IoT is not a futuristic technology trend – it’s already here today and the business value of it as it relates to the end-consumer experience is being realized by industry leaders as we speak.
The Value of IoT for Customer Experience

According to Gartner research, there will be approximately 25 billion connected “things” by 2020. IDC predicts that the internet of things (IoT) market will grow to an astonishing $1.7 trillion by the same time. There is no doubt that the impact of IoT on our every-day lives and in the business world will be huge. However, with all of the potential surrounding IoT comes a great deal of hype and tension, as some companies might see the rise of IoT and the management of it as some-what of a daunting task - but it doesn’t have to be. IoT is not a futuristic technology trend – it’s already here today and the business value of it as it relates to the end-consumer experience is being realized by industry leaders as we speak. IoT is transforming the management of physical assets, Big Data and ultimately how companies interact with their customers.

In this paper, we will show you that IoT does not have to be unduly complicated, expensive or time consuming, and if done properly, it will harmoniously connect with other business initiatives to develop an ecosystem of channels, products and services that will make the lives of your consumers increasingly easy and more personalized. We will show you how to look beyond the hype to see how IoT can transform your customer experience and how you can tap into the power of IoT for your own business goals. You will discover:

- What exactly IoT is
- The impact Big Data and the Cloud have on IoT
- How Microsoft is making IoT easier than ever before
- Real-world examples of IoT across various industries
Aside From all the Hype - What Exactly is the Internet of Things?

The hype surrounding IoT has most IT leaders overwhelmed, but what most of them do not realize is that they already have the basic tools in place to make IoT a reality. IoT is about a world where the connected smart assets that matter to your business the most—whether that’s trucks, scanners or POS terminals—can collect and share data and, in so doing, enable new insights that can transform your business. Connected devices are currently producing measurable ROI, new insights, and improved customer experiences. Many of the decisions made by companies are data driven, so IoT simply provides another layer of information that is in real-time and exceedingly specific.

The value of IoT implementation spreads across countless sectors, from transportation to manufacturing and consumer products. Connected systems are becoming increasingly accessible due to the falling costs of hardware like microprocessors, the scalability and maturity of the cloud, and more affordable wireless connectivity. Leveraging the cloud’s many capabilities, such as agile data storage and machine learning (predicting future behaviors), you can move faster, do more, save money, and capture the benefits of the Internet of Things for your business.

Implementation

In order to formulate the first steps toward an IoT strategy, start with your existing IT assets, such as machines on a factory floor or POS scanners, and then build upon these. You will then need to consider adding a few new assets, such as beacons or sensors, and then connect them to cloud based analytics tools like Microsoft Azure Suite, to enable them to talk to one another, internal staff, and customers through the sharing of their stored information. Then you can start actually utilizing the data that your assets will generate with business intelligence (BI) tools (Microsoft Power BI) to gain actionable insights into what your customers and employees want and need. We will discuss a few examples of how companies are already doing this toward the end of this whitepaper.
The Impact of Big Data in the Cloud on IoT

Data is mission critical to business operations and the end-consumer experience, but the challenge lies in organizing and making sense of the massive influx of data that IoT devices produce. This type of information comes in a variety of formats, values, and traffic patterns and is derived from multiple sources that might not always be interconnected. Context is key within the data, especially when it comes to improving a complex and multi-faceted area such as customer experience. Deriving this context takes new types of cloud-based tools.

Data produced by IoT is large in scale—so large that the typical organization cannot handle the information properly with traditional computing models. The Big Data framework must be built on a flexible and scalable compute model that evolves along with the business and its needs. Cloud-based business intelligence tools can help provide the necessary framework to store and process the large amounts of data coming in. A cloud-based BI platform is vital for IoT initiatives because the data that is received can be automated through rules or filters, viewed in easy-to-read dashboards and crafted into a more usable form—allowing businesses to take action without delay.

A robust cloud system can provide enterprises the agility needed to consume the significant amount of IoT device data, store the information securely, and then handle the application of rules and structure so the data can be utilized. The new marketplace offerings of hybrid, private, and public cloud compute models provide companies with the flexibility and scale that was not previously available.
Leveraging the Power of Microsoft Cloud Solutions for IoT

Microsoft has the capabilities and experience to transform your business by building on your existing investments to easily create a flexible and intelligent IoT system. A surprising amount of value is gained from connecting assets that you already have in place and by simply adding a few new devices such as microchips, GPS devices and sensors. But, there is of course an important layer to this IoT system that cannot be ignored and that is where Microsoft and its valued IoT partners come in.

Microsoft has invested quite a bit in delivering the integrated platforms and services that help enterprises capitalize on IoT by gathering, storing, and processing data. This investment is culminated in the Intelligent Systems Service which runs on the Azure platform. It makes it easier for enterprises to securely connect, manage, capture, and transform machine-generated data from various devices and sensors, regardless of the underlying OS. Blending Intelligent Systems Service with Power BI for Office 365 helps companies develop insights, and the underlying enterprise-grade security delivers peace of mind.

