

# Internet of Things(IOT)

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**Abstract:** "The Internet of Things is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction."

## I. INTRODUCTION

The term "The Internet of Things" (IoT) was coined by **Kevin Ashton** in a presentation to Proctor & Gamble in 1999. He is a co-founder of MIT's Auto-ID Lab. He pioneered RFID (used in bar code detector) for the supply-chain management domain. He also started Zensi, a company that makes energy sensing and monitoring technology. The 'Thing' in IoT can be any device with any kind of built-in-sensors with the ability to collect and transfer data over a network without manual intervention. The embedded technology in the object helps them to interact with internal states and the external environment, which in turn helps in decisions making process. "The Internet of things (IoT) is the extension of Internet connectivity into physical devices and everyday objects. Embedded with electronics, Internet connectivity, and other forms of hardware (such as sensors), these devices can communicate and interact with others over the Internet, and they can be remotely monitored and controlled."

## I. HOW DO IOT DEVICE WORKS

An IoT system is compromised of four main components:

**1.Sensors:** enables the devices to collect data from the environment surrounding the device (eg. velocity, GPS coordinates, temperature, etc...).

**2.Connectivity:** successively the data collected is sent to the cloud (through either WiFi or Bluetooth connection).

**3.Data Processing:** once the data is received by the cloud infrastructure, it can then be processed (eg. check if the data received adhere to the requirements and if its not alert the user).

**4.User Interface:** Once the data is processed, the results are then given to the and user.

## ADVANTAGES OF IOT

Internet of things facilitates the several advantages in day-to-day life in the business sector. Some of its benefits are given below:

**A. Efficient resource utilization:** If we know the functionality and the way that how each device work we definitely increase the efficient resource utilization as well as monitor natural resources.

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**B. Minimize human effort:** As the devices of IoT interact and communicate with each other and do lot of task for us, then they minimize the human effort.

**C. Save time:** As it reduces the human effort then it definitely saves out time. Time is the primary factor which can save through IoT platform.

## D. Enhance Data Collection:

**E. Improve security:** Now, if we have a system that all these things are interconnected then we can make the system more secure and efficient.

## IV.DISADVANTAGES OF IOT

**1. Privacy issues:** There is always the possibility of hackers breaking into the system and stealing the data. And one might want some personal space in life. So staying connected with family and friends always giving them every detail of our life activity is not good. There is every possibility of misusing your information.

**2. Super-reliance on technology and electronic gadgets:** The younger generation has grown up with the readily available things. The internet and technology making them so non-brainy. A simple maths calculation of adding and subtracting is done through a calculator ready available in our phones. The more we entrust and dependent on the Internet, there are more chances to a potentially grievous events if we lose it.

**3. Becoming Indolent:** People are more habituated to have a click based work making them lazy to any sort of physical activity, applied science in their daily routine.

**4. Unemployment:** People who at lower level like unskilled labour may have high risks of losing their jobs. Security Guards, House Servants, Iron & Dry wash services etc may not have proper employment opportunities as the IoT devices replaces their work and people can work on their own.

## V.APPLICATIONS OF IOT

**1. The Smart Home:** It is like making your home smart. You can control and automate the lights, room heater, ventilation, air condition, and security system by yourself. Home appliances such as washer/dryers, ovens and refrigerators can be remotely monitored and automatically get operated.

2. **Wearables:** Watches along with time started giving people more data about their workouts, schedules, appointments and meetings, important days to remember Etc.

3. **The Smart Cities:** The city officials interact directly with the city infrastructure management and govt department for solving real problems facing by the city citizen on each day . They can monitor what is happening in the city, how the city is evolving, and how to enable a better quality of life to their citizens. The IoT devices can solve traffic issues and reduce noise, crime, and air pollution. Having assets like local Govt departments, Security & information systems, schools, libraries, transportation systems, hospitals, power plants, water supply networks, waste management, law enforcement, and other community services.

4. **Connected Car:** The vehicles are connected with the Internet can share that access with others that traveling on the same route, or another route to stay informed and safe.

