

ICE 4071: Industrial Internet of Things (IIoT)

Lecture 1 & 2: Introduction, IoT Vs IIoT

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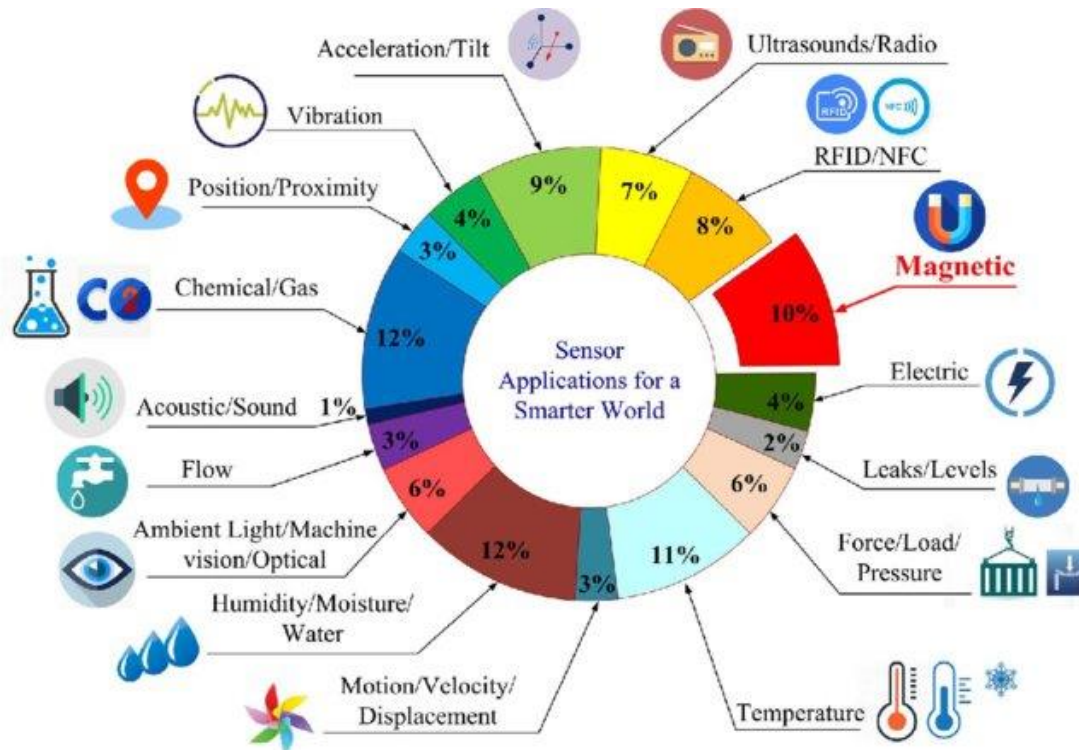
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Introduction

- The Internet of Things (IoT) is a collection of interconnected physical devices that can monitor, report on and send and exchange data.
- IoT devices use sensors to measure specific aspects of the world around them, including
 - location,
 - temperature,
 - humidity,
 - light levels,
 - movement,
 - handling,
 - speed of movement and
 - other environmental factors

Introduction

- IoT devices come in many form factors including RFID chips, smart devices and mobile sensors.



Some basic questions....

- If I use Arduino / Raspberry Pi and perform data acquisition using Integrated Development Environment (IDE), can I call it as IoT?
- Can my mobile phone be called as an IoT device?
- Is cloud / web servers are needed to perform an IoT operation?
- If I store data on a cloud server through my laptop and internet, can I call I am doing IoT?
- Is it compulsory to create of network of sensors?
- Is device id must?

Definition

Some Industrial Definition:

- A network connecting (either wired or wireless) devices, or 'things', that is characterized by autonomous provisioning, management, and monitoring. The IoT is innately analytical and integrated - **IDC**
- IoT is the next evolution of the Internet, connecting the unconnected people, processes, data, and things in your business today - **Cisco**
- IoT devices as those capable of two-way data transmission (excluding passive sensors and RFID tags). It includes connections using multiple communication methods such as cellular, short range and others - **GSMA**

Definition

- Sensors & actuators connected by networks to computing systems. These systems can monitor or manage the health and actions of connected objects and machines. Connected sensors can also monitor the natural world, people, and animal” – **McKinsey**
- “An IoT system is a network of networks where, typically, a massive number of objects, things, sensors or devices are connected through communications and information infrastructure to provide value-added services via intelligent data processing and management for different applications (e.g. smart cities, smart health, smart grid, smart home, smart transportation, and smart shopping).” - **IEEE Internet of Things Journal**

Definition

Consolidated definition:

- IoT is a world of interconnected things which are capable of sensing, actuating and communicating among themselves and with the environment (i.e., smart things or smart objects) while providing the ability to share information and act in parts autonomously to real/physical world events and by triggering processes and creating services with or without direct human intervention.

