

Drive digital transformation of your business with Microsoft Azure

EXECUTIVE SUMMARY

Technology has been transforming business ever since the invention of the wheel. But in recent years, the business landscape has changed fundamentally due to the unique convergence of three things:

1. Increasing volumes of data, particularly driven by the digitization of “things” and advances in data analytics used to draw actionable insight from that data
2. The rise of cloud computing, which places limitless computing and storage power into the hands of organizations of all sizes, increasing the pace of innovation and competition
3. The explosion and ubiquity of mobile computing

The convergence of these factors has shifted both what customers expect, because of access to unprecedented amounts of information, and what companies must deliver to meet those expectations.

In this new competitive landscape, every company becomes an information company—meaning, they need to infuse their products and services with intelligence and a Digital Feedback Loop that connects them to their customers in a continuous and virtuous cycle of improvement. Whether your business is construction, real estate, finance, or agriculture, your success will hinge on how well you use information to:

- Become more engaged with your customers
- Empower your employees
- Optimize your operations
- Transform your products and services using digital content

The dimensions aren't new, but what has changed is the role that intelligent software systems now play, providing better insight from data and enabling people to convert that insight into intelligent action.

With its global network of cloud datacenters, rapidly expanding portfolio of cloud services, and an established presence in both consumer and business spheres, Microsoft is uniquely qualified to help you transform your business for the digital age.

WHY EVERY BUSINESS NEEDS TO TRANSFORM

While software has supported business operations for a long time, the business landscape has changed in a fundamental way because of the convergence of the triple disruptors of big data, cloud computing, and mobile.

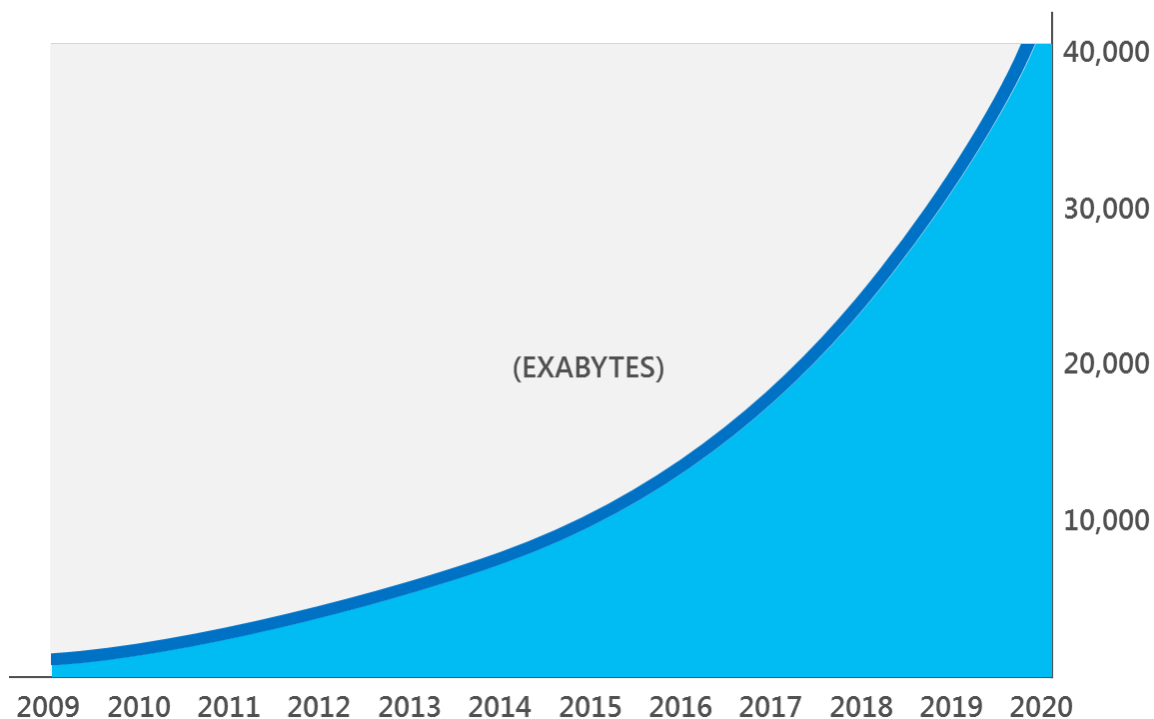
1. **Big data** has particularly driven the digitization of “things” and advances in data analytics and intelligence used to draw actionable insight from data. Analyst firm IDC forecasts¹ that by 2020, there will be nearly 45 zettabytes of data, or almost 20,000 times the total amount of data that existed in the world less than three

¹ <https://www.emc.com/collateral/analyst-reports/idc-the-digital-universe-in-2020.pdf>

decades before. Expensive business intelligence (BI) capabilities that a decade ago were the province of multinationals are now available in the cloud, for a few dollars a month, to businesses of all sizes.