In addition, Microsoft has invested in an IoT partner program where they have selected an exclusive group of systems integration specialists, TechBlocks being one of them, to help companies maximize the value of the Microsoft Cloud suite and to connect additional assets into one agile ecosystem that they can use and manage on their own to make smarter decisions and improve experiences for their customers.

Companies are already utilizing Microsoft-based technology for IoT initiatives to:

- **Deploy solutions quickly.** By building on what already works, you can start building an intelligent system to capture opportunities today.
- **Lean on trusted support and expertise.** Microsoft is an industry leader with a clear vision and understanding of the potential IoT has for businesses. They have the right tools and the right solutions to take your business to the next level with IoT.
- **Leverage partners.** Device manufacturers to build the next generation of devices, software vendors, and reliable systems integrators are part of the Microsoft partner network and can all work seamlessly to put in place custom-built IoT strategies.
As it grows in scale and accessibility, IoT will fundamentally alter business and customer interactions to make them smarter, more efficient and more personalized. By connecting people, assets, devices and systems, IoT delivers a true omnichannel experience between the physical and digital world. Connected systems will ultimately remove guesswork from many situations, allowing managers to make informed decisions with improved confidence.

Let’s delve in a little deeper to discover the real-world value of IoT on the customer experience by looking at the retail, green energy/utilities, and logistics/transportation industries.

Retail Customer Experience

IoT has the potential to disrupt the retail experience, possibly more than the rise of online shopping. For traditional brick and mortar retailers, IoT provides a significant opportunity as it can provide the tools to gather in-store data in order to create customer personas that coexist with the online world in an omnichannel environment.

The offline and online experiences are already blending in terms of data, returns, and inventory, but IoT will take it further. For example, a shopper that was searching for a product online can be guided through IoT devices to the location of the item in-store, while simultaneously receiving a personalized coupon – this can all be accomplished using Wi-Fi sensors and mobile devices.

IoT can also be used as a tool to optimize store layouts, automate checkout processes, and adjust inventory management to better handle spikes in demand for maximum efficiency. Customer’s benefit from a more intuitive shopping path, faster checkout, and the confidence of knowing desired and popular items are always kept in stock. It develops a classic win-win, improved customer experience combined with reduced costs and increased productivity for the retailer.

As adoption of IoT spreads, it positively transforms the entire value chain. It reduces the labor needed on the selling floor while also boosting sales-per-customer through the use of data-informed customization and cross-selling. Personalization is key, and BI platforms have become a major component in the way retailers are using IoT data to develop a one-on-one relationship with every value customer. Retailers that do not embrace IoT in the next few years will likely fall behind as they struggle to provide competitive experiences.
In-store Experience:

By studying the location and movement of shoppers over time, IoT data can be used to optimize a store’s physical layout so that it displays products based on the customers’ actual habits, not by store-defined categories. A study notes layout optimization can boost productivity by over five percent, leading to a total potential value of $158 billion by 2025 (McKinsey). This assumes widespread adoption, which would be likely if early adopters show that layout optimization provides a competitive advantage, forcing other stores to match this capability.

Mobile Checkout:

With IoT, retailers can automate the in-store sales process by installing sensors that scan the contents of shopping carts and automatically charge the purchases to the shopper’s linked mobile payments account. Consumers can simply grab the items they desire and walk out of the store, then check their receipt on their mobile device at their convenience – no more waiting in long line-ups. The system would read the electronic tags on the items in the cart and a checkout system would add up the prices of the items and relay the information to a wireless payment system. Lowered labor costs would combine with a faster shopper experience. Of course, retailers would still need some staff to handle pricing or other issues that would require human action.
With a global focus on energy efficiency, conservation of energy and water sources, and reduction of carbon emissions, the utility industry is shifting rapidly. New capabilities that include intelligent assets such as grids, meters, and appliances are being implemented to improve efficiency while better connecting individuals with their community and the utility itself. Assets such as smart thermostats use sensors and predictive algorithms to detect when a home is vacant and then adjust the temperature settings accordingly. The devices can "learn" patterns over time by adapting to household behaviors. Connected washers and dryers are other smart-equipped devices that can pull information about peak energy periods, and then delay their start cycles accordingly.

The sophistication of such devices will only continue to improve, and the implications for satisfaction are clear, as the homeowner saves money and energy without expending any effort. The IoT will expand to numerous items in the home, which will work together to improve daily lives seamlessly, so they work in sync with the user's routines and desires. The end result is satisfaction through monetary savings and the elimination of certain tasks and concerns that are removed through smart data.

**Smart Grid**

Physical assets are also connecting to other machines, systems, and people, not just the internet. They are becoming more intelligent as increasing amounts of embedded software and analytics are utilized to determine the "health" of assets. Within the utility environment, understanding the broader picture is essential for efficiency and service, and utilities will pull aggregated smart appliances data to streamline their businesses while improving their service levels to customers.

