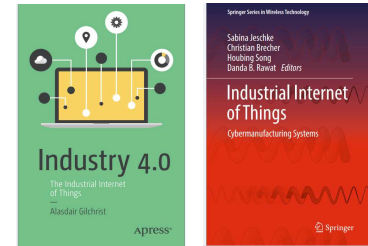


# IOT & IIOT

1

## What is IoT?



2

## Internet of Things

A “Thing” with some sensors or instruments connected physically with the computational computer and has a internet connection is said to be an IoT device.



3

## Poll

Which of these is/are an example of Things (by the definition of IoT)

- a. An operator
- b. A machine
- c. A sensor
- d. All of the above

4

## Internet of Things (IoT)

- IoT is the network of devices connected over internet for the purpose of exchanging data and information.
- IoT has three major components: **Devices, Internet, and Data.**
- Enable experience sharing among devices through **Collaboration, Interaction and Exchange of data** with each other
- Reducing human intervention into a machine cycle.

5

## Poll

Which of the following can be an IoT device\_\_\_\_\_

- a. A pen
- b. A fan
- c. A lamp
- d. All of the above

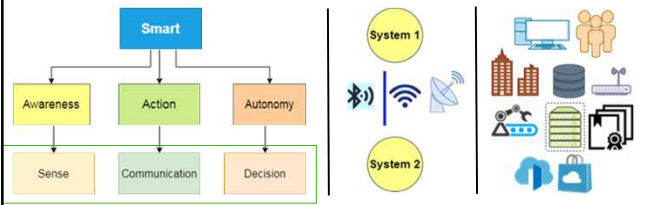
6

## Smart Connected Things

Showing quick-witted intelligence

Brought together so that a link is established

Generalised reference



7

## Poll 6

My watch displays the weather downloaded from the internet. My watch is an IoT device

- a. True  
b. False

8

## Applications of IoT

- ❖ **Smart Home**  
Application of IoT to control and monitor systems and appliances like lightening systems, air conditioners, etc.
- ❖ **Smart City**  
Innovative solutions to traffic congestion, energy efficient buildings and improved public safety.
- ❖ **Industrial Internet of Things**  
Optimization and time saving, Quality control and inventory.
- ❖ **Smart Healthcare Services**  
Real time data, makes devices smarter and Provides superior analytics

9

## What is IIoT?

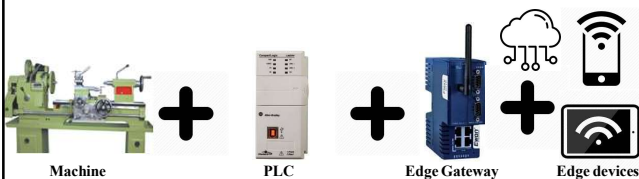
### Industrial Internet of Things

GE (General Electric) coined the name "Industrial Internet" as their term for the Industrial Internet of Things,

10

## Industrial Internet of Things

It is a extension of IoT, used for industrial purpose such as manufacturing, supply chain monitor, and management system.

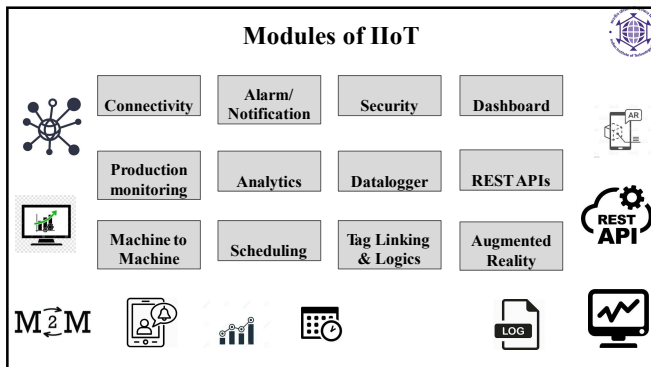


11

## Difference between IoT & IIoT

Features	IoT	IIoT
Area of focus	Consumer or commercial convenience	Monitoring and management in any industries
Focus development	Smart devices	Sophisticated machines
Degree of application	Simple application with low-risk impact	Sensitive sensors, advanced control and analytics
Interoperability	Functionally independent	Integration with co-existing legacy operations systems
Scalability	Low Scale	Large Scale
Accuracy & Precision	Critically monitored	Synchronised to milliseconds
Output	Convenience	Economic growth
Maintenance	Consumer preferred	Scheduled and Organized