2. **Cloud computing** places limitless computing and storage power into the hands of organizations of all sizes, increasing the pace of innovation and competition. Most of the 45 zettabytes of data mentioned above will reside in the cloud, which is the only practical place to store, manage, and analyze it.
3. **The explosion and ubiquity of mobile computing** is driven by the fact that today, powerful computers and communication devices are in the hands of billions of people. People are both generating and consuming data on the go at unprecedented rates—and that changes the way companies market to and support customers.

THE DIGITAL UNIVERSE: 50-fold Growth from the Beginning of 2010 to the End of 2020



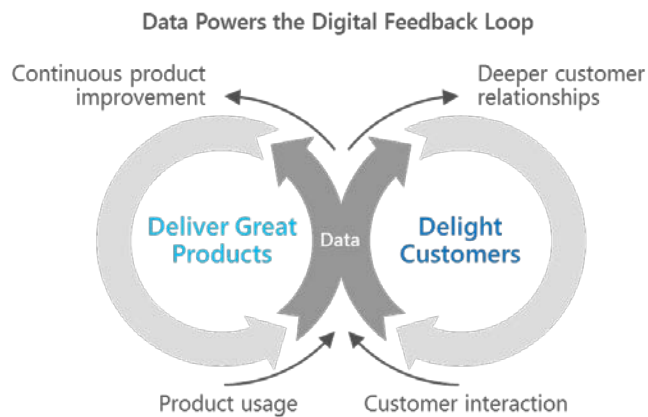
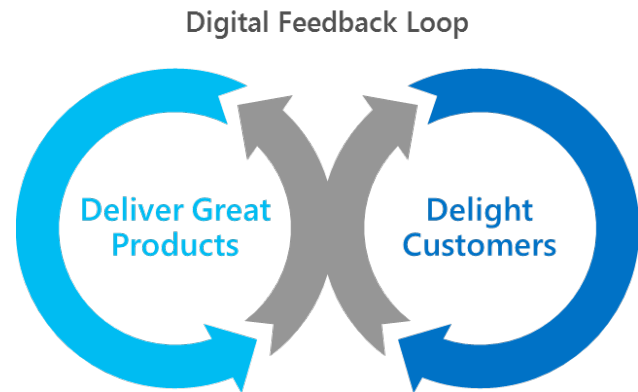
The Digital Feedback Loop

The tri-factor disruptor of big data + cloud + mobile is driving an unparalleled expansion in technology-driven innovation. Traditionally the domain of the IT department, big data + cloud + mobile is quickly becoming essential parts of every product, across every industry and every company.

One-time improvements are no longer sufficient, as they can be easily copied by competitors. Only changing the rate of improvement by continuously learning from your customers (and how they use products) will give companies a

sustainable advantage. This is the crux of creating a Digital Feedback Loop, which is only possible if signals from customers, employees, and operations are digital and connected. As such, every enterprise must embark on digital transformation to succeed in this new paradigm.

The Digital Feedback Loop has evolved hand in hand with broader changes in how customers and companies interact. With customers increasingly empowered by digital technology, companies are losing the ability to tightly control product narratives and brands. Reviews make it easy to separate good products from bad ones. Social media allows any customer to become an instant advocate or critic. Subscription-based products and services facilitate rapid customer acquisition and churn. This unprecedented rise in customer empowerment not only raises the bar for delivering great products, but also dramatically increases the cost of disappointing customers.



To meet these challenges, companies must recognize that the goals of delivering great products and delighting customers are intrinsically linked. While these goals form the sides of the Digital Feedback Loop, data is at the center. By harnessing data on product usage and customer interactions, companies will be able to drive continuous product improvement and create deeper customer relationships.

