IOT AND THEIR APPLICATION

Mrs.Sonal Nanasaheb Mhase

Lecturer, Electrical Engineering, P.Dr.V.Vikhe Patil Institute of Technology & Engineering (Polytechnic), Loni Bk.,Maharashtra, India.

ABSTRACT

The popularity of IoT has been growing rapidly in recent years. This is due to the reduction in the cost of devices that take place in IoT solutions, the creation of user-friendly software development systems and the development of cloud services.IoT in industry is a rapidly developing area. Numerous IoT research and application projects have been done by universities or in joint industry- university consortia in recent years. New real life and industrial projects have been done and joint future oriented industry and government initiatives such as Industry 4.0 in Germany, have been started .Since Industrial production is one of the world's biggest economic factors one of the major objectives of these initiatives is to bring the paradigms of the IoT to the factories enabling them to cope with the challenges raised by popular mega trends.One of the most promising IoT use cases is creating smarter, more efficient cities.IoT home automation is the ability to control domestic appliances by electronically controlled, internet-connected systems. It may include setting complex heating and lighting systems in advance and setting alarms and home security controls, all connected by a central hub and remote-controlled by a mobile app.In this paper explain IoT application.

Keyword : - *IoT, cloud services, IP network, electrical grid, wire less sensor networks, sensors and Industry 4.0 etc…*

1. INTRODUCTION

One of the most promising IoT use cases is creating smarter, more efficient cities. Public energy grids can be optimized to balance workloads, predict energy surges, and distribute energy more equitably to customers.Traffic lights could be synced using IoT to adapt to traffic conditions in real-time.The Internet of Things is a concept of building an environment in which static physical objects (mechanical, digital, people, animals and other objects) are connected to the World Wide Web and can communicate with each other and exchange information to solve everyday problems. The main idea of IoT is that these objects can interact with each other, perceive and collect data from the environment without the need for human intervention or the need to communicate with her. According to researchers, IoT infrastructure could reach 1.5 billion devices in 2022 .Given that the prices of micro controllers have fallen to the prices of everyday food [10], it is possible to automate and monitor all processes in life.

Internet of Things is a kind of network to connect anything with the internet. It is also defined as an emerging technology utilizing the internet and targeted to give connectivity to physical things or devices. When anything, object machines are interacting with each other through the internet is known as the internet of things.

1.1 IoT Applications

IoT applications promise to bring immense value into our lives. With newer wireless networks, superior sensors and revolutionary computing capabilities, the Internet of Things could be the next frontier in the race for its share of the

wallet. IoT applications are expected to equip billions of everyday objects with connectivity and intelligence. It is already being deployed extensively, few applications of IoT :
Wearable,Smart Home Applications, Smart Buildings, Smart Infrastructure, Securities, Health Care, Smart Cities, Agriculture, Industrial Automation.

