IoT Application

Internet of Things is not the technology that we get form only a certain interest and investment. It is a way of turning the raw data to wisdom of humanity. While we saw the evolution of the Web in the previous chapters, IoT is a step forward in the Internet's side. The Web is in the application layer that sits on the hardware layer, sits on top of the Internet. At first, it was simply a read-only content. Then it moved on a phase that we can call as Transactional Web. It was the time that companies,holdings and factories were putting their wares online available and promote their branding. And all these improvements over time helped us create the Social Web. Facebook, Twitter and so on. The main idea is getting people communicate with each other using the Web.

With Internet of Thing, the next level of this improvements, Internet will not be recalled as people-centric, the machine surrounded by sensors will communicate and provide data too. Why it is a step forward? First of all it will be more mobile then the current web. Its not fixed anymore, it available 35.000 feet up in the air and also in the ground. Its open for new way like cloud and virtualization. IPv6 will be the dominant protocol of the next generation. It has 340,282,366,920,938,463,463,374,607,431,768,211,456 addresses. We will see many sensors will be added to the Internet - it will be sensor-laden. We will have so many absolute information of temperature, pressure, location, position and so on. Maybe we will go through a phase where Internet is more about machines then people. Moreover, the Internet is doubling the size of itself in every five years. So five years from now there will be twice as many devices connected and addressed to the Internet as there are today.

Nowadays, 93% of global population have wireless connectivity. 294 million consumer electronic devices with Wi-Fi shipped in 2007. 1 billion in 2012. And not just the amount of smart devices are increased, the data traffic also exponentially increased:

In 2003: 1.8 petabytes

In 2007: 161 exabytes

In 2009: 487 exabytes

In 2010: ½ zettabytes

In 2011: 1 zettabyte (540.000X increase from 2003)

In 2012, just 20 regular house hold generated more traffic than the entire Internet did in 2007.

Why is this important?

We are separated from other species with our ability to communicate. So with communicating we can turn the raw data into information and turn it into knowledge and turn it into wisdom. With the invention of the greatest tool that human created ever, we can surround the planet and universe with sensors and smart machines, get the raw data and turn it into wisdom of humanity. Learn what’s going on in universe! So it will make our generation much more smart and intelligent.

The IoT technologies can be applied in a variety of domains of which the following will be discussed in this section:

- Automotive/Transportation applications, e.g., in-vehicle infotainment, eCall, parking meters, information sharing about road conditions and traffic density, road pricing, toll collection, taxation, pay as you drive (PAYD) car insurance
- Digital/Connected home including (home) consumer electronics, home automation, utilities/automated meter reading (AMR), and residential security

- Healthcare solutions including the monitoring solutions to support wellness, prevention, diagnostics, or treatment services.

Now, we could ask ourselves: What do trees, cows and shoes have in common?

They can be all parts of the Internet of Things. They are all new inhabitants in it. How? Its simple.

There is a company they stucked sensors to farmed cows and they collect 200mb data everyday about their dietary habits and likely behaviours.

There is a tree in Brussels which is surrounded by cameras and sensors. Its able to collect information about its environment. It has 3000 twitter followers.

There are shoes such like NIKE plus which has sensors at some specific places which can detect your movement, and the pressure. It is able to measure how much you walked or ran and send it.

Besides all these benefits that internet of things has brought to us, there will be some side effects as you may think. For example, we are willingly recording our private life with this connected devices. And decoding & processing this data will cause complications, securing and keeping this information private will be such a big issue as well.

In near future we will see that interactions and Internet will be mostly in every object and we will see that different objects will be used in some common purposes. We will see how human will respond to that. Fields of applications include: waste management, urban planning, environmental sensing, social interaction gadgets, sustainable urban environment, continuous care, emergency response, intelligent shopping, smart product management, smart meters, home automation and smart events.

For example, Songdo, South Korea, the first of its kind fully equipped and wired ubiquitous, or smart city is near completion. Nearly everything in this digital metropolis of smart homes is planned to be wired, connected and turned into a constant stream of data that would be monitored and analyzed by an array of computers with little, or no human intervention. Thus, Internet of Things, or embedded intelligence in things, with "smart systems that are able to take over complex human perceptive and cognitive functions and frequently act unnoticeably in the background" is a close reality.

Center of Songdo

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