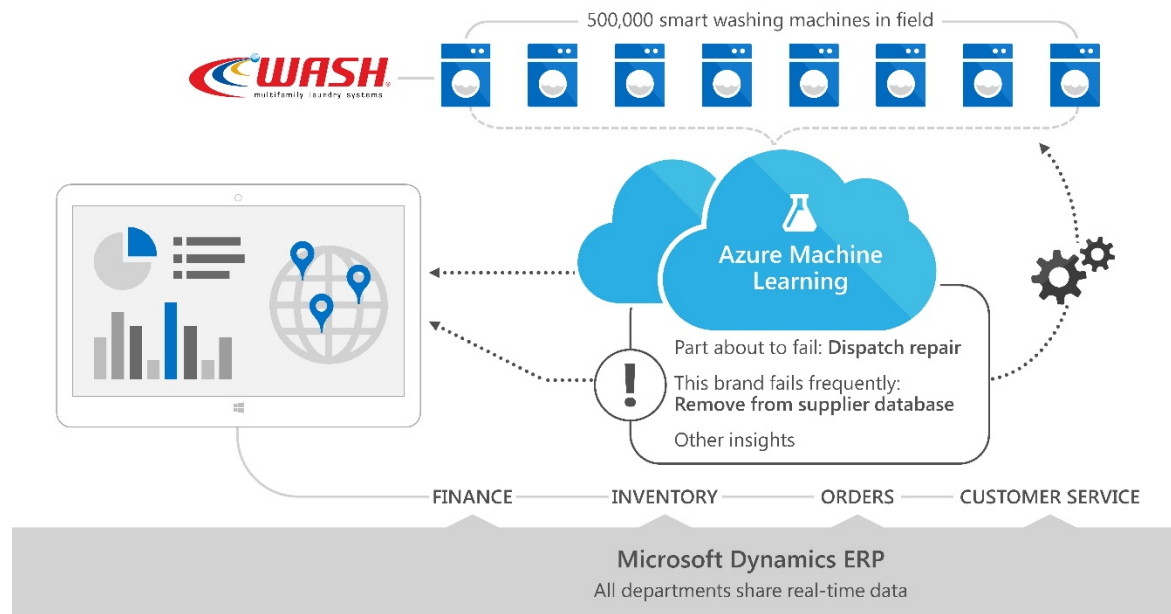
Smart washing machines

Consider the traditional customer service model: a customer purchases a washing machine. After a few years, it breaks down. The customer calls the store with a service request. The store sends out a repairman, who may have to make a couple of trips to diagnose and fetch the correct parts. The repairman fixes the washing machine. A few months or years later, the process repeats.

For a modern spin on this scenario, let's look at the new customer service model represented by [WASH Multifamily Laundry](#), which sells and maintains a half million washers and dryers in 75,000 locations throughout the United States and Canada. Five million people do their laundry every week in a WASH laundry room.

The company has reinvented itself with technology in the last 10 years. It has deployed Microsoft Dynamics as its Enterprise Resource Planning system, which serves as a digital backbone connecting every area of the business. Employees use Microsoft Power BI to analyze the reliability of certain brands and models by tracking service histories, so they're constantly weeding out unreliable machines. And they plan to use Microsoft Azure Machine Learning to perform predictive analytics on service histories to ensure that service reps are carrying the right parts in their trucks before they arrive at customer sites—and to ensure that service reps preemptively replace older parts before they fail.

The company's CEO likes to say that WASH is a technology company that just happens to do laundry.



This is the attitude that every company will need to adopt in the digital age. "I am a technology company that just happens to sell cars/make garments/provide financial services/build homes, etc."

While software is the linchpin of digital transformation, it is a strength that many organizations do not currently have. And it's neither practical nor necessary for every company to arm themselves with vast software development staffs. For one thing, there aren't enough software developers to go around, and they're expensive.

Fortunately, you do not have to build all this software intelligence yourself; you can use intelligent software as a service (SaaS) and cloud solutions from Microsoft and other companies. Let's see how other businesses are doing just that to transform their operations for the new digital age.

BUILDING THE DIGITAL FEEDBACK LOOP

Where new entrants who are 'born digital' have the benefit of building the Digital Feedback Loop from the ground up, established companies must digitally transform to unleash this virtuous cycle. There is a common set of transformational capabilities that all businesses need to unlock their Digital Feedback Loop. We categorize these capabilities as the four pillars of digital transformation:

- **Engaging customers:** Companies must tap into new sources of customer insight and use it to fuel more personalized, seamless customer engagement.

- **Empowering employees:** Employees across all levels and business silos must be given the tools to work and collaborate, especially between product and customer-facing groups where the Digital Feedback Loop has the greatest impact.
- **Optimizing operations:** Internal operations must be augmented to ensure that companies can quickly turn product and customer insights into action.
- **Transforming products:** Products must be augmented with software, connectivity, and instrumentation to capture valuable usage data and facilitate continuous product refinement.



Let's look at each of these areas in more detail.

Engaging your customers

Becoming more engaged with customers includes predicting what customers want even before they know they want it. It also includes giving customers new, more natural ways—such as human language—to relate to your company.

Today, customers have to pick up a phone and call your company, often wading through frustrating interactive voice response menus and being bounced from person to person. Or they comb your company's website looking for a way to contact you.

What if your customers could speak to your product to voice their needs? A washing machine maintenance company such as WASH Multifamily Laundry might give customers a way to say to their washing machine, "This machine is making a funny noise," or "This machine is leaking," and the washing machine will transfer the customer's input directly to the company.

Or you could say to your car while driving, "Schedule an appointment with the garage; there's a vibration when I go over 60 mph."

