

# Know How – Internet of Things

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**Abstract-** The next revolution in IT industry after World Wide Web that we can realize is the introduction of Internet of Things (IoT). Internet of Things is also sometimes referred to as Internet of Everything. In simple terms, we can understand Internet of Things (IoT) as a concept where all day to day objects are connected to the Internet and to one another. The IoT is a concept that can improve our lives to make it easier and smarter.

The concept of IoT is very simple but is very dominant. It is nothing great but simply a concept where the network devices sense data and collect it from all around us and finally share it over the Internet for further processing and utilization as desired by the end user.

The day is not far when Internet of Things will create a bridge between the real life and virtual world.

**Index Terms-** IoT, Internet of Technology and IoT vs M2M.

## I. INTRODUCTION

Internet of Things can be referred as ANY THING Connection, ANY TIME Connection and ANY PLACE connection. Though the evolution of Internet has existed for several decades but the explosive growth of smart mobile devices and introduction of wireless technology has given this technology a new boost. Not only this, the declining cost of smart devices and widespread and omnipresent connectivity will lead to easy and smooth deployment of IoT solutions. The physical world will become an informative world as the Internet of Things comes into existence through sensor enabled devices.

Internet of Things is an extended expression of M2M technology, which requires some new in-network features to connect to objects in the physical world similar in a way computers do now.

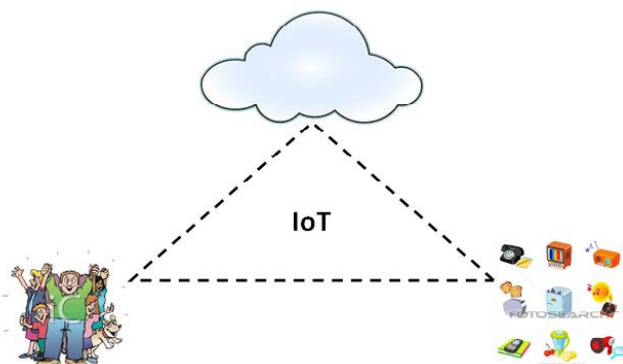


Figure 1: IoT at a Glance

## II. IoT OVER M2M

It is difficult to distinguish between IoT and M2M because both the technologies are connected through automated devices with their end points communicating to devices, such as sensors or sensor holding devices. M2M with a combination of some transport protocols can be treated as a subset of Internet of Things. M2M is actually a communication between machines with the remote computer. In M2M technology, first machine connects the device to the cloud, next it manages the device and finally it collects the machine data. It is actually connecting and communicating with anything, such as machine, device or sensor where as IoT is an extension of M2M, setting up a communication between things with people, system and things.

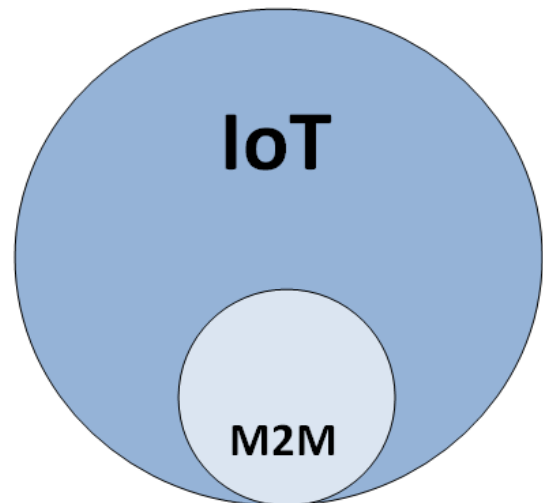


Figure 2: IoT vs M2M

## III. APPLICATION

As we are moving towards connected things through the evolving IoT technology, the sensors will be embedded in a normal device to turn it into a smart device. Let us now learn that how Internet of Things enables different sectors in offering new services.

1. **Healthcare:** Data driven decision making is the biggest gift to healthcare sector by introduction of IoT technology. The patient will wear IoT enabled wearable and facilitate the doctor in capturing the health related data. Moreover, a person with troubling health problem can get detected by the physician before the problem gets converted into more chronic health issue.

The introduction of IoT in healthcare will reduce cost of care and at the same time will improve quality of life of patients and real time disease management.

**2. Transportation:** The introduction of safety enabled sensors in automobiles will be a boon to transport industry in reducing road accidents every year. As majority of accidents on roads are because of human error, hence through IoT automobile industry is committed in removing human decision making intervention while driving.

The biggest advantage by introducing IoT in this sector would be reduction of carbon emission to the environment.

**3. Retail:** It is very important to track assets in real time to keep the business going smoothly. The introduction of IoT in retail sector will help the organizations to identify any bottlenecks or challenges in the supply chain.

The introduction of IoT in retail sector will help in bringing retailers closer to the end user.

**4. Energy:** Today the energy sector is facing tough challenge in finding ways to reduce cost and save energy waste by consumers. The introduction of IoT will convert the energy sector into an efficient energy sector.

IoT in energy sector will help the energy sector to collect real time usage data thereby predicting the demand supply ratio and accordingly ensure energy load balancing. Hence, this will help the energy sector as well as the customer to save significant cost and resource saving.

There are many other sectors, such as Finance, Manufacturing, Real State, Aerospace, Marine etc where the IoT can play a significant role.

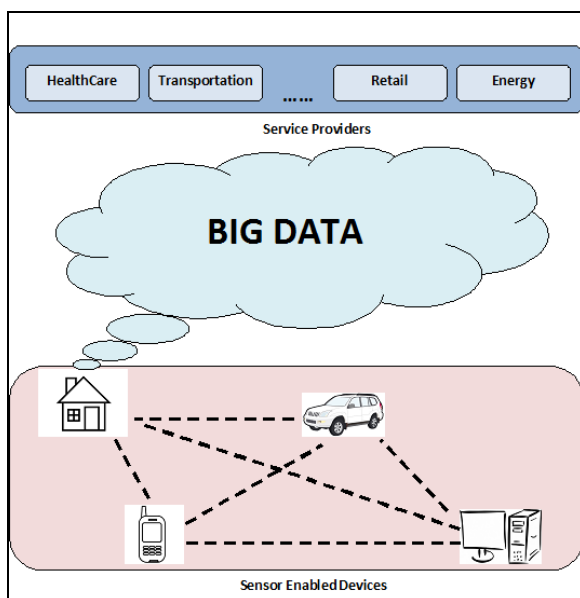


Figure 3: IoT Application in varied Sectors

#### IV. CHALLENGES

The foundation of IoT technology is sensor based devices, but the control and management of sensor enabled devices over large geographical area will be a real challenge. In addition, also the supply of continual energy to sensors fitted in billions of devices across the globe will not be less than a challenge for IoT technology.

As IoT technology relies on big data gathering from various sources, the management of this big data will become a real time problem as the user base and devices increase over a period of time.

Above all the challenges, the biggest threat is security of the personalized data that is continuously getting collected through numerous sensor fitted devices. Hence, protection of personalized data from unauthorized access and utilizing it only for the specific purpose for which it is intended to is a big challenge of IoT technology.

#### V. CONCLUSION

History repeats itself; the evolution of the Internet now in terms of Internet of Technology is now knocking again at our door step. For IoT to gain acceptance among common people, it is necessary that everyone has to come together and play their part of significant role in making it a success.

The white paper is intended only for knowledge purpose. Unless stated to the contrary, any opinions or comments are personal to the writer and do not represent the official view of the company / organization.

#### ACKNOWLEDGMENT

I would like to acknowledge and thank my colleagues for supporting and encouraging me throughout the course of work.

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