Internet of Things (IoT)

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Abstract— **In Today's world, everything is moving towards the path of Digitalization. Internet of Things (IoT) is the way to connect billions of people together for sharing the views and information through which a human being life can easily live smartly. The "Iot" is a combination of 3 words "Internet of Things" which tells that every work is going towards the Internet. IoT techniques is implemented in the real world and sensors which are attached to the things with the help of the Internet. IoT helps in the things which will share information about the condition of things with people and other machines.**
By the use of technology, the world will becomes smart in every sectors.

Keywords— **IoT Applications, Future Technologies, Smart Cities and Smart Transportation**

I. INTRODUCTION

The term of Internet of Things (IoT) was first invented in 1998 which is a network of networks which means large number of networks are connected with each other and helps in sharing the information and ideas. In other words, Internet of Things (IoT) is the interconnection of devices through networks and helps in data flow. [1][2]
The Internet of Things (IoT), is known as the Internet of Things, which will change almost everything in every sectors. The Internet is being used in every sectors like education, private sectors, science, government, and humanity as it makes the work easier and too easily in less manpower and cost. The Internet is one of the most important part of human daily routine and now the Internet of Things, has given the advancement and help in converting towards smart city. It helps in converting the world by connecting every objects and things with the Internet, through this anyone can access the data and information whenever required or used. The main vision of Internet of Things (IoT) is to improve the lifestyle of users.

II. DIFFERENCE BETWEEN M2M AND THE IOT

M2M	IoT
Point-to point communication usually embedded within hardware at the customer site.	Devices communicate using IP Networks, incorporating with other protocols
Many Devices uses wired and cellular network.	Data delivery is done or relayed with the help of cloud.
In this devices, do not rely on the Internet for the communication.	In this devices, rely on the Internet for the communication.

III. FEATURES OF IOT

Some important features of IoT is given below:-

1) Intelligence: Internet of things provides the techniques to understand the behaviour of the users by applying specific techniques.
2) Connectivity: The main important feature of this technology is that it connects the different people with each other over a Internet and also helps to share the information over Internet.
3) Safety & Security: In the improvement of the technology, it also provides a special feature of the security of data which is very much important in now a days.
4) Searching: In this, it also helps in the searching of data as soon as possible and make the data independent that means it works on the technique of distributed database through which our data can be managed easily.

II. APPLICATIONS OF IOT

Applications of IoT are given below:

A. **Smart Cities**

Fig 1.Smart cities[6]

Many cities are following the smart projects in the process of development. In this cities, the basic principal of Information technology is to provide the essential services to the residents.

Smart cities are the cities in which the every city aims to improve the technologies to support the different services and networks. So that the communication becomes faster and effective.[6]

Smart cities requires highly advanced technology in every sectors like infrastructure, improving public transportation facility and also helps in reducing traffic congestion ,so that the traffic can easily managed.

B. Smart Environment

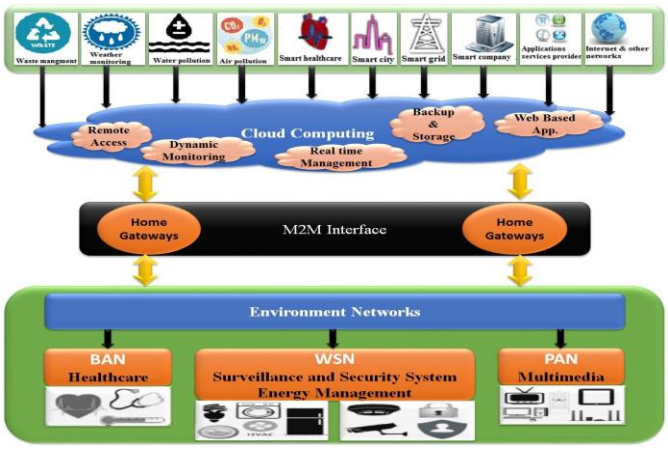

Fig 2: Smart Environment

Environment plays a important role in human life. People as well as animals, birds, fishes and plants may be affected in unhealthy and bad environment. There were many techniques and efforts that are being used to solve the problems of environmental pollution and waste resources.

