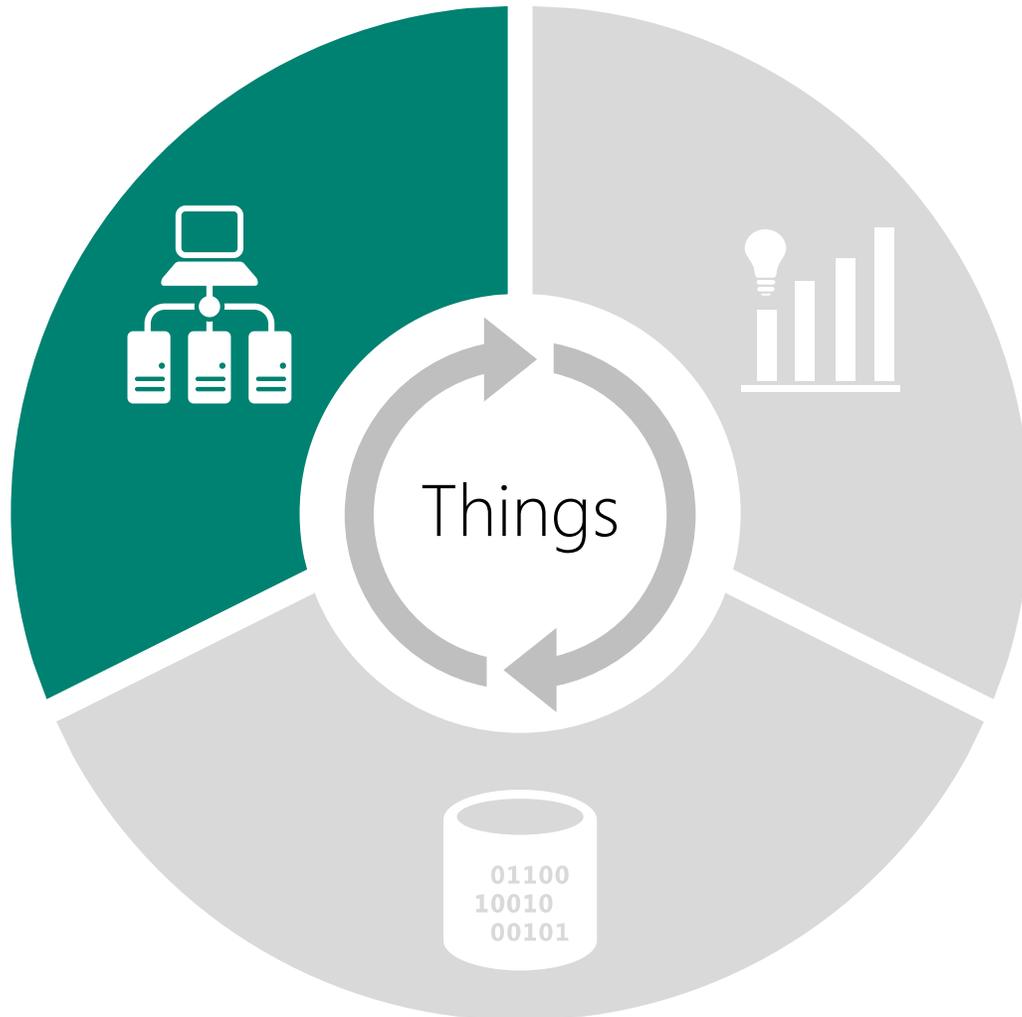
Things



## Transform your business

Leverage advanced analytics to transform your business by creating new business models and revenue streams

