Microsoft Azure

Connect your data to your decision making

The IoT Guide for Business Leaders

Contents

01.
Introduction

Lowering the costs of production and operations, creating new revenue streams, and increasing customer satisfaction and loyalty are all paths to greater success and profit.

Each one requires in-depth knowledge of your own business and your customers, and then using that unique information to make business decisions that move the needle on revenue and create competitive differentiation. You can be the hero who makes it possible for your organization to achieve more success by using your hidden data to improve operations, efficiency, and decision making.

What if you could harness the equipment you already have and use it to gather data that reveals new insights? Your industrial machines, trucks, products in the field, and even your buildings can all gather, send, **and process data**, creating an invisible workforce ready to be deployed in a number of scenarios:

- **Remote monitoring**—Capture data from distant devices, and connect it to your business systems.

- **Connected manufacturing**—Generate more profit out of your process at every step.

- **Predictive maintenance**—Avoid problems before they happen based on real-world conditions.

- **Facilities management**—Make your spaces work harder for your business.

- **Fleet management**—Track, maintain, and optimize vehicle use.

02.
What exactly is IoT?

Put simply, the Internet of Things (IoT) is just that. Your things—machines, trucks, products, any kind of device or durable good—are outfitted with data collection and transmission capability.

All your things are connected through the internet, so your business systems can receive and analyze that data. Then you can act on the data, by discrete decisions, or in an automated way that's triggered by a specific set of conditions. Sounds good, right? It gets better.

The real magic happens when you get the chance to look at that data— really analyze it—for insights about your business, your customers, and your processes. Your equipment can tell you a lot that you won't find out any other way. And you can turn those insights into a real competitive advantage. You can even apply artificial intelligence and machine learning to the data and discover insights you might never detect on your own.

$267 billion

Predicted spend on IoT by manufacturers by 2020[1]

+ $100 million

$100

Average increase in operating income among the most digitally transformed enterprises[2]

25.1 billion

Gartner predicts 25.1 billion installed IoT units by the end of 2021[3]

03.

Solve business issues with your own data

You may already see potential for IoT in your business. Let's take a look at some common use cases across businesses in many industries.

Remote monitoring

This is IoT 101, the most common scenario that can apply to many business situations. Sensors in products or systems remotely collect data about conditions, performance, or other issues, and transmit them continuously or at regular intervals. So you can monitor remote equipment to reduce service costs, improve up-time, and increase customer satisfaction.
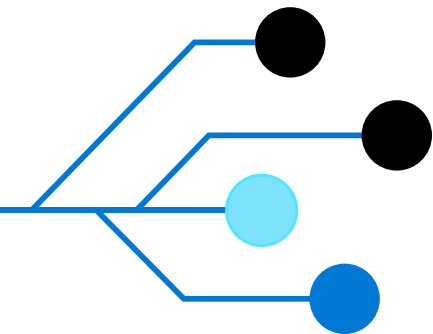
For example, with remote monitoring you can:

- Know how your products are performing and provide better customer service
- Determine if your remote device is still where it's supposed to be
- Combine data from multiple sensors to glean decision-making insights

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The ability to maximize optimal operating conditions, minimize downtime, and lower lifetime ownership costs supports our belief in offering customers the highest-quality beverages and best overall value in dispensed beverage equipment.

Hy Bunn
CEO and President
BUNN[4]

Connected manufacturing

Every manufacturing business is different, but many manufacturing processes are similar on a basic level. Raw materials or parts at the beginning, a series of tooling or assembly steps in the middle, and a finished product at the end. Every step in that chain has associated data about speed, efficiency, breakdowns, temperature, fluid levels, shift changes, and human interventions.
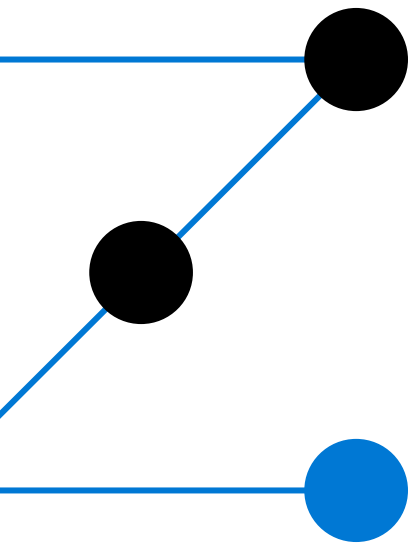
With embedded devices and sensors, you can learn from your own systems and glean insights about how best to manage the process, including:

