

Impacts of IOT: An Overview

Priya Sharma
Department of E & Tc.,
Institute of Engineering and Technology,
Devi Ahilya University,
Khandwa Road, Indore (M.P.)-452001

Tanya Sharma
Department of E & Tc.,
Institute of Engineering and Technology,
Devi Ahilya University,
Khandwa Road,
Indore (M.P.)-452001

Uma Rathore Bhatt
Department of E & Tc.,
Institute of Engineering and Technology,
Devi Ahilya University,
Khandwa Road, Indore (M.P.)-452001

ABSTRACT

Internet of Things is one of the most attention grabbing technology which aims at bringing a revolutionary change around the world. This paper throws light over the impact caused by this technology. The paper starts with the very basic introduction of IoT, heading towards visualization of the major change it will cause in our society. A broader view towards the areas where it contributes the most is shown. At the end certain challenges to IoT is presented along with the conclusion.

General Terms

Technology, impact, automation, development, management, reliability, future, intelligence

Keywords

Internet of Things (IoT), IP address, network, smart technology, services, machine to machine (M2M)

1. INTRODUCTION

Internet has caused a lot of changes in past decades. Each and everything is getting smart, like smart phones, smart watches, smart machinery etc. Whole generation is heading towards a world which undoubtedly can be called a smart world [1]. This qualitative change is supposedly due to the evolution of an inevitable advancement in the technology of internet, the Internet of Things (IoT). Trillions of objects will be connected over internet, so that they can communicate with each other taking important decisions [2]. This seemed to realize, as giving senses to things came into picture. Taking the example of smart phone, it can see (through camera), hear (through microphone), speak (through speaker) as well as can sense the gestures. This idea will extend its domain over each and everything in the world. As internet has achieved a great progress in connecting people all around the globe, connecting things is also not a faraway thing.

2. DEFINING IoT BRIEFLY

The “Internet of Things” can be termed as a network established with the purpose of connecting things which are incorporated with sensors. Each and every “thing” in the IoT network is assigned a unique identification [3] termed as an IP address. This helps in locating the object referred. The objects then are embodied with an ability to transfer and receive data and instructions. In this way, a system with the ability of sensing and actuation is created which avoids human to human or human to system interaction to a greater extent [4].

Thus, a new dimension of connectivity is created in which anyone at any time in any place can connect through the world of information and communication technologies [5].

3. NEED OF IoT

It is a good question to be asked oneself that why he/she should show concern towards IoT? One should definitely know that how IoT is making changes in surroundings and whether it is worthy or not. A concern towards such a burning topic which is going to modify the way of working and living in a highly qualitative way is essential.

Lives will get better and people will hopefully live longer and safer with the development of totally unpredictable services established on the platform of IoT. It also tends to form a much better environment around us. In fact, it also helps to save much of our valuable resources like electricity, water or anything of concern. Recent researches show that by 2020 there will be around 24 billion devices that will be connected through IoT [6].

It is a common deep rooted tendency existing in majority of the individuals that they are resistant to any change around them. It seems that everything is just fine the way it is. So will IoT be actually meeting the expectations of society? It is an early stage to predict the future, but one thing that can be expected for sure is that it will definitely raise standards of living. Taking the example of internet, as it evolved, its future seemed hazy at an initial stage as not many people were accustomed to the services it provided. But at present it can be seen clearly that how rapidly internet is gaining a role of prime importance in lives of people. Thus similar is the case with IoT, once people will get accustomed to it, it will become an inseparable part of their lives as internet. Getting back to the track of discussing the need IoT has in the normal lives of people. The major problem with the people today is that they have limited time and accuracy but they want to get work done in minimum possible time with high rates of accuracy. This is one of the key roles achievable by IoT. If there are things which know what their role is and how they can perform it efficiently, their qualitative role will greatly increase. This transformation in the living style of people makes IoT an important topic of concern.

4. BROADER VIEW TOWARDS ITS IMPACT

This section broadly discusses the scenario of various sectors of the world under the impact of IoT.

- a) **Health Sector:** Health sector is one of the primary sectors that a person is most concerned about. With IoT, continuous health monitoring is becoming easier which reduces the need of admission to hospitals. At critical times it can save much of the patients' time by alarming doctor about his/her medical condition and accordingly initiating an appropriate clinician action [7]. Also the techniques adopted for medication and surgeries are being improvised thus ensuring longer and healthier lives.
- b) **Industrial Management:** Industries have experienced a lot of advancements in past few years. M2M communication provided great help in simplifying the techniques of production as well as manufacturing. With IoT coming into existence these processes can be further simplified. The 4th industrial revolution is changing the old picture of industries, introducing the new cyber-physical system as an intelligent network [8]. Machines are now able to take smart decisions causing minimal human involvement. This is imparting quality as well as cost effectiveness to the product. Also marketing can be done effectively along with ensuring whether the public needs are actually met by their respective products.
- c) **Infrastructural Management:** The continuous monitoring ability is much easier on the grounds of IoT. This reduces great risk associated with critical infrastructure. Their strength records can be monitored continuously so that any requirement in maintenance could be informed at right time. Thus taking correct repairment action will reduce hazards associated with it.
- d) **Energy Management:** As the energy needs are being crucial with time, judicious use of energy resources is gaining prime importance. Here IoT provides an efficient approach at continuous monitoring of energy utilization and minimizing the extent of energy being wasted. The sectors like state electricity boards can adopt smart technologies to observe the consumer utility pattern. Also, smart home devices can be used to aware people about judicial use of resources [9].
- e) **Traffic Systems:** Traffic systems based on smart devices serve as a great tool for building a city with greatly managed traffic, in turn reducing the need of employing more number of traffic policemen [10]. The automated traffic monitoring system can even display the density of traffic on different roads. This information can be communicated to the vehicle drivers who can drive smartly to reach their destination quicker as well as safer. With the use of similar techniques a proper management of traffic system is possible on the grounds of IoT.
- f) **Home Automation:** The concept of smart homes is drastically changing the definition of living comfortably. With the smart devices functioning at homes, a better and more comfortable life is possible. Almost everything in the house can be automated. This proves helpful in assuring emotional satisfaction to people as they can save most of their valuable time [11].

