

Growth and Technologies of Internet of Thing in Various Area

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Abstract

The IoT promises to deliver a step change in individuals' quality of life and enterprises' productivity. Through a widely distributed, locally intelligent network of smart devices, the IoT has the potential to enable extensions and enhancements to fundamental services in transportation, logistics, security, utilities, education, healthcare and other areas, while providing a new ecosystem for application development. The fact that IoT is so expansive and affects practically all areas of our lives, makes it a significant research topic for studies in various related fields such as information technology and computer science. Thus, IoT is paving the way for new dimensions of research to be carried out. This paper presents the recent development of IoT technologies.

Keywords: IOT, Ubiquitous computing, RFID etc.

I. INTRODUCTION

The essential idea of the Internet of Things (IoT) has been around for nearly two decades, and has attracted many researchers and industries because of its great estimated impact in improving our daily lives and society. When things like household appliances are connected to a network, they can work together in cooperation to provide the ideal service as a whole, not as a collection of independently working devices. This is useful for many of the real-world applications and services, and one would

for example apply it to build a smart residence; windows can be closed automatically when the air conditioner is turned on, or can be opened for oxygen when the gas oven is turned on.

The idea of IoT is especially valuable for persons with disabilities, as IoT technologies can support human activities at larger scale like building or society, as the devices can mutually cooperate to act as a total system. A concerted effort is required to move the industry beyond the early stages of market development towards maturity, driven by common understanding of the distinct nature of the opportunity. This market has distinct characteristics in the areas of service distribution, business and charging models, capabilities required to deliver IoT services, and the differing demands these services will place on mobile networks. Connecting those smart devices (nodes) to the web has also started happening, although at a slower rate. The pieces of the technology puzzle are coming together to accommodate the Internet of Things sooner than most people expect. Just as the Internet phenomenon happened not so long ago and caught like a wildfire, the Internet of Things will touch every aspect of our lives in less than a decade.

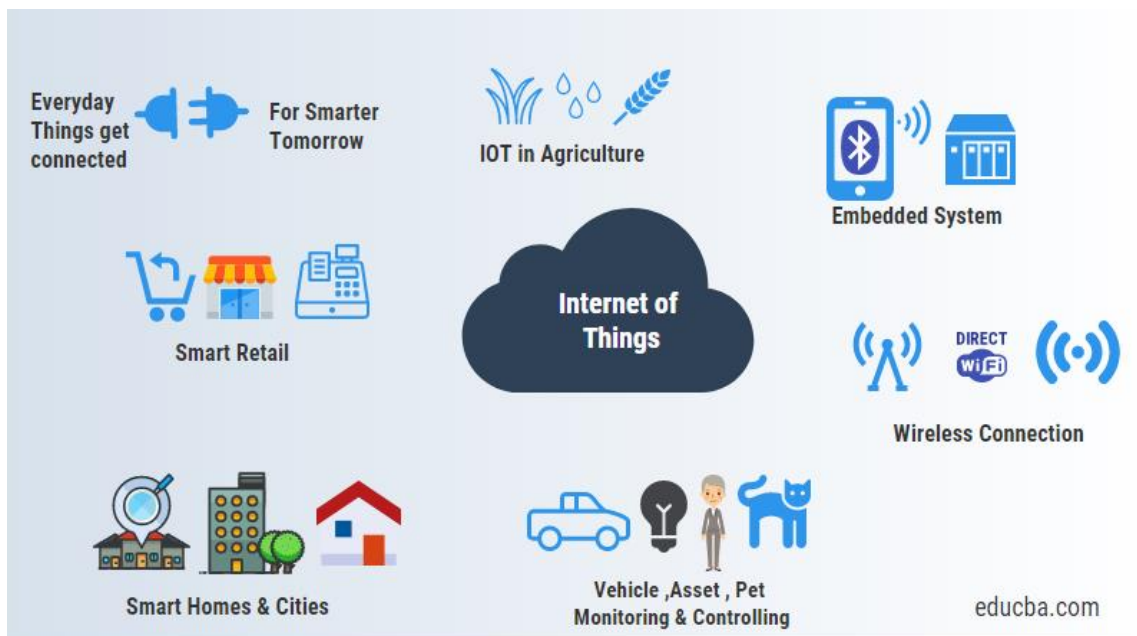


Fig 1: IOT

II. EVOLUTION OF IOT

Internet is a huge space of information and people. It is a global platform where many services like the World Wide Web could be implemented on top of it. It was an era of information exchange. Many social websites came into picture which kept people connected all the time. This has led to internet being filled with people rather than information. On the other hand, technology has been advancing day by day and simultaneously an era of mobile computing had begun.

Mobile helped man to be always connected to the internet on the move. Wireless technologies and mobile computing have become cheap and have gained more popularity. Hence a new computing had emerged- Ubiquitous computing. This computing focuses on smart, intelligent space and minimal user involvement. Advancement in technology led to mobile and other hand-held devices to diminish in size. Smart phones, Ipads, tablets and notebooks replaced ordinary mobiles and PCs. Hence there was a

change in the device with which people access the internet.

The way of connecting the physical world with cyberspace with the help of a smart device led to internet being called as “Internet of Things”. Hence IOT has its roots from Mobile computing, ubiquitous computing and information technology. IOT connects the objects in an intelligent way. The “thing” here refers to the physical object’s information read through sensors and RFID reader and uploaded into the internet. The physical object can be anything from smart phones to objects at home.