# Improve efficiency



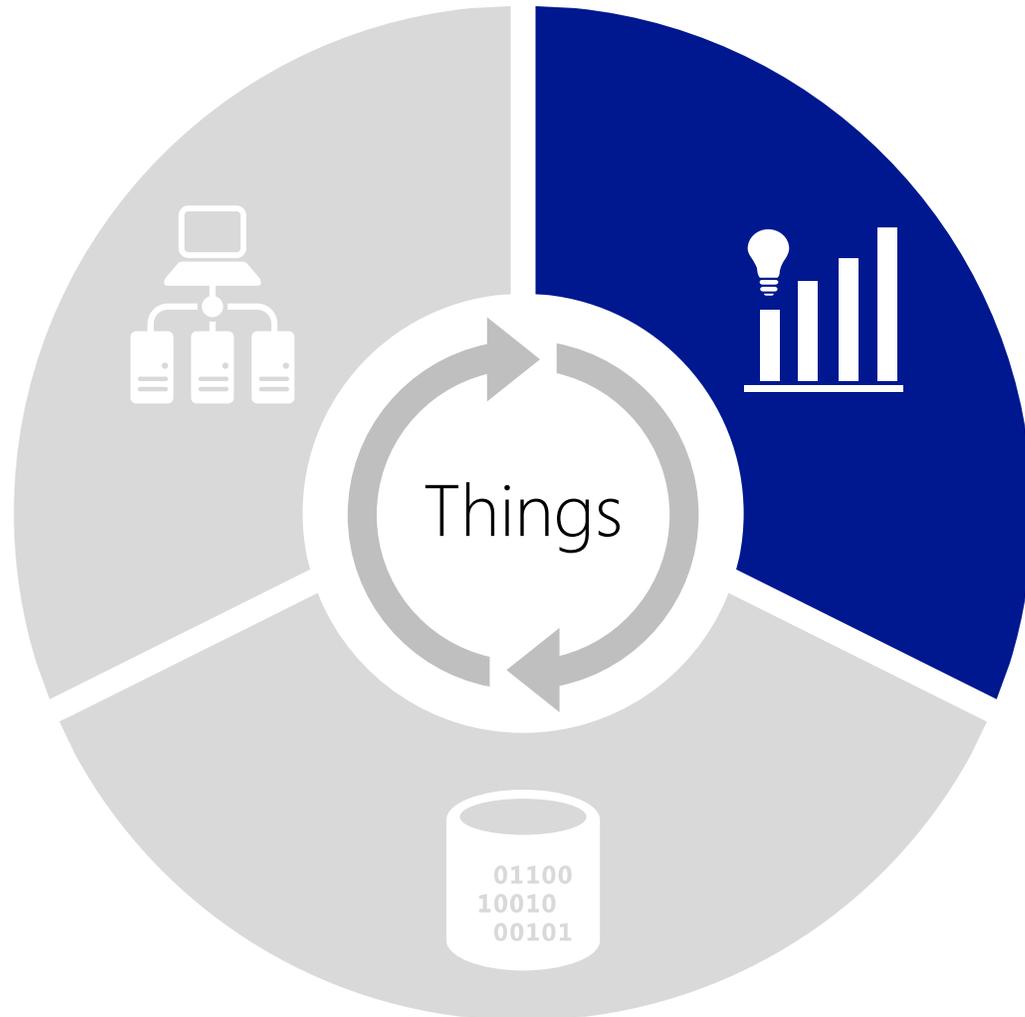
Monitor and track the health of your assets to reduce costs

Reduce the burden of connecting disparate line of business assets

Log millions of events per second in near real time

Establish rules and alerts for proactive monitoring

# Enable innovation



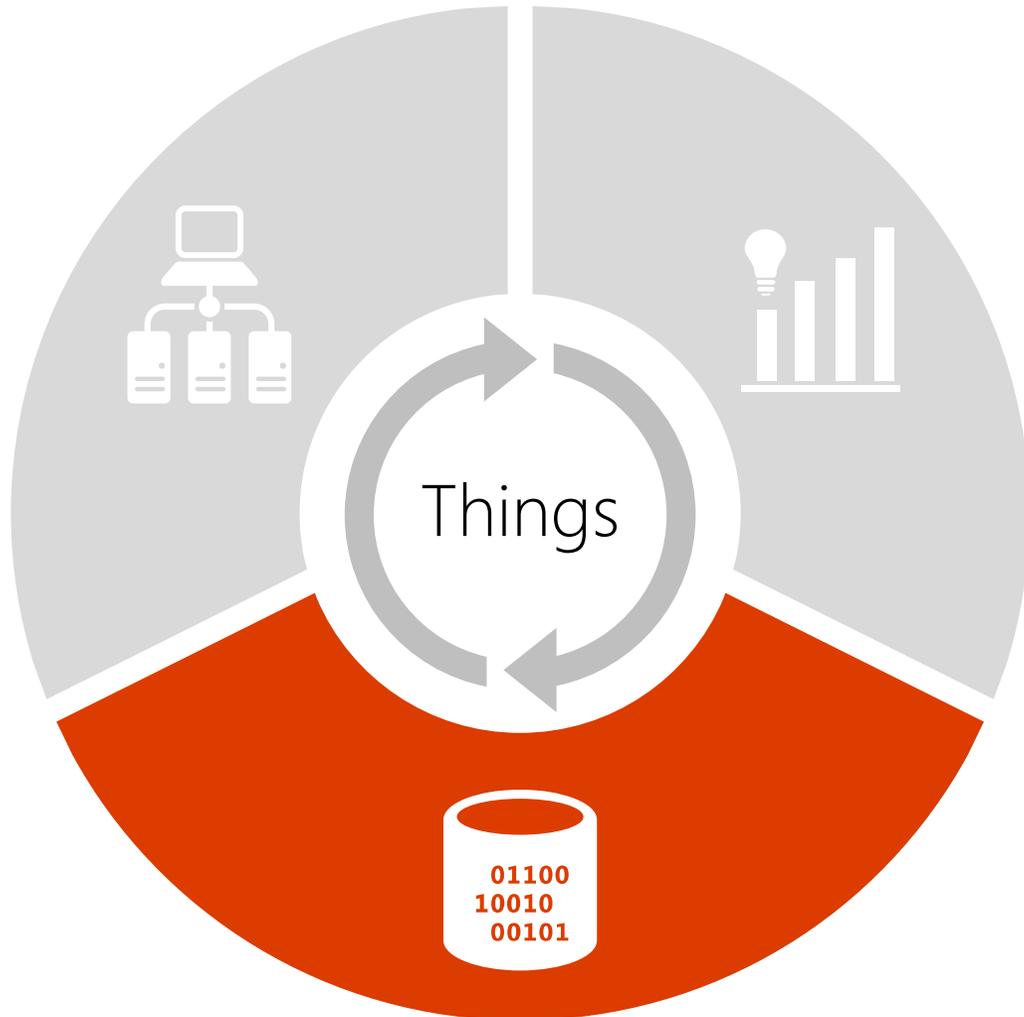
Analyze data from multiple sources in real time to drive revenue

