



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.



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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUT205 – INTERNET OF THINGS IN AUTOMOTIVE SAFETY

II YEAR /IV SEMESTER

Unit 1- Introduction

Topic 3 : IoT Model



CONTENT



- ❖ Introduction
- ❖ IoT Model
- ❖ Applications of IoT
- ❖ Future of IoT
- ❖ Market Potential of IoT



1. What is Industry 4.0?
2. Mention some applications of IoT
3. what is the future scope of IoT?





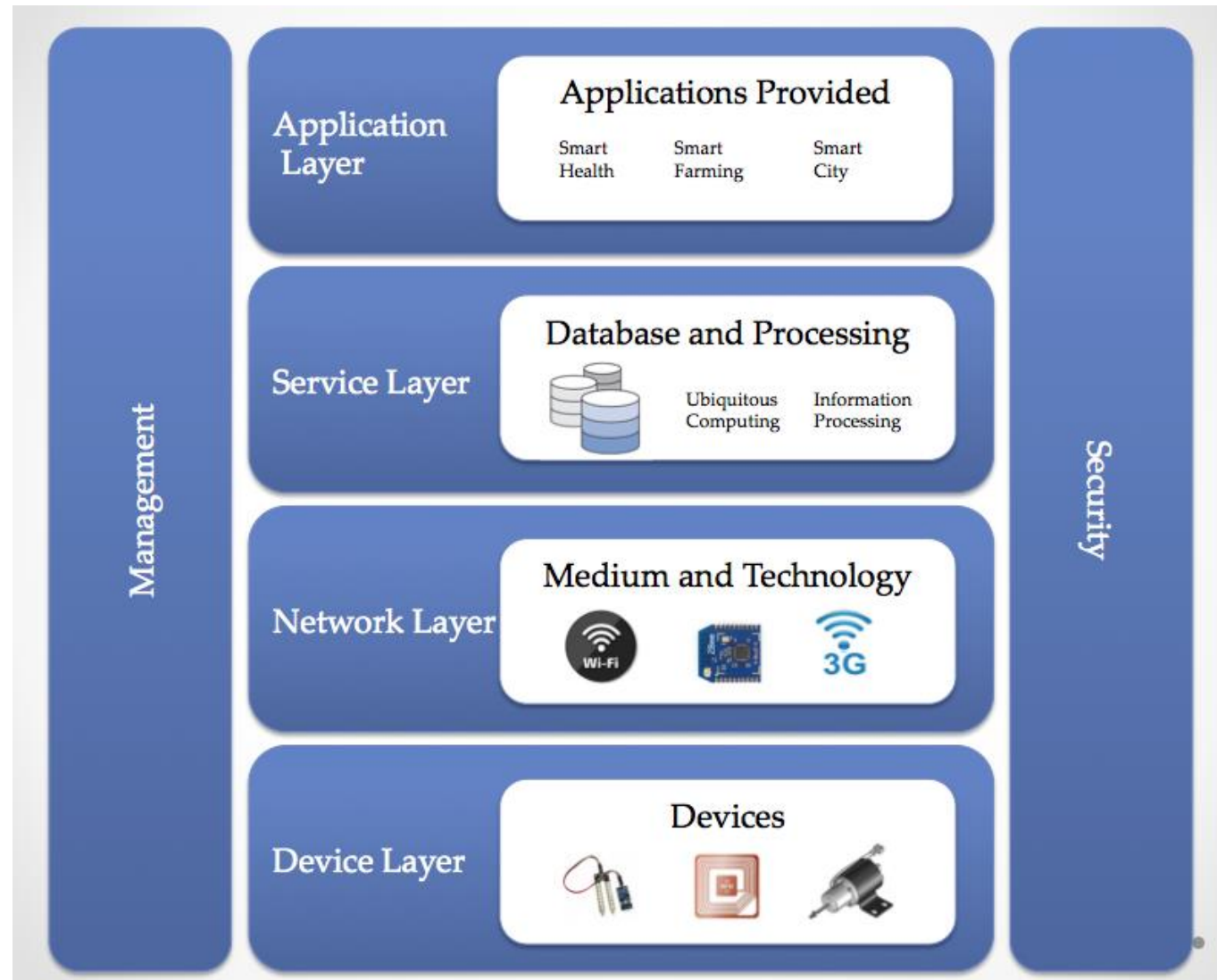
Industry 4.0



- Industry 4.0, IoT involves the interconnection of devices, machines, and systems, creating a network where data is seamlessly exchanged in real-time
- The integration of IoT in Industry 4.0 brings about a paradigm shift in traditional manufacturing
- IoT enables the creation of 'smart factories' where interconnected devices communicate and collaborate autonomously. This results in adaptive and responsive manufacturing systems that can quickly adjust to changing demands and market conditions.
- As Industry 4.0 continues to evolve, the synergy between IoT and manufacturing processes will play a pivotal role in shaping the future of industries, fostering innovation, and driving economic growth.



IoT Model





IoT MODEL



➤ The Internet of Things (IoT) model is a conceptual framework that outlines the key components and processes involved in creating a connected ecosystem of devices. The model typically consists of several layers, each serving a specific function in the IoT architecture.

➤ Simplified representation of an IoT model :