Microsoft offers a range of [cognitive services APIs](#) for recognizing speech and images, doing intelligent web searches, and performing other machine learning tasks, in its Azure cloud. Startups and enterprises alike can quickly and easily integrate these APIs into existing software applications to give them incredible new dimensions of human interactivity.

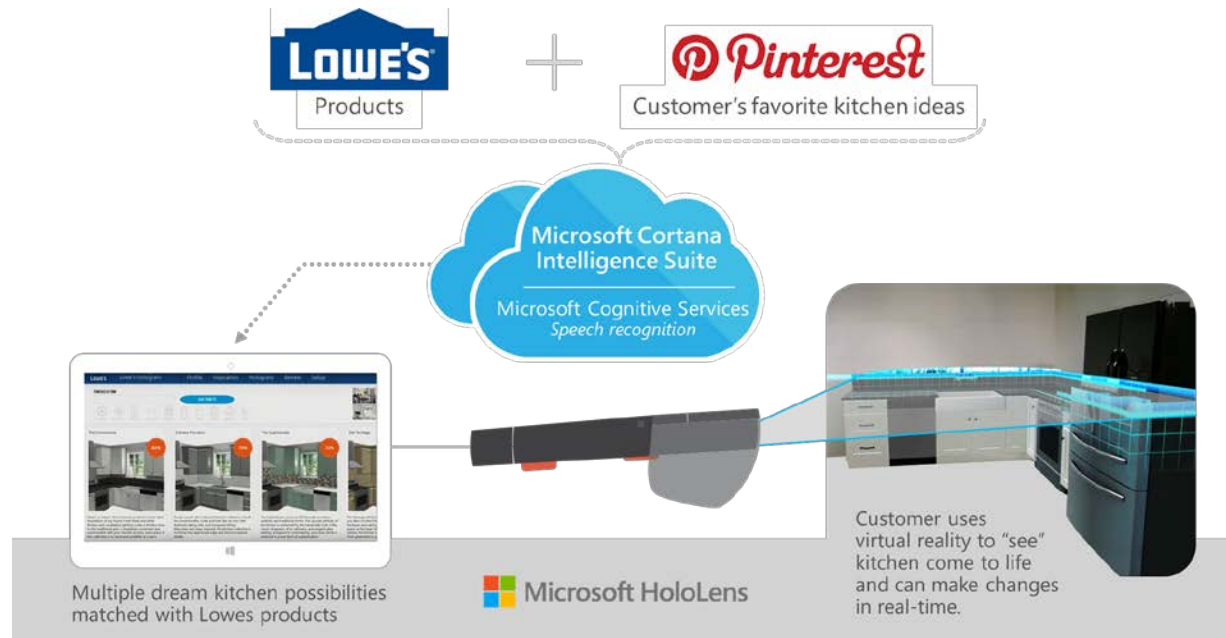
While scenarios such as speaking to your washing machine or car may sound far-fetched to many businesses, there are many other ways to improve customer engagement with breakthrough experiences. Remember, consumers are savvier than ever and are using technologies such as computer vision, digital agents, and conversation bots in their personal lives. They expect this level of innovation and simplified interaction in all areas of their lives.

[Lowe's](#), a leading home improvement store in the US, plans to pilot technology to completely revolutionize home remodels. Whereas such projects today involve multiple trips to the store for paint chips, flooring samples, and cabinetry samples, Lowe's idea is to let customers make all their decisions in the store using a mixed-reality headset.

Customers will give their Pinterest boards to Lowe's, which will load the data into the Microsoft Cortana Intelligence Suite for analysis and matchup with Lowe's product line. By donning a Microsoft HoloLens, customers will be able to see their new kitchens take shape before their very eyes. They can change backsplash color, cabinet designs, and

other elements by simply saying, “Let me see the wall color in pewter gray.” Microsoft Cognitive Services APIs will provide speech recognition capabilities.

The experience will give customers confidence that they’ll love their kitchen once it’s installed without bringing home a single swatch card or sample.



Another great example is the website [AllRecipes](#), which wants to be more than just a recipes database. It used Microsoft Cortana Intelligence Suite and the Microsoft Cognitive Services Recommendations API to transform into a food social network that analyzes visitors' past search and sharing histories to create far more personalized search returns and online food experiences.

In the healthcare field, [CardioDiagnostics](#) allows doctors to monitor heart patients in real time, from anywhere in the world—to give in-patient attention in an out-patient setting. Portable monitoring devices send data to Azure, where it can be analyzed by doctors. If the patient feels a rhythmic abnormality in their heart, they press a trigger on the device, which sends a message to the CardioDiagnostics monitoring center.

The Azure platform has built-in compliance for the Health Insurance Portability and Accountability Act (HIPAA), providing the “ultra-security” needed for medical-grade technology and the special considerations when dealing with patient data.