- Scheduling maintenance during slower times and predicting breakdowns before they happen
- Identifying subtle bottlenecks that sap efficiency so you can optimize your process
- Weeding out substandard raw materials, parts, or manufacturing errors before the product is complete

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Since deploying the Microsoft predictive analytics solutions, we have seen at least an 80% accuracy rate in the prediction of machine processes that will slow down or fail, contributing to a scrap and rework savings of 17 percent.

Clint Belinsky
Vice President, Global Quality
Jabil[5]

Predictive maintenance

What if you knew in advance that a part was likely to break based on the time it had been in use, or the conditions it's been working under? Sensors in equipment monitor conditions, you collect that data, and machine learning software uses that data to predict when maintenance should be proactively performed to avoid a breakdown. The more data you gather over time, the more accurate the predictions become, so efficiency keeps improving over time.
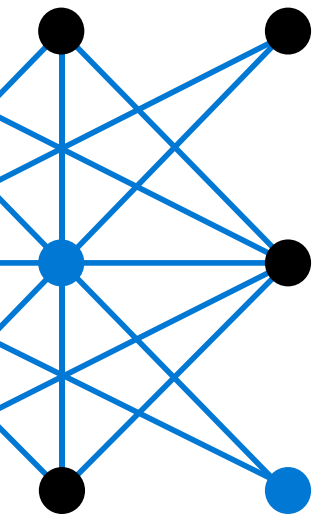
With predictive maintenance, you can:

- Schedule the most appropriate technician, with the right parts, at the right time
- Figure out which conditions are causing failures and slow-downs
- Be prepared with adequate parts inventory for issues before they happen

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The more data we have, the more we can learn and put together algorithms to predict problems.

Doug Weber
Business Manager, Remote Application Monitoring
Rockwell Automation[6]

Facilities management

In this scenario, your facilities collect data that you can then use to make better decisions to optimize energy consumption, space utilization, and even employee experiences. It could be lighting on the manufacturing floor, climate control in an office building, or virtually any other condition a sensor can detect. You can also create a digital representation of a physical environment, and model the relationships between people, places, and devices, based on real-world data.

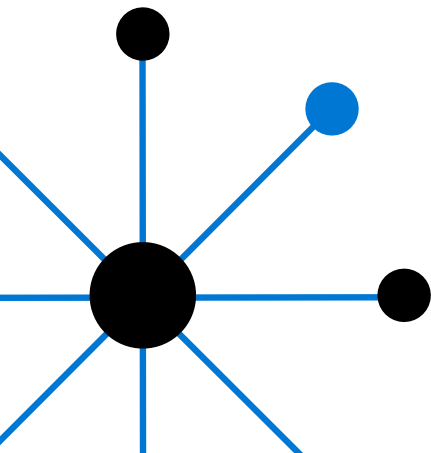The possibilities for facilities management include:

- Improving employee and occupant satisfaction and morale with smart spaces that increase productivity and comfort
- Dimming lights, automating thermostats, or planning meeting and office space based on elevator usage patterns
- Building repeatable, scalable models that combine data from digital sources and the physical world

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If one of the connected chillers does shut down, it comes back online nine times faster than unconnected equipment because we now have all of this information about what happened, the root cause, and what needs to be tested.

