Internet-of-Things
MCA 5036

By,

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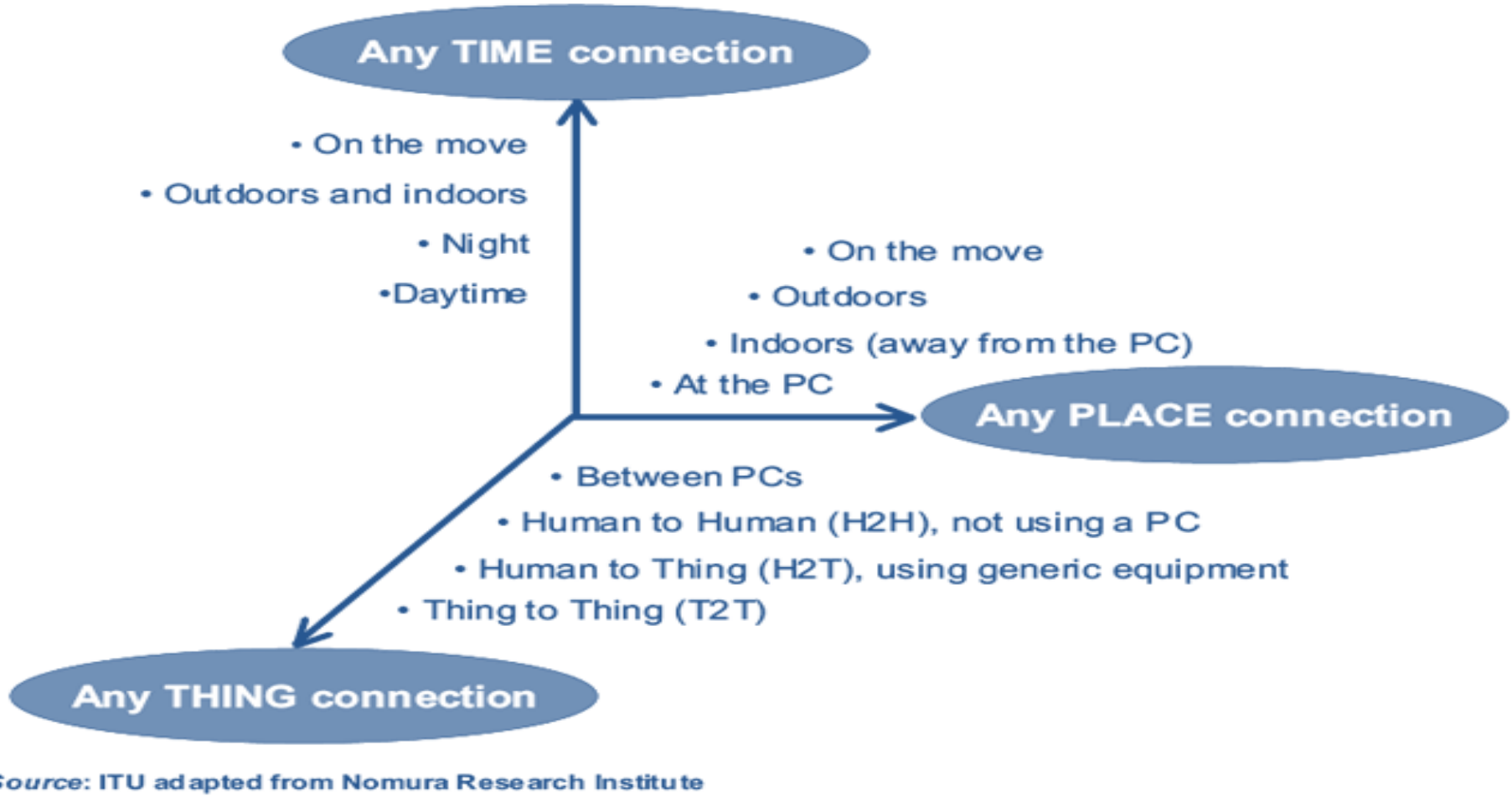
Introduction

IoP v/s IoT

Internet-of-People (IoP) is a network that connects people across the globe via Internet.

Internet-of-Things (IoT) is the network of physical objects—devices, vehicles, buildings and other embedded systems—that enabled to communicate and exchange data.