By using cloud technologies—from limitless raw computing power to innovative speech and image recognition—there are no limits to how you can engage and impress your customers.

“We weren’t able to build the product and technology that the market really needs. When we came across **Microsoft Azure technologies**, it literally transformed our ability to create scalable, available, and durable products.”

- Ziad Sankari, Founder,
CardioDiagnostics

Empowering your employees

It's serendipity at work when you discover that someone else is producing something you need, or you find someone who has the solution to a problem that stumps you. Rather than relying on serendipity, you should be able to use organizational analytics to discover information and people who are interesting to you, by analyzing emails, documents, and line-of-business applications.

Even better when you can simply ask a voice-enabled digital assistant such as Microsoft Cortana, "Who in my company is working on self-driving cars? Please send me their most recent research and set up meetings with them this week."

The nature of how we work – and the workplace itself – has undergone a dramatic evolution. Individual and group workstyles are diverse and shifting, with the ability for people to be mobile instead of tied to a single location. Growing volumes of data offer promise of greater insight, but accessing and making sense of the information can be nearly impossible. And truly safeguarding our organizations and people remains a major challenge.

Organizations have a great opportunity to empower their people, to help them do their jobs better by re-engaging with their work and transforming the workplace environment itself.

Successful businesses leverage the power of mobility to empower collaboration from anywhere, on any device, providing easy access to the apps and data they need, while mitigating security risks. They draw insights and make decisions based on business metrics in living, dynamic dashboards, and leverage the power of social conversation to keep a pulse on employee sentiment.

[Pinnacle Hospital](#) of Crown Point, Indiana, is completely transforming its information systems to remain competitive and deliver relevant data to doctors at the point of care. Using Azure and Microsoft Dynamics, Pinnacle created one big integrated information heartbeat that is doctor-friendly, mobile-friendly, HIPAA-friendly, and budget-friendly.

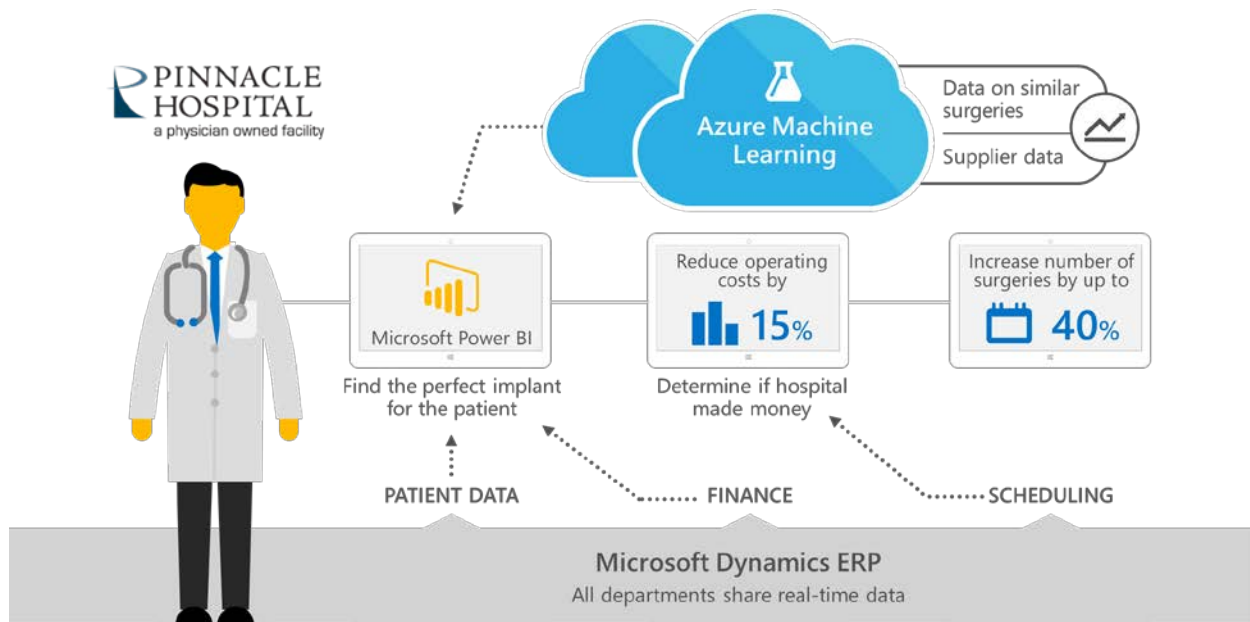
"The idea of evidence-based medicine has been around for decades, but what's new is the ability to analyze massive amounts of data and **make the results visually and instantly available** to caregivers at the point of care."

