Digital transformation powered by IoT is **reinventing retail**

Executive summary

Digital technology has completely changed the retail industry in the past 20 years, and the industry is hurtling forward at breakneck speed. The battle for customers is now fought channel by channel, interaction by interaction, and hyper-local market by hyper-local market. For many, the battle is also micro-moment by micro-moment.

While reports of store death have been exaggerated, companies are struggling to understand and predict customer behavior across channels and meet their ever-increasing needs. Physical stores can serve as research laboratories, guiding the path to reinvention. The omni-channel strategies that retailers have developed will need to evolve for an era of extreme personalization; real-time, context-sensitive interactions; and a mobile-first, convenience-driven world.

This white paper describes how innovative retailers are using digital transformation powered by the Internet of Things (IoT) to reinvent their businesses and operations. These company leaders have adopted IoT as a state of mind. They are thinking strategically about how they can use IoT to achieve their goals, including engaging customers, empowering employees, optimizing operations, and transforming products. Retailers know that just 1 percent of potential IoT connectivity has been accessed to date, meaning that business opportunities abound.[1] This white paper provides case studies of what industry innovators are doing and offers a business case and roadmap for retailers to use as they rethink retail with IoT.

Redefining retail for an omni-channel era with IoT

Retailing used to live and die by the three P's of marketing—price, product, and promotion. Now the old rules don't work quite as neatly anymore. Convenience-driven customers often choose service over price, as witnessed by the Amazon boxes that pile up on customers' front porches. Niche retailers like Warby Parker are thriving, specialty marketplaces like Etsy win sales in an era of eBay and Alibaba, and big-box retailers like Costco continue to outperform competitors. Meanwhile, in a continual sales environment, discounts and VIP offers don't lure consumers into shopping malls and stores the way they used to.

Amazon is driving the market, setting new standards with selection and service that are changing consumer behavior. E-commerce is projected to reach $4 trillion USD by 2020, or nearly 15 cents of every dollar spent on retail goods.[2] It's not enough to digitize: companies need to reinvent themselves. Some of the biggest names in retail, from luxury merchants to discounters, are struggling, and a third of all shopping malls in the United States are slated to close during the coming years.[3]

It doesn't have to be this way. Retail is in the throes of creating what Gartner thought leader Jorge Lopez, VP and distinguished analyst, calls "digital business"—"the creation of new business designs by blurring the digital and physical world."[4] From radical transparency into inventory, to new shopping and service concepts, to technology-enabled stores, retailers can engage with customers in new ways. Consumers still spend up to 65 percent of shopping dollars in stores,[5] and many start their search in stores so they can see, touch, and compare products. Meanwhile, analytics enables savvy retailers to predict changes in marketing and customer demand. However, retailers need help, and they need it fast: In the coming years, industry companies will lean heavily on their partners, including device manufacturers (OEMs), independent software vendors (ISVs), systems integrators (SIs), and data and solution aggregators to help them achieve commerce anywhere, anytime, on any channel model.

Retailers have a powerful new weapon as they embrace digital transformation: the Internet of Things (IoT). IoT is unleashing a vast amount of data that retailers can use to reinvent their businesses. Companies will need to evolve from social listening experts to smart listening savants, filtering in data from customer behavior across channels, and adjusting their responsiveness to targeted marketing and recommendations, changing demographics, weather patterns, footfall patterns in stores, community events, and more.

Retailers can start with what they have, connecting data, devices, and systems to turn insight into intelligent action. In an IoT universe, physical stores can be more than transactional environments. They can be dynamic research labs for studying customer behavior, empowering associates to act as consultative sellers, and optimizing interactions in real time. Sensor-tagged devices and merchandise, location-tracking technology, and mobile devices create powerful data insights about consumers' behavior and needs that can inform every aspect of store operations. Retailers can collaborate with partners to develop products, services, and end-to-end solutions, and to fine-tune operations for an era of dynamic, evolving engagement between consumers, brands, and suppliers.

"In today's increasingly connected world, brands and retailers are struggling to find ways to appeal to omni-channel shoppers. Technology advances have created an environment in which the line between brick-and-mortar and e-commerce is blurred and fading fast."

— Mark Paley,
Executive Vice President, Shopper Marketing, The Marketing Arm[6]

The future of retail with IoT: a scenario with the shoppers

So what will that look like? Let's follow Raj and Marie Shopper as they use IoT-driven retail innovations to research and buy what they need on a leisurely weekend.

