



Unlocking Internet of Things for Business: Turning Data into Action is the Key

Consumers and businesses alike are surrounded by the Internet of Things. Everywhere we look, we are reminded of its dominating presence as the next big technology trend.

Executive Summary

Without a doubt, everyone associated with enterprise technology has heard about the Internet of Things (IoT). This latest technology phenomenon has dominated the conversation around the consumerization of IT through the latest smart devices and prototypes being introduced to market.

As IoT continues to gain momentum, we are seeing more and more instances of where its relevance is being introduced to business. Industries across all verticals are developing innovative technologies such as sensors and mobile devices that are able to collect data and resources valuable to ensure competitive advantage and customer satisfaction.

While the new tools and smart devices are exciting, the revolutionary business value behind the IoT movement can be overlooked. The data itself, not the device in which data is collected, holds the transformation gains IoT can bring to business.

This white paper examines how business must look to modern application platforms as the bridge connecting the data available from new smart devices to business processes and business transformational value. An application platform approach to IoT allows business be made aware, become knowledgeable and take action on data from a new world of sources, resulting in process innovation and competitive advantages unknown before.

Introduction

The Internet of Things (IoT) has been all the talk of late. From dominating the coverage at the 2015 Consumer Electronics Show (CES) to C-Level executives taking its many aspects into consideration for business growth, everywhere you turn the conversation is all around you.

Today we see more and more smart devices introduced to consumers, forcing business to keep up. As BYOD continues to evolve as a major component of the workplace environment and as other devices and sensors begin collecting and sending more data, leading organizations must align IT strategies with IoT.

Forecasts show this latest technology paradigm will continue to sky rocket. As predicted, more than 50 percent of mobile users¹ will go to a tablet or smartphone first for all online activities, whether it is for business or pleasure. But the mobile revolution is nothing new, and plays just a small role in defining the true meaning of IoT.

In short, the Internet of Things is about using embedded sensors to connect things in the physical world to the online world. Most of the discussion is currently on the consumer level – the connected car or connected home – but the implication for business is that processes can be monitored, maintained, and completed more easily and efficiently. IoT is about creating awareness, driving more knowledge, and taking action more quickly than previously possible.

No Longer just a Buzzword

What once was means of social communication and knowledge sharing for consumer purposes has now extended to new modes of collaboration and decision-making for modern business practices. We live in an on-the-go society, and the work environment is following suit. Being able to access information from today's smart devices, sensors and prototypes – and turn it into actionable understanding – allows employees to stay connected to the business from anywhere at any time.

Whether monitoring energy usage in our homes, providing real time data to field service staff, or managing supply chains for major retailers, end users of IoT data will frequently be on the go. Turning the vast amounts of data and awareness generated by the coming wave of IoT into rapid, responsive action is a must for businesses trying to stay ahead in the digital age.

IoT, which excludes PCs, tablets and smartphones, will grow to 26 billion units installed in 2020,² representing an almost 30-fold increase from 0.9 billion in 2009, according to Gartner, Inc. IoT product and service suppliers will generate incremental revenue exceeding \$300 billion, mostly in services, by 2020. This transformation will result in \$1.9 trillion in global economic value-add through sales into diverse end markets.



As enterprise software spending is on pace to total \$335 billion in 2015,³ a 5.5 percent increase from this past year, more price erosion and vendor consolidation is expected because of competition between cloud and on-premises software providers. Leading IT vendors, as well as in-house IT departments need to recognize that components of IoT must be budgeted into their present and future technology initiatives. On the business side, the need to keep pace with IoT must be recognized and adopted with the same urgency as mobile, social and cloud strategies.

The “Things” are Everywhere!

An area of IoT that has gained a considerable amount of momentum is connected homes and connected work.⁴ Smart homes and smart metering are gaining considerable traction around the world. We see a lot of this already happening through smart kitchen appliances such as refrigerators and microwaves removing manual steps for consumers.

As has been the cases with other notable enterprise software developments like cloud computing and mobile enablement, the IoT revolution is not bound to a few select industries. In industries such as manufacturing, agriculture, health care and public infrastructure, IoT is far from an unproven prototype at a trade show; it is an exploding industry, and it's completely changing the game.⁵

The agriculture industry is undergoing a powerful transformation⁶ thanks to IoT technologies. Farmers can now monitor soil conditions and crop growth, or livestock health, across thousands of acres of land, all in real time.

In healthcare, advances in patient condition monitoring can create healthy living habits for those suffering from illnesses. The development of smart technology may soon allow patients with diabetes to monitor glucose levels from a portable device, instead of daily finger pricking. This approach will enable physicians to gain a better understanding of their patients, leading to better levels of care provided.

Commercial transportation and supply management providers are using social and mobile capabilities to keep vehicle operators connected to headquarters in real-time. This helps track critical data, allowing for optimized operations and quality assurance when it comes to fleet management and the goods being transported. In the near-term IoT future, the trucks and goods themselves – not the drivers – will be the sources of that data.

