What is the real value of IoT?

How the IoT will make our lives better

By Cees Links, GM of Qorvo Low Power Wireless

Is the Internet of Things just another new technology fad? If you ask tech industry professionals, consumers, media, analysts and even the vendors who make and market IoT solutions, products and services, you will discover that there is a lot of confusion about what the Internet of Things is.

First of all, the name "Internet of Things", also known as IoT, can be misleading.

Actually, there is no specific internet of things. The Internet of Things lives and runs over the regular internet, just like every other connected computer, online game box, video streaming device or smartphone. It is no surprise that many companies prefer to talk about the Internet of Everything (IoE), and probably rightly so, as it is a better term that describes the reality of what universal connectivity really encompasses.

The internet itself is essentially a communication infrastructure that connects all devices in the world. Companies and people access it through a service provider, whether a telecom, cable or satellite operator, or by connecting to hotspots almost anywhere in the world.

Describing the Internet of Things sounds more like connecting a "thing" to the internet. This immediately leads to the question: what are the goals and benefits for the user? This question is becoming more important, and the answers more relevant, because IoT is being hyped today, setting people up for disillusionment – unless we understand what this connectivity is really all about.

Here is another interesting question – Is the IoT really all that new? The Internet of Things, in one way or another, has existed for over 20 years. In its early days, it was somewhat obscure, often called M2M, Machine to Machine communication for industrial applications. Since then, it has progressed significantly. Today's IoT technology is more maturing than emerging. IoT devices are moving into the mainstream but they still have further to go.

Fitbit® Type Devices – The IoT on your Wrist

A fitness wearable like the Fitbit® is a good example of a popular IoT application. It is a band that someone wears around his or her arm, with the goal of getting more fit. But unfortunately, in most cases, people using it do not get healthier. This points to the core of the confusion and to what needs to be resolved, not so much from a technical perspective, but definitely from a marketing perspective.

The problem is that most people buy fitness wearables, wear it for a few weeks, and afterwards leave it in the drawer. Statistics are not made publicly available, but there are anecdotes that the average use is only 4 weeks.

Why is this?

The first question to ask is: who really wants to live a healthier life? Unfortunately, less people than we might think. Too much eating, too much sitting, too much smoking has made our generation less healthy. How can a fitness tracker help alter this lifestyle choice? Actually, very little. The device reports to a "cobot" (a collaborative robot, essentially a "coach in the cloud"), where activity is measured in step counts as well as in number of hours of sleep. Based on this dataset and input that the users provide about gender and age, this fitness cobot starts to
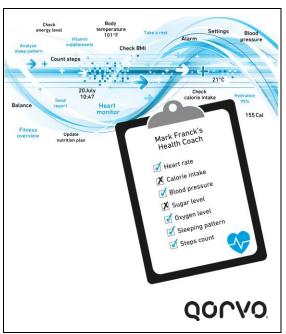
coach people on how to become fitter. To successfully become healthier, people have to use this information tochange their behavior. Most people do not.

So this is the real question: do we want to listen to our coach?

It is just like saying: "I do not want to weigh myself regularly, because I get depressed reading my weight and I am happier not knowing." Whoever has been in coaching knows that measuring can be an effective tool for improvement but the client must want to change to succeed. Setting goals and measuring progress can make all the difference.

So do we even want to be coached? If the answer to this question is "yes", then fitness trackers will fly off the store shelves. If the answer is "no", only the very interested and disciplined will be the right audience for these products.

The bottom line is this: the device is an enabler for someone who WANTS to be coached to live a healthier life. The device is just a "thing". Although it is a good example of the Internet of Things, it also shows that the Internet of Things essentially is not about things, but is only an enabling service. It is a good solution for people willing to be coached, for people willing to make better decisions about their lifestyle. If someone buys you a fitness tracker for your birthday, it will probably not get a lot of use unless you really want to change your lifestyle.

The Smart Home – Enabler for a Better, Safer and More Efficient Life

Another example of the IoT is the smart home. It has been slow to reach success, despite 50 years of development and hype. Could it be that the smart home is also suffering from the same marketing problem as the Fitbit®? Clearly the smart home puts a thing (the home) in the center which leads to the immediate question of what are the underlying services?

 "Home security" immediately comes to mind. Even though security services have been around for decades and are not usually marketed as IoT, at the core they really are. The "things" are the sensors, and the phone line is the connection to the outside world (in this case the connection to the security firm).

The problem is that it is a closed proprietary system. Efforts are made to make it more open, so that residents also get a message on their phone in addition to messaging the security service. Users can turn the system on and off remotely with their smartphone, without being at home. They essentially use the smartphone as the home control panel.