1. Perception Layer
2. Communication Layer
3. Cloud/Edge Layer
4. Middleware Layer
5. Application Layer
6. Security and Privacy layer
7. Business Layer



IoT Model



Perception Layer:

This layer involves the physical devices or "things" that gather data from the environment. These devices are equipped with sensors, actuators, and other technologies to collect and transmit information.

Communication Layer:

Responsible for the transmission of data between devices and to the cloud or central processing system. Communication protocols, such as MQTT or HTTP, enable seamless data transfer.

Cloud/Edge Layer:

This layer handles the storage, processing, and analysis of the massive volume of data generated by IoT devices. Cloud-based platforms or edge computing solutions are employed to manage and derive insights from the data.

Middleware Layer:

Acts as a bridge between the communication layer and the application layer. It facilitates data integration, device management, and ensures interoperability between different devices and systems.



IoT Model



Application Layer:

The top layer where end-users interact with the IoT system. Applications can range from simple mobile apps to complex business intelligence dashboards, offering insights and control over the connected devices.

Security and Privacy Layer:

Ensures the protection of data and devices from unauthorized access, cyber threats, and privacy breaches. Security mechanisms such as encryption, authentication, and secure APIs are implemented to safeguard the IoT ecosystem.

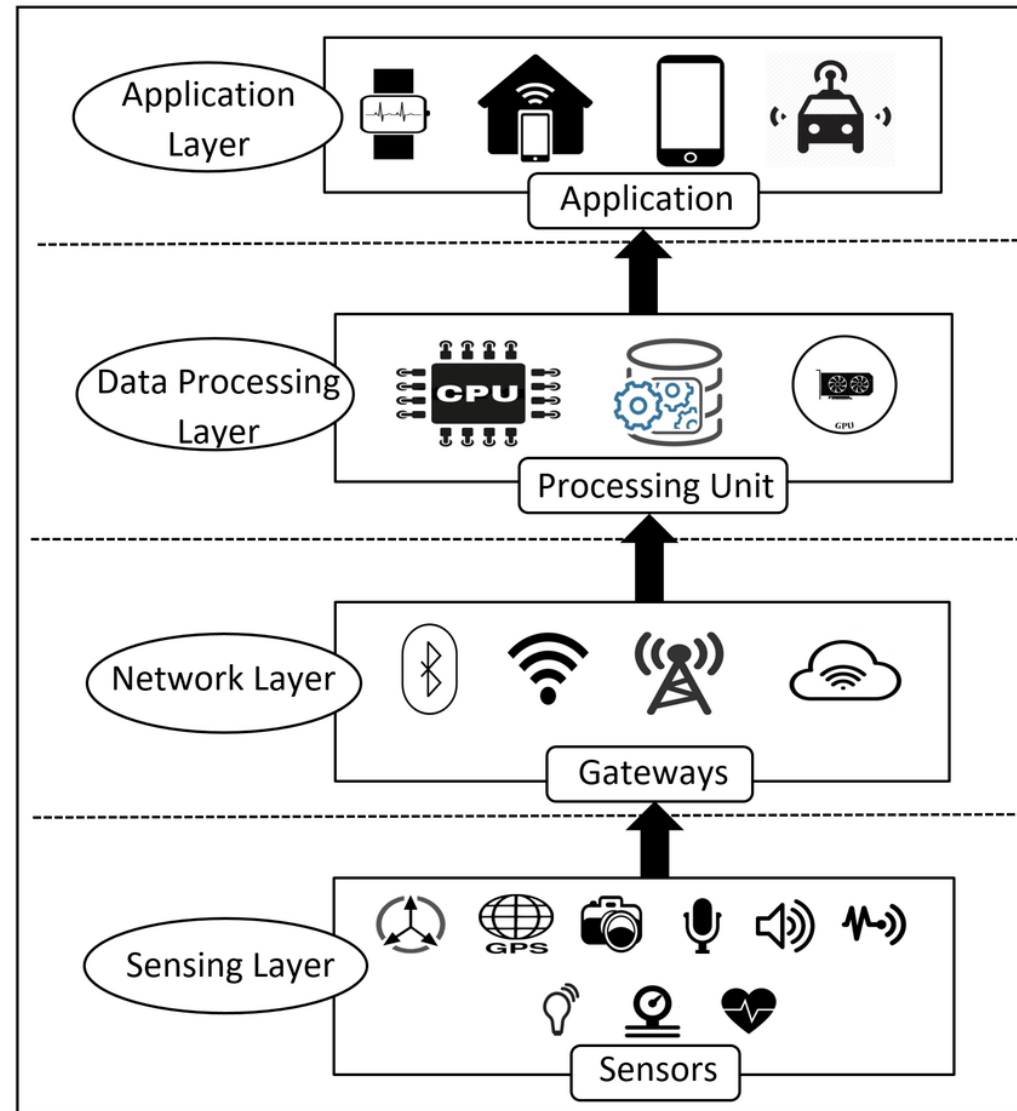
Business Layer:

Involves the business processes, rules, and strategies that leverage the insights gained from IoT data. This layer focuses on how organizations can derive value, improve efficiency, and create new business models through IoT implementation.

The IoT model provides a holistic view of the interconnected elements, guiding the development and deployment of IoT solutions for various applications, including smart homes, industrial automation, healthcare, and more. It emphasizes the importance of seamless integration and collaboration between the different layers to create a robust and efficient IoT ecosystem.



IoT Model





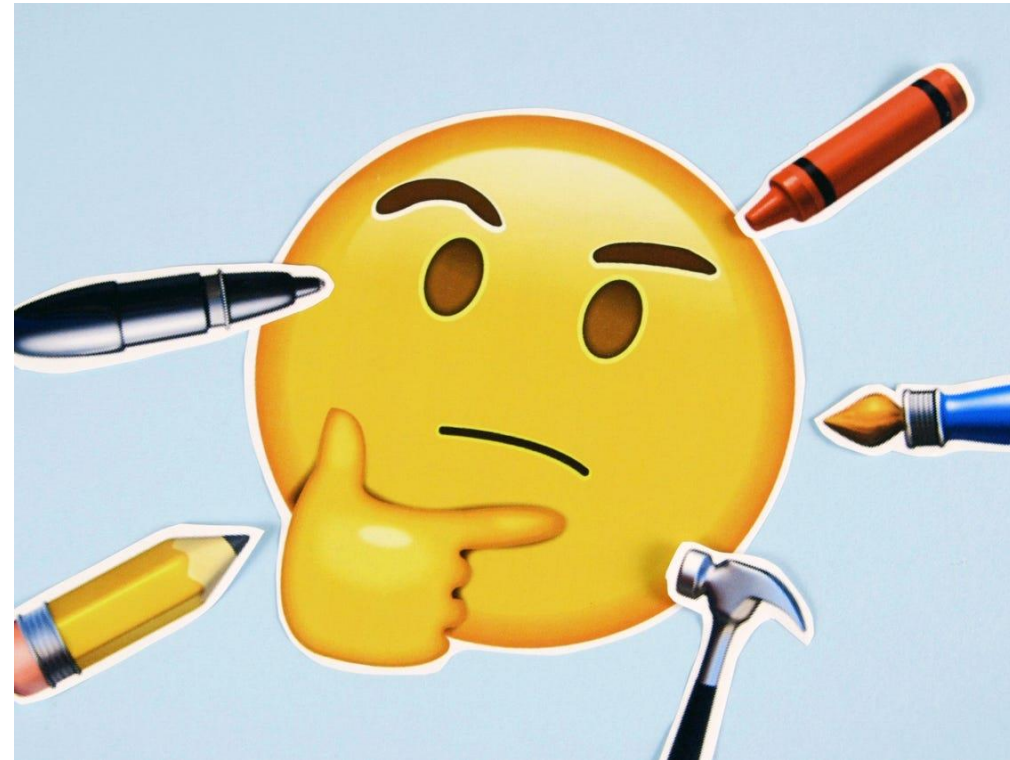
IoT Model Layers

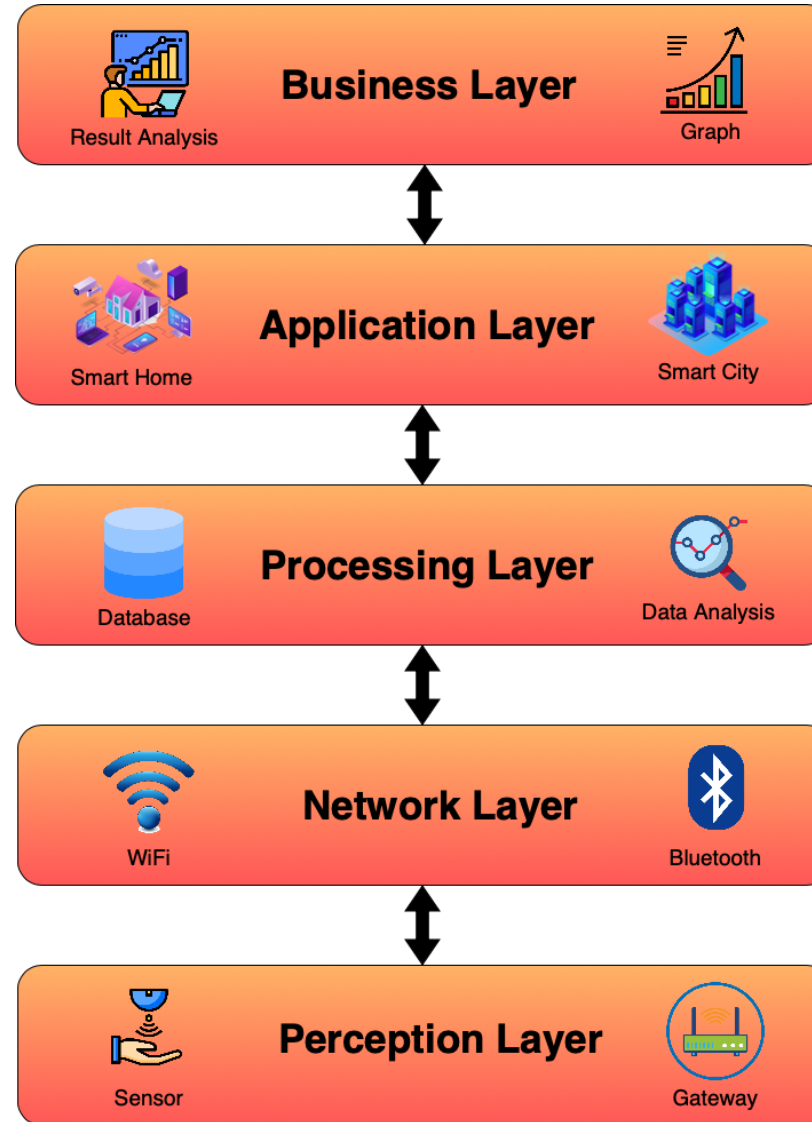


- ❖ The **perception layer** hosting smart things
- ❖ The **connectivity or transport layer** transferring data from the physical layer to the cloud and vice versa via networks and gateways;
- ❖ The **processing layer** employing IoT platforms to accumulate and manage all data streams; and
- ❖ The **application layer** delivering solutions like analytics, reporting, and device control to end users.



Task







1. What is the role of device layer?
2. Mention the different layer of IoT model
3. Mention some applications with the aid of IoT model

ASSESSMENT





REFERENCE



- ❖ <https://www.altexsoft.com/blog/iot-architecture-layers-components/#:~:text=Most%20commonly%2C%20these%20layers%20are,manage%20all%20data%20streams%3B%20and>
- ❖ <https://belkiot.in/5-layer-architecture-of-iot/>



THANK YOU !!!