5. CHALLENGES TO IoT

As newer technologies come into existence they face different challenges. Similar is the case with IoT. Although IoT is proving to cause a revolutionary effect over the world, there are certain challenges associated with the implementation of IoT. A major question is of the reliability over IoT due to security issues. As IoT will be having control over each and

every field of concern including privacy, the primary requirement that it should meet is to maintain privacy and security. Hacking is one of the major threats. Once the system is hacked each and everything one had control over can be easily accessed by the hacker. Thus relying over fully automated setup is questionable, and so it is quite uncertain that people will lay their trust over IoT. Therefore, there is a need to work on the privacy, integrity of data, data security as well as confidentiality ensured by IoT [12][13]. Also, IoT raises its own complexity. Developing public understanding of this technology is another major challenge. In order to make people accustomed to its usage there is a need of research in making it easier to handle. The energy availability is being crucial with time. Many IoT applications run on batteries which have limited shelf life. Observing current energy trends, it is essential to research on having prolonged battery life which derives energy from unconventional sources.

6. CONCLUSION

This paper presents a picture of how IoT will drastically affect the world on the grounds of technology. It is seen that this major advancement in technology will prove to be an extension to internet and mobile communication network, being a third wave in information technology [14]. But the question of reliability over IoT is still persistent due to sharing of personal data over various devices. Also, it can be inferred that the wealth and value created by IoT will ironically increase global poverty. With the automation of almost everything around us, people will subsequently be wiped out of their current roles. Their talents would be least entertained and the unemployed sector will eventually widen its current domains. In this way IoT seems to create a lot of disruption in the society. Thus it is a point of concern that there is an actual need to rethink what should be the areas where the use of IoT should be implemented.

7. REFERENCES

- [1] John A. Stankovic, "Research Directions for the Internet of Things" in IEEE 2014
- [2] Timothy Malche, Priti Maheshwary, "Harnessing the Internet of Things (IoT): A Review", International Journal of Advanced Research in Computer Science and Software Engineering, Volume 5, Issue 8, August 2015
- [3] Balamuralidhar P., Prateep Misra and Arpan Pal, "Software Platforms for Internet of Things and M2M" in Journal of the Indian Institute of Science VOL 93:3 Jul.-Sep. 2013
- [4] Daniele Miorandi, Sabrina Sicari, Francesco De Pellegrini, Imrich Chlamtac, "Internet of things: Vision, applications and research challenges", Ad Hoc Networks 10 (2012) 1497–1516
- [5] Meesun Kim, Hyun Ahn and Kwanghoon Pio Kim, "Process-Aware Internet of Things: A Conceptual Extension of the Internet of Things Framework and Architecture", KSII Transactions on Internet and Information Systems, vol.10, no.8, pp.4008-4022, 2016
- [6] Jayavardhana Gubbi, Rajkumar Buyya, Slaven Marusic and Marimuthu Palaniswami, "Internet of Things (IoT): A vision, architectural elements, and future directions", Future Generation Computer Systems 29(2013)1645–1660
- [7] Moeen Hassanali, Alex Page, Tolga Soyata, Gaurav Sharma, Mehmet Aktas, Gonzalo Mateos Burak

- Kantarci, Silvana Andreescu, “Health Monitoring and Management Using Internet-of-Things (IoT) Sensing with Cloud-based Processing: Opportunities and Challenges”, 978-1-4673-7281-7/15 IEEE 2015
- [8] Mihyun Chung and Jaehyou Kim, “The Internet Information and Technology Research Directions based on the Fourth Industrial Revolution”, *KSII Transactions on Internet and Information Systems*, vol.10, no.3, pp.1311-1320, 2016
- [9] Mahesh Hiremath and Manoranjan Kumar, “Internet of things for energy management in the home power supply”, *International Journal of Research In Science & Engineering* Volume: 1 Special Issue: 2
- [10] Hasan Omar Al-Sakran , “Intelligent Traffic Information System Based on Integration of Internet of Things and Agent Technology”, (*IJACSA*) *International Journal of Advanced Computer Science and Applications*, Vol.6,No. 2,2015
- [11] Vinay sagar K N, Kusuma SM, “Home Automation Using Internet of Things” , *International Research Journal of Engineering and Technology(IRJET)*,Volume: 02 Issue: 03 | June-2015
- [12] Qazi Emad-ul-Haq, Hatim Aboalsamh, Abdelfettah Belghith, Muhammad Hussain, Wadood Abdul, Mostafa H. Dahshan and Sanaa Ghouzali, “Challenges and solutions for Internet of Things Driven by IPv6”, *KSII Transactions on Internet and Information Systems*, vol. 9, no. 12, pp. 4739-4758, 2015
- [13] Tuhin Borgohain,Uday Kumar,Sugata Sanyal, "Survey of Security and Privacy Issues of Internet of Things", *Cryptography and Security (cs.CR)*, Cornell University Library, 2015
- [14] Kai-Di Chang and Jiann-Liang Chen, “A Survey of Trust Management in WSNs, Internet of Things and Future Internet”, *KSII Transactions on Internet and Information Systems*, vol. 6, no. 1, pp. 5-23, 2012