On Saturday, the Shoppers wake up and plan the day. The coffee is out, but there's no need to worry. All the appliances and important products are tagged with sensors, which automatically reorder products as needed. Mr. Shopper steps outside and unlocks a secure locker on the side of the garage. While delivery personnel use temporary mobile keys to open and load in goods, Mr. Shopper uses a simple finger swipe on the biometric lock. The video camera overhead films deliveries, ensuring that items are left as promised. Since the retailer implemented no-click, sensor-based shopping for its consumers and monthly rentals on lockers, sales are soaring, margins are high, and package theft has largely dwindled.

Mrs. Shopper is inside, ordering groceries online on her tablet. With a smart shopping list of her favorite items that's updated based on her last purchase, she completes the task within minutes. After breakfast, she picks up the week's groceries using her grocer's drive-through lane. While waiting, she receives relevant, location-and-weather-sensitive offers on her smartphone. Since there is a storm warning for Sunday, she accepts the grocer's recommendation to buy extra milk, bread, and a snow shovel. She uses her smartphone to pay for orders at the window, not realizing that the grocer has used aggregated data, analytics, and dynamic pricing to optimize her order and reduce its food spoilage and waste.

The Shoppers visit the mall in the afternoon to buy clothing, research an upcoming furniture purchase, and enjoy amenities. Digital signage at the entrance alerts them to on-site events and promotions. Mrs. Shopper uses a wayfinding app on her phone to find her way to a temporary pop-up store, a display of her favorite designer at a big retailer. She uses a smart shelf to model sunglasses and share them via social media with her friend, and a smart dressing room to accessorize an outfit and request associate help. The associate uses a tablet and real-time inventory management system to locate in-store items and places a same-day order for related merchandise. Mrs. Shopper pays for the items on the spot and walks her paid-for, RFID-tagged merchandise through RFID readers. By investing in an interactive experience, the retailer has turned around dwindling in-store visits and deepened relationships and wallet share with customers like the loyal Shoppers.

At the same store, Mr. Shopper receives a text with a two-for-one special on pants, which is driven by his purchase history and size, his location in the store, and the fact that the items are aging inventory. A digital sign alerts Mr. Shopper that there is a five-minute checkout so he decides to self-pay. He is automatically offered a belt in his size at half-off as he checks out at an interactive kiosk, which he accepts. The products, displays, and kiosk have all been strategically placed using beacon location-based tracking systems, heatmaps, and foot-traffic counters to monitor dwell times and movement patterns. The goal is to convert browsers like Mr. Shopper into buyers, as well as focus staff time on important tasks like selling, rather than stacking goods.

The Shoppers have researched new furniture for their family, using their mobile phones to browse items and read online reviews. When they visit the store, they use an augmented reality app to find the items in the store and an interactive kiosk to model what the furniture will look like in their home. They like what they see and arrange for delivery later that day. Alerted by the CRM system that the Shoppers are VIP customers, the associate waives the delivery fee and arranges white-glove setup in their home.

On their way out to the car, the Shoppers see a connected home store. Although they're not familiar with the term "the Internet of Things" the Shoppers are eager to buy technology-enabled products that save them money and make their lives easier and more enjoyable. Retail and other products are increasingly bundled "as a service" and predictive analytics make the personalization irresistible to consumers like the Shoppers. Retailers and partners that adopted IoT early have created an insurmountable advantage, as consumers like the Shoppers are reluctant to switch services to use "dumb" commodity products. Less-fleet competitors are forced to offer ever-increasing discounts, hurting margins and cannibalizing their business.

63%
Locating shopping items in stores with augmented reality apps on mobile phones

73%
Receiving in-store, personalized offers and promotions on their mobile phones

Hi Sarah! Have you seen these?

50%
Using a smart shopping cart to streamline product ordering

IMPROVING
marketing and service
with IoT

Consumers may not know what IoT means, but they like the results. Today, they're primarily focused on receiving better service. In an industry survey,[7] consumers ranked their favorite shopping concepts:

53%
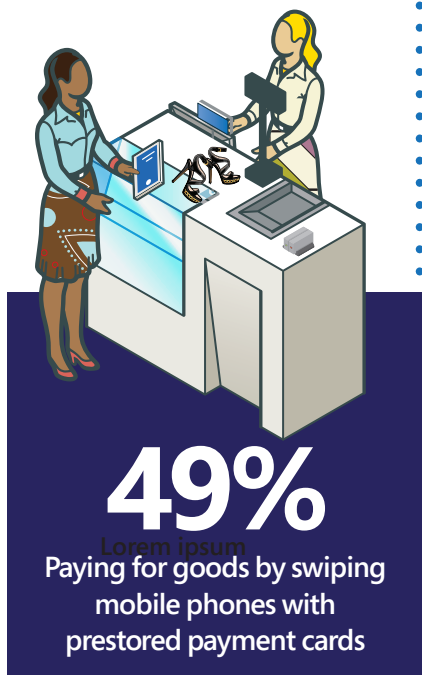Receiving same-day service for items ordered online