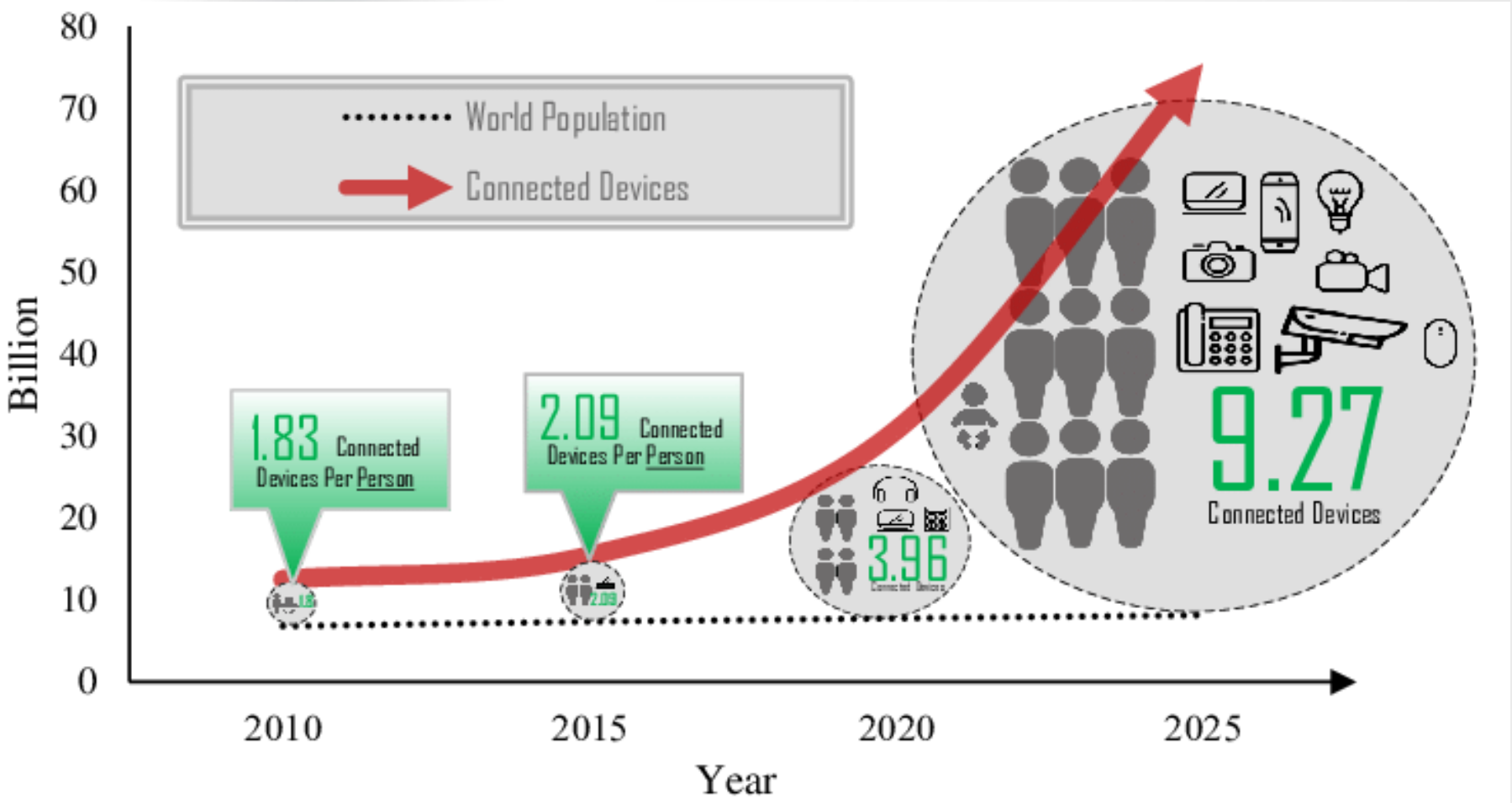
Scope of IoT



Source: ITU adapted from Nomura Research Institute

The goal of the Internet-of-Things is to enable things to be connected anytime, anyplace, with anything and anyone ideally using any path/network and any service.

Connected Devices

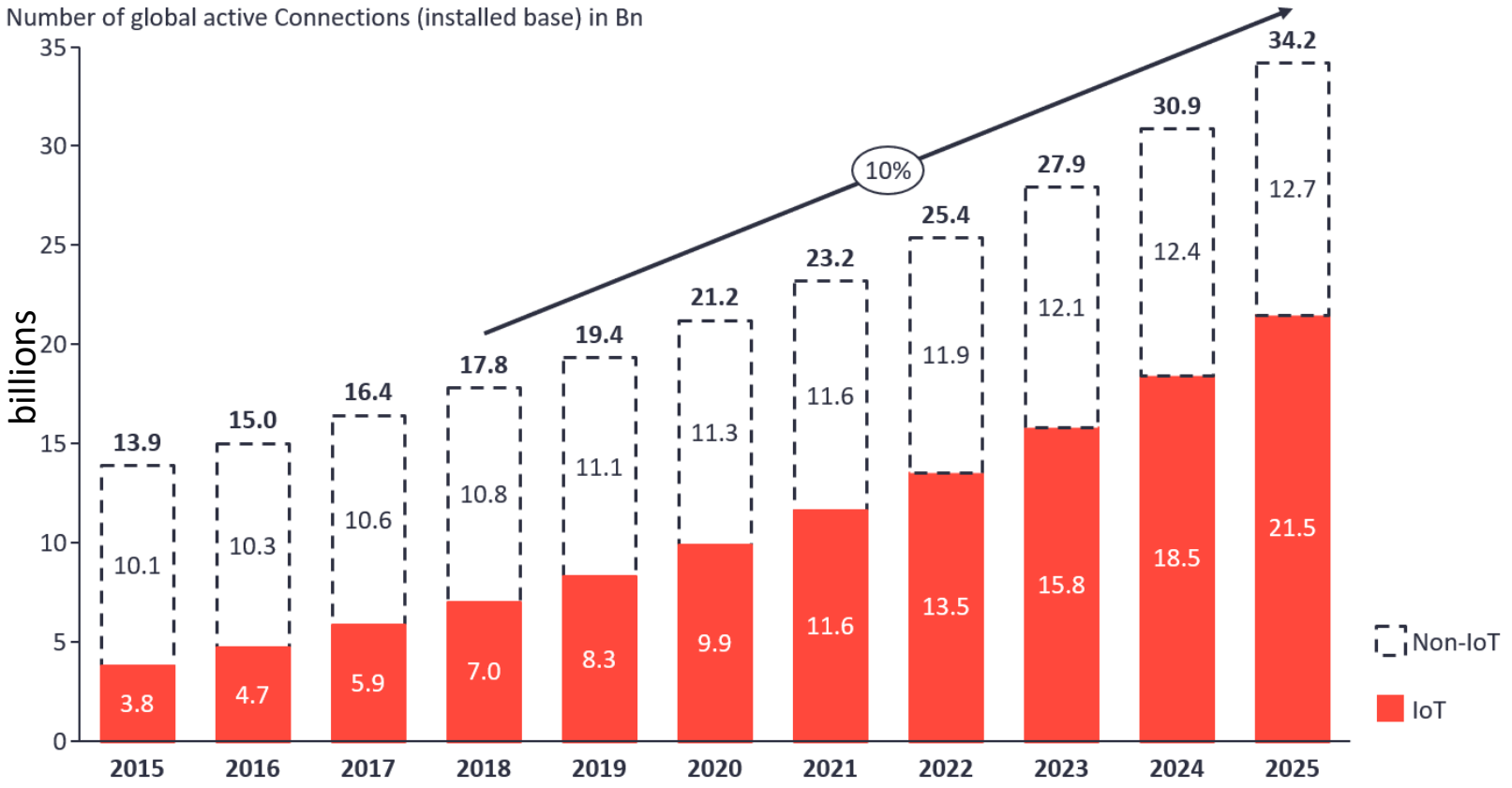


Connected Devices

IOT ANALYTICS

Insights that empower you to understand IoT markets

Total number of active device connections worldwide



Note: Non-IoT includes all mobile phones, tablets, PCs, laptops, and fixed line phones. IoT includes all consumer and B2B devices connected – see IoT break-down for further details

Source: IoT Analytics Research 2018

Why Study IoT?

