

The Internet of Things:

The power of actionable insight

Transform your business with insights gained from the Internet of Things





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A new world of potential



For years, the Internet of Things (IoT) has been touted for its ability to change the world we live in. Yet it has seemed to be on the edge of mainstream acceptance, beyond the ability of most businesses to embrace it and tap into its potential. **Is the IoT real then, or just hype? And is it ready for your business?**

This interactive white paper explores the IBM approach to the IoT and how to move beyond the buzzwords to put new IoT solutions to work in your own business.



What is the Internet of Things?



When we think of the Internet, we typically think of technologies that allow people to interact and access data—through email, social networks and more. The Internet is a communication conduit through which anyone, or anything, around the globe can communicate to get work done.

Physical objects, such as an engine, a river or even an entire manufacturing plant, can be equipped with sensors that measure physical characteristics of the surrounding environment, such as the location, temperature, vibration and flow rate. And low-power networking technologies allow these “things” to share this data with other “things” across networks and data centers. The cost of these technologies has fallen dramatically in recent years, so that now virtually any aspect of our environment—natural systems, human systems and physical objects—can connect and interact.

Recently, the IoT has received increased attention in the media. However, the underlying capabilities have been around for many years, and businesses have been quietly reaping their benefits.



Three key technology shifts



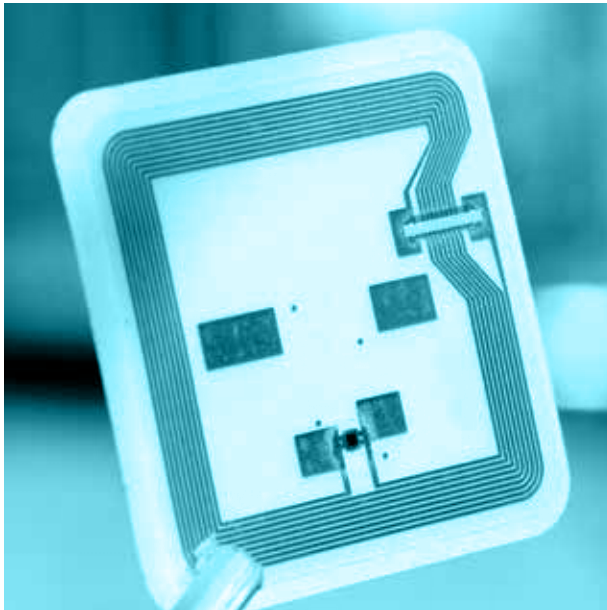
What's driving this new level of IoT awareness

is a convergence of three key technology shifts that are accelerating IoT deployments:

1. **The explosion of data generated by devices.** The number of connected computing devices around the world is growing—several billion connected devices are already in use today, with many more billion expected in the near future. These devices—smart meters and appliances, RFID tags, connected cars, wearables and more—are producing massive amounts of data about the environment around them.
2. **Cloud as a growth engine for business.** Businesses are able to respond to changing market conditions with agility and flexibility using the cloud. New solutions can be deployed quickly and cost effectively to open cloud platforms that connect to people and devices around the globe.
3. **New ways to engage the business and its customers.** Mobile and social are enabling people to work smarter by putting more real-time information and decision-making power in the palms of their hands, integrated securely with business processes and workflow.






The IBM point of view on the IoT



IBM recognized the potential offered by the IoT

many years ago and aggressively helped clients tap into its potential. Launched in 2008, the IBM® Smarter Planet® initiative introduced the idea that the world was rapidly becoming:

-  **Instrumented**—through low-cost smart sensors and mobile devices that turn the workings of the physical world into massive amounts of data points that can be measured.
-  **Interconnected**—where different parts of a core system—countless networks, applications and data centers—are joined and “speak” to each other, turning data into information.
-  **Intelligent**—with information being transformed into real-time actionable insights at massive scale through the application of advanced analytics.

IBM’s pioneering work infused intelligence across the global management systems that drive human progress and economic growth. Many of these applications evolved into what is called the IoT.



Turning data into insights



The IoT links the physical and digital worlds.