Sudhi Sinha
Vice President of Product Development
Johnson Controls[7]

Fleet management

Similar to monitoring manufacturing lines or products in the field, your vehicles can be monitored as well—trucks, cars, planes, forklifts, and almost anything that moves. In addition to predicting maintenance needs, you can also track locations, mileage, and a host of other conditions that might impact your business. Not only can you resource vehicles appropriately based on predictive data, but you can also maintain them properly and even potentially save on insurance costs.
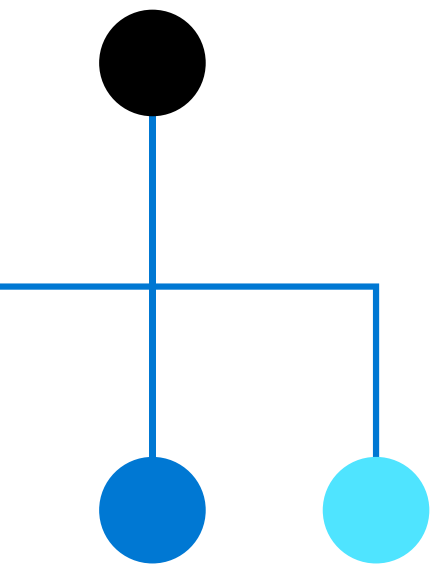
IoT-enabled fleet management lets you:

- Optimize the routing of vehicles to reduce fuel costs, wear and tear, and relocation needs
- Know where every truck is at any given moment for stronger security and employee safety
- Employ robotic or self-driving vehicles for routine tasks with remote supervision

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We started with one problem, and we've already solved three or four. TrackingForLess is going to be a game-changer for our company. It's going to allow us to grow on a scale that we never have before.

Tyler Levato
Operations
Quality Logistics[8]

04.
Get the ROI you need

While reducing operational costs is a major focus of IoT solutions, that same cost-reduction solution may also be able to generate increased revenue.

As data is collected and analyzed, new trends may reveal new revenue opportunities. Organizations with more sophisticated data and analytics capabilities are able to harness that data to deliver more value to the business, including stronger customer engagement, better business optimization, and improved product design processes.

These organizations are:

- 2.5x more likely to harness real-time data and analytics to deliver tailored customer experiences
- 2.3x more likely to use predictive modeling to anticipate customer support requests
- 2.3x more likely to inform product design by capturing data on how their products are used[9]

There are a lot of variables to consider when implementing an IoT solution. The place to start is with your challenges. What are you trying to solve? Then you can look at the costs associated with that issue now, the IoT investment required, and the expected savings for comparison.

The good news is, you don't have to figure it all out yourself. Many options are available to help you control costs and get the ROI you need. A trusted technology partner can help you look realistically at the process and propose solutions that fit your needs and budget—everything from simple device sensors connected to your existing systems, to a fully managed solution priced per device, so you know exactly what it will cost now and in the future.

05.
Starting is easier than you think

Many organizations, especially small and medium-sized ones, see technology costs and complexity as overwhelming.

But it doesn't have to be that way. IoT can provide amazing ROI, even implemented on a relatively small scale to start. In fact, starting small is a great strategy as a proof of concept. You can scale over time, making additional investments where they make the most sense for your business. Once the initial deployment is running smoothly, you can scale out.