Uncover real time insights from streaming data and events

Predict future outcomes by combining live operational data with historical data

Notify the right team or department in your business when action is needed

# Transform your business



Leverage advanced analytics to transform your business by creating new business models and revenue streams

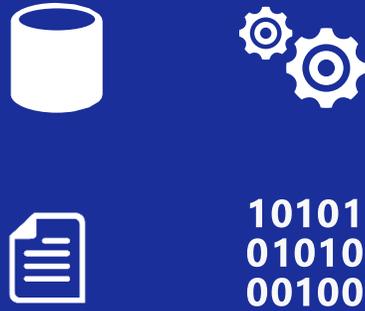
Microsoft's data platform and solutions empower enterprises to transform the raw data from its "things" into actionable insights and business results.

# Your things. Our services.

You have things...

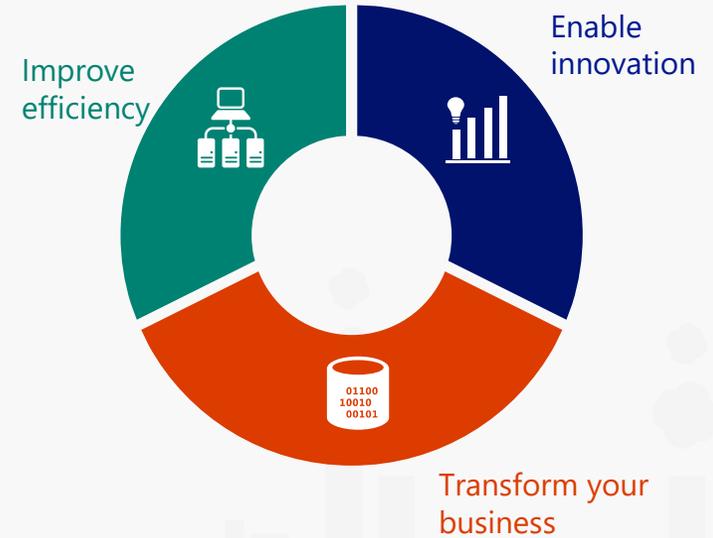


You have data...



10101  
01010  
00100

Microsoft has services that:



# Why Microsoft?

Microsoft has an enterprise grade cloud with global footprint



Microsoft has the technology that brings the Internet of Things to life



Microsoft supports a diverse ecosystem of partners and solutions



# Microsoft Enterprise Services



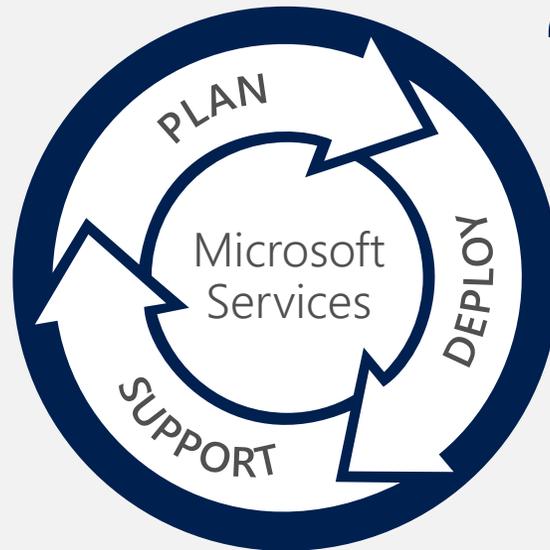
A Worldwide Footprint  
191 countries 46 languages

75% of the Fortune 1,000

35,000



Global Partners



20,000 employees worldwide

architects, engineers, consultants, and support professionals with the deepest expertise in Microsoft technologies

