

# Role of IoT in Various Industries

Someet Singh<sup>1</sup>, Navjot Kaur<sup>2</sup>

someet.17380@lpu.co.in<sup>1</sup>, navjot.20506@lpu.co.in<sup>2</sup>

AP, School of Electrical Electronics Engineering<sup>1</sup>, School of Computer Science & Engineering<sup>2</sup>

Lovely Professional University, Phagwara, Punjab

**Abstract-** Individuals chase for making their living easy and relaxed because of fast change in their lifestyles. Over the passage of time, humans have experienced technology related transformations because of invention of new techniques. The discovery and development of technology has led human to complete their tasks in stipulated time with least error. Invention of smart devices has imparted significant impact on daily life. This paper highlights evolution of Internet of Things, its tendencies to its futuristic programs and its impact on industries.

**Keywords:** Technology, IoT, influence of IoT on industry

## Introduction

Internet of Things (IoT) is a systematic system of interconnected intelligent smart devices including various sensors and people. All intelligent devices are provided and identified with the unique id's.[1] IoT has ability to transmit information over the network and allows human to human or machine to human interaction. This fast revolution of technology has put a significantly incredible impact of the technical, social, economic and educational aspect of living and non-living things. [2] In the recent years, the individuals had encountered educated specialized changes because of creations of new innovation. [3]

## Working of IoT

Internet has influenced our lifestyle and mode of communication among human and machines. IoT has forwarded this legacy by interconnecting many devices over internet communicating to each other at the same time. It has facilitated the machine to machine and human to machine communication. [4][5]

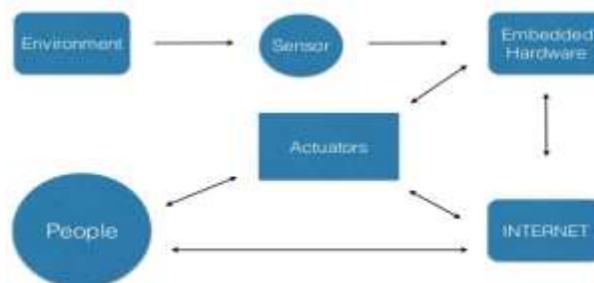


Figure 1: Working of IoT

## IoT Architecture

The IoT architecture consists of four components: Sensors or Devices, connectivity, data processing, and a user interface. [6]

1. **Sensors or Devices:** Sensors or devices are used to gather data from the surrounding. A device can consist of multiple devices to sense other devices and data. [7]

2. **Connectivity:** Data that is collected is sent to cloud through a medium like WiFi, WAN.
3. **Data Processing:** The data collected at cloud is processed using a software or appropriate devices or technique. Processing of data can be for multiple reasons like examining the temperature sensed during the day to predict variation in temperature during the day or identifying any moving or still object. This processing might require human intervention to meet the purpose. [9][8]
4. **User Interface:** The collected and processed information is made available for users to use. Such information can be used for multiple reasons (but depends upon the reason for which it is collected and processed) like accessing information from a remote source, identifying objects to fine intruders, checking availability of items in a smart houses. [10][11]

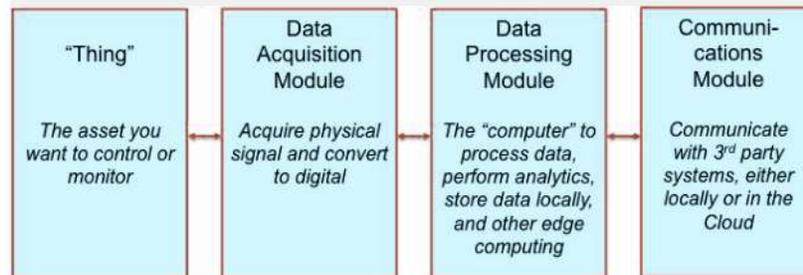


Figure 2: Components of IoT

## Applications of IoT in Industries

With the evolution and advancement in technology, use of Iot in various industries has hit the highest point. [12] Industries are highly influenced by the application and deployment of IoT based solutions including ecological surveillance, healthcare sector, stock and manufacture management, food supply chain (FSC), transportation, work and home security, and supervision.[13] [14].

### IoT in the Healthcare Service Industry

IoT offers major and continuous prospect to advance healthcare. Influenced and powered by IoT's omnipresence recognition, its ability to sense and communicate. All entities in the healthcare systems can be tracked and monitored constantly with the help of connected smart devices. Data is collected and is sent over cloud. By using that data all connected devices are operated.

### IoT in FSC

The IoT system offers ability in networking; all the connected elements can be distributed throughout the entire Food Supply Chain system for smooth and efficient implementation and transfer. Enabling FSC industry IoT equipped, additionally offers powerful monitoring and identifying functionalities and techniques to track and screen the procedure of nourishment generation. IoT based solution to FSC encompass three parts:

- 1.) Wireless Sensor Network Hosts, RFID tags, client interaction units.
- 2.) The backend systems and other types of units attached by distributed networks.
- 3.) The communication infrastructures.

### Role of IoT for Mining Industry

Mine safety is a major worry for some majority of the nations because of the working conditions beneath the surface of the ground mines. To avoid tragedy in the mining, there is a need to setup and utilize IoT enabled smart devices and technologies to be aware of mine calamity. By using IoT enabled devices underground mining can be monitored and controlled. Mining units can follow the area of mining beneath the surface and examine, analyze all safety information gathered from electronics sensors to upgrade security standards.