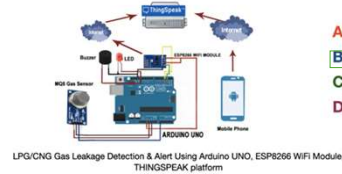
12



13

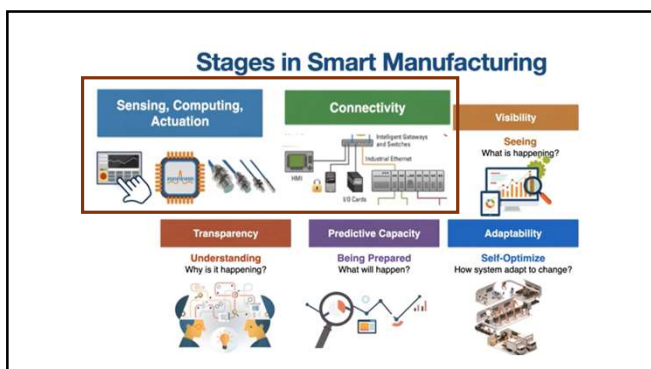
### Quiz

Following implementation is an example of

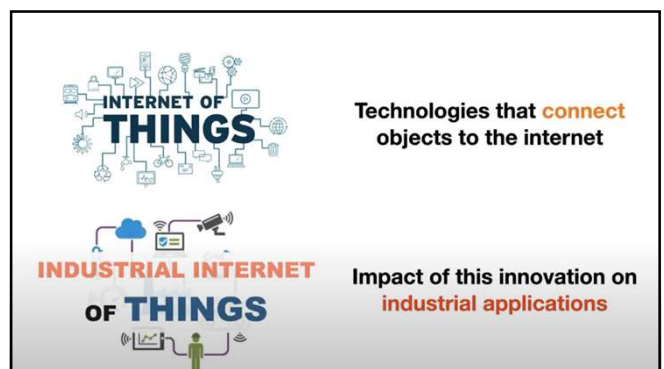


- A) Machine-to-Machine
- B) Industrial IoT**
- C) Internet of Thing
- D) Industrial Automation

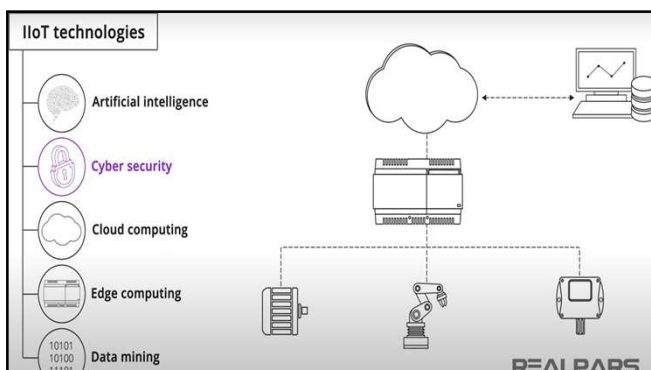
14



15



16



17

### Use Cases

**Thames Water**, the largest fresh-drinking water and water-waste recycler in the UK. It uses the IIoT for remote asset management and predictive maintenance. By using a strategy of sensors, remote communication, and Big Data analytics, Thames Water can anticipate equipment failures and respond quicker to any critical situation that may arise due to inclement weather.

**Indeed Schlumberger** is currently using an autonomous underwater vehicle to inspect sub-sea conditions. The unmanned vehicle travels around the ocean floor and monitors conditions for anything up to a year powered only by wave motion, which makes deployment in remote ocean locations possible, as they are both autonomous and self-sufficient requiring no local team support.

IIoT, one being health and safety. Here we have seen some innovative projects from using drones and **autonomous vehicles** to inspect Oil and Gas lines in inhospitable areas to using autonomous mining equipment.