Internet of Things
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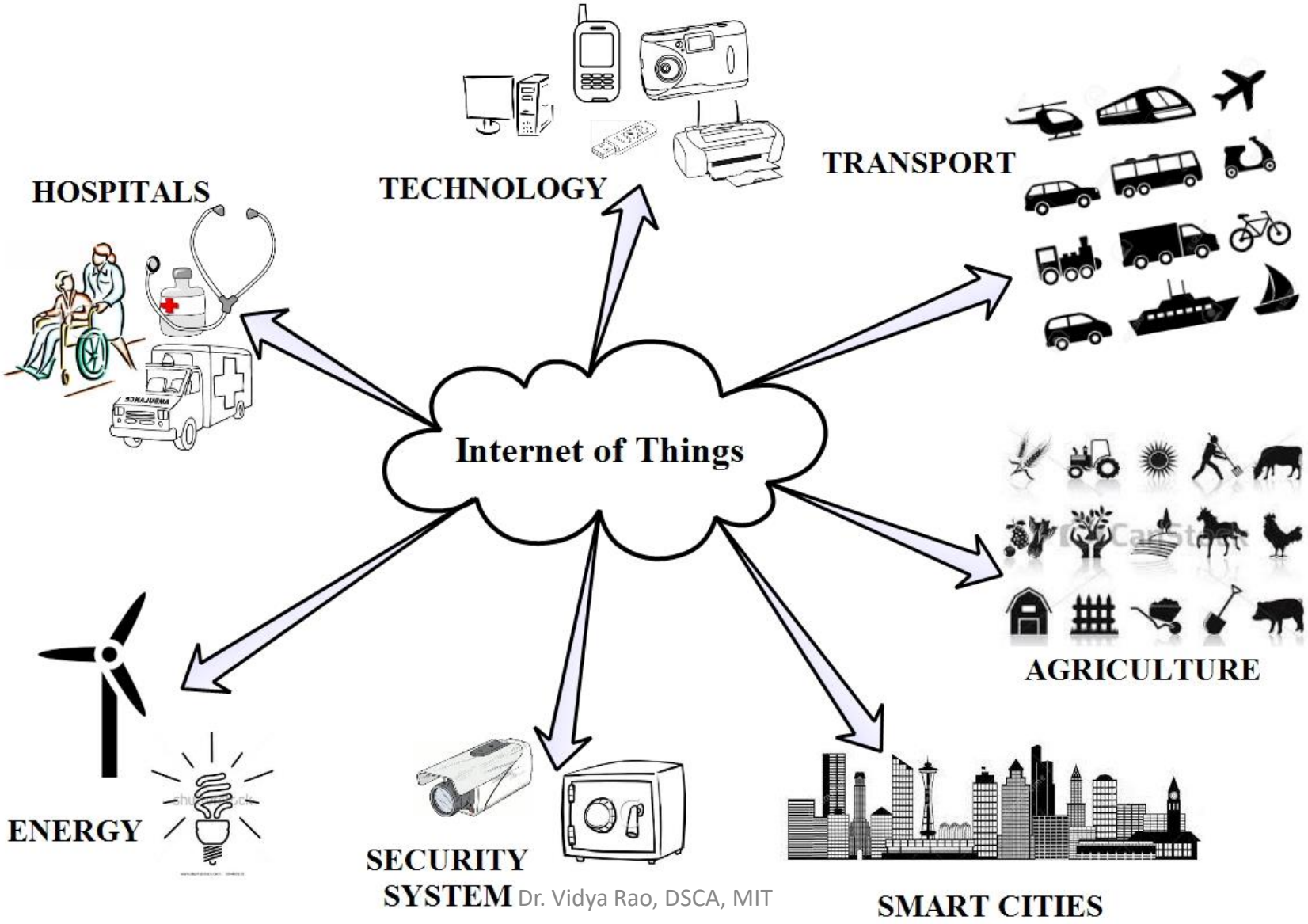
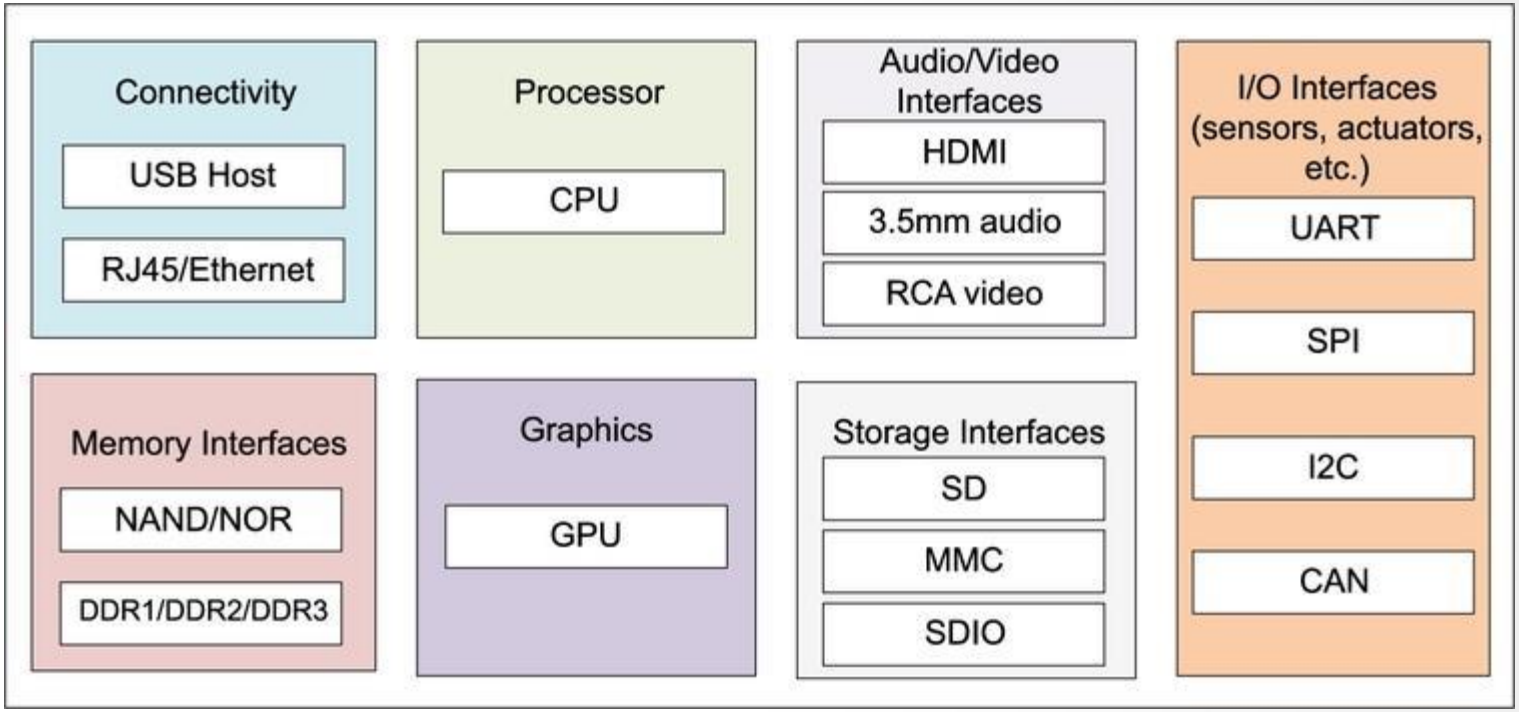
Course Structure

