

A STUDY ON INTERNET OF THINGS

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Abstract: *The Internet of Things (IoT) is a computing concept that describes a future where everyday physical objects will be connected to the Internet and be able to identify themselves to other devices. The Internet of Things is an emerging topic of technical, social, and economic significance. Consumer products, durable goods, cars and trucks, industrial and utility components, sensors, and other everyday objects are being combined with Internet connectivity and powerful data analytic capabilities that promise to transform the way we work, live, and play. The internet of things (IoT) is the network of physical objects—devices, vehicles, buildings and other items—embedded with electronics, software, sensors, and network connectivity that enables these objects to collect and exchange data. More things are being connected to address a growing range of business needs. In fact, by 2020, more than 50 billion things will connect to the Internet—seven times our human population. Examples are wearable health and performance monitors, connected vehicles, smart grids, connected oil rigs, and connected manufacturing. This Internet of Things (IoT) will revolutionize the way we work, live, play, and learn. A lot of technological communities are dynamically following research topics that add to the Internet of Things (IoT). More support between communities is optimistic. To provide a beginning for discussing open research troubles in IoT, a dream for how IoT could transform the world in the remote future is first offered.*

Index Terms— IOT, Internet of Things, Networks, Technologies.

I. INTRODUCTION

The Internet of Things is the intelligent connectivity of physical devices driving massive gains in efficiency, business growth, and quality of life". Extending the current Internet and providing connection, communication, and inter-networking between devices and physical objects, or "Things," is a growing trend that is often referred to as the Internet of Things. "The technologies and solutions that enable integration of real world data and services into the current information networking technologies are often described under the umbrella term of the Internet of Things (IoT)". The term "Internet of Things" (IoT) was first used in 1999 by British technology pioneer Kevin Ashton to describe a system in which objects in the physical world could be connected to the Internet by sensors.

II. EVOLUTION OF THE WEB VERSUS THE INTERNET

The web has gone through several distinct evolutionary stages:

Stage 1 First was the research phase, when the web was called the Advanced Research Projects Agency Network (ARPANET). During this time, the web was primarily used by academia for research purposes.

Stage 2 The second phase of the web can be coined "brochure ware." Characterized by the domain name "gold rush," this stage focused on the need for almost every company to share information on the Internet so that people could learn about products and services.

Stage 3 The third evolution moved the web from static data to transactional information, where products and services could be bought and sold, and services could be delivered. During this phase, companies like eBay and Amazon.com exploded on the scene. This phase also will be infamously remembered as the "dot-com" boom and bust.

Stage 4 The fourth stage, where we are now, is the "social" or "experience" web, where companies like Facebook, Twitter, and Group on have become immensely popular and profitable (a notable distinction from the third stage of the web) by allowing people to communicate, connect, and share information (text, photos, and video) about themselves with friends, family, and colleagues.

III. HOW INTERNET OF THINGS WORKS?

Internet of Things is not the result of a single novel technology; instead, several complementary technical developments provide capabilities that taken together help to bridge the gap between the virtual and physical world. These capabilities include: Communication and cooperation, Addressability, Identification, Sensing, Actuation, Embedded information processing, Localization, User interfaces.

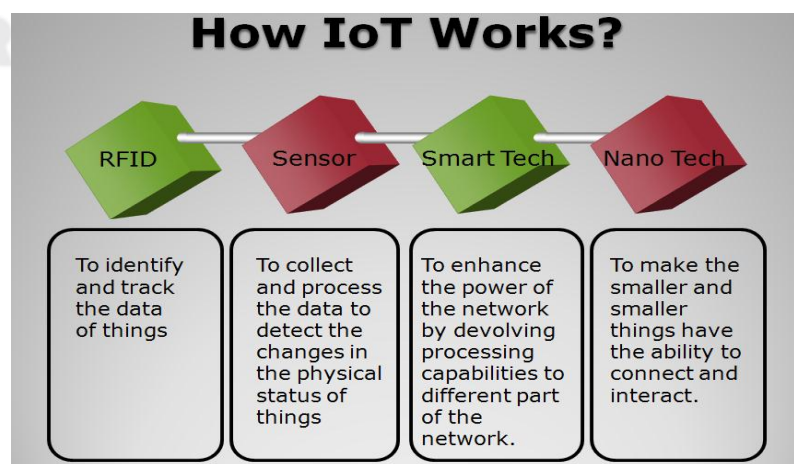


Fig. 1. The Internet of Things work process

IV. IMPORTANT OF INTERNET OF THINGS

Before we can begin to see the importance of IoT, it is first necessary to understand the differences between the Internet and the World Wide Web (or web) terms that are often used interchangeably. The Internet is the physical layer or network made up of switches, routers, and other equipment. Its primary function is to transport information from one point to another quickly, reliably, and securely. The web, on the other hand, is an application layer that operates on top of the Internet. Its primary role is to provide an interface that makes the information flowing across the Internet usable. Below diagram describe Future Prediction of Uses in the World of IOT. It is changing everything in real life with the data of world population and connected devices in different years.