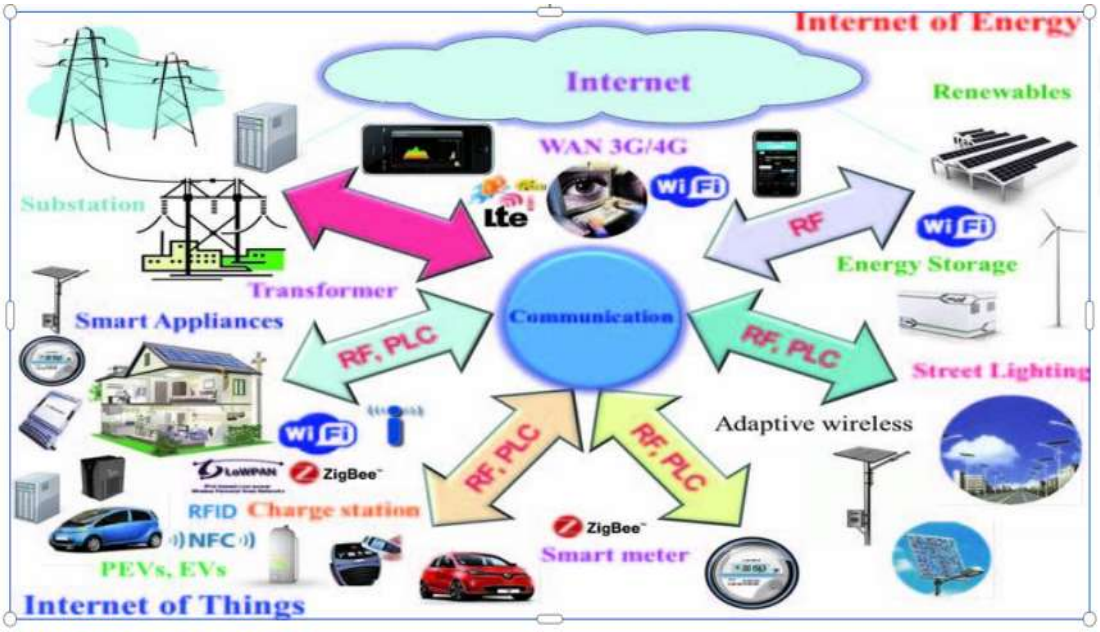

Fig -1 Application of IoT

IoT home automation is the ability to control domestic appliances by electronically controlled, internet-connected systems. It may include setting complex heating and lighting systems in advance and setting alarms and home security controls, all connected by a central hub and remote-controlled by a mobile app The rise of Wi-Fi role in home automation has primarily come about due to the networked nature of deployed electronics where electronic devices (TVs and AV receivers, mobile devices, etc.) have started becoming part of the home IP network and due the increasing rate of adoption of mobile computing devices (smartphones, tablets, etc.), see above Figure.2. The networking aspects are bringing online streaming services or network playback, while becoming a mean to control of the device functionality over the network. At the same time mobile devices ensure that consumers have access to a portable 'controller' for the electronics connected to the network. Both types of devices can be used as gateways for IoT applications. In this context many companies are considering building platforms that integrate the building automation with entertainment,healthcare monitoring, energy monitoring and wireless sensor monitoring in the home and building environments.

IoT applications using sensors to collect information about the operating conditions combined with cloud hosted analytic software that analyzes disparate data points will help facility managers become far more proactive about managing buildings at peak efficiency. Issues of building ownership (i.e., building owner, manager, or occupants)challenge integration with questions such as who pays initial system cost and who collects the benefits over time. A lack of collaboration between the sub sectors of the building industry slows new technology adoption and can vent new buildings from achieving energy, economic and environmental performance targets. Integration of cyber physical systems both within the building and with external entities, such as the electrical grid, will require stakeholder cooperation to achieve true interoperability. As in all sectors, maintaining security will be a critical challenge to overcome. Within this field of research the exploitation of the potential of wireless sensor networks (WSNs) to facilitate intelligent energy management in buildings,which increases occupant comfort while reducing energy demand, is highly relevant.In addition to the obvious economic and environmental gains from the introduction of such intelligent energy management in buildings other positive effects will be achieved. Not least of which is the simplification of building control; as placing monitoring, information feedback equipment and control capabilities in a single location will make a buildings' energy management system easier to handle for the building owners, building

managers,maintenance crews and other users of the building. Using the Internet together with energy management systems also offers an opportunity to access a buildings' energy information and control systems from a laptop or a Smartphone placed anywhere in the world. This has a huge potential for providing the managers,owners and inhabitants of buildings with energy consumption feedback and the ability to act on that information.In the context of the future Internet of Things, Intelligent Building Management Systems can be considered part of a much larger information system.This system is used by facilities managers in buildings to manage energy use and energy procurement and to maintain buildings systems. It is based on the infrastructure of the existing Intranets and the Internet, and therefore utilizes the same standards as other IT devices. Within this context reductions in the cost and reliability of WSNs are transforming building automation, by making the maintenance of energy efficient healthy, productive work spaces in buildings increasingly cost effective.

