RapidScale

White Paper
The Internet of Things

The Internet of Things

The Internet of Things (IoT) isn't exactly new – according to The Guardian, **the first Internet-connected toaster was unveiled at a conference in 1989**, and does anyone remember the movie "Smart House"? People have been intrigued by the idea of connecting anything and everything for years.

Today, we actually have the technology in place to accomplish this, and the Internet of Things is taking off in this perfect storm. It's predicted that **by 2020 there will be 50 billion connected devices communicating through the Internet.**

The Internet of Things

Internet of Things Defined

The Internet of Things revolves around increased machine-to-machine communication, and it's said that this technology will make everything from streetlights to seaports "smart." Its true value lies in the intersection of gathering data and analyzing it. Today, there's a huge network of physical objects that are embedded with electronics, software, sensors and connectivity. These objects, or more generally, "things", are able to collect and exchange data, and this network will only continue to grow in coming years.

In really simple terms, the Internet of Things is all about connecting devices and objects over the Internet. Basically, devices in the IoT can talk to each other and to their users. There are plenty of examples already: smart technology in automobiles, connected fridges, coffee makers, headphones, lamps and more, mobile devices, and wearable technology. Really, anything with an on and off switch has the potential to be part of the Internet of Things.

Key Trends

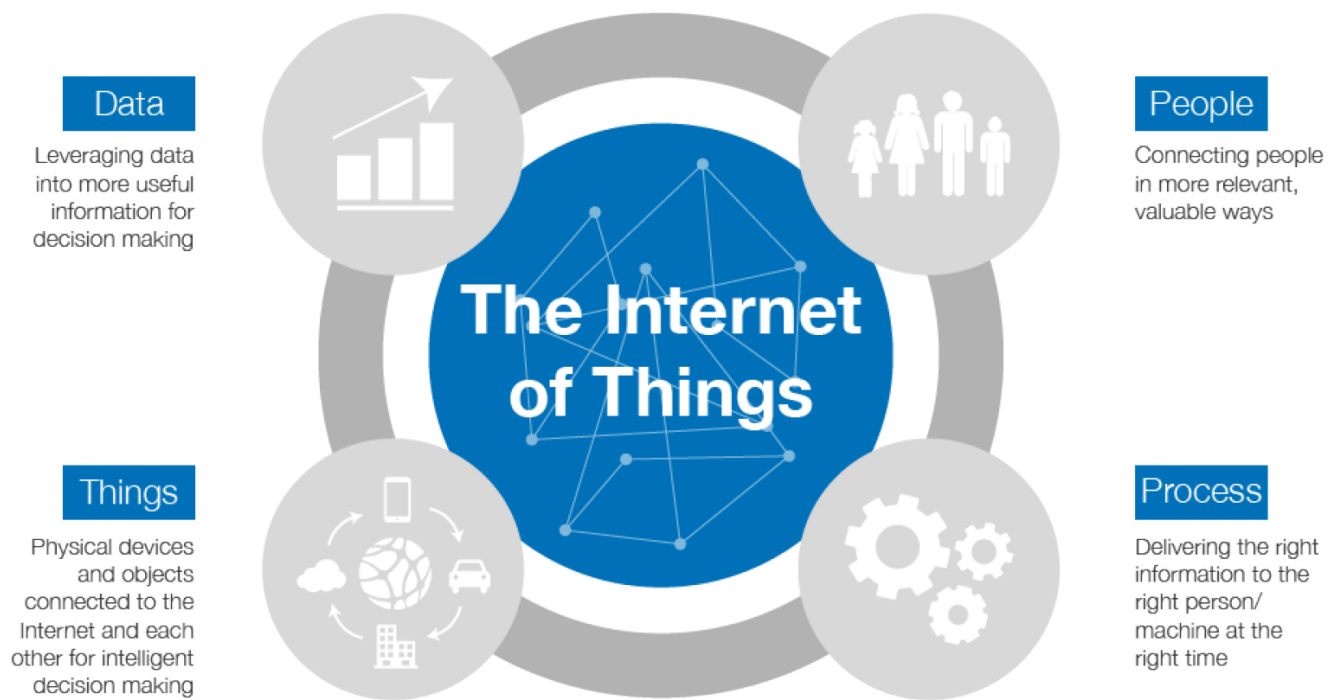| Wearable Technology |
| Connected Homes |
| Connected Cars |
| Connected Cities |
| Industrial Internet |

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Benefits and Opportunities of IoT

Data
Leveraging data into more useful information for decision making

Things
Physical devices and objects connected to the Internet and each other for intelligent decision making

The Internet of Things

People
Connecting people in more relevant, valuable ways

Process
Delivering the right information to the right person/ machine at the right time

Improved Productivity

The Internet of Things has the potential to greatly boost productivity on consumer and business levels. Imagine that you're on your way to a meeting, and your car has access to your calendar so it's able to pick the quickest route. Or wouldn't you love waking up to an alarm that notifies your coffee maker to start brewing? And what if your office equipment could sense supplies were running low, and it automatically ordered more? These are the kind of situations that will be possible as the IoT grows. It can even help reduce waste and improve energy efficiency as ideas for smart cities or transportation networks come to fruition.