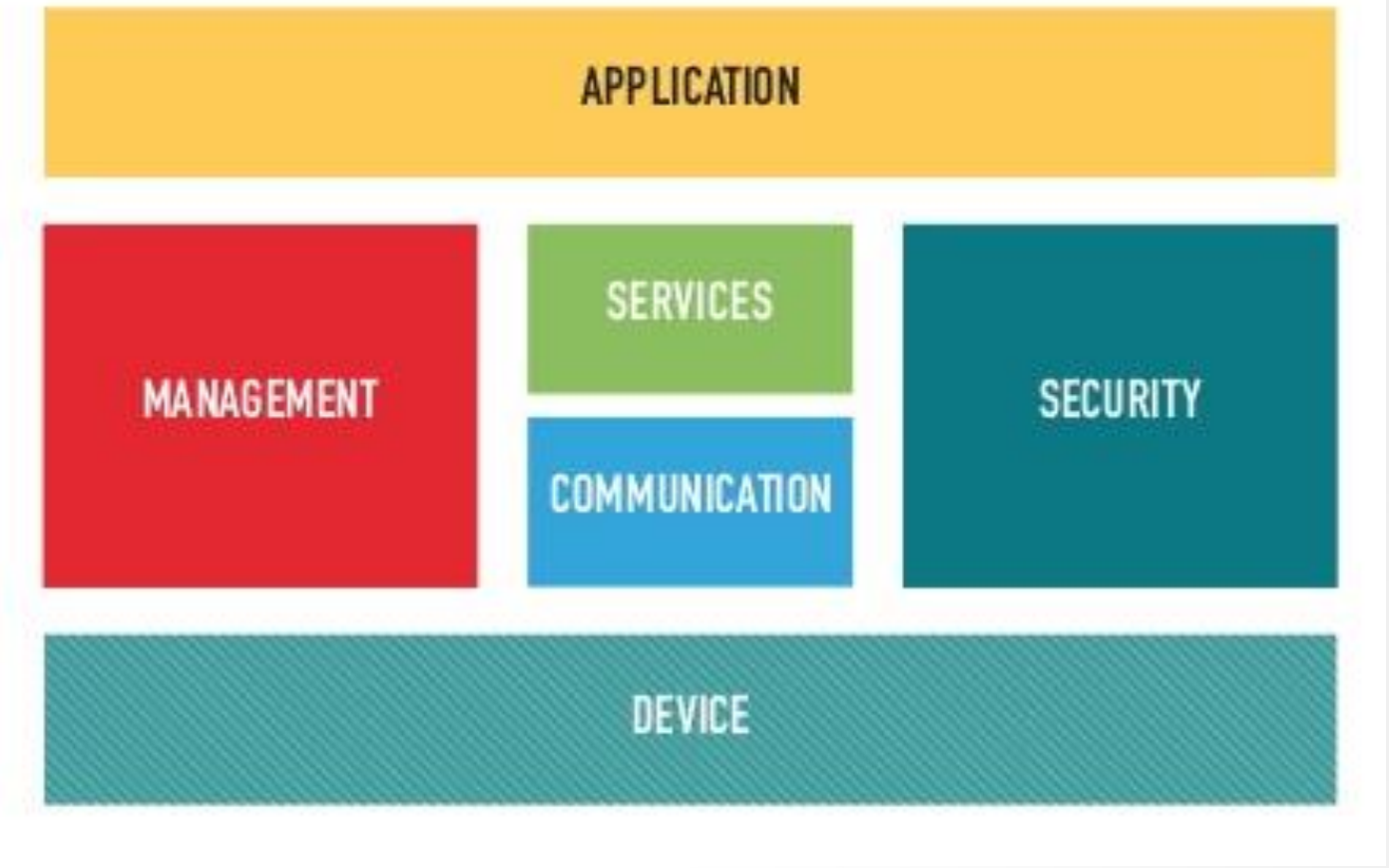
Application Domains



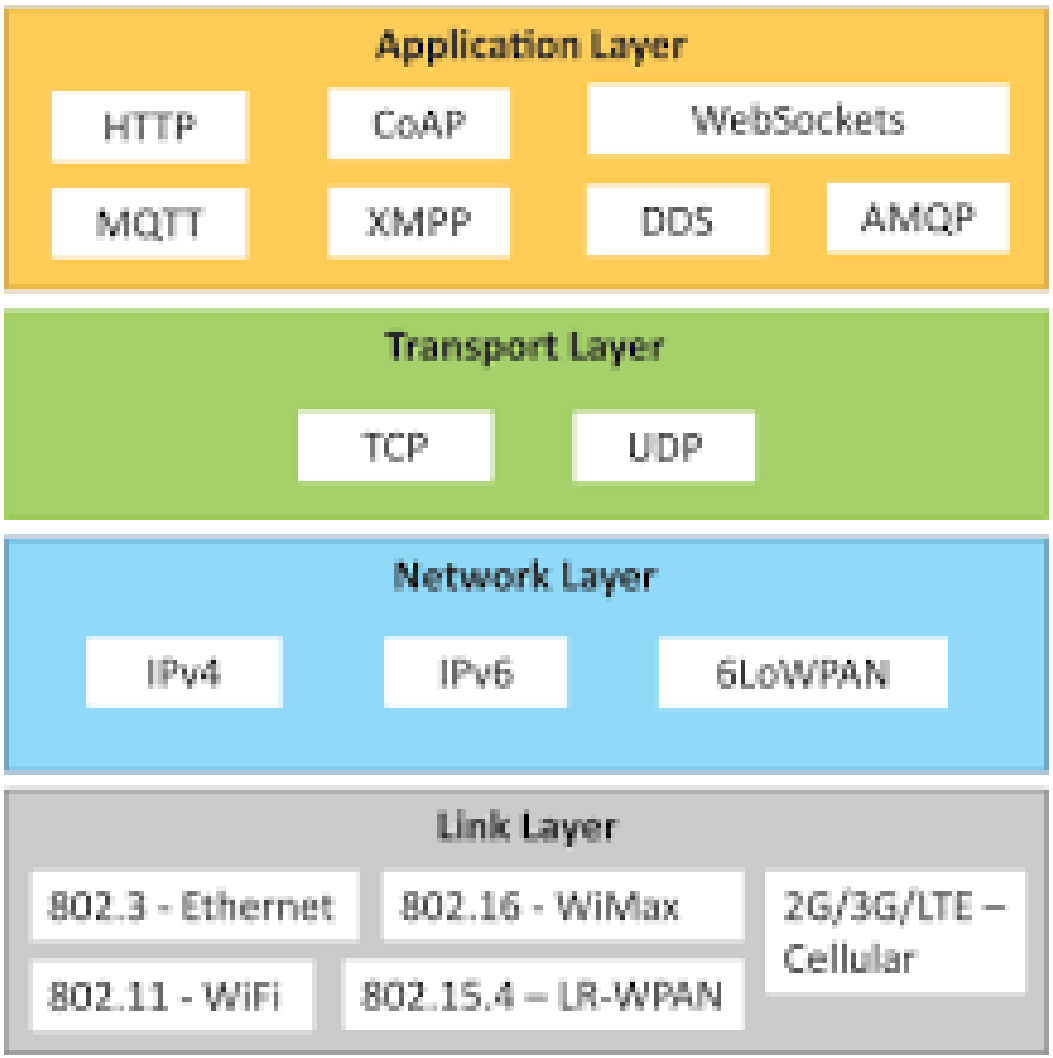
Physical Design of IoT



Logical Design of IoT



Layers of IoT



Defines user interfaces

Responsible in Routing of packets

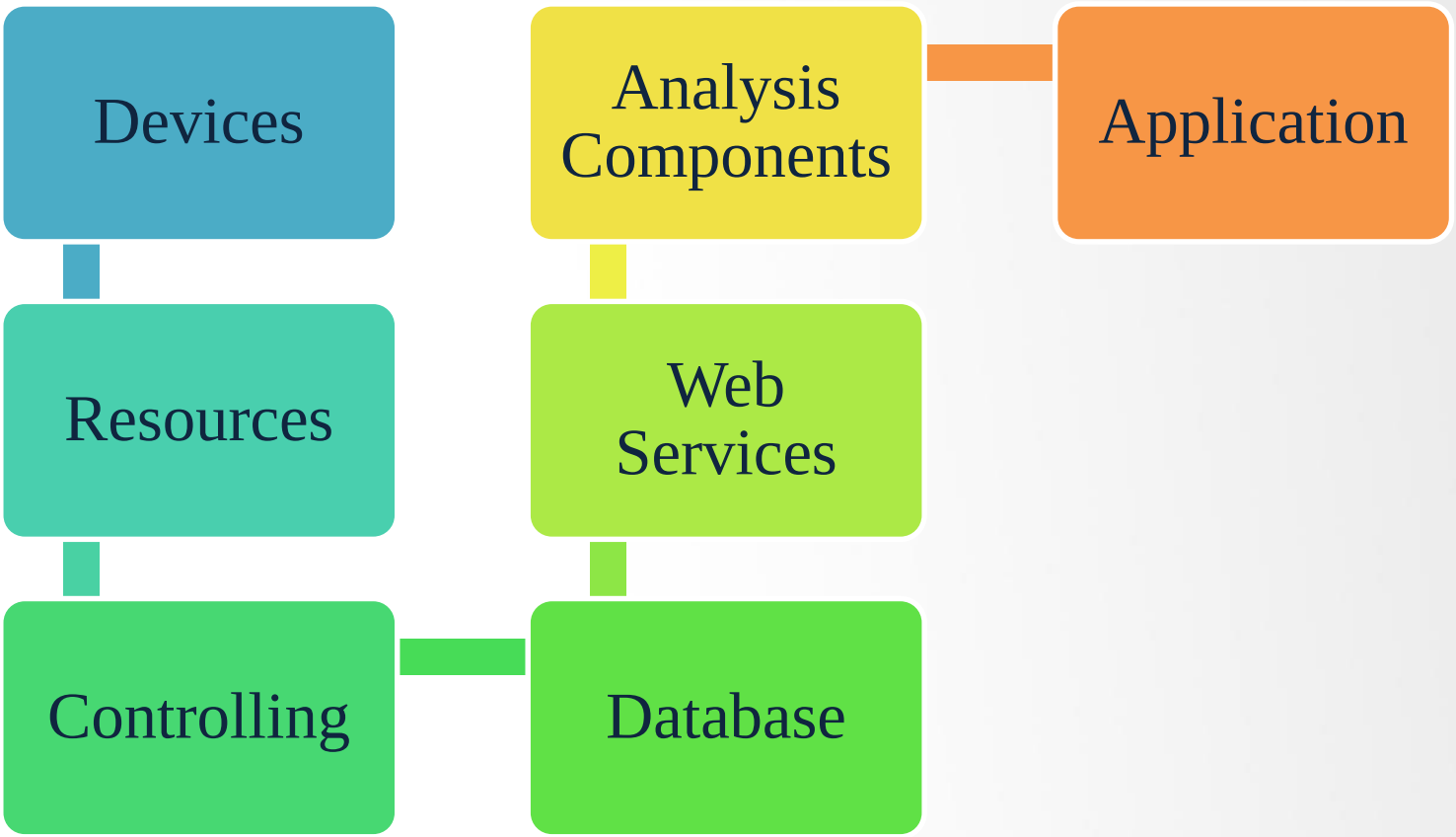