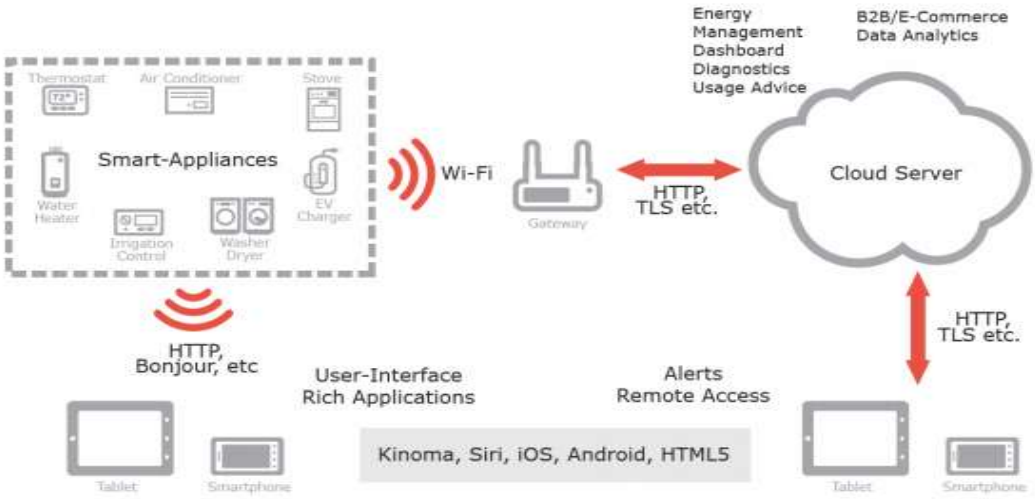

Fig -2 Smart Home Platform.

1.2 IoT Application in industries

IoT in industry is a rapidly developing area. Numerous IoT research and application projects have been done by universities or in joint industry- university consortia in recent years. Internet of things (IoT) has become part of your daily life. The "things connected to the internet" idea is continuously evolving in content, areas of applications, visions and technology. New real life and industrial projects have been done and joint future oriented industry and government initiatives such as Industry 4.0 in Germany, have been started [1].Since Industrial production is one of the world's biggest economic factors one of the major objectives of these initiatives is to bring the paradigms of the IoT to the factories enabling them to cope with the challenges raised by popular mega trends. The foremost mega trends relevant for factories are globalization,progressing technological evolution, the dynamization of product life cycles,the aging work force and the shortage of resources. Central effects are the acceleration of innovation cycles and the increasing customer demand for individualized mass produces with highest quality expectations.Within the context of industrial production IoT projects and applications are developing in manufacturing, supply chain, supervision and servicing.A major question in all projects is about the value, the benefit such application can bring to the user, to the owner or to society. The value question is extremely pertinent in the industry: in the manufacturing industry entire factory related processes, but also in industrial applications where it comes to ensure operation of industrial installations and provide supervision, and improved life service. It is the value which such applications bring which will determine their adoption, acceptance and wide use. However, this

value is very difficult to quantify and prove, and it depends on multiple aspects which are strongly application area dependent. IoT applications form the value creation for industry and brings together expert opinions from academia, research and industry. The industrial application of IoT is multi- faceted and each of the subsections in this paper will highlight an aspect related to industrial application, discuss or show a case or the evolution and potential of a specific technology from industry application point of view.The paper is having a holistic manner to industrial challenges and requirements. Also it will refer to factory concepts and applications supported by IoT, including processes and flows taking a view on related technologies and their evolution. IoT applications benefit and value creation in an industrial environment may have its origin in different aspects, depending on the application type. There is no value but "values" each contributing to the total benefit such as:

- □ Value from visibility identification, location tracking
- □ Value form Io T-supported safety in hard industrial environments
- □ Value from right information providing or collecting
- □ Value form improved industrial operation and flows in industry
- □ Value from reduced production losses
- □ Value from reduced energy consumption
- □ Value from new type of processes made possible by IoT applications
- □ Value form new type of maintenance and lifetime approaches
- □ Value enabled by smart objects, connected aspects
- □ Value from sustainability.