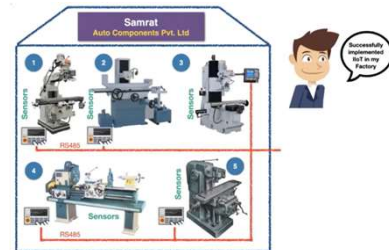
18

## Industrial IoT Implementation



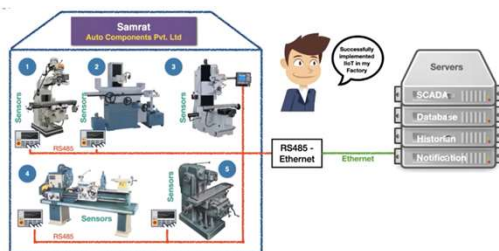
19

## Industrial IoT Implementation



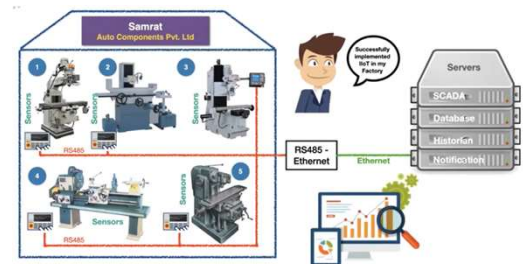
20

## Industrial IoT implementation



21

## Industrial IoT Implementation



22

## Quiz

Technology that differentiate  
Industrial IoT from M2M

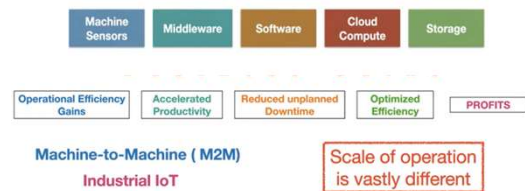


- A) Sensors & Actuators
- B) Wireless Networks
- C) Data Analysis & Visualization
- D) Cloud Connectivity

23

## Industrial Internet

Industrial Internet provides a way to get better **visibility** and **insight** into the company's operations and **assets** through **integration** of



24

## IIoT Benefits

### Cost savings from:

- Minimized energy usage
- Integration with the supply chain
- Fewer on-site personnel
- Less time dedicated to low-level tasks

### Better customer service through:

- Predictive maintenance
- Remote troubleshooting and patching
- Product improvement based on customer use

### Smarter automation, providing:

- Auto-tuning and optimizing based on surroundings
- Notification reporting for diagnosis and resolution
- On-demand assembly driven by business systems

### Visibility, any time and anywhere, enabling:

- Better decision-making
- Increased time to value
- Increased system safety and security
- Remote asset monitoring and managing

25

## Key Opportunities Benefits

Which **key benefits** most **IIoT adopters** want from the **Industrial Internet** ?

**Increased profits**

**Increased revenue flows**

**Lower operational expenditures**

**Predictive maintenance**

Returns the Quickest results and Return on Investment

IIoT has brought about a **new strategy**

**Focusing** on what the **customer** actually **wants** rather than the **Product** they **buy**

26

## Income Economy



27

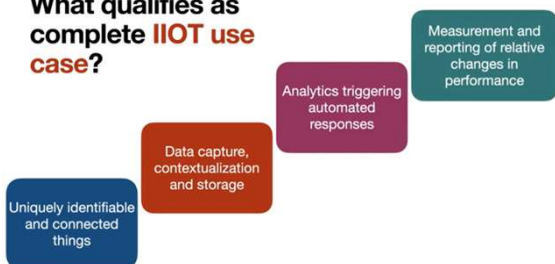
## Selling **Light**, Not **Light Bulbs**



