




Lessons learned: Insights for earning business value with IoT

More and more companies are connecting physical “things” to the cloud so they can improve efficiency and create new value. As solutions for remote monitoring, connected factories, predictive maintenance, and more have proliferated, the concept of the Internet of Things (IoT) has frequently made headlines.

Companies that are embracing and innovating with IoT have a head start on their competition and are building business value. Meanwhile, less agile companies are falling behind.

Yet while the value is real, so are the challenges. In working with thousands of companies across industries and geographies, we've seen the difficulties they face in getting IoT from idea to reality—and how successful solutions can overcome these difficulties.

The hardest part of IoT is usually not the technology. Most failures happen due to operational or organizational issues, such as:

-  Connecting devices or collecting data without a clearly defined business case
-  Incomplete understanding of how end users will engage with the solution
-  Not engaging people early enough, especially those who will be directly affected



Solving these issues requires decision makers and technology professionals to work together effectively. This guide provides insights distilled from our experiences. It's meant to be actively used and shared as a guide to productive conversations with your technical counterparts.

Start with the end in mind

One smart city initiative succeeded in connecting traffic lights to the cloud using an IoT approach. The project was declared a success initially, but two years later, the city still hadn't figured out how to improve traffic using its connected signals.

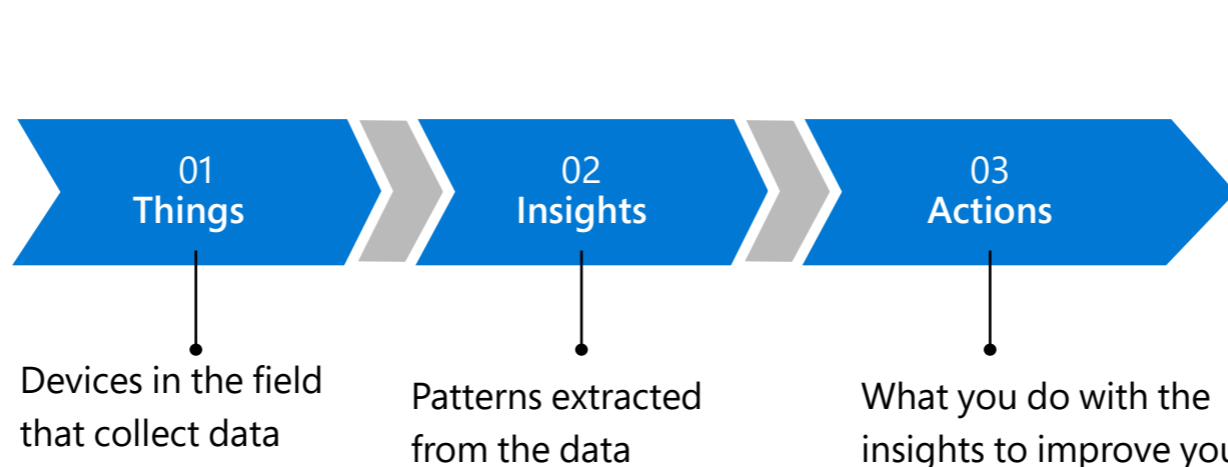
Get laser-focused on your business objective

IoT has so much potential that it's tempting to connect things now and then hope to get value later. This is almost always a dead end. In our experience, successful IoT projects start by pinning down how they will create new revenue streams, reduce operational costs, or both.

- Examples:**
-  **New revenue streams**
Service and support
Pay-as-you-go models
Sales of data and insights
 -  **Reduced operational costs**
Preventive maintenance
Supply chain efficiencies
Energy savings

Consider the complete IoT value chain

Something else the smart city stakeholders failed to consider is that IoT is more than just connected “things.” They didn't plan for the other critical components: insights and actions. It takes all three to make IoT work, and companies get better results when all are considered from the beginning.



What actions are you going to take from the data?

Actions are the part of IoT that drive bottom-line results. Knowing exactly what you want to do at the end of the value chain helps shape it from the start. There are three broad categories of actions to consider, each with different implications for your solution.