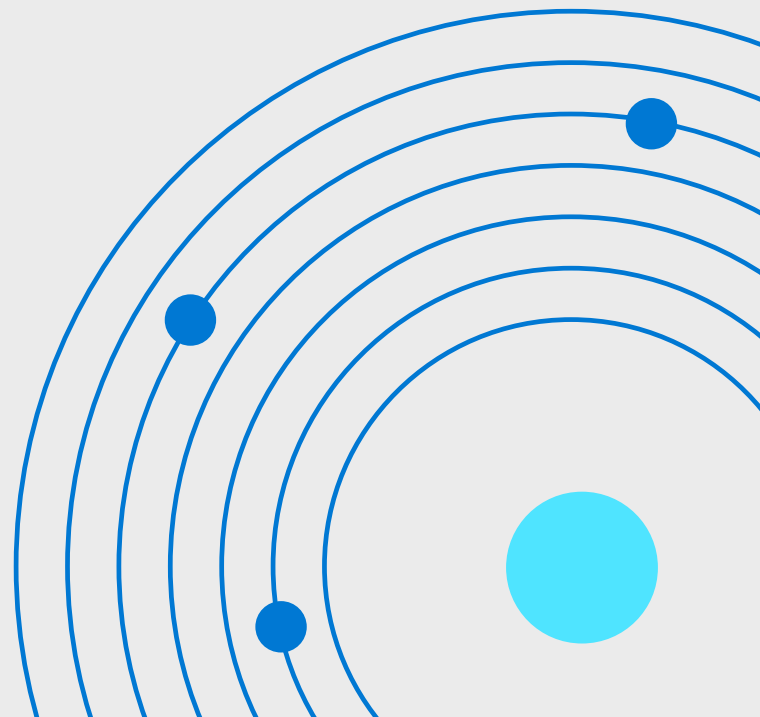| Start small, and start fast	Scale out to production	Extend to new scenarios

As you continue to fine-tune the solution, you can evaluate adding new scenarios to extend the benefits of IoT across your business. The best part will be the benefits you weren't expecting—the insight your data revealed that you couldn't have predicted. The one that puts you a step ahead of competitors, and saved or made money in a way you hadn't thought about. After all, that's what digital transformation is all about.

06.

Keep it safe

Worried about security for all those Internet-connected devices? All those potential points of infiltration?

That's OK—and reasonable. But it shouldn't stop you from taking advantage of IoT to improve your business. It does mean you should choose your technology partners carefully. Security should be built into every step of the process to help protect your equipment, your data, your network, and your business.

07.
Trust Azure IoT

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What truly impressed me with our Microsoft collaboration was that it was not about selling us a product. It was about building something and addressing the world's water challenge together.
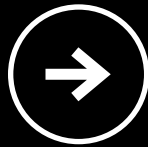
Christophe Beck
Executive Vice President and President
Nalco Water, an Ecolab Company[10]

A proven technology leader with a commitment to the highest levels of trust, transparency, and compliance, Microsoft builds security into every level of our products and services. Azure IoT offers a full range of secured solutions—with predictable pricing—for all the most common IoT scenarios, simplifying decision making, planning, and implementation. We know how important it is to meet you where you are, start small and scale on success, and offer options for whatever degree of automation or control you want for your business.

Our technology is built on decades of experience empowering businesses from the front office to the factory floor, and everywhere in between. With the largest partner ecosystem in the world and a proven track record of success in IoT, Microsoft is ready to address your business needs and technology challenges—and will be here to continue supporting your growth in the future.

Find a partner to help you get started

Contact us to learn more about Azure IoT

[1] https://www.businessinsider.com/internet-of-things-in-manufacturing-2016-10

[2] Keystone Strategy interviews October 2015 - March 2016; Incremental operating income of $100M is based on median company revenue of $3.4B

[3] Gartner Getting Started: How to Strategize, Prepare, Plan and Manage Enterprise IoT Projects, Emil Berthelsen, Peter Havart-Simkin, 12 April 2018

[4] https://customers.microsoft.com/story/now-the-clouds-in-your-coffee-improving-beverage-servi

[5] https://www.jabil.com/insights/blog-main/microsoft-and-jabil-collaborate-to-create-predictive-analytics-quality-assurance-platform.html

[6] https://customers.microsoft.com/story/fueling-the-oil-and-gas-industry-with-iot-1

[7] https://customers.microsoft.com/story/connecting-buildings-to-the-cloud-for-a-greener-planet

[8] https://customers.microsoft.com/story/quality-logistics-azure-united-states-synnex-corporation

[9] Keystone Strategy interviews Oct 2015 - Mar 2016

[10] https://customers.microsoft.com/story/ecolabcustomerstory