Wearable Technology

Wearable technology is a huge part of the Internet of Things. It is creating an insightful, meaningful and simplified experience for users. Just like smartphones and tablets, wearables are popping up in the workplace, moving beyond simple consumer applications. Among the popular forms of wearable tech today are smart watches and glasses. A recent study found that 47% of wearable technology users felt more intelligent, while 61% felt more informed. Additionally, 37% stated that wearable technology has helped with career development. Even at these early stages, wearable technology is already making an impact.

Reduced Costs

The Internet of Things has the potential to save businesses time and money. Devices are so interconnected and data is constantly streaming in. This can lead to things like determining if a product is failing in the market, which leads to timely alerts to the production team and major savings. For example, General Electric believes that using the IoT to develop gas and oil could save them $90 billion a year!

Big Data

As the IoT by definition will generate voluminous amounts of unstructured data, the availability of Big Data analytics is a key enabler. Connected devices gather and share data, which can lead to some powerful insights. These devices and sensors are data generators and collectors that learn, make predictions and even take data-driven actions in response to the collected data. This can hugely impact things like marketing automation and just-in-time product delivery. Businesses will have the opportunity to strategize their production and marketing efforts, while delivering targeted customer service and support.

Transformational Potential

If the Internet of Things truly grows at the expected rate, we'll see passive engagement with connected devices and objects turn into active engagement with the information on these "things." There will be no limitation to what can make use of the IoT technology, and this will almost certainly lead to transformation in the business world and consumers' lives in general.

Industry-Wide Potential

The Internet of Things has the potential to impact multiple industries. Already, 53% of global businesses are planning to implement IoT solutions within the next couple of years. (Industrial Internet Insights Report) There are huge opportunities across all industries, especially in healthcare, automotive and energy.

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Challenges of the IoT

Security and Privacy

Security will always be a top concern as new technology develops. And it's always a valid concern, especially as devices within the IoT continue gathering data about consumers and businesses. This is a challenge that experts in the IoT are already working to overcome, but it's still in the early stages.

There have not yet been major hackings within the Internet of Things, but as it develops it will certainly become more attractive to hackers. This means greater emphasis should be put on security in these early stages to avoid problems later on.

However, it's important to keep in mind that these devices are just as susceptible as home PCs or today's popular smartphones. It's all pretty much a level playing field. And as the Internet of Things grows, so will security technology.

Perceived Business Impact

Another concern lies in how the IoT will impact business. Some think it will affect productivity levels or lead to an invasion of worker privacy. The IoT will definitely impact how business is done – it's already doing so today. But this impact can be positive! For example, manufacturing already uses the IoT to organize and track machines, while farmers are able to monitor their crops and cattle. As more and more business adopt IoT technology, we will see a significant impact on production and efficiency.

And while employees may not like the idea of being tracked throughout the workday, this concern may, and probably should, lead to the implementation of IoT policies. This would both protect workers and allow organizations to take advantage of the latest technology.

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The Internet of Things + Cloud Computing

The Internet of Things is built on cloud computing and networks of data-gathering sensors. Cloud-based applications are truly the key to using leveraged data gathered from the IoT. They interpret and transmit the data coming from all these sensors. The cloud provides the infrastructure needed to analyze these huge amounts of data in real time. **55% of IoT developers primarily connect devices through the cloud** (Forbes). Cloud computing can also address concerns about security, as cloud security has strengthened significantly in recent years.

With huge levels of data flying around, the cloud is immensely important in the development of the Internet of Things. It has the capability to handle the speed and volume of this data, and ensures that the data remains accessible anywhere, at anytime, using any device. And paired with Big Data, cloud computing also provides valuable insights that businesses can use to customize their offerings.

Cloud computing is the only technology that's able to handle and deliver all of the data that the Internet of Things is producing. The cloud and the IoT truly go hand-in-hand.

About RapidScale

RapidScale, a managed cloud services provider, delivers world-class, secure, and reliable cloud computing solutions to companies of all sizes across the globe. Its state-of-the-art managed CloudDesktop platform and market-leading cloud solutions are the reasons why RapidScale is the provider of choice for leading MSOs, VARs, MSPs, Carriers and Master Agents throughout the United States. RapidScale is not only delivering a service but also innovating advanced solutions and applications for the cloud computing space. RapidScale's innovative solutions include CloudServer, CloudDesktop, CloudOffice, CloudMail, CloudRecovery, CloudApps, and more.

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