60%
Checking out independently with mobile scan and pay

Receipt

Rain Coat $
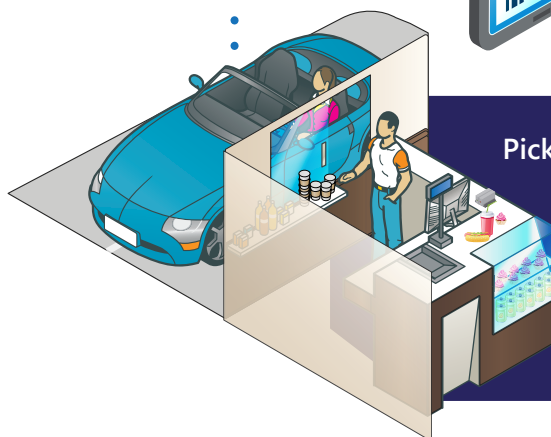Dog Rain Coat $
Rain Boots $

TOTAL $$$

49%
Lorem ipsum
Paying for goods by swiping mobile phones with prestored payment cards

Picking up items ordered online in the store drive-through lanes
53%

Build a business case for IoT and digital transformation

An industry survey that studied 19 different IoT shopping concepts ranging from the practical (mobile payment) to the visionary (augmented reality apps) found that a retailer with $20 billion in annual revenues could drive an additional $312 million in total gross annual value by adopting them all.[8] Here's a business case for using IoT to fuel digital transformation.

1 ### Mobile is the new digital.
The smartphone is increasingly the primary point of interaction, and customer adoption of wearables is growing. Websites must be mobile-responsive and fast, as even a micro-second of lag time increases bounce rates. Customers use smartphones for research in stores and want to receive personalized in-store offers and check out quickly using mobile pay. By 2017, half of all transactions will occur via mobile POS or self-checkout.[9]

2 ### Customers are channel-agnostic and empowered.
Customers start their journey both online (91 percent) and offline (68 percent).[10] They value "web-rooming" (researching online and buying in-store) and "showrooming" (researching in-store and buying online). Retailers need to create a holistic, omni-channel experience for each individual and make sure it is flawless. Customers now have 800 paths to purchase, so retailers need to make sure their channels are the favored ones.

3 ### Social is the new shopping.
Social media, including online reviews and recommendations, influences one out of every three in-store purchases.[11] Retailers of all sizes who aggressively pursue social strategies create social proof, in the form of recommendations, direct interactions with consumers, and social sharing of products being considered.

4 ### Create a smart in-store shopping experience.
More than half (55 percent) of online shoppers prefer to purchase goods from a retailer that has a physical store presence rather than an online-only merchant. However, they want personalization, superior service, and fast checkouts—all of which can be enabled with smart technology.

5 ### Personalization is critical.
Customers want highly relevant advice, products, and services that are tuned to their exact need at a precise moment in time. Companies that deliver personalized e-commerce stand to increase revenues by 15 percent.[12] McDonald's Sweden implemented personalized mobile engagement, using an analysis and insights system from Plexure on the Microsoft Azure cloud platform. As a result, it increased customer transaction value by 150 percent, doubled customer traffic, and increased its conversion rate by 700 percent.

6 ### Any company can sell "as a service."
From appliances bundled with ongoing maintenance, to automated product deliveries, "as a service" offerings create customer loyalty and delight. Retailers know that digital product and service sales will represent more than $1 of every $3 spent by 2021.[13]

7 ### Make sure it's in stock and available around the clock.
Nearly three out of four customers want visibility into online inventory, and one in two would like to "click and collect" their orders.[14]

8 ### Think "global."
Retailers are using hyper-local market knowledge, such as seasonal or weather data or consumption trends, to run promotions and sell merchandise at higher margins. They're selling aging inventory globally, and looking for insights into local demand trends that can guide product transformation. "Glocalization" can end the curse of endless discounting.

9 ## Nimble is the new advantage.

Small retailers have captured $64 billion in market share from larger incumbents.[15] Retailers with physical infrastructures and high inventory must use their customer knowledge and supply chain to better advantage to avoid losing ground to "asset-light" competitors. Some strategies: faster turnovers, product customization, and bundled services.

10 ## Build digital ecosystems that move seamlessly together.