Awareness-Knowledge-Action through Data Innovation

Though next generation smart devices get all the attention, the foundation of IoT lies in the ability to be aware of data from a variety of sources, and take business action on that data. Organizations that develop IT solutions complete with instant access to a broad range of data gain a leg up on the competition, while others remain over their heads with each new device that reaches the market.

Enterprises need to think about the architectural implications of connecting to consumer-oriented devices. Information architecture and management should be top of mind with IoT initiatives being heavily information centric,⁷ says Gartner Research Director Mike Walker. The challenge for business remains finding ways to translate data from what seems like an endless amount of sources (what we could call “awareness”) into knowledge and action.

Where the true value of IoT plays into the various examples detailed above is not the new way in which data is captured, but how rapidly and effectively such data can be analyzed by decision-makers. In order to remain competitive and reach a given customer base, IoT must be incorporated into an accelerated awareness-knowledge-action cycle when it comes to data management.

The devices and prototypes of the booming wearables industry unintentionally work against the long-term value of IoT. Especially on the consumer side, end users get too caught up in the new gadget itself, as opposed to recognizing the integration to meaningful data such a device enables.

The true game changer of IoT is the ability to extract useful, knowledgeable data from what is now an endless amount of resources. Organizations must embrace enterprise technology as the bridge that allows data from new sources to be integrated across key components of business.



Connecting IoT with a Modern Application Platform

So the major question is how do you connect all this IoT-era data back to a business or user? Particularly for business, new and innovative ways to capture data doesn't serve much value unless it can be accessed easily in a single location, where appropriate parties can collaborate around it, draw conclusions, and ultimately take action, from the desktop or on-the-go.

Appian's modern application platform connects users across multiple systems of an organization to the knowledge and awareness needed to turn data into real business action via any device.



This approach is what Appian defines as a [modern enterprise application platform](#) to deliver business transformation. Such an app platform is rooted in Business Process Management (BPM), but extends to include data management, mobility, collaboration and more to create new value and new work practices that are unique to that organization. To ensure rapid business innovation, an application platform approach creates a single intuitive interface that integrates process, data, mobility, social collaboration, and cloud. That's what Appian delivers, and it's what elevates IoT from another technology trend to something that can change the landscape for business and consumers alike. A modern application platform actualizes the possibilities of IoT because it uses the same types of easy connectors that currently link disparate enterprise systems (web services, APIs, etc.) to link smart devices and sensors to innovative business applications.

Let's look back at the transportation example from earlier to see how an application platform can create real value from IoT. In this situation, an application platform is ideal to connect mobile sensors on a truck back to the business for analysis.

Sensors on a truck will be able to track vehicle fuel or oil levels, where as additional hardware may track a driver's speed or how well a navigation course was followed. Currently, a driver can scan an RFID tag on a delivery to collect data, but IoT evolution will take that human component – and the possibility of human error – out of the equation, with the goods themselves auto-transmitting location, quality and other types. Business rules and process automation inherent in a modern application platform can allow for these measurement levels and results to be uploaded in real time via an application back at the trucking company's office headquarters. From there, reports can be generated for each vehicle and its payload to enable innovative [case management](#), allowing a managing director to view all scores and maintenance levels in one environment to analyze holistic performance of the truck, the driver, and the delivered goods.

Access to enterprise data may allow management to better understand in which geographic areas or weather conditions their drivers are struggling to navigate safely, or what type of truck requires more regular servicing. Such data may conclude that certain rural areas during certain times of the year with certain types of cargo require a larger fleet of vehicles to meet delivery deadlines.

This is a perfect example of how IoT and an application platform can create a modern approach to awareness, knowledge and action that allows business to operate in a more agile fashion than ever.

Conclusion

The debate over IoT (fad or game-changer) is sure to remain a hot technology topic both for business and consumers in the near future, but utilizing IoT data in the context of modern applications is sure to cement its relevance. This method of connecting people to data and processes enables a workforce to keep up with a 24/7 consumer culture, as data and behavior is automated and can be interpreted through a simple, easy to use interface, allowing for continuous improvement, rapid product introduction, and improved customer engagement.

The IoT market may shift with each new host of data that reaches consumers and suppliers. This is why business needs a consistent means of data integration to keep up with today's fast-paced digital world and the increased intelligence that is available from endless sources.

Building a successful ecosystem of IoT-enabled services requires enterprise architects to think about using new software platforms and services in an intelligent way through modern integration. Those businesses that are able to automate data collection from any “thing” the fastest, and turn that data into the most rapid action will be the winners of the IoT phenomenon.

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As the market leader in modern Business Process Management (BPM) software, Appian delivers an enterprise application platform that unites users with all their data, processes, and collaborations — in one environment, on any mobile device,

through a simple social interface. On-premise and in the cloud, Appian is the fastest way to deliver innovative business applications.

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