**Outcome Economy**

28

## What qualifies as complete **IIOT use case**?



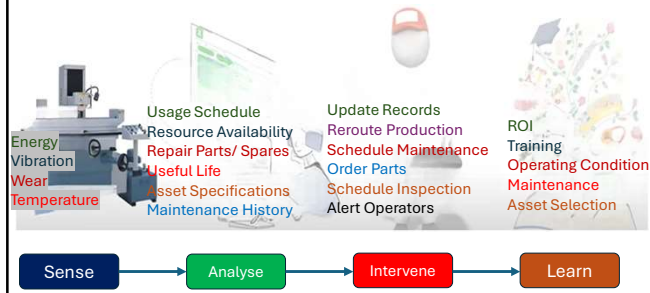
29

## IIoT Use Case



30

### Return on asset Use case



33

### Cyber Physical Factory

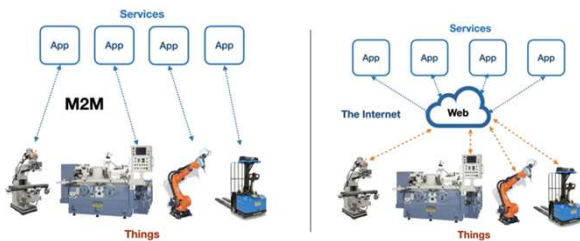
Micro Production System



34

### IIoT Reference Architecture

IIoT's architecture is often seen as a natural evolution of M2M



36

### Industrial Internet of Things

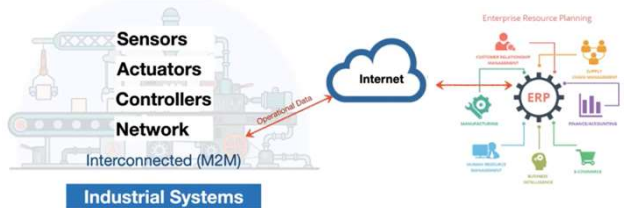
Internet of Things

Industrial Internet



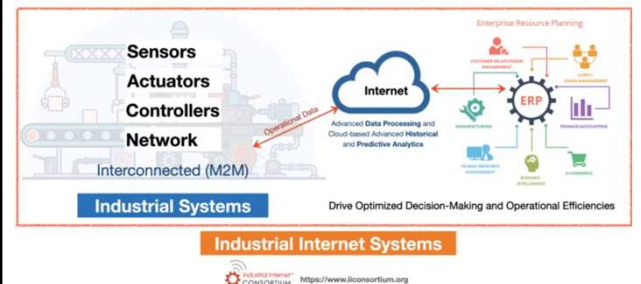
37

### Industrial Internet system



38

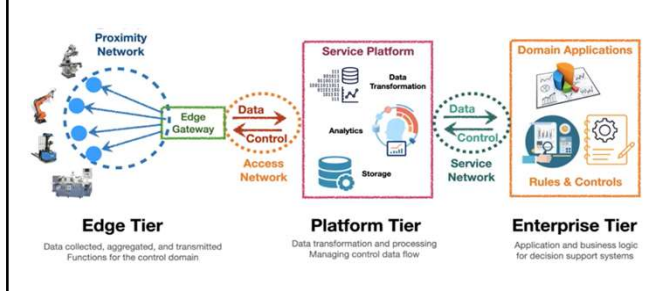
### Industrial Internet system



39

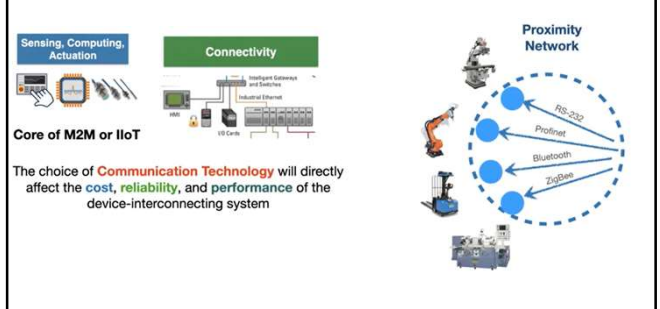


### Three-tier Architecture Pattern



40

### Designing Industrial Internet Systems

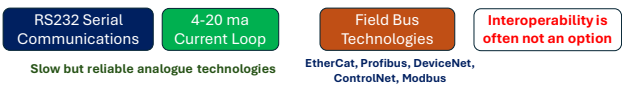


41

### Designing Industrial Internet Systems

#### Legacy Industrial Protocols

- Many Industrial technologies are implemented with up to 20-year lifecycles
- We still have many legacy technologies in place
- Ancient communication protocols still active in industrial environment