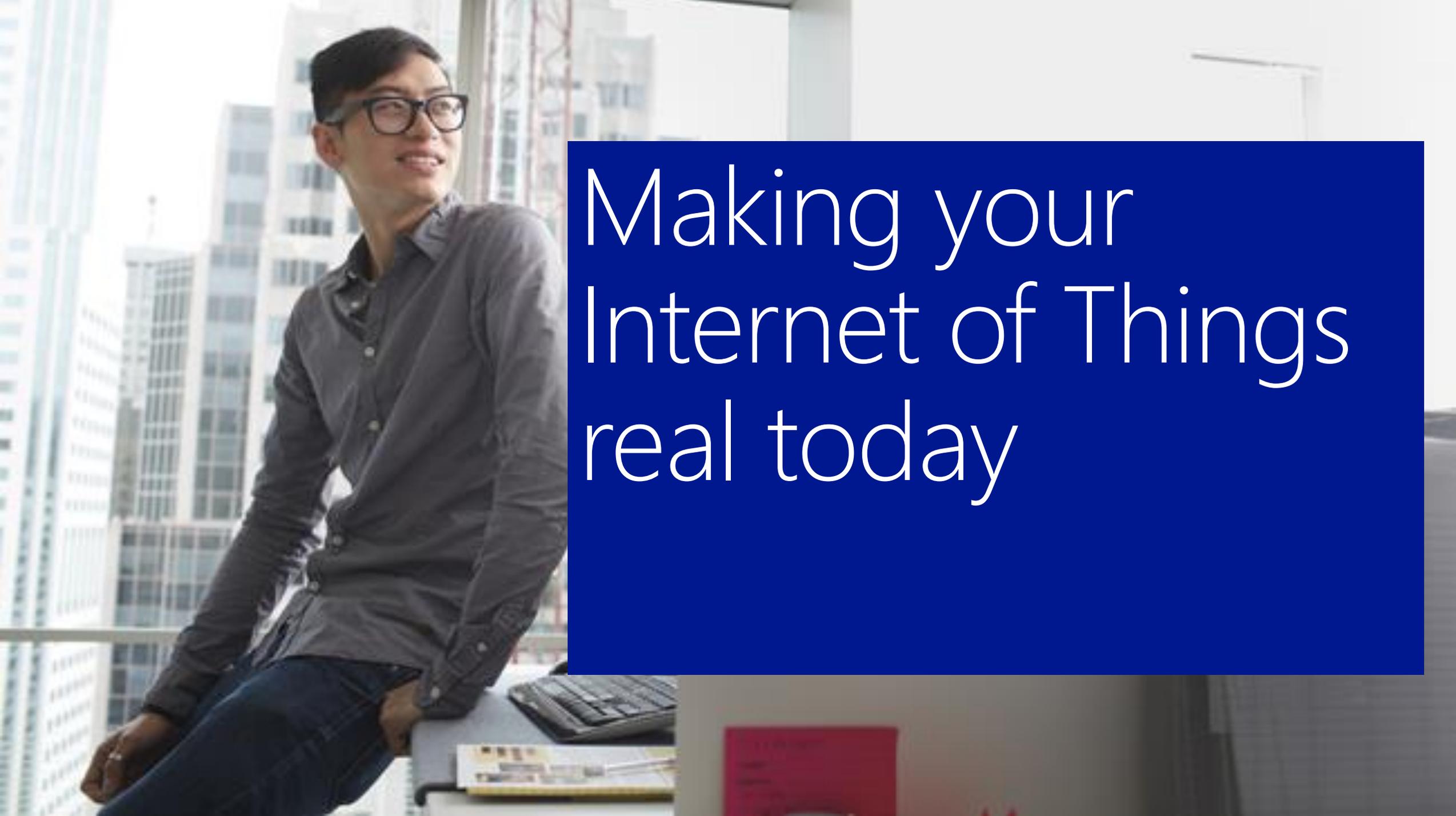


6,000

consultants & enterprise architects

5,000

Premier Support professionals

A man with dark hair and glasses, wearing a grey button-down shirt and dark pants, is sitting on a desk in an office. He is looking out a large window at a city skyline with several tall buildings. The scene is brightly lit, suggesting daytime. A computer keyboard and some papers are visible on the desk in front of him. A dark blue rectangular box is overlaid on the right side of the image, containing white text.

Making your  
Internet of Things  
real today



# The Internet of Things – Manufacturing



## MANUFACTURING PLANT

Monitor production flow in near-real time to eliminate waste and unnecessary work in process inventory.

Manage equipment remotely, using temperature limits and other settings to conserve energy and reduce costs.

Implement condition-based maintenance alerts to eliminate machine down-time and increase throughput.

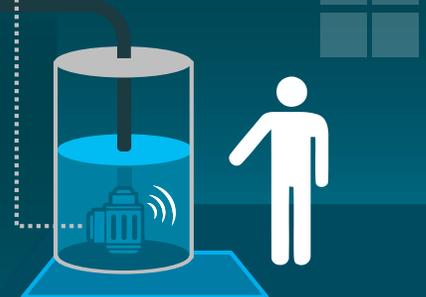
Aggregate product data, customer sentiment, and other third-party syndicated data to identify and correct quality issues.

## GLOBAL FACILITY INSIGHT



## CUSTOMER SITE

Transmits operational information to the partner (e.g. OEM) and to field service engineers for remote process automation and optimization.



Provide cross-channel visibility into inventories to optimize supply and reduce shared costs in the value chain.



## GLOBAL OPERATIONS

Management



I can see my production line status and recommend adjustments to better manage operational cost.

R&D



I gain insight into usage patterns from multiple customers and track equipment deterioration, enabling me to reengineer products for better performance.

Field Service



I know when to deploy the right resources for predictive maintenance to minimize equipment failures and reduce service cost.



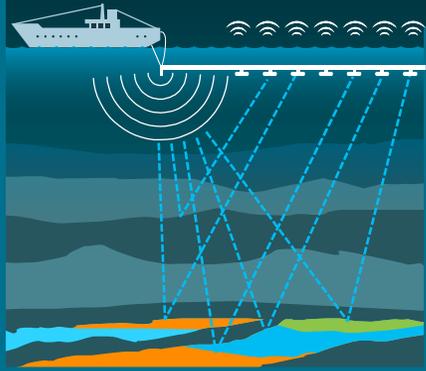
## THIRD-PARTY LOGISTICS



# The Internet of Things – Oil & Gas

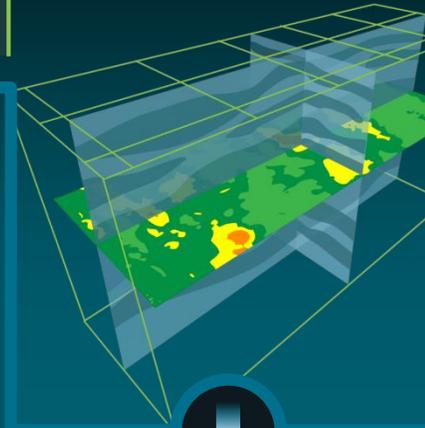
## 1. Exploration

Find new hydrocarbon reservoirs quicker with seismic data uploaded to the cloud and prepared for analysis