Enterprises are deepening relationships with their partners to respond to market demand and collaborate on product development, supply chain, and other processes. These companies move together symbiotically, thanks to integrated processes and a seamless, real-time flow of data.

11 ## Take a futuristic approach to operations.

Retailers are moving from a just-in-time to a predictive operational model, optimizing all aspects of supply chain planning, inventory management, production, deliveries, and equipment monitoring and maintenance.

12 ## Competitors are adopting IoT.

An IDC report found that 56.9 percent of retailers believe IoT will be strategic to their future business success. An IDC retail focus group stated that they believed the technology would be mainstream by 2020.[16]

Build a connected business with current assets

It's easy for enterprise decision makers to get lost in "big IoT"—data and technology—and be overwhelmed about the options and the path forward. What's important is to adopt IoT as a state of mind, using it to inform strategy and goals before optimizing specific processes. Partners can help retailers drive value from the data and tools retailers already have, enabling companies to increase engagement, analyze patterns, and drive to intelligent action. They can build up, not out, using learnings to focus their investments on the areas of greatest ROI.

While constant change can be daunting to retailers, digital transformation is empowering small retailers with the same data and tools as global players, leveling the playing field. IoT can be intimidating, but retailers don't have to adopt every use-case, just the ones that optimize and drive their business. Success can often be found by exploiting niches. Witness Warby Parker's success in an Amazon world, or small retailers on Etsy. With e-commerce sites and analytics, small retailers can compete head to head with giants. The prize for all digitally savvy retailers is the same: Moving the business into real time and anticipating the future to capitalize on opportunities others don't see.

Telstra, Australia's largest telecommunications provider, wanted to create an innovative store environment that would make it easy and intuitive for customers and employees to interact with its telecom products. With Windows 10 and the Universal Windows App Platform, Telstra and its Microsoft partner Engagis, an end-to-end solution provider, developed innovative NFC-enabled "tap and take" cards that customers can use to build personalized digital brochures by tapping desired products or services on digital kiosks in the store. Telstra also uses Power BI to analyze customer traffic and offer a better mix of products. As a result, 40 percent of all customers who interacted digitally in Telstra's stores continued their interactions online.

> *"The future is already here. Consumers are connected, and the challenge for retailers is maintaining the key role in the consumers' ecosystem of product and service providers. The retailer advantage is in the physical-digital converged and enriched experiences with the health of digital, mobile, senior-enabled, and social engagement"*
>
> — IDC[17]

Engaging customers

Many retailers have already invested in creating a 360-degree view of their customers, enabling them to understand and track their behavior across channels. By integrating data from multiple channels, they can microsegment their customer base, delivering highly relevant offers their customers value. They're using analytics to bundle products and services for higher sales; using recommendation engines that personalize products and offers; and providing next best offers or fuzzy-matching, related offers when their desired goods are out of stock. In addition, they can offer targeted promotions that drive sales of low-performing inventory without hurting other products in the same category. With machine learning, personalization gets more accurate over time.

Physical stores offer retailers an unprecedented opportunity to study and serve customers. Retailers are using smart devices and tracking tools to deliver a differentiated experience and solve common retail pain points. Digital signage is a big lure, enabling retailers to convert foot traffic outside their stores into visitors. A survey found that three out of four customers entered a store or told their friends about it because the sign was interesting.[18] Digital signage can also be used to deliver one-to-one personalized offers or interactivity, including personalized content, inventory information, the ability to video-conference with an associate, or wayfinding to navigate the store.[19]

Marston's, a 200-year-old UK pub, uses Microsoft Dynamics to acquire a single view of a customer's activity across digital signage, social media, websites, and emails in order to deliver an exceptional experience. As one example, the pub has a digital message board where customers can post messages for their friends, be handed their favorite drinks when they walk in the door, and automatically play their favorite songs on the jukebox. Marston's is combining data analytics and CRM to reinvent the pub business.

An Accenture report that envisions the in-store experience of the future said that retailers can use smart mirrors that enable customers to try on outfits, accessories, or makeup virtually; smart shelves to prompt replenishment of low inventory; and smart shopping carts to help customers find items on their shopping lists. Tagged perishables can prompt retailers to replace or replenish items or offer discounts to accelerate product turns. Customers can use mobile apps to scan price tags to gain more information about products and check inventory and order goods. RFID-tagged merchandise can be scanned individually or in bags or baskets as customers leave stores, charging their accounts via mobile pay.[21]