"Home security" is the leading smart home IoT solution in the market today. Another popular part of the smart home is the smart meter. But there is nothing really smart about today's smart meters. A smart meter (thing) is a meter connected (via the internet) to the utility, that can continuously track the energy consumption in the home. A few utilities even allow access to a website to check energy consumption, but most don't.

This makes life easier for the utilities. Now they send bills without having to read meters in the field. However, there is nothing smart about the meter: there is no coaching ("cobot"). Using the wrong words confuses concepts and conceals the real value of the internet. This makes it even more important to understand the value of the internet – not only to get the marketing right, but also to put business models in place that can generate value, so the IoT can really take off.

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So What is the Value?

Let us first look at the value of the internet: allowing people to get immediate access to information to make faster, better decisions. A great example is product development. When defining a new product 25 years ago, a product manager had to study a market, understand customer requirements, analyze competitors and competing products. Market research reports needed to be searched, identified, ordered and mailed. Going to stores and trade shows, visiting competitors' booths, were often the only ways to understand the competitive field. This was a process that could take weeks or months. Today, by using the internet, this analysis process can be shortened to days. At the same time, the quality of the information has improved enabling better decisions with fewer mistakes.

Today, something similar happens during conversations at the dinner table. When questions pop up, they can immediately be addressed by doing a quick search on your smartphone. For example, from what will the weather be tomorrow, to "who is who", and when did this or that happen. For many families, the golden rule is "no smartphones at the dinner table." But this rule quickly loses its value when the depth of the dinner conversation instantly improves by less speculation and the introduction of clear facts.

The key for the Internet of Things is in the same realm: enabling better decisions made faster. More sensors collect more data, more sophisticated software does better data analytics and then detects trends and anomalies. Alerts are generated by comparing data sets with average trends. It is clear that "things" play only an enabling role, just collecting the data. **The actual value is generated by the interpretation of the data and the execution on it.**

How is this True Value Generated?

Let us take a look at the applications above. Consider the fitness tracker case. When people want to make 10,000 steps per day (as is recommended by physicians), it is better to take the stairs instead of taking the elevator. People will argue that they don't need a device for this. However, it helps if it keeps people committed to their goals.

This also applies to the smart home. If residents do not have a security system, they will know that someone broke into their house only after they come home. But would it not be better that residents or someone else be notified at the moment the burglary is taking place? So they can take immediate action and prevent the theft?
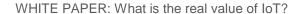
It is also clear how a smart meter generates value. When abnormal energy consumption is detected, it should send out an alert to the home owner, or, even better, it could take action itself by shutting off the power supply and the water, preventing the energy bill from racking up. By adding leak and temperature sensors throughout the home, the smart meter could pinpoint the exact problem to help troubleshoot.

An illustration of "faster and better" is the Sensara Assisted Living solution. It can help senior citizens live independently in their own home longer. It works with a few internet-connected motion sensors located in strategic places the home. With a cloud based data analytics program that, over a period of about two weeks, learns the senior person's life style, the application is able to send alerts in case anomalies are detected. For example, if a person is not getting out of the bed in the morning, or not returning home within a reasonable time frame, a caretaker can take action.

These systems can also detect behavior trends over time. For example, when someone starts walking slower, it can be an indicator of balance problems with an increased risk of falling and breaking a hip. Bottom line, it is about collecting more data, extracting more relevant information via data analytics and enabling more timely interventions. **This is the core value of IoT.**

How Important is Better and Faster?

Do we really need this "better and faster" mantra? Modern society seems to be in a rat race. Are we risking that people drop out? Not being able to keep up? These are fair questions, but not logical ones. We have to realize that much of our wealth and well-being today is a result of better and faster decision making.

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According to the World Bank organization, for the first in history, less than 10% of mankind lives below the poverty line. Despite population growth, we are well on the way to eradication of poverty by 2030. Technology is contributing to this. We don't realize often enough how quality and speed creates wealth and comfort. And how essential this is for feeding and clothing the world's growing population. In this sense, the Internet of Things is just a logical step. towards a better and more comfortable future.

Technology can be used in many different ways but we continue to be responsible for how we use it. It would be a mistake to ignore how it can help us live better lives: a connected world is a better world.

About the Author

Cees Links was the founder and CEO of GreenPeak Technologies, which is now part of Qorvo. Under his responsibility, the first wireless LANs were developed, ultimately becoming household technology integrated into PCs and notebooks. He also pioneered the development of access points, home networking routers, and hotspot base stations. He was involved in the establishment of the IEEE 802.11 standardization committee and the Wi-Fi Alliance. He was also instrumental in establishing the IEEE 802.15 standardization committee to become the basis for the ZigBee® sense and control networking. Since GreenPeak was acquired by Qorvo, Cees has become the General Manager of the Low Power Wireless Business Unit in Qorvo.

For more information, please visit **www.qorvo.com.**

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