Consolidate data from surveys, drill logs, and external sources to generate advanced reservoir models and production forecasts

## 2. Development

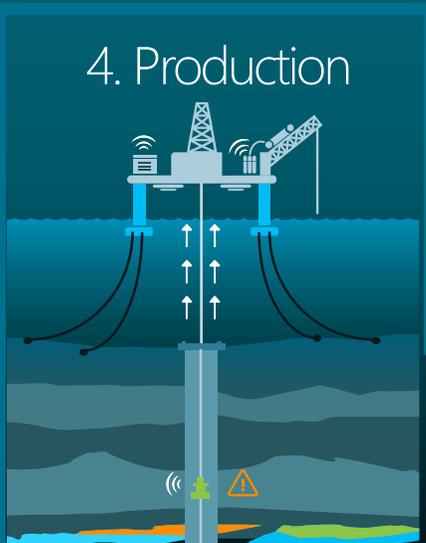


## Operations Control Center



## 4. Production

Maximize recovery by monitoring near real-time production data and generating alerts for conditional maintenance needs



Combine near real-time drilling and seismic data to optimize drilling trajectories and recovery potential, while minimizing environmental risk

## 3. Drilling



Production Manager



Integrate all upstream data onto a unified platform to facilitate analytics, information sharing, and organizational transition

Geologist



Utilize advanced 3D and 4D visualizations based on analytic algorithms to model subsurface geology

Onsite personnel



Establish near real-time communication and automatically publish events and alarms to the field to guide and protect onsite personnel and assets



# The Internet of Things – Auto



OEM

R&D



Gain insight into vehicle feature use patterns to improve designs



Use remote diagnostics to reengineer products for better performance

Marketing



Customize marketing with advanced product usage data

Improve brand loyalty with an ongoing customer relationship and differentiated services



Offer rich connected consumer services



DISCOUNTED EXTENDED WARRANTIES AVAILABLE



Send extended warranty offers based on driving behavior



REPLACE BRAKES  
Discounted service available



Provide customers with peace of mind regarding vehicle functionality

SAFE DRIVER DISCOUNT



DEALERSHIP

Capture more of the repair market by sending alerts for proactive maintenance needs



THIRD-PARTY SERVICES

Insurance Provider



Enable pay-as-you-go and other scenarios leveraging connected car data



Smart Charging



# The Internet of Things – Pharma

## R&D



## Manufacturing

Manage equipment remotely, using appropriate KPIs

Reduce machine downtime with condition-based maintenance alerts

Develop better products, faster, informed by a much larger data set based on patient outcomes

## Distribution

Enable advanced product tracking and authentication to prevent counterfeits

## Customer Service



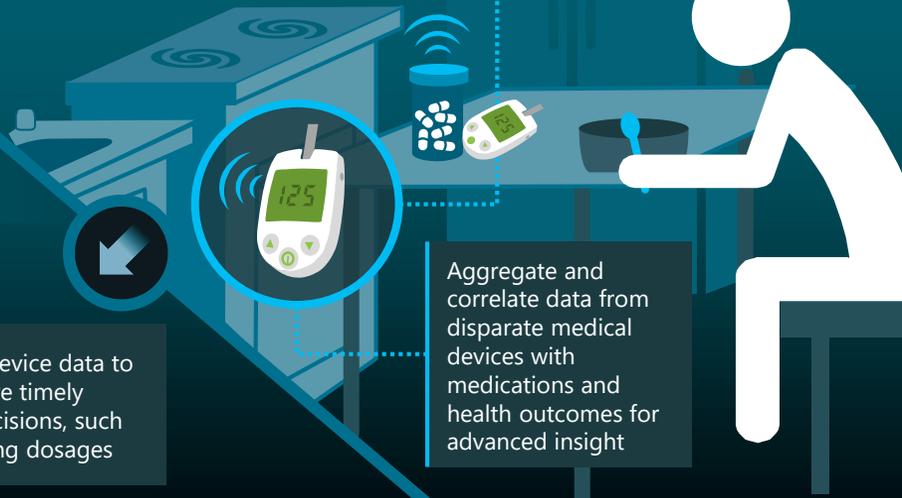
Anticipate medical device maintenance needs, and alert patients to schedule a doctor visit for replacement or repair

## Healthcare Provider



Monitor device data to make more timely health decisions, such as adjusting dosages