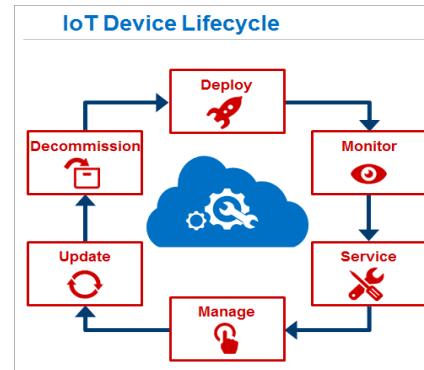
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bicycle, medical sensors, fitness trackers, smart security system etc., are few examples of IoT products.



The technologies used in these devices are low energy wireless and Bluetooth, NFC, LTE, ZigBee, wireless protocols etc..

#### 1) Google Home Voice Controller

- Google home allows a user to listen to media.
- Let's the user to control TV and speakers.
- It is capable of managing timers and alarms.
- It can remotely handle the volume and home lights as well.
- It helps the user to plan their day and get things done automatically.

#### 2) Amazon Echo Plus Voice Controller

- Amazon Echo can play songs, connect to external speakers or headphones.
- It is capable of making calls and messaging on voice command.
- Amazon Echo has around 6-7 microphones, good technical specification and sound cancellation. It is capable of hearing your voice from all the directions even when songs are played.
- Controls compatible smart home devices including lights, plugs, and more.

#### 3) August Doorbell Cam

- It allows the user to order products quickly and there is no need to recall the message again and it also helps to reduce the time frame for searching the required product by the user.
- Amazon Dash Button also allows the user to reorder from popular brands – like Bounty, Tide, Cottonelle, Glad, Clorox etc.
- It does not accept fresh order if the prior order is not complete unless the user allows multiple orders.
- It is a good and reliable IoT product that is developed for making the user's lifestyle simple and easy.

#### 4) August Smart Lock

- Allows the user to know about each and every person coming and going into your home.
- Provides unlimited digital keys and no fear of stolen key.

## VI. EXAMPLES OF IOT

**Internet of Things (IoT)** devices support the expansion of internet connection beyond the usual standard devices like computers, laptops, smartphones etc. There are several top devices in the market. Smart Mobiles, smart refrigerators, smart watches, smart fire alarm, smart door lock, smart

- It gives the status updates of your door as it is properly closed or not.
- It has a good auto-unlock feature and as soon as the user arrives near the door it opens automatically.
- Easy installation and is compatible with most standard single cylinder deadbolts.

#### 5) **Kuri Mobile Robot**

- Kuri has capacitive touch sensors and HD camera.
- It is integrated with gestural mechanics and microphones.
- It has heart light and speakers.
- It includes integrated mapping sensors and drives system.
- It has a good processor and smooth charging pad.

#### 6) **Nest Smoke Alarm**

- The user can manage this alarm with the phone without any extra hardware.
- Installation is easy and can be set up through iPhone, iPad or Android device.
- Appearance is very good.
- It also has certain colors like green, yellow, red to communicate with a user according to the situations.

#### 7) **Philips Hue Bulbs and Lighting System**

- Smart and away from home control.
- Light schedules and comfort dimming.
- Create your ambiance, wake up, well being, etc.
- Sync with music and movies.

#### 8) **Footbot Air Quality Monitor**

- It cleans the air pollution.
- Keeps the humidity and temperature levels in check.
- Helps to develop more focus and energy by breathing fresh air.
- Supports to increase the lifespan of the users.
- It has a very fast and simple installation process.

#### 9) **Amazon Dash Button**

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### CONCLUSION

As IoT technology has already made itself comfortable in our homes, public spaces, offices and factories, and given the breakneck pace of its development, it seems that the hackneyed IoT phrase 'anything that can be connected will be connected' is ever closer to becoming our daily reality. Therefore, the real question shouldn't be about when this will happen, but rather how the connections should be made to achieve the highest possible efficiency while retaining key features like security and cost-effectiveness. With this approach in mind, a deployment envisaging a great number of low-power, low-bandwidth devices would require the use of LwM2M, a lightweight protocol designed especially for the management of such resource-constrained machines. Therefore, seen from such practical perspective, the question of success in case of given IoT applications seems to boil down to the choice of appropriate IoT technology from the vast array of existing solution.

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