Many retailers are also innovating loyalty programs. Recognizing the power of more, many retailers are creating loyalty card alliances that allow customers to link accounts and earn points easily as they buy products and services in their daily lives. Others are moving loyalty programs online to enable omni-channel messaging (opt-in SMS, social messaging, email, and in-app messages), recommendations, and benefits to engage customers on an ongoing basis and drive sales. Omni-channel shoppers have a 13.4 percent higher basket size and are 11.2 percent more profitable.[22]

Companies that have adopted digital signage have increased brand awareness by 47.7 percent, purchase amount by 29.5 percent, sales volume by 31.8 percent, repeat buyers by 32.8 percent, and in-store traffic by 32.8 percent.[20]

Empowering employees

Retail used to be an industry that focused on maximizing transactions. Now leading retailers are empowering associates with data and tools to offer consultative service and reduce time on low-value activities such as checking inventory or processing customer payments. Employees can access a single view of customers, including preferences and transaction history, using location-tracking beacons and mobile POS solutions to offer targeted service and customize their upsell and cross-sell strategies.

Large companies can improve productivity and collaboration among all employees with Microsoft solutions, including Office 365, SharePoint, and Yammer. Connected devices, such as tablets, online portals, interactive kiosks, and digital signage make it easy to connect, work together, and streamline processes.

Tesco, a British multinational grocery and general merchandising retailer, uses Microsoft Office 365 and the integrated enterprise social networking tool, Yammer, to enable employees to share ideas, build communities, and work efficiently. Tesco employees enjoy non-hierarchical communications and a collaborative culture that motivates them to do their best work and improve customer service.

Optimizing operations

As early adopters of RFID, retailers already track products through development, warehouse operations, and delivery to retail stores. Companies use automation and advanced robotics to pick and prepare products at warehouses, enabling fast turnover and rapid shipping. In the warehouses of the future, the aisles and shelves themselves will self-organize endlessly to meet demand changes,[23] and both employees and customers will be able to use data visualization to assess where custom orders are in the production and distribution process.[24] Companies can use GPS tracking and better route management to predict accurately when goods will arrive, reduce lost time in transit, and optimize energy usage. IoT technology enables retailers to monitor items and equipment on the truck, such as refrigerated goods at risk for spoilage, and ensure their stability.

One of the biggest gains with IoT is the ability to forecast demand and match business decisions with analytics, powered by Microsoft Azure IoT Suite. Employees will use visual dashboards that integrate historic and real-time metrics, predictive insights, and machine learning to more accurately forecast every aspect of supply chain management, from raw materials ordering to supplier management to inventory management and pricing. Microsoft estimates that companies that use IoT can reduce inventory on hand by 8–10 percent, matching ordering to actual demand and working seamlessly with partners to fulfill it. They also can hyper-localize products to meet micro-market or changing demands. Pricing goods, which today is done by employees manually with pricing guns, will be replaced by sensor-driven smart price tags, which integrate into corporate pricing systems. Retailers will improve staff productivity, reduce pricing errors, and synchronize prices between channels. In addition, they can rapidly update prices to meet real-time demand.

ArcaContinental, a beverage manufacturing and distribution company headquartered in Monterrey, Mexico, wanted to use its data to enhance customer service and boost profitability. The company used regression models enabled by Azure Machine Learning to transform raw data into actionable intelligence. The company can drill down on sales data to understand how markets respond to different variables and assess the impact of every marketing campaign.

With IoT and real-time visibility into inventory management, companies can ship goods anywhere—extending their lifecycle—or assemble incomplete items to protect margins. Macy's created complete dish sets out of 1,600 place settings that were scattered across their stores in ones and twos—selling them all at full price.[25]

When it comes to predictive maintenance, retail isn't the industry that typically comes to mind. Yet the reality is that all retailers operate POS systems and other technology; grocers depend on refrigerated trucks and in-store units; and convenience stores operate interactive gas pumps, refrigerated cases and food warming stations, and in some cases, full-fledged food operations.

Predictive maintenance, powered by sensor-tagged systems and building management systems, can alert retailers to routine and emergency needs and optimize machinery for energy consumption and savings. Companies that have manufacturing operations can use predictive maintenance to drive throughput, prevent costly shutdowns, and schedule routine maintenance for off-peak hours.

Transforming products

In a just-in-time world, commerce won't wait. Much like Zara revolutionized clothing with two-week time-to-market on new styles, companies are reducing product development cycles by using market trend data, customer purchasing and feedback, and social and demand signals to test and develop new products—and bring them to market swiftly. Top-selling products in one geography may provide insights into buyer appetite that could go global. In addition, refreshing inventory constantly can prove to be a powerful tool to bring customers back into physical stores. Zara, which introduces new products into its stores twice a week, cycling through 10,000 items in a year, draws an average customer to its stores 17 times a year versus the four to five times its competitors do.[26]

Other retailers take a different approach: curating products to avoid buyer choice fatigue and ensure their singular vision resonates in a crowded marketplace. These companies can use IoT data to narrow products to meet targeted customer segments, offer pop-up displays or stores to draw in customers seeking the novelty factor, and winnow out low-performing products.

