

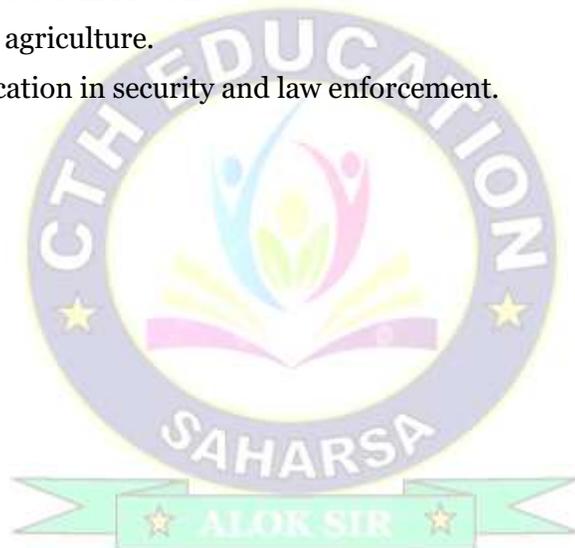


## Unit – 05: IoT Applications

- Industrial IoT and Internet of everything
- IoT for consumer electronics products
- IoT for Medical applications
- IoT for Agriculture
- IoT for security and Law enforcement

### Questions to be discussed:

1. What do you mean by IIoT? What are the application of IIoT?
2. What are the application of IoT in Healthcare?
3. Explain the uses of IoT in agriculture.
4. Discuss in brief IoT application in security and law enforcement.

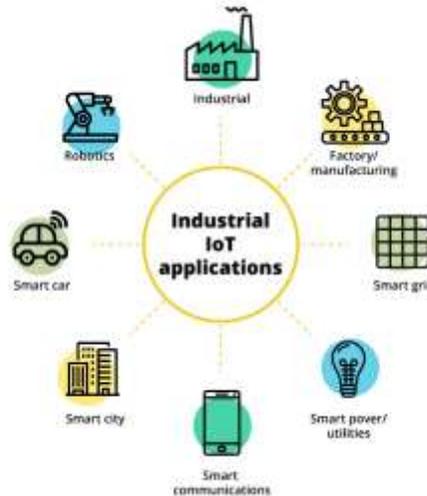


## What is IIoT?

- IIoT stands for Industrial Internet of Things.
- It is the use of smart sensors and actuators to enhance manufacturing and industrial processes.
- It is also known as the industrial internet or Industry 4.0.
- The IIoT refers to the extension and use of the IoT in industrial sectors and applications.
- With a strong focus on M2M communication, big data analysis, and machine learning.
- The IIoT enables industries and enterprises to have better efficiency and reliability in their operations.

## What are IIoT application:

- Industrial
- Manufacturing
- Robotics
- Smart car
- Smart city
- Smart communication
- Smart power utilities etc.



## Many industry uses IoT some of them are given below:

### Automotive industry:

- The automotive industry uses IIoT devices in the manufacturing process.
- It uses industrial robots, and IIoT can help proactively maintain these systems and spot potential problems before they can disrupt production.

### Agriculture industry:

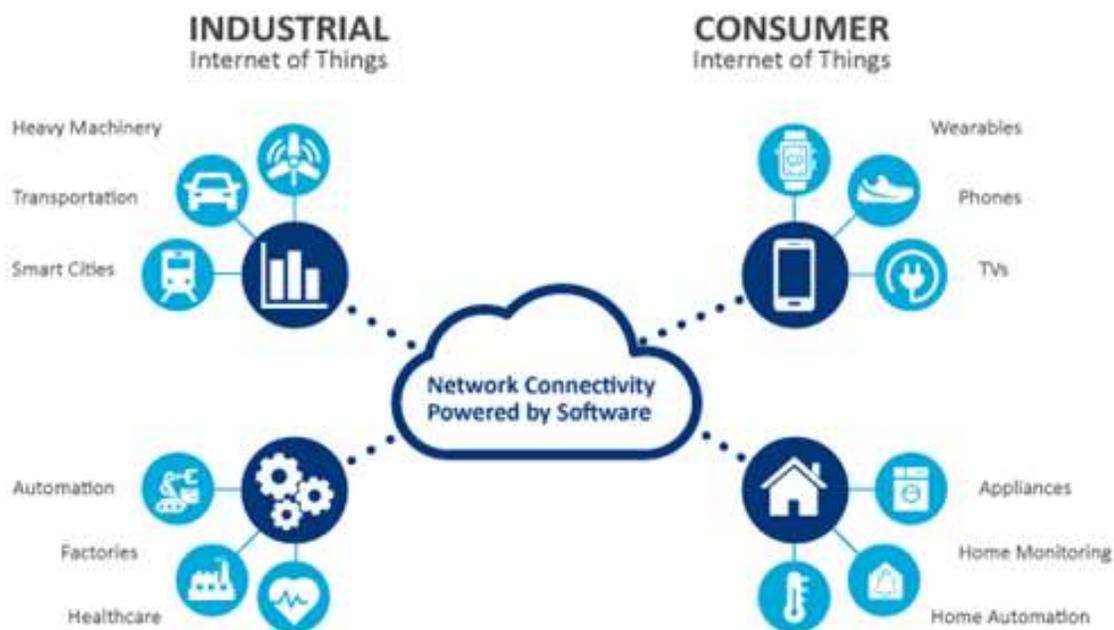
- The agriculture industry makes extensive use of IIoT devices, too.
- Industrial sensors collect data about soil nutrients, moisture and more, enabling farmers to produce an optimal crop.