## Patient Home

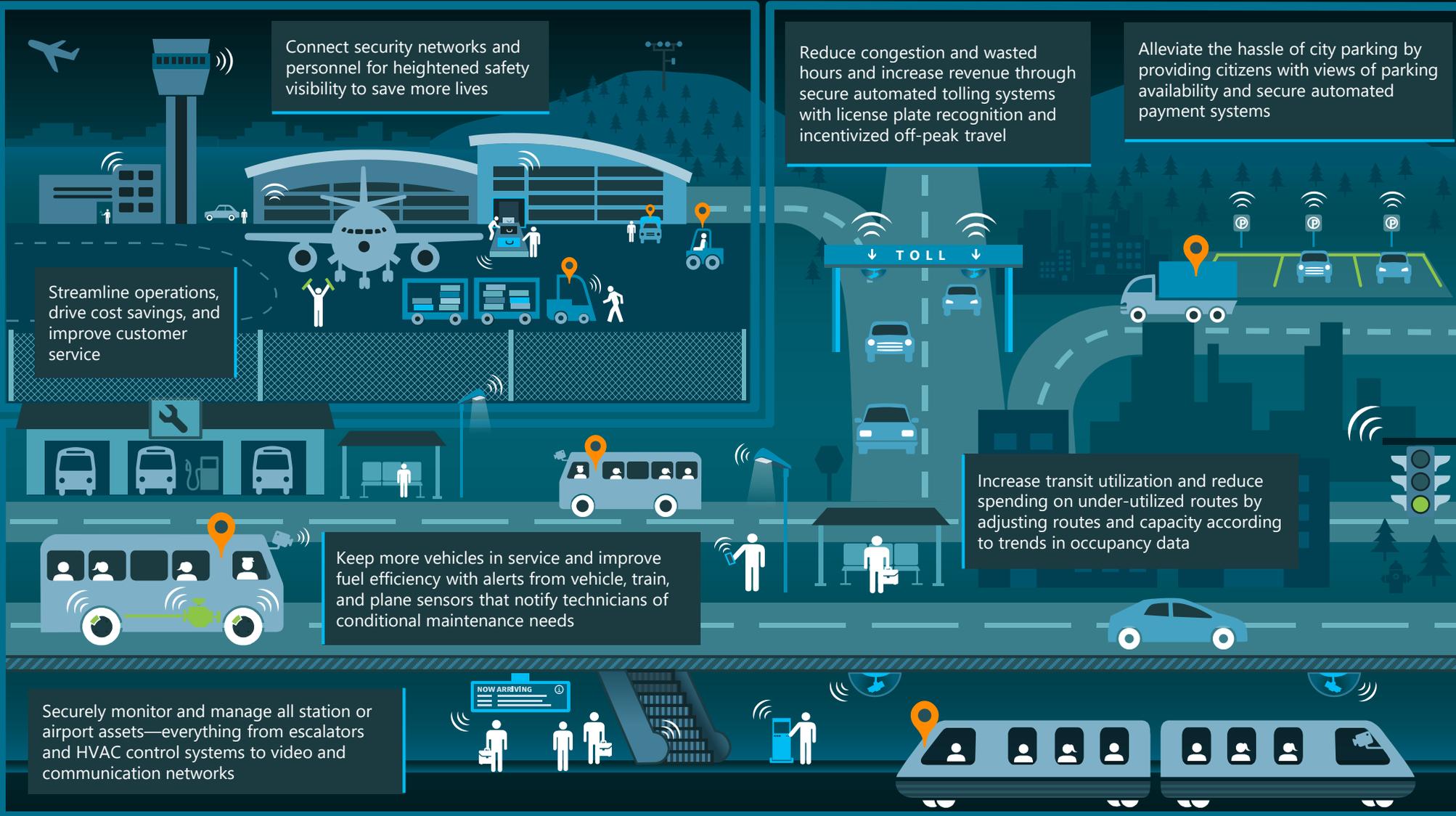


Aggregate and correlate data from disparate medical devices with medications and health outcomes for advanced insight





# The Internet of Things – Public Sector Transportation



**City Manager**

Ease congestion to save wasted hours and dollars, and increase environmental awareness for cleaner air and a smaller carbon footprint

**Fleet Manager**

Centrally monitor fleets, and improve performance and decrease maintenance costs by analyzing data across the system

**Citizen**

Provide citizens with better transit experiences—from supplying information on digital signs to offering services on citizens' mobile devices



# The Internet of Things – Water



Water

Integrate with a variety of data sources to track conservation efforts and gain insights to improve existing operations.



Increase facilities asset visibility and improve performance with convenient dashboards and performance data analytics.



Use near real-time data on weather and local events to anticipate changes in resource availability or need.

Manage water and energy sources from a remote location, controlling flow and usage by setting automated responses.

Leverage historical usage data to forecast need and collaborate with third-party water providers to meet demand.

Provide citizens greater visibility of residential and community resource consumption, to drive people-first conservation efforts.

City Leaders



Use data to drive uncover insights that drive policy change, improve procedures, and increase service to citizens.

Worker



Track conservation efforts and improve billing accuracy by reading all types of water meters more frequently.

Citizen



Collaborate with interested citizens on consumption reporting for individuals and neighborhoods.



# The Internet of Things – Healthcare



## PATIENT HOME



## HOSPITAL



## OUTPATIENT FACILITY

Monitor patient conditions with in-home medical devices that alert care team staff when a health event occurs.

Enable an interactive experience between patients and collaborative care teams, and reduce response times by providing remote access to the latest patient data.

Connect patient data to contextual data, so the latest patient data automatically displays on care provider devices based on their location and role.