Numerous research studies have demonstrated that providing excessive choice in physical stores can create indecision, leading to fewer purchases and greater dissatisfaction.[27]

Lowe's Home Improvement, uses Microsoft HoloLens to help customers explore and visualize renovation projects as if they were in their new kitchens. They can use the solution to experience a holographic representation of a completely new kitchen, with life-like cabinets, appliances, and countertops depicted to size and scale. They view high-definition options and detailed finishes, adjusting them instantly and sharing them with friends online. A mini-hologram kitchen provides a bird's-eye view of the kitchen. VR solutions not only model products in context, but also help overcome buyer resistance to purchasing high-dollar products and reduce costly returns.

With sensors and embedded technology, retailers of products such as home appliances can create rich opportunities for creating value-added services, such as selling maintenance and repair services, parts, and related products.

Retailers make significant investments in physical infrastructures. They can use IoT data and hyperscale computing to analyze which locations are best for new stores and close under-performing stores that analytics predict can't be turned around. They can also treat their stores as a product, redesigning layouts for optimal dwell times and using smart technologies and IoT data to track consumers, optimize energy use across locations, and improve security of goods, equipment, staff, and more.

How to triumph at digital transformation
Use this roadmap to ensure digital transformation success in the retail industry.

- **Articulate your goals.** Understand what you want to achieve and why. Review best practices from market leaders like Microsoft to understand what is possible. Learn how to sequence investments for near-term ROI and ongoing value creation.

- **Create a smart building strategy and roadmap.** Create an overall strategy and partner with OEMs, ISVs, SIs, and data aggregators to design the initiative. Use what you have, identify a high-value opportunity, and decide what to track. IoT creates huge volumes of data so narrowing in on the information that matters to your business will help you gain rapid value from your investments.

- **Communicate intent.** Tracking technologies can introduce the specter of Big Brother into customer and employee relationships. While customers understand that they trade privacy for personalization, employees need to understand why they are being monitored. Explain what you're tracking and why. Consider user privacy concerns and address them.

- **Run an IoT pilot.** Launch an IoT pilot and chart business gains. Collect, analyze, and use structured, semistructured, and unstructured data to predict future demand. Use success metrics to help prove the worth of a larger-scale initiative. Stair-step to greater business gains.

- **Place the right strategic bets.** With the Microsoft Cloud, Windows 10 devices and apps, and Azure IoT at the core of the solution, enterprises and their partners can identify new business opportunities. They can gain enterprise-wide visibility into marketing, sales, and operations, from a global level to industry and individual product-line performance, enabling them to make informed decisions in real time.

- **Build a platform business.** Just as cloud services have decoupled technology systems, digital transformation enables enterprises to collaborate with their partners—OEMS, ISVs, SIs, and data aggregators among them. Gartner recommends taking a platform approach to business—creating a flexible, agile foundation where internal and external resources, such as people, assets, material, and intelligence, are used in a dynamic way to promote discovery of new ideas, integration of new sources, and rapid scaling of the best innovations. Companies can use social media and self-service tools to engage with customers, online talent pools to augment the workforce, partners to run critical technology infrastructures, and crowdsourcing platforms and startups to drive product innovation.

- **Create and build on a solid, yet flexible IoT foundation.** Microsoft, a proven leader in the enterprise space, has a long-standing commitment to helping its partners and enterprise customers build on their existing technology assets, devices, and data to derive business value from IoT. Many companies already use a wide variety of Microsoft devices and services. By building devices on Windows 10 IoT, OEMs can help enterprises maximize the value of their assets as they evolve their digital strategies to become mobile-first, cloud-first businesses. The Windows 10 IoT product family—Windows 10 IoT Enterprise, Windows 10 IoT Mobile, and Windows 10 IoT Core—offers three editions to meet the full range of device manufacturers' needs, from devices with robust functionality to single-purpose edge devices. By Azure-certifying devices for IoT, OEMs ensure the dependability and credibility needed to help enterprises unlock the power of the data these devices will create with confidence.