### Oil and gas industry:

- Some oil companies maintain a fleet of autonomous aircraft that can use visual and thermal imaging to detect potential problems in pipelines.
- This information is combined with data from other types of sensors to ensure safe operations.

## What is CIoT?

- CIoT stands for Consumer Internet of Things.
- It is an interconnected system of physical and digital objects, personally used by a consumer.
- Consumer IoT covers all the user's network around their personal and home devices.
- In IoT, the devices are integrated with multiple wireless technologies and microcontrollers.
- That makes it easier to share consumer data and information without any individual's direct interaction with each other or the computer.
- CIoT devices divided into two types:
  1. Personal IoT
  2. Smart Home IoT



### Personal IoT:

- Personal IoT devices and applications include wearable, hearable, smartphones and personal laptop gadgets such as-

### Smart Home IoT:

- Smart Home IoT devices and applications include home automation products like smart kitchen gadgets and security systems with face recognition and voice control.

## IoT for Medical application:

- The application of IoT in medical transforms it into more smart, fast and more accurate.
- It keeps the patients safe and healthy as well as improves the physician delivers care towards the patients.
- Healthcare devices collect diverse data from a large set of real-world cases that increases the accuracy and the size of medical data.
- There are various IoT Applications in medical:
  - Implantable Glucose Monitoring Systems
  - Activity Trackers During Cancer Treatment
  - Heart Monitors with Reporting
  - Medical Alert Systems
  - Wireless Sensors
  - Trackable Inhalers
  - Wearables to Fight Depression
  - Connected Contact Lenses
  - Location Services
  - Remote Monitoring



## IOT in Agriculture:

- IOT accessing and controlling daily usable devices and equipment using the Internet.
- The term "Things" in the IoT refers to anything and everything in day-to-day life which is accessed or connected through the internet.
- Agriculture is another important domain for IOT.
- IOT systems play an important role for crop and soil monitoring and give a proper solution accordingly.
- IOT leads to smart farming.
- Using IOT, farmers can minimize waste and increase productivity.
- The system allows the monitoring of fields with the help of sensors.
- Farmers can monitor the status of the area.



## What is IoT security?

- IoT devices are computerized Internet-connected objects, such as networked security cameras, smart refrigerators, WiFi-capable automobiles etc.
- IoT security is the process of securing IoT devices & ensuring they do not introduce threats into a network.
- IoT security refers to the methods of protection used to secure internet-connected devices.
- Anything connected to the Internet is likely to face attack at some point.
- Attackers can try to remotely compromise IoT devices using a variety of methods, from credential theft to vulnerability exploits.



## Law Enforcement Applications of IoT:

- IoT enhances law enforcement organizations and improves the justice system.
- The technology boosts transparency, distributes critical data, and removes human intervention where it proves unnecessary.
- This ensures strict adherence to the rules and guidelines by the government.
- The following are a few of the IoT applications in law enforcement among citizens of any country or state:
  - Traffic signals sensors to avoid road accidents
  - Wearables for officers and government officials
  - Drones for border patrol
  - IoT in courts
  - Policing
  - Maintaining Law and order with IoT
  - Detection of crime
  - Gathering of evidence
  - IoT firearms
  - Smart Vehicles etc.

