DEFINING BUSINESS SUCCESS WITH THE INTERNET OF THINGS

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THIS EXECUTIVE BRIEF IS A SUMMARY OF THE WHITE PAPER:

7 Steps to Business Success on the Internet of Things

DEFINITION

- The Internet of Things (IoT) allows businesses to connect products, applications and services over the Internet and to understand and control almost anything in the physical world. It uses bidirectional sensors and actuators to track, control, and communicate over a network.

INTRODUCTION

- IoT has the potential to revolutionize business, adding opportunities to enhance business on all fronts through devices with the ability to sense and control the physical world.

- IoT devices can push information directly to the cloud, but sometimes it is better to send all data through a central access point for consolidation before going to the cloud. This is called a gateway.

- Businesses all over the world are planning on incorporating IoT into their daily operations. According to research, 76% of businesses plan to incorporate IoT internally while 74% have external uses for the technology.

KEY POINTS

- Begin by understanding the business case for using IoT. Explore all of the options that can accomplish goals, and apply the most appropriate technologies. Consider embedded components, connectivity, platforms, applications, clouds and security.

- Listen to users for what content should be on apps as well as the best way to access it. Are users on their smartphone, tablet, laptop or desktop? What operating system do they prefer? Considering the user in the beginning will refine your efforts and provide the most value.

- By being informed and flexible, a company can gain the operational resiliency it needs to respond to unexpected developments quickly and gain an edge on competition.

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KEY POINTS
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- Keeping the end user in mind early in development will help make sure that one selects the right hardware and firmware.

- Determine the frequency of data collection and communication by figuring out how often data is required and then reverse engineer to determine how often the IoT device needs to collect the data to generate that information.

- Incorporating IoT into a business is not as simple as just connecting an object to the internet and sending its data to a mobile application. To be successful, acknowledge and learn a complex, multi-discipline knowledge-set to make informed choices about hardware, software, security and network options.

- Security is the number one concern with IoT technology. Use an industry standard end-to-end security solution like symmetric data encryption (TLS, SSL) to protect communication channels and permissions.

- Managing administrators and permissions is complicated but necessary to make life easier for users but also protect a company from tampering by limiting who can do what and when.

- For maximum success, integrate an IoT solution with key third-party business services that record and analyze the data. The service will return the data considered important automatically.

- Products and services on the IoT need to provide an innovative yet evolved customer experience that provide new efficiencies for the customer. Determine what can be learned by understanding how and when a product is used and what can be done with that information to better satisfy the customer.

- IoT use cases include operational optimization, revenue discovery opportunities, product feature upgrades, predictive maintenance, device lifecycle management.

- Operations and processes are prime candidates for streamlining over the IoT. Among them are maintenance, fleet tracking, goods tracking, systems monitoring and after-sales services.

- CRM integration in end user applications gives service, sales and marketing employees information for improved service delivery, maintenance and usage patterns.

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KEY POINTS
(cont.)

- A robust data center is necessary for device data coming in. Options include a cloud platform or an in-house data center.

- "Data deluge" is a huge issue in data collection. Build algorithms to help sort through it. Even simple ones can illuminate new ideas that a simple review would not uncover.

BUSINESS BENEFITS

- Using the IoT to connect vendor, customer and product can have a profound, positive effect on each party by filling orders faster, restocking quickly and accelerating production while reducing wait times.

- Internal operations benefit from building apps that connect aspects of the business that weren't possible in the past.

- Connected solutions and products allow gathering of real-time information and present an opportunity to transform a business model.

- Connected devices provide a business with new data to be explored and mined for operations and sales enhancing information that can take a company to the next level.

- IoT also helps marketing by indicating what products sell in which locations. The marketing team can customize efforts for maximum effect using that information.

TECHNICAL

- There are many low power Radio Frequency (RF) gateway options including ZigBee and ANT. Bluetooth, Zigbee and ANT are part of the IEEE 802.15.4 standard using their own radio frequency protocol over an ISM band (usually 2.4GHz).

- It is possible to develop your own RF protocol to fit product needs and extend power source life. Using an appropriate gateway for a device can deliver up to seven years of life on a coin cell battery.

- Bluetooth and Bluetooth Smart gateways are the most common, and prevalent in smartphone technology. The difference between the two is in battery life: with Bluetooth, battery is drained after one day of constant use or 7 to 10 days of intermittent use while Bluetooth Smart battery life is significantly longer. With Bluetooth Low Energy, a battery can last up to 2 years.

TECHNICAL
(cont.)

- WiFi is the primary network of the first-wave of IoT devices. Its availability is a plus, and developments in battery life can allow a device to run for months. A main power source is still the best bet.

- Cellular networks (3G/4G) cover 85% of the world. The disadvantages of cellular networks include the expense of bandwidth and quick power consumption in an IoT environment.

- Ethernet is the easiest network - plug and go. Proximity to an Ethernet port means proximity to a main power source. Lack of transportability is a negative with Ethernet.

- A product with an actuator can turn its sensor-based data into an output, closing the loop between sensing and acting.

- When a device is ready to connect, determining the messaging protocol requires some thought and consideration of components.

- Sensor data is time focused so having storage capable of handling incoming streams of time-stamped data is essential.

TAKEAWAYS

- Building a successful connected product, service or operation requires determination of a business case. Think it through, navigate a myriad of choices in hardware, firmware and cloud services to arrive at a successful, user-friendly end product that enhances the experience for both the business and its customer.

- Plan for service and maintenance over the lifespan of a system. Consider accessibility, device servicing, updating firmware, and what do if the system is running but unresponsive.

- Even with in-house built infrastructure, use specialists for the creation of an IoT platform. Carefully consider the capabilities and limitations of each.

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