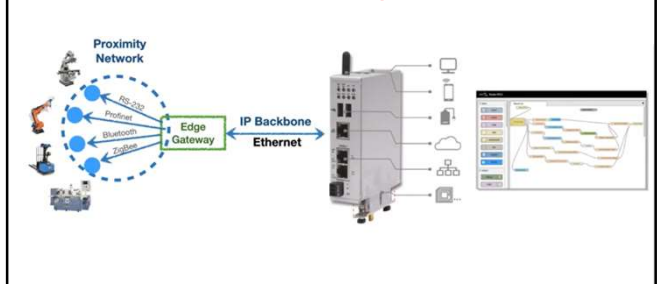


#### Modern Communication Protocols



42

### IIoT Gateways



43

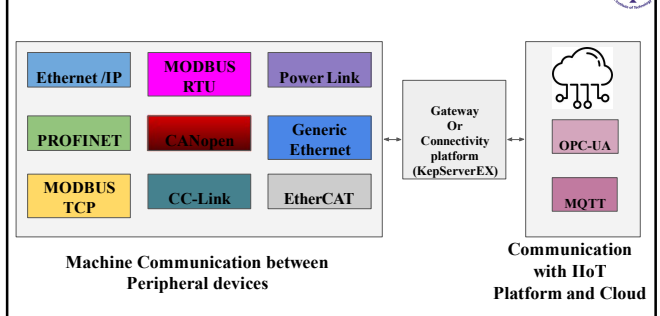
### Poll 8

IIoT data is extracted from \_\_\_\_\_

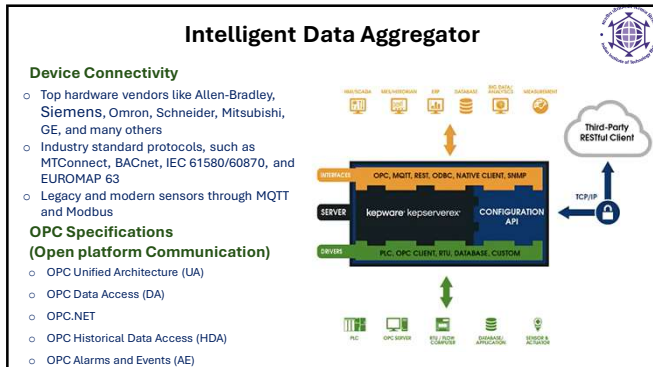
- Edge Tier
- Platform Tier
- Enterprise Tier
- All of the above