- Examples:**
- 01 Reporting**
Viewing equipment performance and status in real time
 - 02 Integration**
Automating business actions such as customer notifications
 - 03 Control**
Managing equipment and operations

Questions to ask your tech team

- Does the business case look realistic from a technical perspective?
- What technology costs should we consider, both upfront and ongoing?
- Are we going to use existing devices or do we need to invest in new ones?
- What level of action is required to achieve the business goals—reporting, integration, or control?
- How can we measure the effectiveness of the solution and gather the right data to prove it?

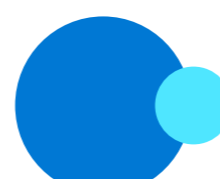
Understand the impact

Seeking to increase sales, an ice cream manufacturer designed an IoT system that tracked how long shoppers took to choose a product and what they bought, and then responded with custom coupons and social offers displayed on a screen. Unfortunately, store chains refused the system. They were concerned that it would negatively affect shoppers' experiences because it took up too much space in the aisle, was not compatible with the stores' existing systems, and made offers they couldn't support.



Know the user

At the end of all the work that goes into creating an IoT solution, somebody has to actually be able to use it. If it gets in the way of more critical functions, it will be dead on arrival. Companies that are successful at IoT build the user experience into their earliest discussions. They also talk to users and stakeholders throughout the process to ensure the final product will meet their needs.



Investigate the impact

IoT crosses traditional silos of operations, IT, and the business. Without careful consideration, it can have unintended ripple effects whether it's eating up network bandwidth or requiring service personnel to divert their activities. You can't predict everything, but it pays to look beyond the confines of the IoT solution itself to every layer of your organization.

Questions to ask your tech team

- Do we have user experience research or personas that could guide the design?
- What challenges do users have today that could be solved using an IoT approach—and what new challenges could it create?
- Where will the devices be installed and how will they be supported?
- What user experience design approaches can we use to ensure the solution works for end users?
- Do we have the resources to support people as they adopt and use this technology?
- How can we enable continuous feedback and improvement over time?
- What other systems and processes could be affected as we implement the IoT solution?





Embrace your stakeholders

An automaker wanted to connect its assembly line to enable predictive maintenance. IT delivered a solution that required shutting down the equipment during software updates. The operations team rejected it because the factory would lose \$1 million per hour of downtime. The operations team delivered a solution that didn't use standard security protocols, so IT vetoed it. The project stalled indefinitely.

Build a broad team

Lack of early and frequent communication is a frequent source of problems for IoT projects. Getting the right people on board greatly accelerates results.

Make sure to include:

-  IT and operations
-  Data scientists and business analysts to inform insights
-  Sales and marketing, especially if IoT is affecting the customer experience or creating new products or services
-  External partners, such as system integrators, who need clear direction and success metrics

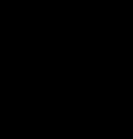
Address fears

Even with a clear use case, IoT can be intimidating. Costs and timelines have many unknowns, and IoT has the potential to disrupt entire business models. Identifying

and addressing these concerns can help clear the way. Successful IoT teams find ways to articulate the positive benefits of the solution for each case.

Questions to ask your tech team

- What skills do we have in house that we can use to drive this solution forward?
- How can we demonstrate the benefits of the solution to each set of stakeholders?
- Are there technology approaches that can mitigate typical concerns or fears that could hold the solution back, such as security, compliance, and complexity?
- Can we deliver visibility into IoT success using existing scorecards and reporting?
- Should we use a partner, and how should we evaluate them?
- How can we minimize the burden of IoT on IT and operations?



The right partner can make all the difference

Technology that connects things, insights, and actions to create impact is at the heart of IoT. Chances are your competitors are doing something about it. Are you? And are you trying to do it on your own? Just as important is having a partner that understands the broader organizational and operational challenges and how to address them.

everyone in your organization, whether that's a compliance-ready, easy-to-manage platform for IT, or familiar workplace experiences for end users. We know what it takes to make IoT work in the real world. And, with our extensive partner network, you have resources to help with almost any use case.

Microsoft IoT solutions are built from the ground up to help you make IoT work for

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