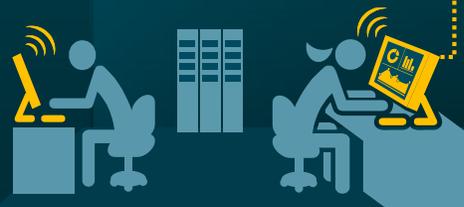
Make authorized patient data accessible from a unified point, enabling a holistic view of the patient's journey so providers can optimize each care interaction.



Transform the vehicle into a smart environment that monitors health indicators.

Combine data from various sources to uncover insights that enable an enhanced patient journey, improved operational efficiency, and better risk management.

Make patient data visible and actionable in near real-time, enabling improved outcomes through data-driven decision making, better coordination and error reduction.



## HEALTHCARE ECOSYSTEM

Integrate data from existing and non-traditional sources to drive Big Data analytics, enabling care process innovation and healthcare transformation.





# The Internet of Things – Retail





# The Internet of Things – CPG



## Retail Environment

Track inventory location and shipping status end-to-end to maintain on-shelf availability and reduce out-of-stocks.

Dynamically manage digital promotions on vending machines, and display content tailored to specific audiences.



Upload geotagged photos of retail displays to verify trade compliance, and enable automatic comparisons to the planogram, reducing the time required for audits.

Integrate data from smart shelves with point of sale and trade promotions data to determine the most productive merchandising treatments within stores.



## Customer Home

Transmit data on product use and consumer behavior to enable improvements in product design.

Track consumer interactions with a brand across channels to better target campaigns and understand purchasing patterns.



## Global Ops

### Customer Insights

Develop a 360° view of customer experiences, better understand brand sentiment, segment buyers and determine lifetime value.



### R&D

Use data-driven insights to identify new product opportunities and reengineer products for better performance.



### War Room

Aggregate data from suppliers, vehicles, stores, homes, social media and third-party data sources to create a demand signal repository and enable reengineering and supply chain visibility.

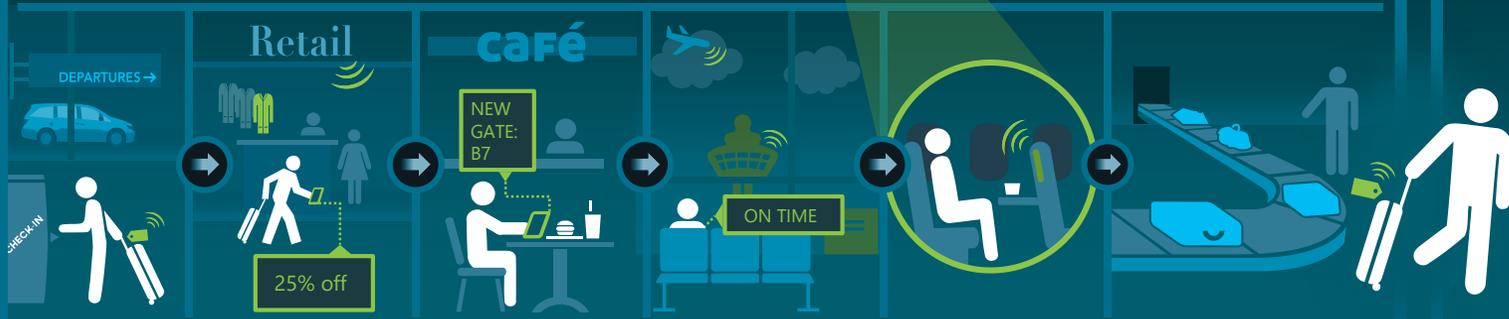


# The Internet of Things – Hospitality & Travel

Provide a seamless traveler experience from the curb to the gate, and enable context-sensitive notifications



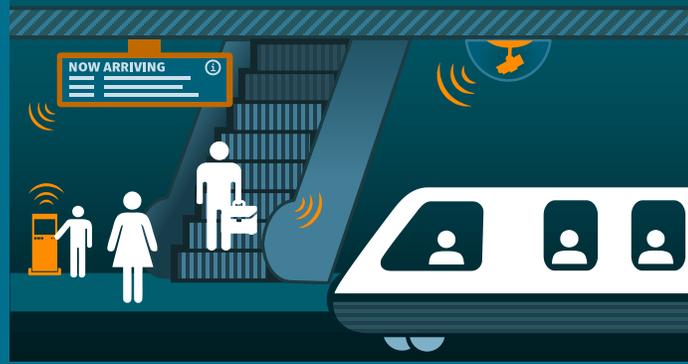
Save money with more accurate arrival time predictions



Provide guests with a connected tablet to control room settings, request services, and provide feedback—and save their preferences