Implementing smart grid technology will vastly transform the utilities industry. It will allow for utility companies to keep up with the rising demands for power meet spikes in energy consumption based on time of day or geographical location. It will also help decrease brownouts, blackouts and surges. When issues do occur, technicians will be able to pinpoint the errors and perform real-time trouble-shooting in order to get service back up and running more efficiently. All of this will provide smoother service and lowered costs for both utility providers and customers.

**Augmented Reality and Asset Monitoring**

With augmented reality, operators see temperatures, pressures, and work orders. In the meantime, a maintenance worker views cycle times, vibrations, and calibration dates. And anyone approaching the machine accesses relevant safety information. Augmented reality can also work with geographical information technology that collects the recorded global positioning information of assets from various sources to visualize their location in the real world. As a result, workers can see and walk through interactive 3D renderings of buried assets, such as buried cables or pipes, through a live feed from their mobile device helping them to solve service issues faster and provide faster resolution times to customers.
Streamlining Logistics and Transportation

Gartner recently released a report confirming the impact IoT will have on business, especially how it will transform logistics. All of the changes and benefits that IoT will bring to third party logistics providers, shipping companies and warehouse personnel will end up benefiting consumers through faster and cheaper shipping options. Customer demand for free shipping and instant gratification is already high, and IoT-driven data can help companies meet this demand without undue expense. The impacts will occur throughout the supply chain:

Inventory Visibility

The logistics ecosystem has many interconnected parts, that all must work together for a smooth operation. IoT can help by introducing more visibility to the “in-transit” part of logistics, where products are handled and transferred between the manufacturer, suppliers, the distribution center, retailer, and customer. All of these entities working together calls for technology that can track and locate products in an instant.

Key technologies are cloud-based GPS and Radio Frequency Identification (RFID) that offer instant access to data. Sensors throughout the supply chain can relay this information is vital to maintaining inventory levels and meeting customer demand. And it further enables customer self-service when the customers are given access to the data (in a simplified format) so they can track their orders in real time. Delivery time windows can be shrunk down to minutes instead of hours, freeing the consumer to spend more time getting things done and less time waiting for deliveries or updates.
Smart Machines

The core of logistics and transportation is the warehouse, as items must be picked and packaged before the shipping and tracking process begins. The best shipping procedures are not much use to the end customer if the warehousing is buggy and fraught with delays. IoT comes into play by giving warehouse managers instant (and mobile) access to information about inventory, equipment, and other physical assets through smart machines, that combined provide a snapshot of the entire operation process. It’s about converting the physical to digital, so warehouse management can share data across the cloud. IoT can actively reduce human intervention in processes by enabling info sharing between the connected machines. The result? Improved efficiency and accuracy, which has a downstream effect on the quality of orders for reduced returns rates and happier customers.

Last Mile Delivery

Fleet management and last mile delivery is another critical component of the logistics puzzle that can be improved through IoT. Downtime of equipment can cause delays (potentially damaging the customer relationship), so minimizing maintenance time and equipment failures is very important. Visibility is again the goal, and fleet managers can use mobile scanners, RFID, and other tools to better understand where their assets are located.

Blending connected devices with mobile allows companies to share and manage the data of their moving assets. They can talk to drivers and maintenance crews quickly, to guide them on proactive repairs, route changes, or the possible impacts of weather or other events. Sensors can for example determine when a truck requires maintenance, allowing a team to service it during off-peak times and have it up and running in time for deliveries the next day. The benefits come into play for both business and consumer customers, with the trickle-down effect of lowered costs and smoother logistics end up boosting satisfaction.
Conclusion:

The Internet of Things provides businesses with an exciting opportunity to combine the digital and physical world in order to foster more efficient operations and customer interactions. It’s important to realize that IoT is not a thing of the future. The driving business need to capture and use Big Data, be increasingly more efficient all while providing an amazing customer experience is making IoT a reality for many industries today.

IoT should not be looked at as a separate and complex initiative, it’s about adding devices and applications to your existing assets in order to create a smart ecosystem that will provide you with a competitive advantage. The investment in IoT does not have to be huge and ROI can be seen not only in streamlining internal processes, but also in developing new information about your customers - how they behave, what they buy, and how they use the things they buy. It provides a whole new layer of information that can then be leveraged for business gain while increasing customer satisfaction with every brand interaction.

Are you looking to implement IoT as part of your business strategy but you’re not quite sure where to start? The experts at TechBlocks would love to help you get started. As a leading Microsoft Azure IoT Platform partner, we help businesses get the most out of their Azure environments, and can provide consultative and platform development services in order to help our clients bring their IoT initiatives to life. Our guidance and expertise will help you optimize the structure of your data to deliver the biggest business impacts and ultimately improve your end customer’s experience. Contact us today for more information on how we can help.

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