Responsible in sending IP datagram

Describes how data is physically sent

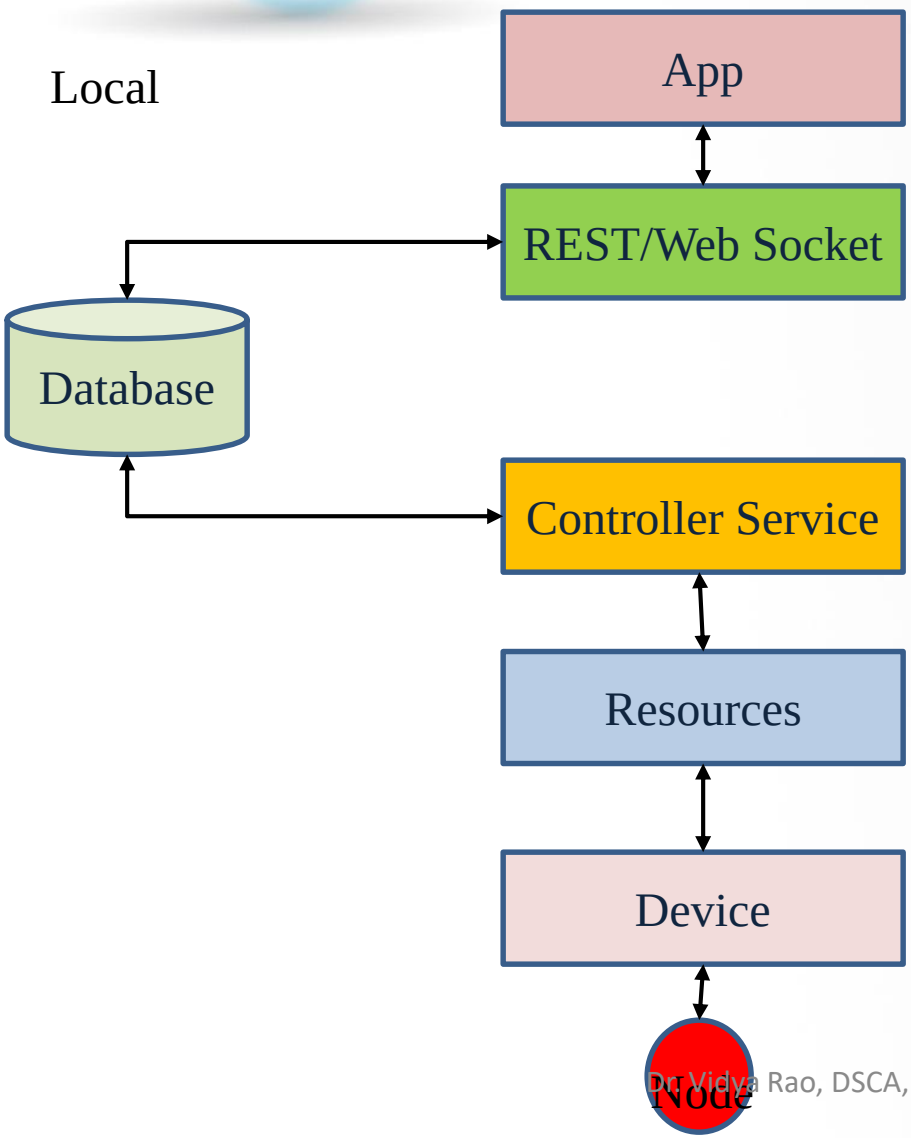
IoT Enabling Technologies

1. Wireless Sensor Networks
2. Cloud Computing
3. Big Data Analytics
4. Communication Protocols
5. Embedded System

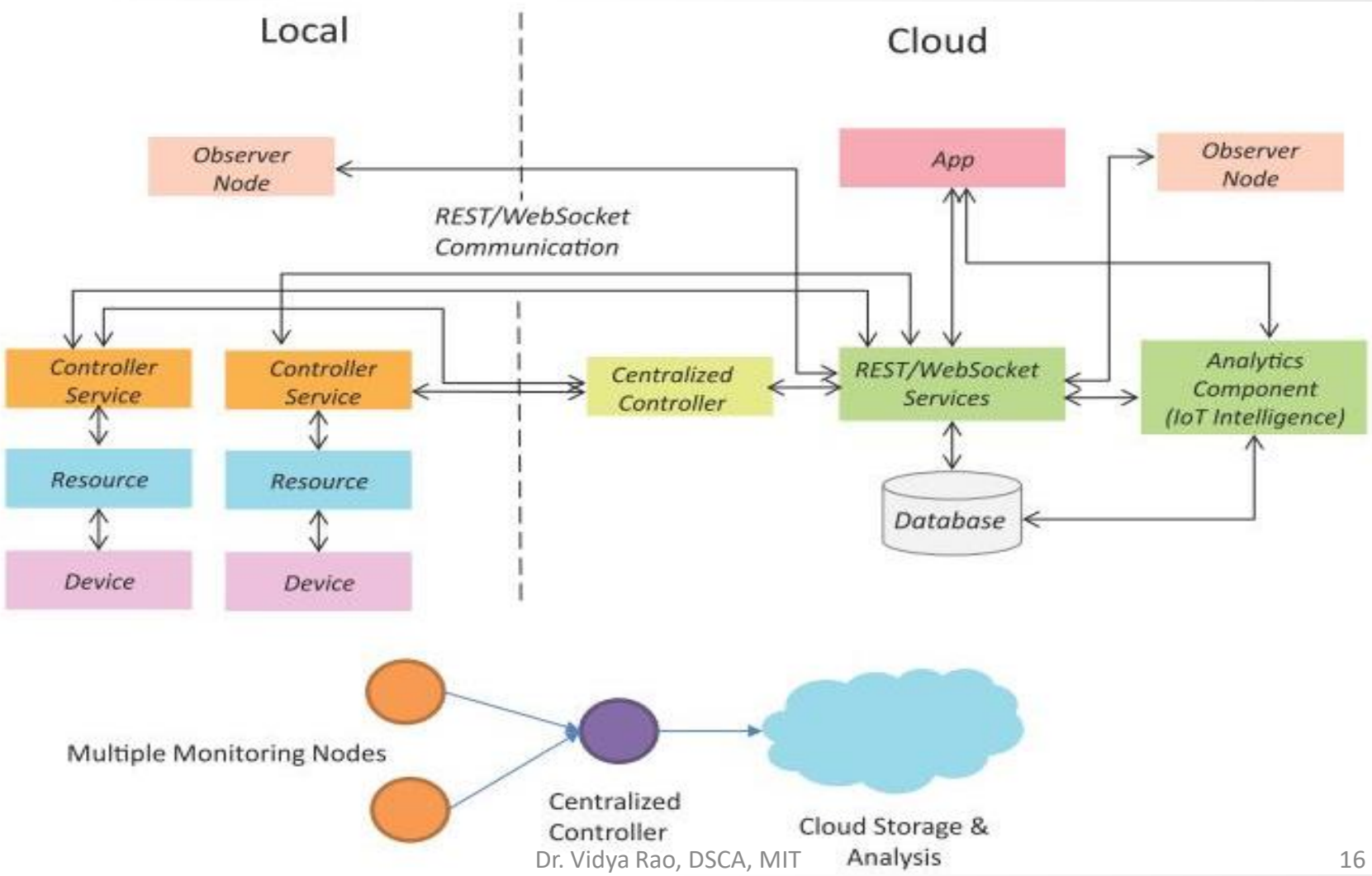