Hence from the above , IOT changes the connectivity view from “any-time , anyplace” for “any-one” into “any-time , any-place” for “any-thing”. These things once connected to the internet provide smart services beneficial to the environment and society. They play a major role in supply chain, energy, defence, health care and other useful applications.

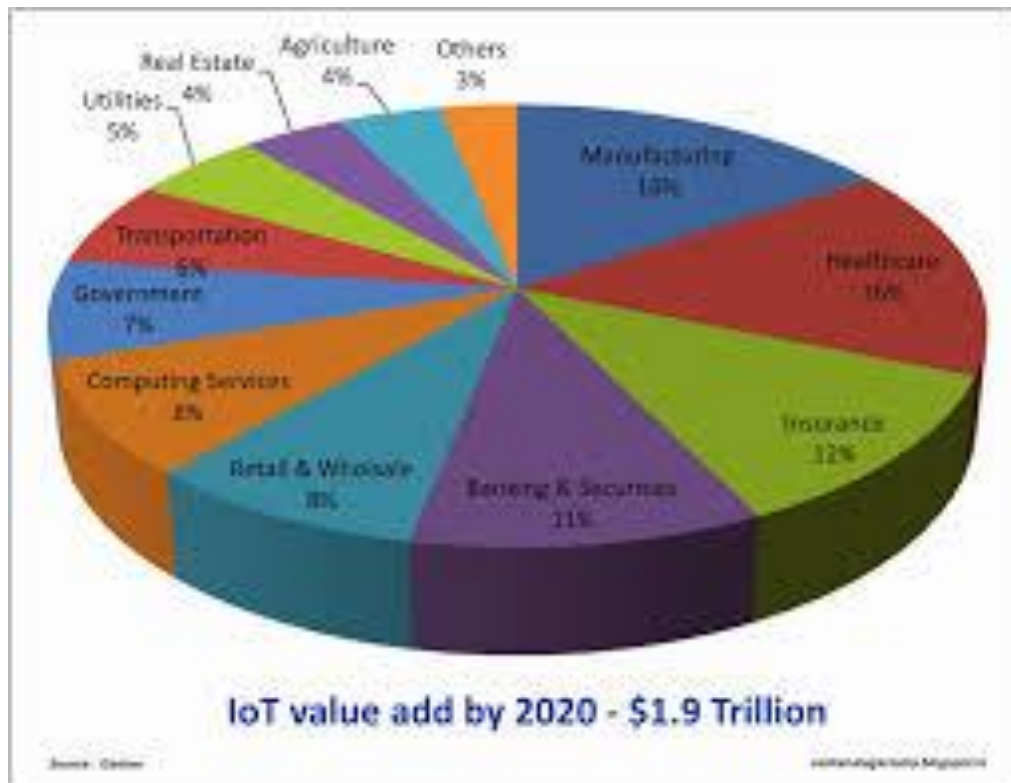


Fig 2. Growth of Internet Of Things

III. TECHNOLOGY IN IOT

A) RFID

The RFID is a unique identity of object or person wirelessly using radio waves in the form of numbers. RFID technology plays an important role in IOT for solving identification issues. RFID system is composed of one or more reader and several RFID tags. Tags uses radio-frequency electromagnetic fields to transfer data attached to an object. The tags contain electronically stored information. Passive tags collect energy from a nearby **RFID** reader's interrogating radio waves. The RFID device serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card; it provides a unique identifier for that object. And, just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be

scanned to retrieve the identifying information.

B) RFID READER-

A radio frequency identification reader (RFID reader) is a device used to gather information from an RFID tag, which is used to track individual objects. Radio waves are used to transfer data from the tag to a reader. The RFID tag it must be within the range of an RFID reader, which ranges from 3 to 300 feet

C) INTERNET PROTOCOL (IP)-

Internet Protocol (IP) is the primary network protocol used on the Internet. The two versions of Internet Protocol (IP) are in use: IPv4 and IPv6. Each version defines an IP address differently. There are five classes of available IP ranges in IPv4: Class A, Class B, Class C, Class D and

Class E, while only A, B, and C are commonly used.

D) Wireless Fidelity (Wi-Fi)-

Wireless Fidelity (Wi-Fi) is a networking technology that allows computers and other devices to communicate over a wireless signal. Wi-Fi or WiFi is a technology for wireless local area networking with devices based on the IEEE 802.11 standards. Devices that can use Wi-Fi technology include personal computers, video-game consoles, smartphones, digital cameras, tablet computers, digital audio players and modern printers. Wi-Fi compatible devices can connect to the Internet via a WLAN network and a wireless access point.

e)Machine-to-machine communication (M2M)-

Machine-to-Machine (M2M) refers to the communications between computers, embedded processors, smart sensors, actuators and mobile devices. The use of M2M communication is increasing in the scenario at a fast pace M2M has several applications in various fields like healthcare, smart robots, cyber transportation systems (CTS), manufacturing systems, smart home technologies, and smart grids. Example of M2M area network typically includes personal area network technologies, such as Ultra-wideband and Bluetooth or local networks.

IV. CONCLUSION

With the Internet of Things (IoT) gradually evolving as the subsequent phase of the evolution of the Internet, it becomes crucial to recognize the various potential domains for application of IoT, and the research challenges that are associated with these applications. As more and more

research studies are conducted, new dimensions to the IoT processes, technologies involved and the objects that can be connected, continue to emerge, further paving way for much more application functionalities of IoT. The fact that IoT is so expansive and affects practically all areas of our lives, makes it a significant research topic for studies in various related fields such as information technology and computer science.

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