



Will You Be a Digital Sensation or a Digital Catastrophe?

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The incredible emergence and wildfire growth of the Internet of Things (IoT) is sparking a global race to stake a claim in this trillion+ dollar movement. IoT is a vision that will create a fundamentally different business environment as businesses transform analog transactions to digital options.

IoT is not like the Dot-com phase of the Internet. The cost of Innovation is so affordable to companies today versus 15 years back. Every company can now afford a higher level of innovation and technology. Advanced database development, web and mobile interfaces and access to people with the knowledge to build and to manage technology projects enables every company to compete in their own market space.

**The Internet of Things
moves us from the
Information Age to
the Intelligence Age.**

IoT innovators believe that businesses will be able to offer “guaranteed outcomes” to their customer bases by extrapolating results from large amounts of data that is collected during IoT processes.

Where does your business fit in? Can you create services and niches to earn your share of the IoT pie? The answer is a resounding “yes.”

What is IoT?

We see IoT as two separate components. First, **connecting** everyday items to the Internet allowing processes to be automated. Second, **collecting**, dissecting, and reporting on the data to enhance business-making decisions.

The Internet of Things moves us from the Information Age to the Intelligence Age. On its own, that is a very large statement to make. Without the full knowledge of what IoT can do, you might believe that statement is just a piece of marketing fluff. IoT is already a multi-billion dollar business, even though you may not be aware of what it can do and how you can take advantage of it. We hope you find seeds of innovation and inspiration for your particular business within this paper.

The D's of IoT

“We identified four D-level words that can easily guide a discussion on IoT, and those words are devices, data from devices, displayed reports, and decisions,” said Jay Joyce, president of The Idea People. “The beauty of IoT is that the data and devices will allow people and processes to take either a manual or automated action as a next step in decision making.”

DEVICES	The sensor or item as an end point. This could be your phone, tracker or sensor on a piece of equipment.
DATA	The collection of data from connected devices.
DISPLAYED REPORTS	Each connected device will have a dashboard where data is collected, researched and reported against to share with stakeholders.
DECISIONS	Decisions can be automated based on collected data or lead to a precise manual decision or outcome.

We think this is a good example of how IoT could affect a daily, routine retail process:

A customer visits a retail store, picks up the items they want to purchase, and then walk out with them. Data sensors in the products, the retail store and on the customer's credit card finalize the transaction as the customer leaves the store. There is no waiting in line or swiping of payment cards. This is the impact of IoT on the retail side. Automated checkout.

On the commercial side, this is an existing application of the IoT process:

GE Aviation has installed sensors on aircraft engines that collect all types of data from key points in the engine. The data is transmitted continuously to GE and monitored for maintenance cues or improper operation. GE is then selling this data back to the airlines. The airlines are seeing minimized aircraft downtime, fewer maintenance errors, maximized people resources and more operating time in the air, which means more profits for the airlines.

IoT Makes Us Smarter – The Data

We have passed the “smart phase” where items told us what was happening. Now we are in the automation phase where items will do something based on a previous action. For example, currently a smart watch will show your heart rate. An IoT device will show your heart rate, know if you are having a heart attack and automatically call for help.

The data being collected by sensors allows companies to track individual components and products as they travel on ships, planes and trucks. Sensors can weigh all of the parts in an inventory bin in a factory or all of the shirts in a store's stockroom, empowering new levels of supply-chain efficiency and inventory management.

The pace of emerging technologies has evolved so quickly to where we are today. We started out with things that were monitored, like local printers or scanners. Then we went to remotely controlled and managed things, like remote servers or operation devices. Then we went to smart systems in homes and offices. And now we have arrived at The Internet of Things.

Research is showing that products using sensors and capturing data from them can provide much better insight into customer behavior than actual focus groups. Connected products can even adapt to a customer's preferences.

A very good article about IoT data was written on August 13, 2015, on ReadWrite: readwrite.com/five-types-data-internet-of-things. The article summarizes that there will be four types of data collected from the IoT process: status, location, automation and action.

Big data is one of the greatest economic opportunities of our time. It's also incredibly vague and challenging to grasp within everyday conversations. This brings the discussion about "standards" and "best practices" to the software and protocols for IoT.

The Search for IoT Standard Protocols

There is no way that all of these devices will ever be able to talk to each other until we find either a victory or a truce in the race to establishing standard protocols.

Several major initiatives are underway in the quest to establish global standards in software and protocols, including:

 ALLJoyn	Open source project supported by Qualcomm, Cisco, Microsoft, LG, HTC.     
 Thread	A new IP-based wireless networking protocol, a collaboration with Google's Nest, Samsung Electronics, Big Ass Fans, Yale Locks and Silicon Labs.
Web Languages	ThingSpeak, Google Apps Script, Google Site, Android Client, C#.   
 IoT Languages	C, C++, Java, JavaScript, Python, Rust from Mozilla, PHP, Ruby.     