IoT Deployment Components



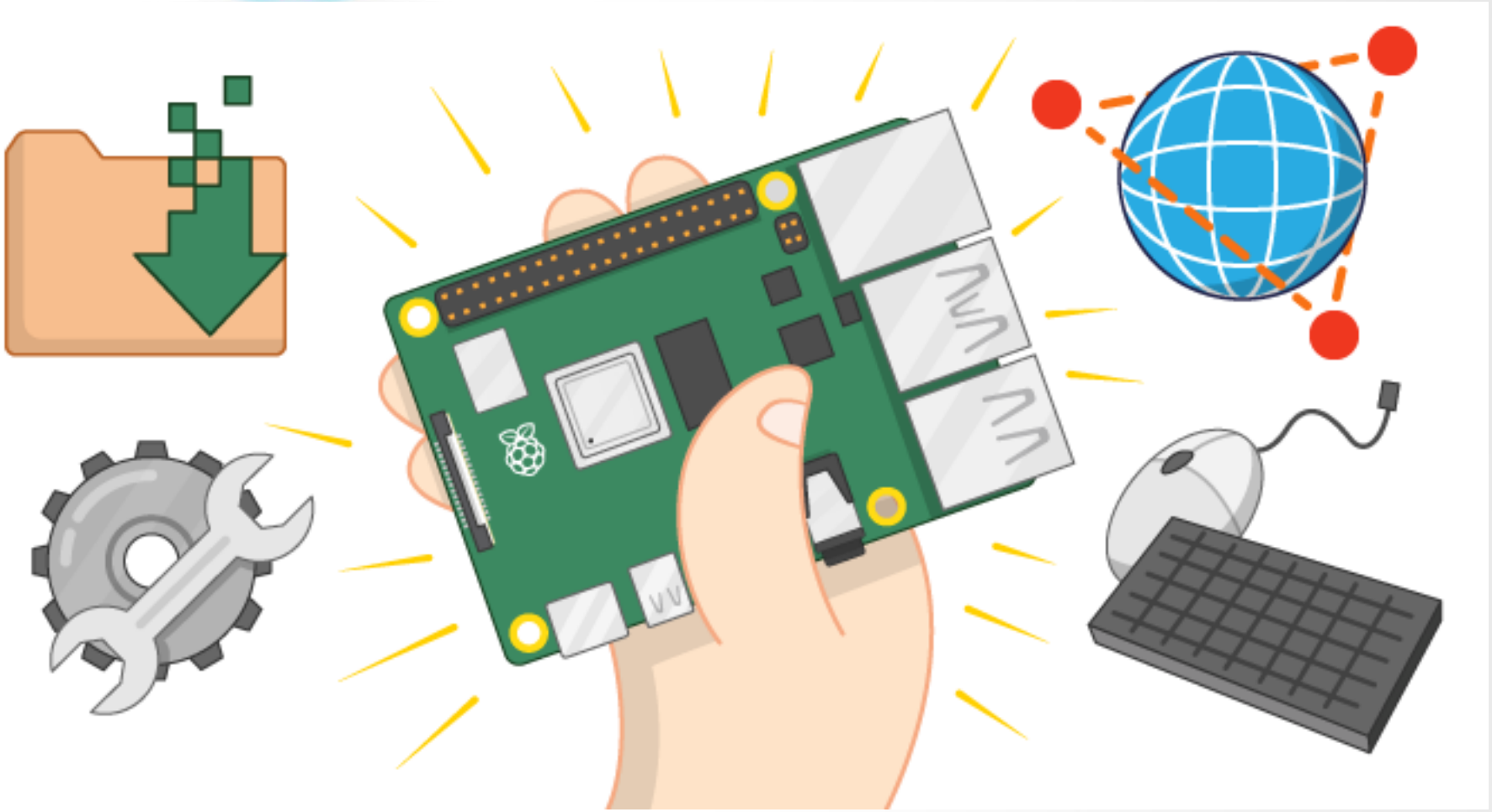
IoT Level-1


Local
Cloud
App
REST/Web Socket
Database
Controller Service
Resources
Device
Node

IoT Level-6

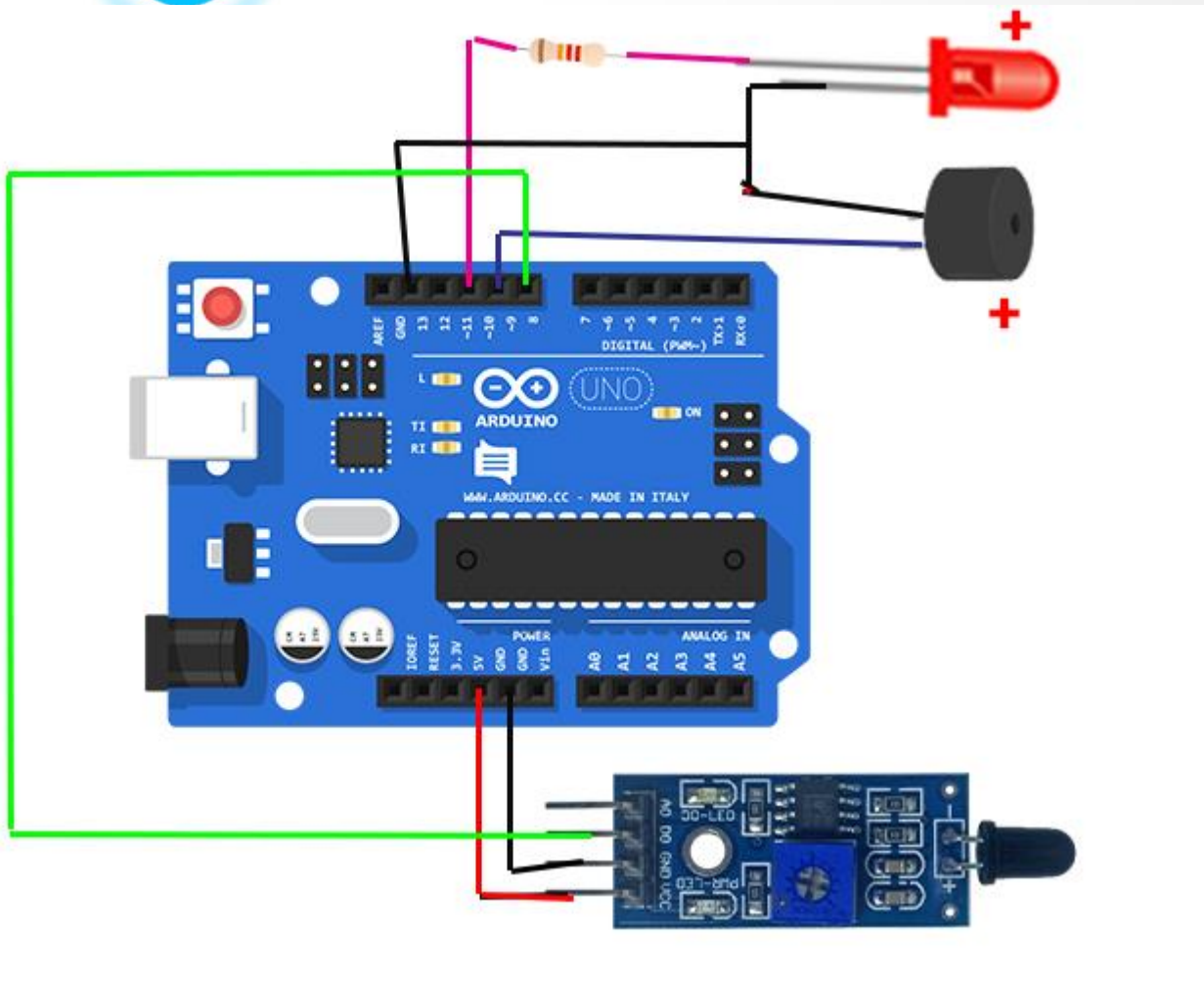

Local
Cloud
Observer Node
REST/WebSocket Communication
App
Observer Node
Controller Service
Controller Service
Centralized Controller
REST/WebSocket Services
Analytics Component (IoT Intelligence)
Resource
Resource
Database
Device
Device
Multiple Monitoring Nodes
Centralized Controller
Cloud Storage & Analysis