- Haroon Ansari, Chief Executive Officer,
Pinnacle Hospital

Surgeons scheduling surgeries have the data they need to order the correct supplies, and financial officers can tell at a glance if a surgery was within the allowable insurance reimbursement threshold. Insurance claims that previously took 48 to 72 hours to process now take a few minutes.

When a 120-pound female comes in for a knee replacement, the surgeon can use Cortana Intelligence Suite to combine outcomes data about thousands of similar patients and vendor data to determine which implants and surgical instruments are a good fit for this particular patient.

Or, say, a 58-year-old man comes in with diabetes. Using Azure predictive analytics, Pinnacle doctors can crunch data on thousands of similar patients to provide assistance in coming up with the best clinical pathway for that patient—and the expertise and other resources needed to treat him.



Iconic guitar brand [Fender](#) is using the Microsoft cloud (Microsoft Dynamics CRM running in Azure) to help sales teams work collaboratively to drive new sales. Its goal is to better connect previously siloed customer service and sales teams. If its customer service team is talking to a dealer about a particular issue, a salesperson is aware of the issue before he or she walks into the dealer's shop.

Optimizing your operations

Don't let talk of virtual reality kitchen design and talking washing machines discourage you. Most organizations won't leap to intelligent products and services right away. The first step is to get data and applications into the cloud. And just moving data and applications into Azure delivers abundant benefits: lower costs and increased computing scalability, flexibility, management simplicity, and availability.

Our own [Microsoft Movies & TV](#) moved its entire 140,000-title video library into Azure to improve streaming quality, publish new titles faster, and optimize video delivery in different parts of the world. If the business needs to add capacity to serve more video, it can double its serving capacity in minutes versus the days or weeks needed to provision servers on premises. This gives the entertainment company the ability to meet peak demand at a lower cost and to expand its server infrastructure in lockstep with business growth rather than overprovisioning servers.

Moving its streaming infrastructure to the cloud also enabled Microsoft Movies & TV to save money. By using Azure, the business is able to focus its staff and budget on innovation and activities that make it more competitive rather than on the day-to-day work of running a datacenter.

The technology is not especially glamorous—pushing workhorse servers from your own datacenter to a third-party datacenter—but even that move gives the business exciting new capabilities that enabled it to be more agile and competitive in a hyper-competitive marketplace.

Another example of a company using the cloud to transform its business one step at a time is [Whole Foods](#), the natural grocery store chain. Whole Foods put application sign-on credentials for its 91,000 employees in the cloud (Azure Active Directory) to support mobile productivity and seamless access to a growing portfolio of SaaS business

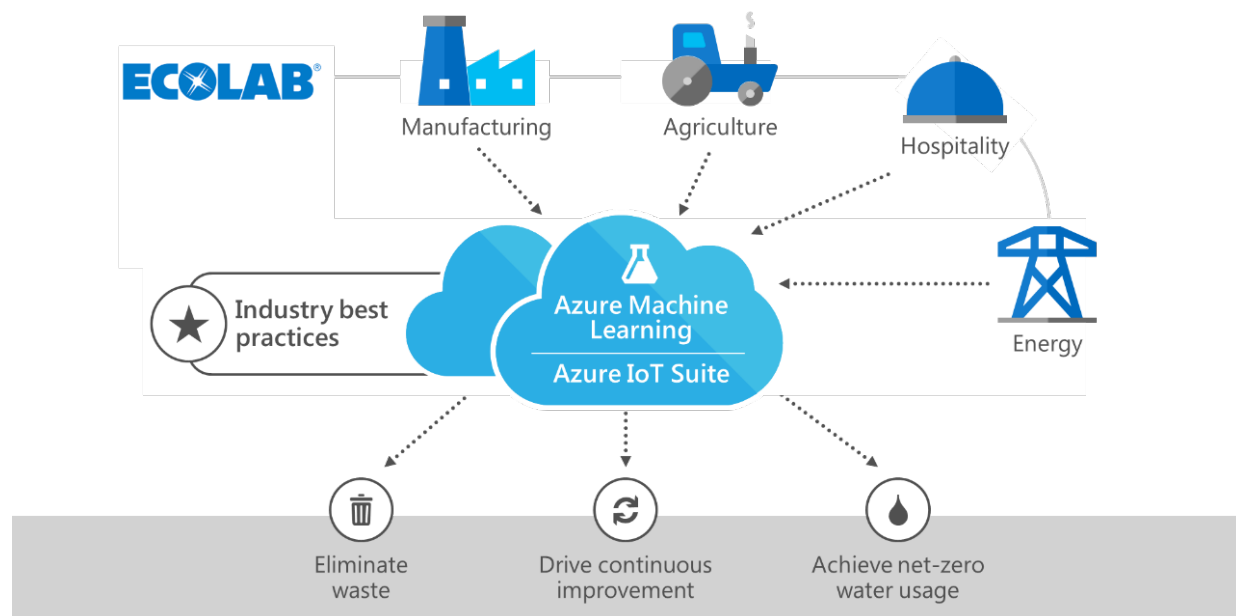
applications. Improved security, lower support costs (related to password resets and onboarding new SaaS vendors), and savings in on-premises infrastructure have all been critical wins for the retailer.