- **Unlock more potential from existing infrastructures.** Both enterprises and OEMs have made sizeable investments in building IT infrastructures and product lines. Reap the full benefits of those investments with Windows 10, which provides interoperability and communication across IoT devices. OEMs can provide device-as-a-service (DaaS) offerings with device telemetry, configuration, and updates, and access to Microsoft productivity solutions. Help customers reap the benefits of Microsoft Azure and the Microsoft Cloud platform, with anywhere, anytime access to their data and resources, increasing their agility and responsiveness.

Ignite continuous innovation. Microsoft has scanned more than 100,000 drivers to create a universal driver API set for device manufacturers. One universal driver targets all Windows 10 IoT editions, and enables devices to access a larger ecosystem of peripherals. OEMs can use Windows 10 IoT to scale quickly by selling or using the same components across all Windows 10 IoT editions. They benefit from a steady cadence of Windows 10 IoT innovation that will keep smart devices at the leading edge of capability and performance. OEMs can use Windows 10 IoT to manage for optimal results, while reducing overhead.

Choose the trusted cloud. Microsoft is the leading trusted, flexible, and open-cloud platform. Today, the Microsoft cloud infrastructure supports more than 1 billion customers in more than 140 countries. With this unique experience and scale, Microsoft cloud services can achieve higher levels of security, privacy, and compliance than customers can on their own. Azure has received more compliance certifications than any other cloud provider, including major global, national, regional, and industry standards and regulations. The PaaS, IaaS, and SaaS services can enable business growth when and where it's needed. Scale up and down as needed, minimizing cost and ensuring business continuity and effectiveness.

Build devices on one common platform. Windows 10 provides one universal app platform, one security model, one management approach, one unified experience that scales across devices from the smallest sensor to the largest, most powerful devices. OEMs can reduce the cost and complexity of running their business and empower their developers with one common developer platform, and service teams with enhanced security, management, a store, and more across the broadest range of devices. Enable ISV partners to make a wealth of apps for multiple devices, knowing that each app can be deployed across all Windows devices without modifications. Authorize approved apps to manage IoT devices easily, with a standardized device management API. Make it easy and intuitive for enterprise customers to use devices, integrate them into their infrastructures, deploy apps of their own, and acquire immediate and ongoing benefits.

Accelerate time to value. With Windows 10, one common and universal platform, it is easy for developers to do their best work. Build and deploy apps using the same tools and code for PCs, phones, and other industry devices. Enable developers to use their existing skill sets, doing more with existing staff. Reduce the training time for new hires, improve image design time, and meet market demands for new device types. With faster development, release a steady stream of updates to enhance device capabilities and help ensure security.

Reduce product investments with extended lifecycle support. Develop new product and service lines knowing that Microsoft stands behind its partners. Microsoft offers 15 years of product availability, 10 years of support, no-cost security updates, and premier account management to its OEM and ISV partners.

Prepare to incorporate AI and machine learning. While enterprises may start with humans reviewing IoT data and dashboards, they will move to running powerful algorithms that autonomously decide what needs to be done and initiate actions. Smart buildings will provide a continuous feedback loop, enabling machine learning to continuously improve both customer-facing and operational processes for peak effectiveness and efficiency.

Why Microsoft

Microsoft has a strong track record of helping retail organizations realize the business value of digital transformation. That's because our holistic platform and advanced technologies, open and flexible approach, enterprise-grade solutions, and partner ecosystem build on companies' existing technology investments and deliver results quickly and cost-effectively. Working with Microsoft brings a distinct set of business advantages that no other provider offers. Across the different retail sectors, Microsoft solutions help companies achieve the insight, innovation, and efficiencies that promote competitive advantage and keep the world powered.

A trusted, flexible, and open-cloud platform

Today, the Microsoft cloud infrastructure supports more than 1 billion customers in more than 140 countries. With this unique experience and scale, Microsoft cloud services can achieve higher levels of security, privacy, and compliance than most customers can on their own. Azure has received more compliance certifications than any other cloud provider, including major global, national, regional, and industry standards and regulations.

Windows 10 accelerates time to value

Windows 10 provides one universal app platform, one security model, one management approach, one unified experience that scales across all devices—from the smallest sensor to the largest, most powerful devices. This one core operating system provides a common developer platform, enhanced security, management, store, and more, across the broadest range of devices. Windows 10 devices offer advanced integration with your customers' current infrastructure. Use Azure IoT Suite to connect your devices and things, get started quickly with preconfigured solutions, and use untapped data to transform your business.

Global

The extensive, global Microsoft datacenter footprint covers more regions than any other provider, to better meet data sovereignty requirements. We're investing in one of the world's largest technology partner ecosystems with more than 640,000 partners in 170 countries.

