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IOT & IT'S SMART APPLICATION

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ABSTRACT

We are entering in another time of figuring innovation i.e. Internet of Things (IoT). The Internet of things (IoT) is the network of physical gadgets, vehicles, home apparatuses and different things inserted with hardware, programming, sensors, actuators, and network which empowers these articles to associate and trade information. The huge amount of data is being produced, stored and data is handled into beneficial actions which make our life much easier and safer. Each and every organization needs internet for data transformation, and internet access is available to every person on system and their mobile devices so that the information can transferred easily and economically.

Keywords: *IoT, RFID, QR, BLE.*

I. INTRODUCTION

It represents how the devices sense and collect data from other devices using internet. It takes the data from one device and send the data to other devices all over the world where it can be administered and used for different interesting purposes. Today each and every person is connected with others using other different ways of communication in this the most common way of communication is internet or we can say that internet connect peoples. This term is first used by KevinAshton in 1999 in the perspective of supply chain management. In past this term is mainly focused on health, transport, utilities etc. but now a days things has changed, technology has evolved but the purpose of IOT is same i.e. make a computer sense information without human interference.

Now a days it is necessary to provide the information as soon as possible either it is information of flight schedule or any other important notices in any field. But in this the problem is that it requires extra employees that are devoted to that purpose and give the updated information. The second problem is that a person needs to go there to get the information. We can use technology to solve these problems and the best technology is mobile phones, which are available everywhere and that is connectable to internet to download latest information. Now users need not to be go anywhere, user can get information at the home and if the information is not updated then the user can call customer care and can get related information.

II. TECHNOLOGIES

i) Near-field communication and Radio Frequency Identification (RFID) - In the 2000s, RFID was the dominant technology. After few years, NFC became dominant (NFC). NFC have become common in smart phones during the early 2010s, with uses such as reading NFC tags or for access to public transportation.

ii) Quick response codes and Optical tags - This is used forlow cost tagging. Phone cameras decode QR code using image-processing techniques. In reality QR advertisement campaigns gives less amount as users need to have another application to read QR codes.

iii) Bluetooth and low energy - This is one of the latest techniques. All newly releasing smartphones have BLE hardware in them. Tags based on BLE can signal their presence at a power budget that enables them to operate for up to one year on a lithium coin cell battery. [1]

III. APPLICATIONS

Today the connectivity is going beyond laptops and smart phones, its going towards real world connections like smart cities, smart highways etc. According to Gartner report, connected devices across all technologies will reach to 20.6 billion by 2020 as shown below: [2]

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Figure 1: No. of Connected People

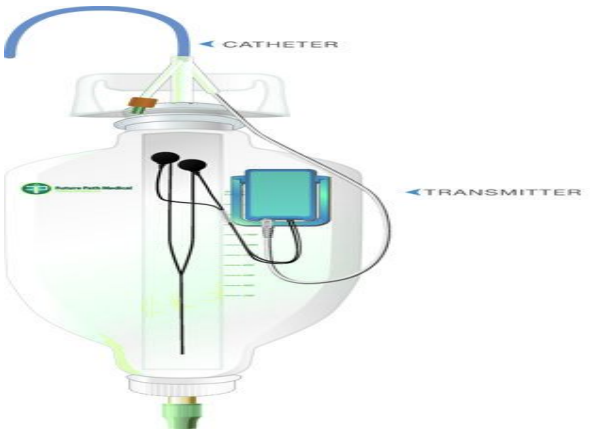
YEAR	NUMBER OF CONNECTED DEVICES
1990	0.3 million
1999	90.0 million
2010	5.0 billion
2013	9.0 billion
2025	1.0 trillion

There are some areas where IoT is used:

1. **Smart cities**: It is an urban area which uses sensors to handle the resources efficiently. It includes:
   a) **Smart Parking**: It is like monitoring of parking space availability in the city. It provides an ultimate solution to the driver on their journey from the starting to the ending without finding travelling cost, travelling time, parking space etc. [3]
   b) **Smart Lighting**: It is intelligent and weather adaptive lighting in the street lights. In this world 19% of the energy is used for lighting and out of this 19%, 6% derived from this energy in greenhouse emission. So the Smart lighting is the best way to save this light by allowing the householder to control remotely cooling and heating, lighting, and the control of appliances. [4]
   c) **Smart Roads:** Smart Roads are like intelligent highways with warning messages and diversions according to the climate conditions and unexpected events like accidents, traffic jams etc.
   d) **Smart Agriculture:** Smart agriculture is used because 60% of water is used in irrigation and 20-30% out of this figure is wasted due to evaporation and over watering.

2. **Healthcare:** It is used to improve the quality and accessibility of digital products that are revolutionizing the health and fitness industries. It has many examples:
   a) **Future Path Medical's UroSense:** It is smart fluid management solution, it automatically measures the body temperature and provides the medical report to the patient accordingly their healthcares.

Figure 2: Future Path Medical's UroSense



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b) **Philips' Medication Dispensing Service:** It is for elderly patients persons who find it difficult to maintain their medical dosage by their own. [5]

Figure 3: Philips' Medication Dispensing Service

3. **Environmental Monitoring:** It is mainly used for environmental protection. In this, sensors are used for sensing the water quality, air quality, soil etc. and also monitor the movement of wildlife and their habitats. It also provides some effective aid from natural disasters like tsunami, earthquake etc.

4. **Building and Home automation:** IoT is used to control and monitor the mechanical, electrical and electronic system used in buildings. There are mainly three areas used in this :
   a) **Integration of internet with energy management systems** (used for efficient energy creation in building).
   b) **Integration of Smart devices**
   c) **Real-time monitoring of energy management.** [6]

5. **Security**: Attackers can access data from a connected device by making three target hacking points:
a) The device
b) The cloud infrastructure
c) The network.
   IoT can control these targets by:
   a) **Perimeter Access Control** (restricted the unauthorized people)
   b) **Liquid Presence**
   c) **Radiation Levels**
   d) **Explosive and Hazardous Gases** [1] [7]

6. **Industrial Control**: IoT is used in industries in many ways. Some of them are as follows:
   a) **Machine to Machine Applications**
   b) **Indoor Air Quality** (monitor the level of gases)
   c) **Temperature Monitoring**
   d) **Ozone Presence**
   e) **Vehicle Auto-diagnosis** (send the real time information to drivers in case of emergencies in the form of alarms) [1]

IV. CONCLUSION

The future of IoT is more fascinating than this where billions of things will be talking to each other and human intervention will become least. IoT will bring macro shift in the way we live and work. The IoT changes in individuals‟ quality of life

and enterprises‟ productivity. IoT is used in many areas from transportations, securities, to educations, utilities, and malls etc., where in malls it is used to maintain the humidity inside the mall.

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