Once data and applications are in the cloud, organizations can take operational efficiency to the next level, beyond knowing what's happening now in their business to anticipating what will happen, by using Azure Machine Learning predictive analytics, Azure IoT Suite, and Cortana Intelligence Suite.

Field equipment once marooned and disconnected from company information systems can now be connected and "listened to" on a continuous basis, enabling businesses to gather data across a dispersed set of endpoints. When this data is fed into advanced analytics systems, new insights emerge to drive improvements on a continuous basis.

Organizations in manufacturing, retail, and a host of other industries can shift from merely reacting to events to responding in real time, or even preemptively anticipating and solving customer issues before they become issues.

[Ecolab](#) is taking full advantage of the Azure platform, including the Azure IoT Suite, to improve how worldwide industries tackle water scarcity. Ecolab has a vision to help energy, agriculture, food and beverage, manufacturing, and hospitality companies achieve net-zero water usage, meaning producing goods with the absolute minimum amount of freshwater.



Ecolab collects information from 36,000 water systems in more than 100 countries, feeds it into Azure, and provides customers with actionable intelligence that can be used to benchmark performance and drive continuous improvement. The company's field personnel use the data to effectively quantify and communicate the return on

"We can now easily compare a three-year historical view of weather patterns with our sales data. This means we can optimize our menu to ensure that our vending machines are stocked appropriately for the season. And that's **the power of the Azure cloud** and being able to pull in and analyze external data sources."

- Jamie Head, Chief Information Officer,
MARS DRINKS

investment a customer achieved through its water management program—and recommend areas where additional investment in services might drive even greater reduction in water, energy, and operational costs.

Workplace drink provider [MARS DRINKS](#) has connected thousands of global vending machines to the cloud to collect real-time data. Using the Azure IoT Suite, it is applying predictive analytics to avert vending machine downtime and out-of-stock products. The solution also enables innovative inquiries into consumer behavior by integrating diverse data sources including telemetry information from machines, weather data, holidays, and even moon cycles.

Transforming your products

In the old days (five years ago), product development relied on extensive pre-release testing and focus groups. At the same time, because products in the field could not be easily updated, new features and fixes needed to be created before the product rolled out.

Digital transformation not only enables interconnectedness between product makers and users but necessitates it. To achieve rapid product innovation, customer engagement must become a core input to the product development process. Simultaneously, deep customer engagement is only possible when the customer experience becomes ingrained in the product itself. These connections form the Digital Feedback Loop and are giving rise to a new phenomenon, Products as a Service.

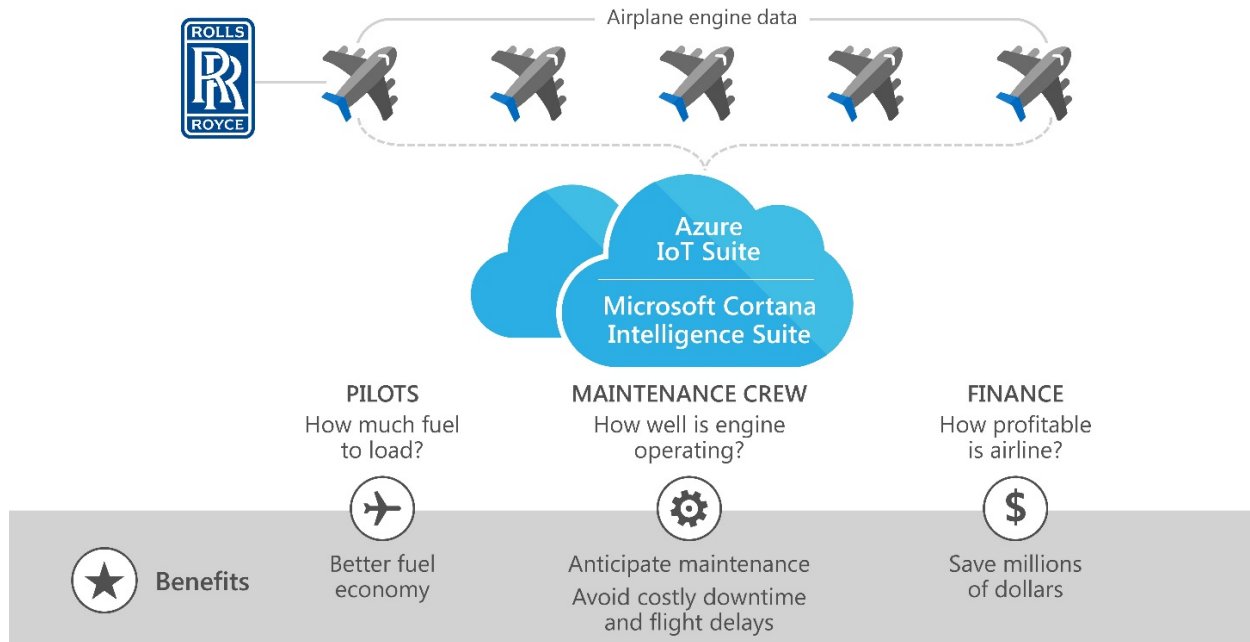
The opportunity to embed software and technology directly into products and services is evolving how organizations deliver value, enabling new business models and disrupting established markets.