The massive amounts of data that instrumented devices collect provide businesses the opportunity to learn about the environment in which they operate, glean insights that can be turned into actions. These insights can help formulate new delivery models and fundamentally change how a business operates.

Unfortunately, 90 percent of data created at the edge of the IoT is never captured, analyzed or acted upon. Furthermore, 60 percent of that data loses its value within milliseconds of being generated.¹ So, most of the data is never turned into insights. And that is where the true potential of the IoT lies. It's not just the devices that generate valuable data, but also the intelligence that is built to consume that data, analyze it and generate actionable insights.

Using advanced analytics with the IoT, organizations can find out:

- What is happening right now?
- Why did it happen?
- What could happen?
- What action should I take?
- What did I learn?
- Most importantly, how do I change and improve?



Opportunities in every industry



IBM is helping companies capture IoT opportunities across every industry:



Oil and gas companies are significantly reducing capital expenditures for exploration and development.



Energy and utilities companies are optimizing natural resource consumption through smart meters and sensors that adapt to changes in the distribution infrastructure.



Automotive manufacturers are redefining the driving experience with connected cars that enable “infotainment” systems and real-time health monitoring of onboard systems.



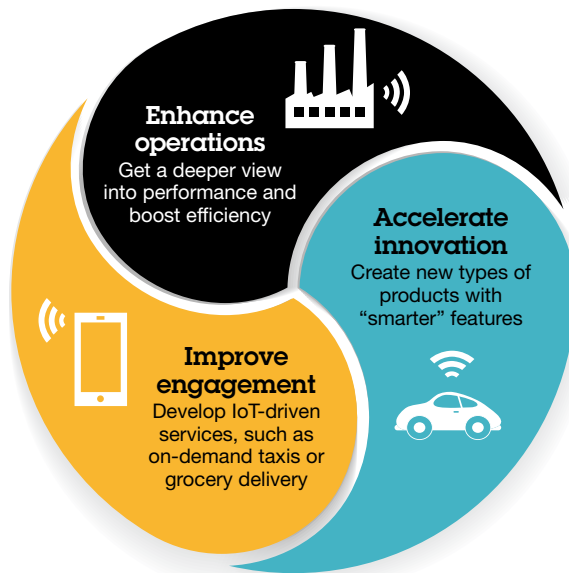
Aerospace and defense firms are reaping billions in fuel savings and condition repairs that minimize aircraft taken out of service.



Electronics companies are building more meaningful interactions with consumers and pioneering better lifestyles with smarter homes.



The power to innovate and engage



The IoT is a **business opportunity**, with the potential to impact and deliver value across the business, resulting in better outcomes. It allows a business to innovate, operate and engage at the next level. For example:

- **Business leaders** can transform their business by shifting to new, disruptive business models—moving value creation toward revenue models that are services-based.
- **Business operations and plant and facilities managers** can optimize the operation of old and new systems—now integrated with intelligent things to become interactive, reactive and adaptive. The cost of running buildings and the resources they consume can be reduced, asset utilization can be increased—as can the revenue they generate—and asset maintenance costs can be reduced through condition repairs instead of time-based maintenance.
- **Product engineers and designers** can accelerate the development of smarter, connected products that redefine every industry with innovative new capabilities that improve functionality, reduce costs, manage complexity and deliver new value. Insights gained from the operational performance of products can be used to improve products and product development processes.
- **Application developers** can quickly develop services that engage users in new and more productive ways, combining device-generated data with analytics to create insights that business leaders need to create better business outcomes.



Get started today



The IoT is here today and rapidly reinventing business across industries. IBM brings years of experience, deep industry expertise, open platforms and leading analytics solutions to help you begin your journey. Working with IBM, you can put the right IoT solutions to work for your business.

To learn more about IBM's point of view on the Internet of Things:

- Contact your IBM representative or IBM Business Partner
- Visit ibm.com/loT
- Join us in our IoT conversations [@IBMIoT](https://twitter.com/IBMIoT)



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¹ “IBM Connects ‘Internet of Things’ to the Enterprise,” *IBM Corp.*, March 31, 2015.
<http://www-01.ibm.com/software/info/internet-of-things/iot-prod/iot-announcement.html>



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