Examples of Companies Using IoT



Disney World - MagicBands

wired.com/2015/03/disney-magicband/



Delta Airlines - Smart Boarding Pass

androidcentral.com/smartwatch-boarding-pass-anything-first-class



Amazon - Predictive Shipping

blogs.wsj.com/digits/amazon-wants-to-ship-your-package-before-you-buy-it



Microsoft - Windows 10 IoT Core

blogs.windows.com/buildingapps/hello-windows-10-iot-core

IoT and Automobiles

Auto manufactures are already adopting IoT into automobiles. This is one space that has a huge potential for growth as IoT evolves. AT&T may not be an auto manufacturer, but that is not stopping them from bringing their technology and resources into the auto industry. If products are not being manufactured and sold, it's the data being collected that is sold to the manufacturers.

fortune.com/2015/07/23/att-connected-cars

Government and Transportation

From streetlights to city buses, IoT can make any device connected in the city.

newsroom.cisco.com/feature-content?type=webcontent&articleId=1667013

Wearables & Small Devices in the Home

Wearable technology and other small IoT devices started the adoption of consumers using these highly capable devices. Home automation is the other front leading the charge in bringing IoT technology straight to the consumer.

eetimes.com/document.asp?doc_id=1326860

Financial Impact

IoT has a potential financial impact of \$11 trillion by 2025, according to an article published by McKinsey & Company. You can view the article here:

mckinsey.com/insights/mgi/in_the_news/by_2025_internet_of_things_applications_could_have_11_trillion_impact

Privacy & Security

How will companies protect company and customer data? So much data from the IoT movement will be collected about a customer's preferences and behavior. How willing will customers be to start sharing so much of their personal data? How will this be protected during the IoT process?

Pulling IoT details together to make it successful across all fronts will depend upon the trust factor that people will place into the process. People will want to know that the collection of their data will only be used in certain ways and will not be abused by those collecting the data. And companies will want guaranteed assurances that their intellectual property and data are protected.

The Online Trust Alliance has released an "Internet of Things Trust Framework" in the hopes to establish guidelines addressing IoT risks.

zdnet.com/article/internet-of-things-device-security-degrades-over-time



INTERNET OF THINGS

How The Idea People Foster IoT Adoption

At the beginning roots of our company back in 1994, we were one of the first web development agencies to adopt web development as an organic partner to web design. “We anticipated that there would need to be some type of functionality on the backend of a ‘brochure’ website in 1995,” said Jay Joyce, president of The Idea People in Charlotte, NC. “So we invested in emerging web languages and people [web developers] who wanted to tackle that frontier. That critical decision proved to be a fantastic, long term business outcome for us.”

The Idea People embraced IoT development and design trends in early 2015. “We know that connecting things, devices and data will evolve very quickly for our North Carolina customers as IoT spreads like wildfire across all types of business segments,” added Joyce. “As business goes, the companies that adopt IoT early will not have to play ‘catch up’ and will capitalize on their investments when consumers do transition to more IoT devices and transactions.”

The companies that adopt IoT early will capitalize on their investments.

IoT Services from The Idea People

IoT Assessment

Your company can be either a manufacturing or service-based business. “We spend time with a new IoT client to hear where they exist today in the digital space, what type of efficiencies do they need or want, how can we identify new service offerings, what technology or product commitments do they need to make to meet those demands, and how do we build a data program to assess the collected data,” said Joyce.

New Service Creation

Where can we identify digital opportunities for your business to create value for your customer base? What type of predictive or assumptive business cases can we build [using the newly collected data] to offer better solutions for your customers? Where can we help you “take credit” for services that you are already providing by leveraging digital strategies?

Rocket Science Data Science

Yes, this is rocket science. We will develop, along with our partnership with the UNCC School of Informatics, a business algorithm that collects, sorts, dices, slices, chops and delivers data into useful chunks of appetizing metrics. Suggestive and assumptive data science menus will be created for your new service offerings. This is about using data that you collect from customer transactions and processes, along with sophisticated analytics reporting, to build end results that have true impact on bottom lines.

Web & Mobile Databases

Access to this sophisticated digital asset will connect via desktop and mobile devices. Custom software and applications will empower your team members to easily report and interpret collected data to offer smarter business outcomes to your clients.

It's Creative & Functional

Everything we do is well designed and highly functional. Even in the future, intuitive navigation, beautiful creative design and proper messaging will connect people to things to data.

“Service-based businesses will offer digital services through the use of connected devices that will automate processes, streamline employee performance, bring more value to your customers and provide much stronger data to operate more profitably,” said Joyce.

IoT will change your business and how you interact with customers and stakeholders.

Will you be a digital sensation or a digital catastrophe?

To learn more about how your business can leverage the approaching juggernaut of IoT, please contact The Idea People in Charlotte, NC.

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theideapeople.com/internet-of-things

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