Take consumer products giant [Honeywell](#). Honeywell used the Azure IoT Suite and Cortana Intelligence Suite to design connected thermostats that deliver "comfort as a service." By analyzing data from millions of installed thermostats, Honeywell can predict failures, do preemptive maintenance, and continuously improve its products.

Then there's global aircraft engine manufacturer [Rolls-Royce](#), which is using Azure services to analyze massive amounts of aircraft engine data and preemptively identify failing parts before they fail. This gives Rolls-Royce a better understanding of how it should structure its support contracts, how it can better manage risk, and what its product development needs are. Of course, it also lets Rolls-Royce make repairs before engines fail, minimizing flight delays and disruptions that today cost the airline industry millions of dollars every year.

"There's no lack of data in our market today. We and our customers are drowning in data ... Our heritage and focus have been intelligent systems linked to engineering knowledge and designed to provide high-quality information and insight. **Digital technology and analytical insight deliver a real, sustainable advantage** in the services we provide."

- Nick Farrant, Senior Vice President, Rolls-Royce



WHY MICROSOFT IS UNIQUELY QUALIFIED TO HELP YOU WITH YOUR DIGITAL TRANSFORMATION

With its global network of Azure datacenters, rapidly expanding portfolio of Azure services, presence in both consumer and business spheres, and expertise in datacenter software, Microsoft is uniquely qualified to help companies transform their businesses through a virtuous cycle of engaging customers, empowering employees, optimizing operations, and transforming products.

- Global, rich, and rapidly expanding trusted public cloud.** The Azure datacenter footprint spans the globe and continues to grow. The Azure services portfolio is also expanding at an astounding rate, with new services being added regularly. With big investments in providing a trusted cloud platform built on pillars of security, privacy, and independent certifications, Microsoft gives customers peace of mind as they make their journey to the cloud.
- Strength in both business and consumer worlds.** Microsoft uniquely spans both consumer and business worlds, which are increasingly blurred today. With Office 365 and Azure, we allow individuals to store both their work and personal data in the cloud and access it from any device, work or personal.
- Hybrid strength.** Microsoft is unique in having a firm stance in both on-premises customer datacenters and the public cloud, which allows us to serve as a bridge for customers on their cloud journey. Our technologies provide a smooth path from on-premises datacenter to the public cloud and support customer transformation needs regardless of where data or compute power resides—in a customer datacenter, Azure datacenter, competing public cloud datacenter, edge device such as a connected car, or mobile device such as a smartphone.
- Open source-friendly.** Microsoft is unique in “speaking” both Windows/.NET and open source. The Azure cloud runs the Linux operating system and other open source software and is part of many solutions that

include both Windows and open source components. Whatever software your solution uses, Azure can connect to it.

START TRANSFORMING TODAY

Digital transformation is in every company's future, and it's easier than you may think to get started. Within minutes, you can have virtual machines running in Azure, loaded with whatever software you want, to develop and test a new idea or give an existing application more performance and scalability.

Once you begin to cloud-enable your thinking about every area of your business, you'll be surprised at the ideas that begin to percolate. With the ability to enhance every phase of your business with limitless computer power and storage and intelligent software capabilities, interesting new ways to engage customers, empower employees, optimize operations, and transform your products become possible.

When gathering and storing vast quantities of product and customer data is no longer cost-prohibitive, when analyzing data is push-button easy, when you can suddenly add speech or image recognition to your business or customer-facing applications with just a few lines of code, imagine the possibilities.

Thousands of companies—including your competitors—are doing just that right now.

Don't get left behind in the rush to transform to meet the new requirements of the hyper-digital age. Visit our [Azure website](#) to learn more about the breadth and depth of Microsoft Azure services, and sign up for a trial license. Or, contact your designated Microsoft account representative or partner to help you get started.