Raspberry Pi Programming



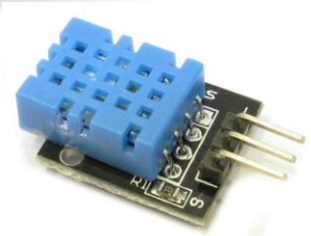
https://www.raspberrypi.org/learn/

Arduino Uno Programming

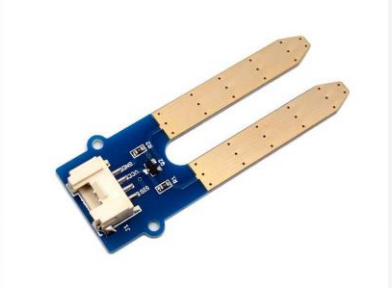


https://docs.arduino.cc/learn/programming/arduino-and-python

Sensors



Temperature



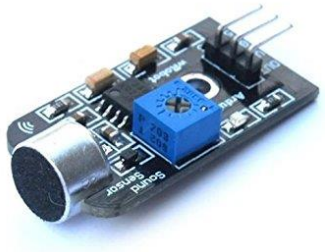
Moisture

Distance & Obstacle

Harmful Gases

SENSORS

Motion



Sound

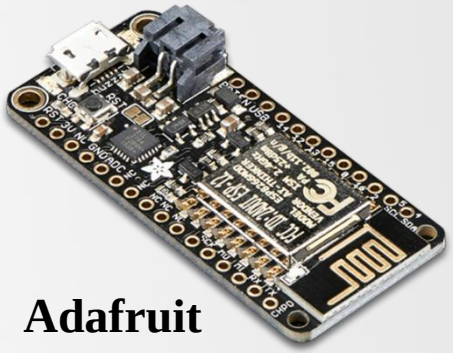
Seismic Sensor

ECG Sensor

Hardware Components

Arduino Uno

ESP8266



Adafruit

PCB Boards

Raspberry Pi 3b

PIC Microcontroller

Intel Edison

Other Topic

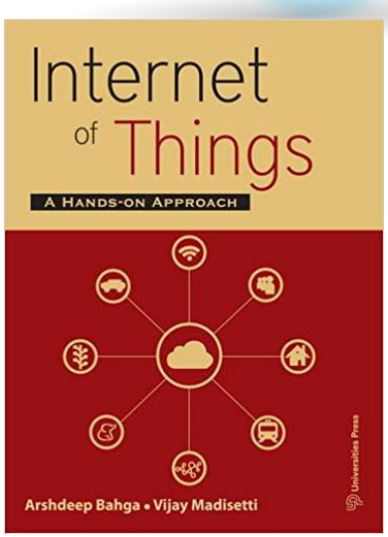
M2M

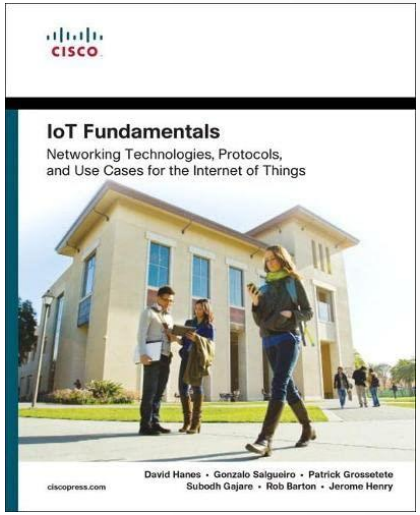
SCADA

WSN

Security

Text Books


Internet
of Things
A Hands-on Approach
Arshdeep Bahga • Vijay Madisetti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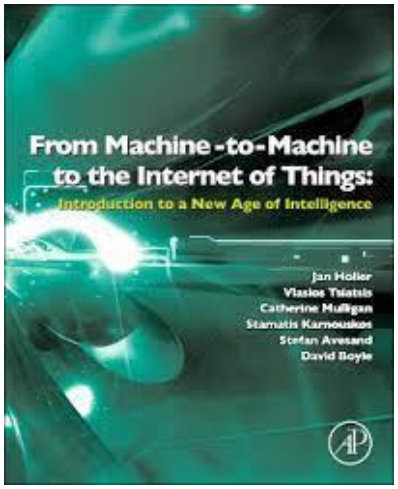
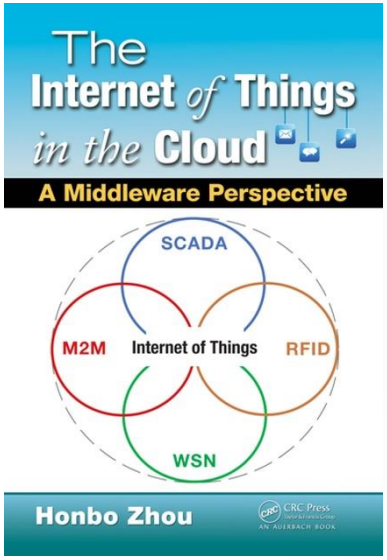
IoT Fundamentals
Networking Technologies, Protocols,
and Use Cases for the Internet of Things
David Hanes • Gonzalo Salgueiro • Patrick Grossetete
Subodh Gajare • Rob Barton • Jerome Henry
ciscopress.com


Dieter Uckelmann
Mark Harrison
Florian Michahelles Editors
Architecting
the Internet
of Things
Springer


From Machine-to-Machine
to the Internet of Things:
Introduction to a New Age of Intelligence
Jan Holler
Vlasios Tsiatsis
Catherine Mulligan
Stamatis Karnouskos
Stefan Avesand
David Boyle


The
Internet of Things
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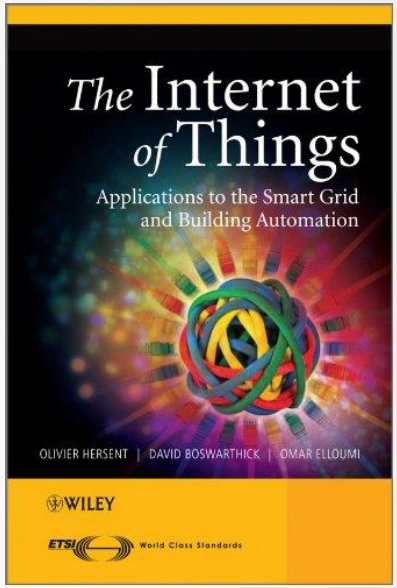
SCADA
M2M
Internet of Things
RFID
WSN
Honbo Zhou
CRC Press


The Internet
of Things
Applications to the Smart Grid
and Building Automation
OLIVIER HERSENT | DAVID BOSWARTHICK | OMAR ELLOUMI
WILEY
ETSI World Class Standards

Text Books

References:

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3.	Dieter Uckelmann, Mark Harrison, Michahelles, Florian, Architecting the Internet of Things, Springer, 2011.
4.	Jan Ho, ller, Vlasios Tsiatsis, Catherine Mulligan, Stamatis, Karnouskos, Stefan Avesand, David Boyle, From Machine-to-Machine to the Internet of Things-Introduction to a New Age of Intelligence, Elsevier, 2014.
5.	Honbo Zhou, The Internet of Things in the Cloud: A Middleware Perspective, CRC Press, 2012.
6.	Olivier Hersent, David Boswarthick, Omar Elloumi, The Internet of Things – Key applications and Protocols, Wiley, 2012.
7.	Click or tap here to enter text.

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