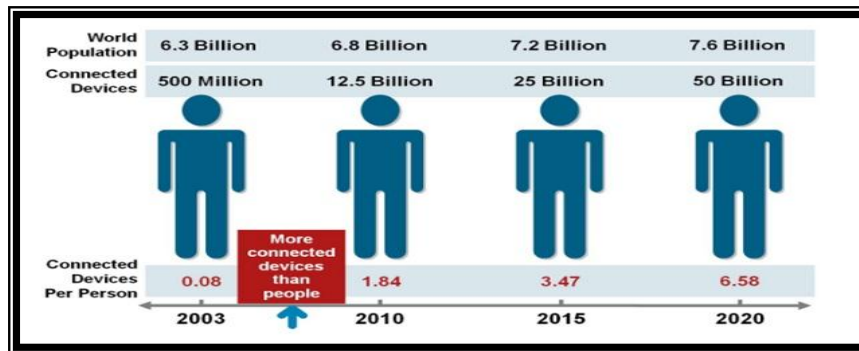


Fig. 2. Future Prediction of Uses in the World - The Internet of Things

V. IOT AS A NETWORK OF NETWORKS

Currently, IoT is made up of a loose collection of different, purpose-built networks. Today's cars, for example, have multiple networks to control engine function, safety features, communications systems, and so on. Commercial and residential buildings also have various control systems for heating, venting, and air conditioning (HVAC); telephone service; security; and lighting. As IoT evolves, these networks, and many others, will be connected with added security, analytics, and management capabilities. This will allow IoT to become even more powerful in what it can help people achieve.

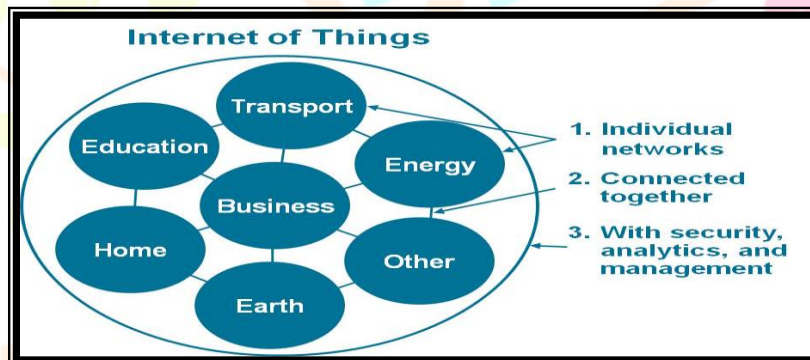


Fig. 3. IoT Can Be Viewed as a Network of Networks

VI. INTERNET OF THINGS APPLICATIONS

Internet of things applications use in many areas like Media, Environmental monitoring, Infrastructure management, Manufacturing, Energy management, Medical and health care systems, Building and home automation, Transportation, Better quality of life for elderly and others. See in Fig. 3. Internet of Things working with different application. Convergence is everywhere, it is just starting. Think on the how your businesses will convergence and scale-up. Need for more large-scale IoT and big data testing and experimentation. In developed countries majority people are living in City whereas in developing countries still living rural area IoT, Big data and Cloud are the future of the world.



Fig. 4. IoT in Different Application

VII. ADVANTAGES AND DISADVANTAGES OF IOT

Advantages:

1. Cost Savings:

It makes the electronic appliances communicate to each other in an effective manner thereby conserving and saving cost and energy; hence, it's helpful to people in their daily routines. By allowing the data to be shared and communicated between electronic devices and then translating it into our required way, IoT is making our systems efficient.

2. Information:

It is true that with more information, you can make better decisions. Whether it is general decisions as needing to know what to buy at a grocery store or if your company has enough supplies and widgets, knowledge is great power and more knowledge is always good.

3. Communication:

IoT encourages Machine-to-Machine (M2M) communication (communication between devices). Owing to this, the physical devices are capable to stay connected; hence, total transparency is available with greater quality and lesser inefficiencies.

4. Automation and Control:

Owing to physical objects getting controlled and connected digitally with wireless infrastructure, there is a big amount of automation and control in the workings. All the machines are capable to communicate with each other without human intervention which leads to prompt output.

Disadvantages:

1. Technology over Dependency:

At present, it is observed that the younger generation is a technology freak and they depend upon technology and its devices for every little thing. With the help of IoT, this dependency will become even more in daily routines. No application is free from fault and there are some hitches in each technical application. Totally relying on IoT devices may create a trouble in case of non-working or crash of an IoT infrastructure.

2. Losing Security on Privacy:

As there is involvement of different technologies and devices, there is monitoring by more than one company, which directly questions the security and privacy issues. Data retrieval and storage also becomes a major concern for the companies because all of them are involved at the same time. In case of keeping only one company, it may lead to question of domination.

3. Lesser Employment Prospects:

With IoT, daily activities getting automated and naturally there will be fewer requirements of human resources and less educated staff, which may create employment issue in the society.

4. Complexity:

With all complex systems, there is possibility of failure. Failures could be sky rocket in case of Internet of Things.

VIII. CONCLUSION:

The main aim of this research paper is to introduce the fundamental concepts of the Internet of Things and its applications also introduction to the technologies and mechanisms for sensing, actuation, processing and cyber-physical data communication. Discussing semantic technologies, service oriented solutions and networking technologies that enable the integration of Internet of Things data and services into the cyber world i.e. the Internet and the Web. Through a study on internet of things increase practical skills that can be transferred into a real-world situation.

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