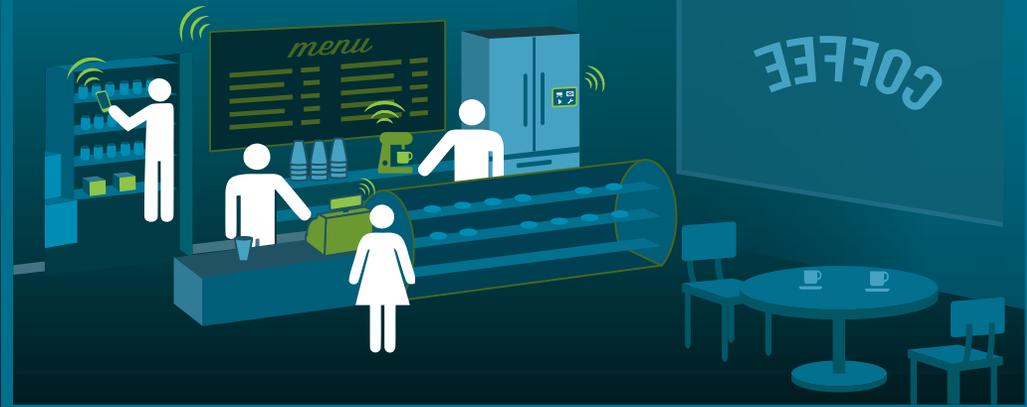


Centrally manage critical station assets—everything from communication and security networks to escalators and HVAC control systems



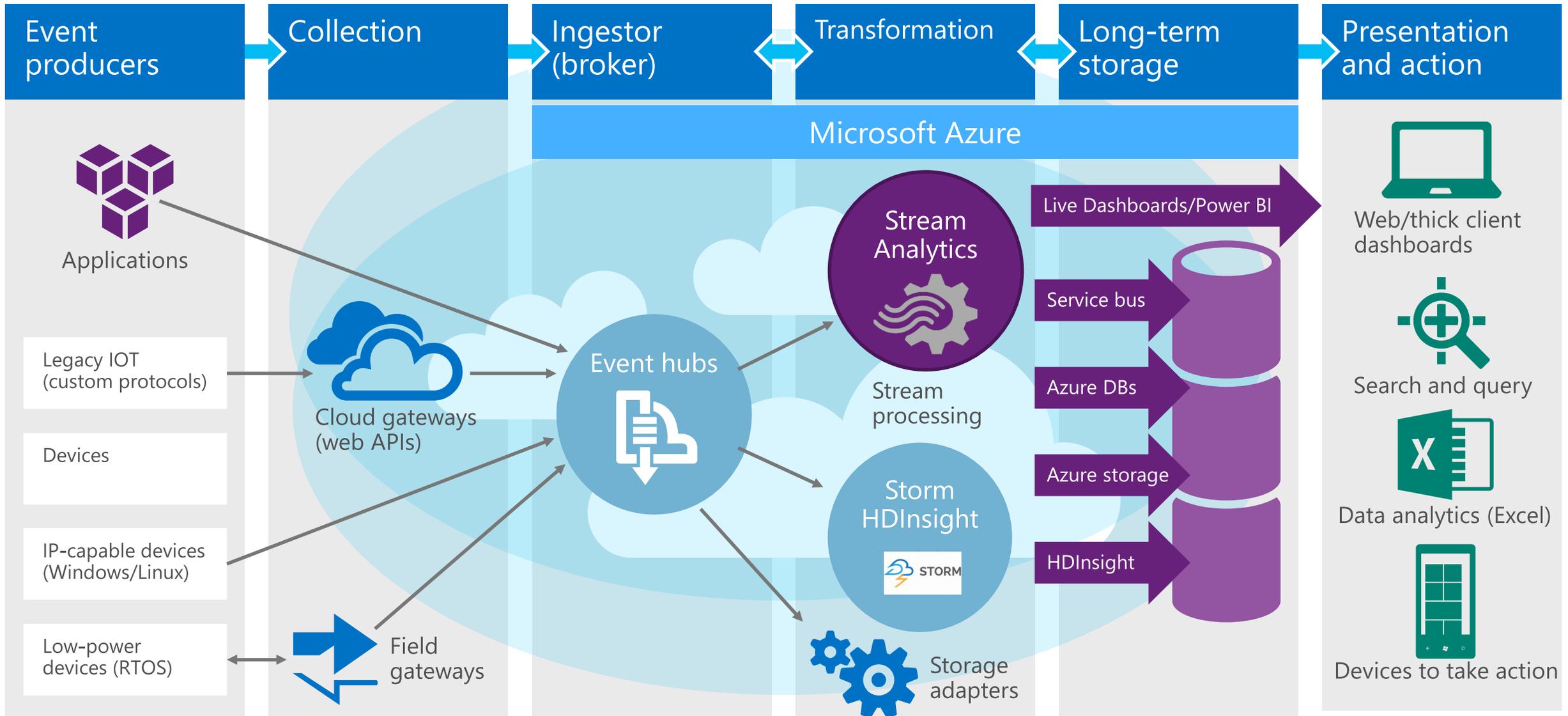
Manage inventory in near real time, and monitor food storage temperatures and expirations

Configure notifications on employee devices of restaurant equipment maintenance needs



Send reports and sensor data to maintenance crews for faster turnaround

# Microsoft Azure IoT Suite: End-to-end stream processing



# Microsoft Azure IoT Suite: Core Technologies

Producers	Event Ingestion	Storage	Transformation	Presentation & action
	 Event Hubs (Service Bus)	 SQL Database	 Azure ML	 Azure Websites
	 Heterogeneous client agents	 Table/Blob Storage	 HD Insight	 Mobile Services
	 Azure Data Factory	 DocumentDB	 Stream Analytics	 Power BI, O365, Dynamics

# Key Concepts

The Internet of Things is happening **now**

Microsoft and our partners have the technology and the experience to make it a reality

Let's work together to transform your business with the Internet of **Your Things**