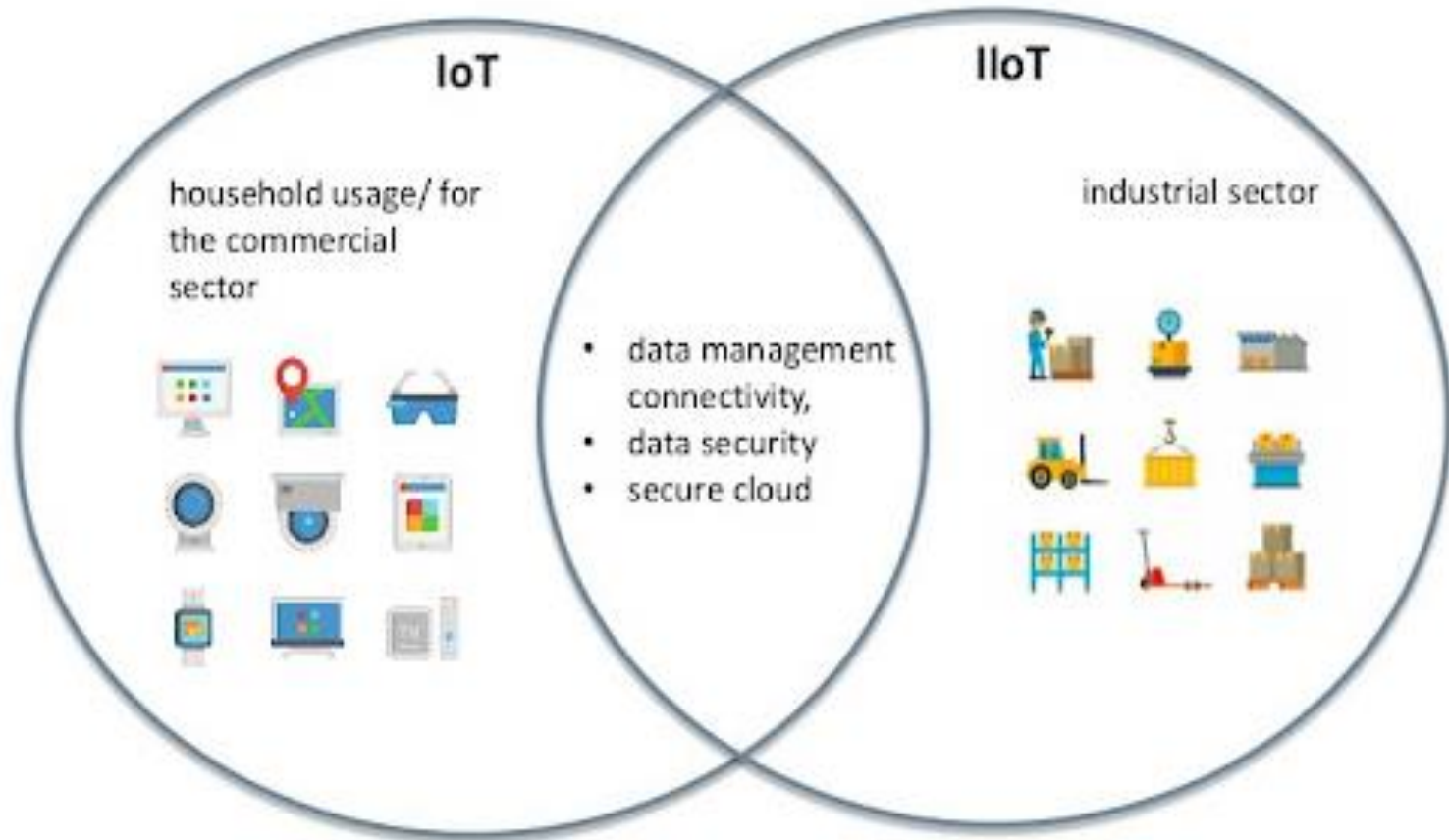
IoT vs IIoT

Comparison between IoT and IIoT

Prospect	Internet of Things	Industrial Internet of Things
Linked things	User-level devices, basically not much expensive	Costly machines, sensors, systems, basically with high degree of difficulty
Service model	Human-based	Machine-based
Communication capacity		
Communication transportation	Typically, wireless	Both wired and wireless
Amount of data	Medium to high	High to very high
Evaluative	Quite trivial	Becomes serious (timing, security, privacy reliability)

Source: Dr. Amitava Ray, Principal, Jalpaiguri Government Engineering College, presentation on Green supply chain management in IIoT

IoT vs IIoT



What is IoT?