Edge-to-edge security

Device manufacturers building smart devices, retailers selling devices, and enterprises using Azure must all protect each and every endpoint and ensure that their cloud services are built with the highest security. Device manufacturers are using Windows 10 IoT, the most trusted Windows ever, to build smart devices. Windows 10 takes intelligence to the edge, with Secure Boot and Trusted Boot, to help ensure device integrity; integrated Windows Defender, to help keep devices safe from malware and other threats; BitLocker and TPM support to help keep user and device data safe; Credential Guard and Windows Hello, to ensure user authentication across all devices using the latest technology; and Device Lockdown, to enhance device security in the event of theft or diversion.

Enterprises benefit by deploying Windows devices that are secure by design, provisioned to connect to the trusted cloud, and provide automatic updates. Azure Active Directory (Azure AD), a world-class identity management solution, provides enterprises with self-service tools that empower employees to access cloud services, but maintain robust controls and provide ongoing security monitoring and alerts. More information about the Microsoft commitment to transparency, privacy, compliance, and security can be obtained at the Microsoft Trust Center.

On customer terms

Azure is the only platform that supports a fully hybrid architecture, giving you complete flexibility and control of data and applications delivered between public and private clouds. The Microsoft Cloud works with any operating system, database, middleware, and application framework, enabling you to build on your current technology. Windows 10 empowers the digital transformation of IoT devices and smart things, enabling edge intelligence for a multitude of ever-evolving needs, whether gathering data, monitoring security, or enabling productivity on the go.

Comprehensive, enterprise-ready solutions

Microsoft solutions span the full spectrum of business needs—data access, high-performance computing, advanced analytics, visualization, and business process automation. Windows 10 offers unprecedented universal application capability across devices, including innovative devices like Surface, Surface Hub, and HoloLens. Individual and enterprise productivity is increased by ensuring that the right information is provided to the right people at the right time for actionable insights and decisions. This is accomplished through a holistic suite of collaboration, knowledge management, work process, mobility, business insight, and advanced analytics capabilities.

Advanced technologies designed for ease of use

By offering technologies such as Power BI, Cortana Analytics, and Azure IoT Suite, Microsoft helps enterprises apply advanced technologies to business challenges once deemed too costly or complex to solve. For example, Microsoft industrial IoT capabilities enable organizations to ingest data from any source or format, apply machine learning models and data visualization, and integrate those results into collaboration and work-process solutions. This drives informed actions, as individuals take advantage of tailored, actionable insights to make better business decisions and deliver better business outcomes.

Largest ecosystem of industry-leading partners

Microsoft has a broad ecosystem of prominent SIs and ISVs. This ecosystem uses existing technology investments and offers the flexibility to select the best solutions for each business. Our partners design and deploy innovative, industry-focused solutions built on a Microsoft foundation, coupling best-in-class technology with deep industry expertise. No other technology provider offers a comparable end-to-end portfolio as well as an open and flexible approach. Together, it's this unique perspective that helps Microsoft drive digital transformation across all aspects of an organization and change the way a company optimizes operations, empowers employees, transforms products and services, and engages with customers.

Windows 10

Windows 10 provides customers with a flexible platform of integrated products and services. Our comprehensive partner ecosystem helps lead companies through a journey of digital transformation to create innovative products and services, improve customer engagement, and execute with excellence.

Windows 10 is:

- **One Windows**—offering a universal Windows platform for developing, deploying, and managing all company devices and apps.

- **Security-enhanced**—providing enterprise-grade security with granular UX control and advanced lockdown to help secure identities, data, and devices.

- **Connected**—ensuring interoperability across devices, easy incorporation of sensors and peripherals, and seamless connectivity to Microsoft Azure.

Retailers use hybrid cloud services, devices that are secure by design, and point-to-point encryption (P2PE) to protect vital data from security breaches, theft, or misuse, and ensure compliance with global regulations.

As one of only a handful of firms with hyperscale cloud infrastructure, Microsoft is in a unique position to help customers tap into digital transformation and invest in technologies that will create more operational efficiencies and better engagements with customers, suppliers, and partners.

Transform your business today at:
www.InnovateOnWindows10IoT.com

Digital transformation starts now

Get started today. Work with Microsoft or one of our global partners to see how to transform business by harnessing IoT, big data, collaboration, and mobile solutions.

- **Get more information on Microsoft and the retail sector:**
  https://enterprise.microsoft.com/en-us/industries/retail-and-consumer-goods/

- **Find a Microsoft partner:**
  www.microsoftpartnersolutions.com/retail

- **Read about customer success stories in the retail industry:**
  https://enterprise.microsoft.com/en-us/industries/retail-and-consumer-goods/?post_type=customer-stories

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