## Role of IoT in Transportation and Logistics Industry

IoT based smart devices play undeniably significant role in transportation and logistics industries. As numbers of interconnected physical devices are operational with scanner tags, unique IDs, transportation and logistics industries can directly monitor of the movement of IoT enabled physical devices from a source to destination across the entire supply chain.

## Role of IoT in Firefighting and Safety Field

Internet of Things has influenced the firefighting safety field. Smart devices are integrated and are used to find potential fire and give early cautionary indications to conceivable fire calamities. Using IoT based devices the industries and business units could perform automatic identification and analysis to recognize real-time environmental monitoring, early fire cautioning and crisis salvage where ever and when ever required.

## Conclusion

Regardless of risk and other issues, industries are gaining faith in IoT enabled solutions because of its popularity, reliability, accuracy. With advancement in technology, sensing devices are becoming less expensive, small in size and technically more powerful. These factors influence industries to deploy IoT enabled devices to build up applications.

## References

- [1] K. Ashton. , Internet of things. RFID J. [Online]. Available: <http://www.rfidjournal.com/articles/view?4986> , Jun 2009.
- [2] R. Van Kranenburg, E. Anzelmo, A. Bassi, D. Caprio, S. Dodson, and M. Ratto, “The internet of things,” in Proc. 1st Berlin Symp. Internet Soc., Berlin, Germany, pp. 25–27, 2011.
- [3] L. Tan and N. Wang, “Future internet: The internet of things,” 3rd International Conference on Advanced Computer Theory and Engineering(ICACTE), DOI: 10.1109/ICACTE.2010.5579543, September, 2010.
- [4] X. Jia, O. Feng, T. Fan, and Q. Lei, “RFID technology and its applications in internet of things (IoT),” in Proc. 2nd IEEE Int. Conf. Consum. Electron., Commun. Netw. (CECNet), Yichang, China, pp. 1282–1285, Apr. 21–23, 2012.
- [5] C. Sun, “Application of RFID technology for logistics on internet of things,” AASRI Procedia, vol. 1, pp. 106–111, 2012.
- [6] E. W. T. Ngai, K. K. Moon, F. J. Riggins, and C. Y. Yi, “RFID research: An academic literature review (1995–2005) and future research directions,” Int. J. Prod. Econ., vol. 112, no. 2, pp. 510–520, 2008.
- [7] S. Li, L. Xu, and X. Wang, “Compressed sensing signal and data acquisition in wireless sensor networks and internet of things,” IEEE Trans. Ind. Informat., vol. 9, no. 4, pp. 2177–2186, Nov. 2013.
- [8] W. He and L. Xu, “Integration of distributed enterprise applications: A survey,” IEEE Trans. Ind. Informat., vol. 10, no. 1, pp. 35–42, Feb. 2014.
- [9] D. Uckelmann, M. Harrison, and F. Michahelles, “An architectural approach towards the future internet of things,” in Architecting the Internet of Things. D. Uckelmann, M. Harrison, and F. Michahelles, Eds., New York, NY, USA: Springer, pp 1–24, 2011.
- [10] S. Li, L. Xu, X. Wang, and J. Wang, “Integration of hybrid wireless networks in cloud services oriented enterprise information systems,” Enterp. Inf. Syst., vol. 6, no. 2, pp. 165–187, 2012.
- [11] Manishaben Jaiswal, “COMPUTER VIRUSES: PRINCIPLES OF EXERTION, OCCURRENCE AND AWARENESS ”, International Journal of Creative Research Thoughts (IJCRT), ISSN:2320-2882, Volume.5,

Issue 4, pp.648-651, December 2017, <http://doi.one/10.1729/Journal.23273> Available at [http://www.ijert.org/viewfull.php?&p\\_id=IJCRT1133396](http://www.ijert.org/viewfull.php?&p_id=IJCRT1133396).

[12] Manishaben Jaiswal “Big Data concept and imposts in business” International Journal of Advanced and Innovative Research (IJAIR) ISSN: 2278-7844, volume-7, Issue- 4, April 2018 available at: [http://ijairjournal.in/Ijair\\_T18.pdf](http://ijairjournal.in/Ijair_T18.pdf)

[13] Manishaben Jaiswal “ SOFTWARE QUALITY TESTING “ International Journal of Informative & Futuristic Research (IJIFR) , ISSN: 2347-1697 , Volume 6, issue -2 , pp. 114-119 ,October-2018 Available at: <http://ijifr.com/pdfsave/23-12-2019214IJIFR-V6-E2-23%20%20OCTOBER%202018%20a2%20files%20mergeda.pdf>

[14] L. Wang, L. Xu, Z. Bi, and Y. Xu, “Data filtering for RFID and WSN integration,” IEEE Trans. Ind. Informat., vol. 10, no. 1, pp. 408–418, Feb. 2014.

[15] ITU NGN-GSI Rapporteur Group, Requirements for Support of USN Applications and Services in NGN Environment, Geneva, Switzerland: International Telecommunication Union (ITU), 2010.

[16] L. Atzori, A. Iera, and G. Morabito, “The internet of things: A survey,” Comput. Netw., vol. 54, no. 15, pp. 2787–2805, 2010.

[17] C. Flügel and V. Gehrman, “Scientific workshop 4: Intelligent objects for the internet of things: Internet of things-application of sensor networks in logistics,” Commun. Comput. Inf. Sci., vol. 32, pp. 16–26, 2009.