Making a healthy environment is not easy task because of growing industries with bad human activities are daily factors that make the environment polluted. Monitoring the environment is important in order to make the environment life according to the users.It helps in monitoring the waste management and also helps in creating healthy environment to protect people and environment, and also to avoid natural disaster. [3]

C.**Smart Transportation and Mobility**

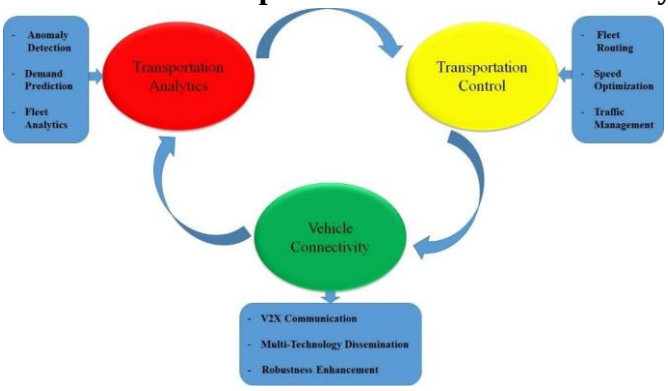

Fig 3**:** Smart Transportation

The improvement in transport facility is one of the factors that helps in development of the country name and name of the peoples too. If the roads and the condition of the roads are being managed by IoT application than it will be helpful and also good sign in the development. The smart transportation and mobility is the concept to apply some new techniques and way to make good transport so that the chances of accident becomes less in day to day life. The smart transportation is deal with three main conceptions as shown in Figure 3. The transport analytic is now in demand as the transportation is one of the major part of any city. The checking of vehicles and speed control is the one way for traffic management known as transportation control.

III. INTERNET OF THINGS CHALLENGES

Some challenges of IoT are given below:

A. Scalability:

The concept of Internet of Things done a big change and also provides new techniques to implement it in the real world and make our life easier and comfortable. Basic techniques of improvement is equally efficiently in both small scale and large scale environments. [4]

B. Data volumes:

In the internet the applications must be very advanced so that the data delivery becomes faster and also make the proper use of memory and helps in searching over large volumes of data on central network nodes.[1]

C. Automatic Discovery:

In this widely changing environments, it is very much important that we should know how to handle with the semantic data and making new updates or discovery very much frequently.

D. Software complexity:

The complexity of the software must be less so that it is easily under stable and managed properly and can make the proper use of the application. [4]

E. Security and privacy:

i It provides security to the data and information which are in the Internet and also keep the data in a proper way.

IV. ADVANTAGES OF IOT

1. Communication**:-**

It improves the communication between the devices which is known as m2m communication (machine to machine).

2. Time:-

The time is too much saved on the introduction of the concept of IoT.

3. Money:-

The biggest advantage of IoT is saving the money. If the price is less than it can be easily adopted by the users and the demand of the product also increases.

4. Improves the Quality of Life:-

It increases the comfort and better management of time by the use of the new technology.

V. DISADVANTAGES OF IOT

Some of the disadvantages are given below:

1) Compatibility:

In this technique we cannot work on a specific or fixed concept of access and storage of data. We have to use different schema or ways for every different works of the data.

2) Complexity:

As the data uses different schema, it is done that the complexity of the data increases like the space complexity for storage and the time complexity for searching process.

3) Privacy:

It is the main problem in which we encrypt the data and then store it in the network, there is a chances of lass of the loss of data privacy and can also change the information by changing the form.

4) Safety:

In the Internet there is less chances of safety of data as it can be used by anyone and can be easily manipulated.

VI. FUTURE SCOPE

In this there is a wide scope of the improvement in every sectors like education, business, marketing and every sectors. The IoT is being implemented in every sectors in now a days which helps in development of the country in every sectors.

VII. CONCLUSION

Internet is basically used in every place and now a days data are also stored with the help of Internet. Now everything in the world has started to make connection between each other over the Internet by a specific way or technique and can take their respective decision. All the concepts that comes from Internet of thing and connected with the help of some technology. It also provides the security of the data.

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