44

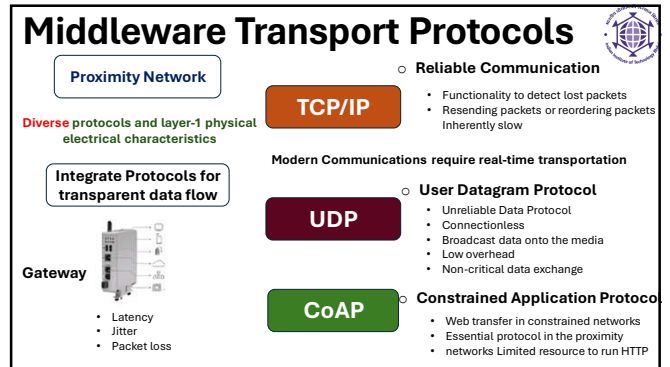
### Communication Architecture



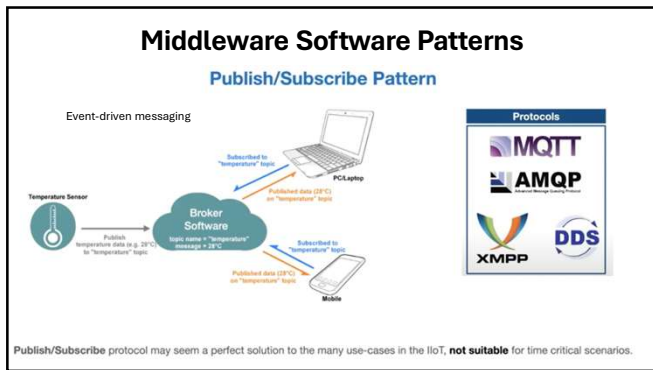
45



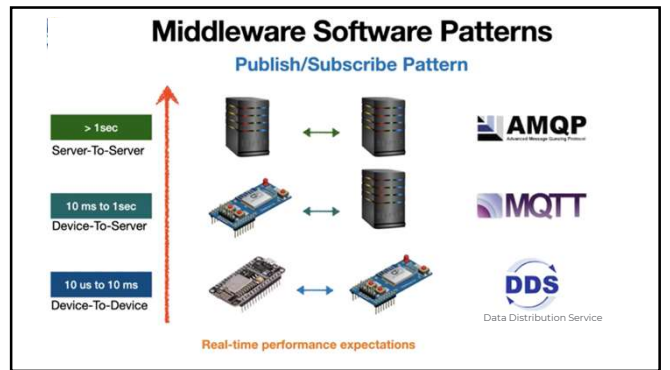
46



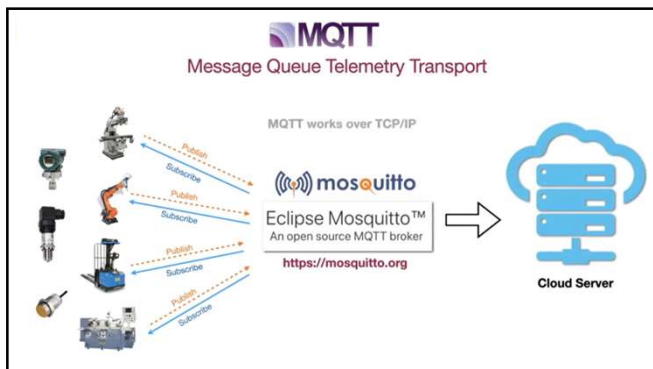
47



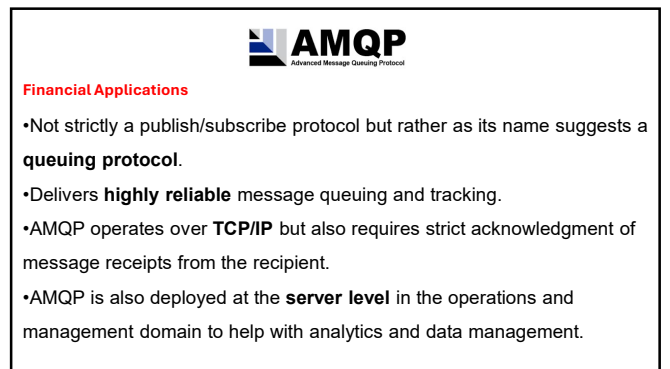
48



49

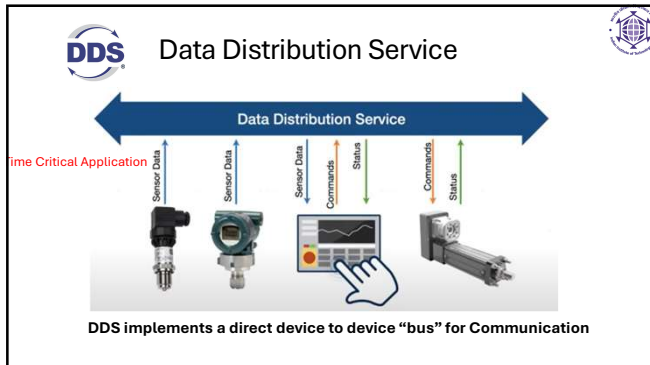


50

