SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 19EEB303 / Microcontroller and its Applications

III YEAR / VI SEMESTER

Unit III – **Evolution of IoT**

Topic:

Evolution of IoT

Internet of Things refers to the **networking of physical objects** that can communicate with each other and with the internet. These devices, from household appliances to industrial machinery, use sensors to collect and share data, enabling automated responses. IoT devices are networked either **locally** or via the **internet** and are designed to make our everyday lives more efficient. It therefore enables direct communication between devices (**machine-to-machine**), allowing them to perform tasks independently and learn from experience. It is already present in many areas, such as robot vacuum cleaners, Apple AirTags and fitness wristbands.

Evolution of IoT

Key features of the IoT:

- **Networked objects:** Devices with sensors, actuators and software.
- **Unique identification:** unique identifier (UID) of the object
- **Automation:** simplification of everyday life through automatic processes, without user input

History of the IoT

The term "Internet of Things" was coined by Kevin Ashton in 1999. He used the term in a **presentation on RFID chips**, which enable automatic and contactless identification. The invention of the World Wide Web in 1989 by Tim Berners-Lee was decisive for the IoT. It developed through the combination of wireless technologies, MEMS, microservices and the internet.

Important milestones

- **1980s:** Networked Coca-Cola vending machine at Carnegie Mellon University.
- **1990:** John Romkey's internet-enabled toaster.
- **1999:** Kevin Ashton coins the term "Internet of Things".
- **2000:** LG's smart refrigerator.
- **2010:** China's government integrates the IoT into its five-year plan.

The Technologies and Distribution

RFID tags and **IPv6 addresses** enabled the mass production of IoT devices. RFID tags track inventory in the industry. IPv6 solved the IP address problem and promoted smart home technologies. **AI (artificial intelligence)** is central to the IoT. Devices collect data, learn and adapt. Voice assistants store commands in the **cloud** and learn independently. IoT has evolved from experiments to a widespread technology and is now present in many areas of life.

Technologies enabled by the IoT

- **Connectivity:** internet protocols enable easy and efficient networking of sensors with the cloud and other devices.
- **Machine learning:** Machine learning and cloud data analytics enable rapid insights and enhance the IoT, which in turn enhances these technologies.
- **Cloud computing:** Enables scaling and real-time processing of large amounts of data
- **Artificial intelligence for conversational functions:** Neural networks enable voice processing through IoT devices, making them attractive and affordable for home use.

Benefits of IoT

Benefits of IoT for companies

- Increased efficiency and cost reduction
- Error reduction
- Increased customer satisfaction
- Faster product development

Advantages of IoT for customers

- Flexibility and cost savings
- Reliability and efficiency
- Convenience
- Safety and security
- Faster problem solving