2. IOT APPLICATION OF HOME APPLIANCES

Internet of Things is a technology that can connect to the internet without the influence of people and send information collected to users through this internet network to which they are connected. Devices in this dynamic are very common today. Many homes, companies and even public organizations benefit from this technology. Used in smart home IoT home appliances is also one of them. A house must have smart devices to be smart. These smart devices are the building blocks of today's technology. So why are these devices and apps smart? First, these devices have their own Internet. With this internet tool, users can receive information from the device. With this internet connection, you can get a lot of information from your smart device. This information which receives from smart devices makes safety for your living area. Smart devices work with technological devices while making you and your home a more secure space. The biggest hero of these technological devices is microprocessors. microprocessors act as the brain for your smart device. There are sensors that allow your smart devices to be classified according to their characteristics and detect the danger or differences in your home. There are many sensors classified by type. Motion sensors, light sensors, image detection, and processing sensors are one of them. For example, if the position of your belongings changes without your knowledge, there are motion sensors that can detect this position change. The motion sensor detects the position change and sends you information about this.

Smart home systems are integrated and enable you to play an active role in every part of your home by surrounding your home. When you're not at home, but your mind stays at home, it's behind you. With smart home systems, you can intervene in your home as if you are at home and perform the necessary controls.In addition to these protection systems, smart home appliances have been making human life easier since the day it was developed.

Smart Washing Machine:

It is very important to save time in daily life. we live in a period where we have to keep up. that's where technology comes in. You can access the developed smart washing machine on your smartphone. you can monitor and control the process at the same time. This smart washing machine can also dry your laundry with the control application.

Smart Refrigerator with Internet of Things:

Internet in this kitchen which makes life easier for you and your family in the kitchen. With this internet connection, you can transmit a lot of information to your shopping list in the weather. You can also view the inside of your refrigerator with its camera technology.

Shortest Way to Dry Hair:

This time it has infrared technology. With this technology, the device is created wireless. Wireless shape so you can dry your hair without connecting the machine.

Smart Doorbell:

The most important thing in smart home applications is known to be secure and protected home. With this smart doorbell designed for security, you can recognize people who come to your home with high quality. The night also has infrared technology added to the smart bell. This will also send the screen to you when it gets dark.

Smart Camera for Safe Home:

Control of your home is in your hands from every part. This smart camera sends records from every part of your home to your smartphone with the Internet of Things technology. Research on smart camera technology will continue for those who want a safe life.

3. SEURITY

- IoT devices are connected to your desktop or laptop. Lack of security increases the risk of your personal information leaking while the data is collected and transmitted to the IoT device.
- IoT devices are connected with a consumer network. This network is also connected with other systems. So if the IoT device contains any security vulnerabilities, it can be harmful to the consumer's network. This vulnerability can attack other systems and damage them.
- Sometimes unauthorized people might exploit the security vulnerabilities to create risks to physical Safety.

3.1 Privacy Risks:

- □ In IoT, devices are interconnected with various hardware and software, so there are obvious chances of Sensitive information leaking through unauthorized manipulation.
- □ All the devices are transmitting the user's personal information such as name, address, date of birth, health card information, credit card detail and much more without encryption.

Though there are security and privacy concerns with IoT, it adds values to our lives by allowing us to manage our daily routine tasks remotely and automatically, and more importantly, it is a game changer for industries.

4. CONCLUSIONS

IoT applications connect everyday devices to the internet to collect and share data, making systems smarter, more efficient, and automated. They improve quality of life in areas like homes, healthcare, agriculture, industries, and cities by saving time, energy, and resources.In this paper explain the IoT application in home appliances and industry.

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