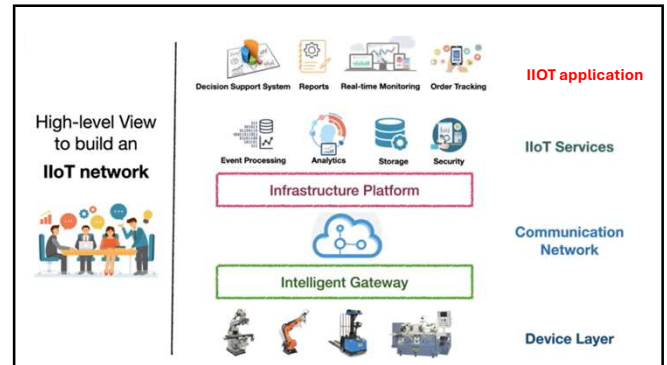


51





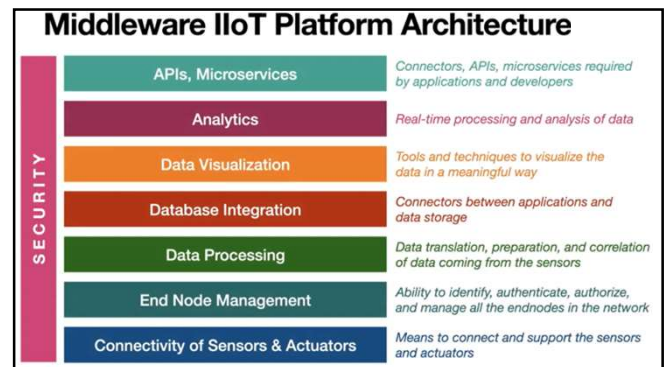
52



53



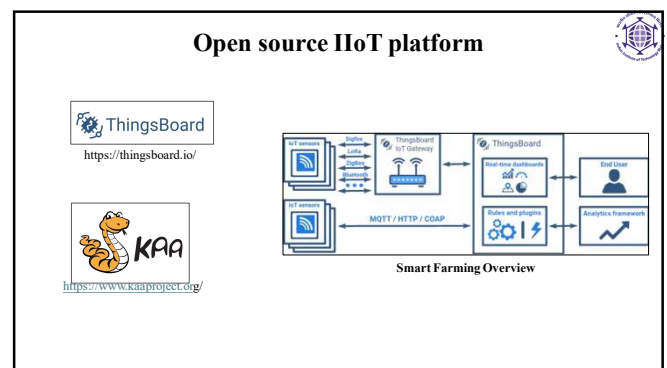
54



55

**How can I try out these IIoT Platforms?**

56

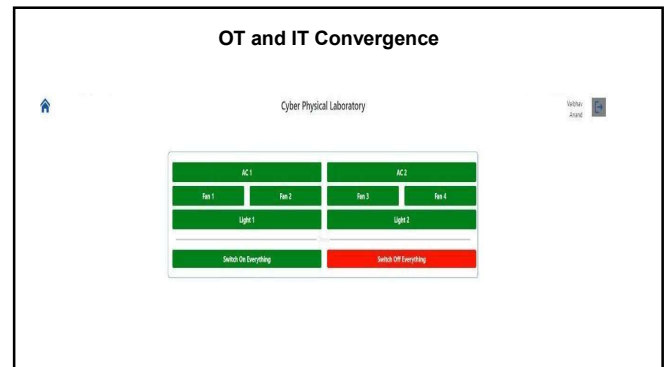


57

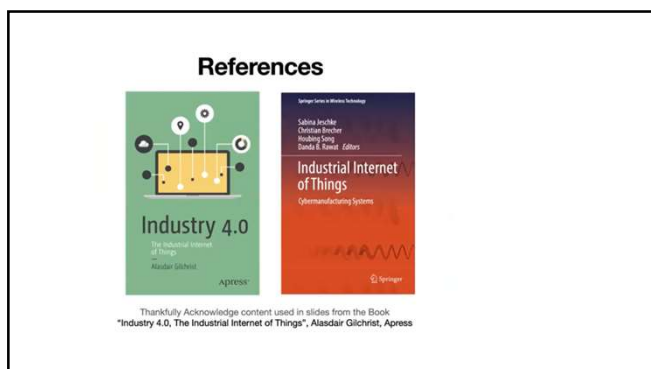
66



67



68



76



77