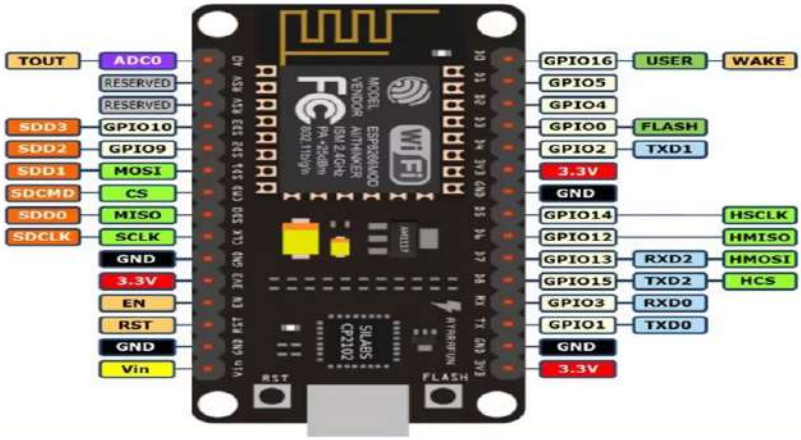
IoT Cloud Platforms

- List of open-source and licensed IoT cloud platforms

S. No	Open source	Licensed
1	Message Queue Telemetry Transport (MQTT)	Amazon Web Services (AWS)
2	ThingSpeak	Microsoft Azure IoT hub
3	Zetta	IBM Watson IoT platform
4	Open Hybrid	Google Cloud platform
5	Node-Red	Oracle
6	Eclipse Kura	Salesforce
7	Wio Link	Bosch
8	Macchina.io	CISCO IoT Cloud Connect
9	IoTivity	General Electric's Predix
10	Kaa Project	SAP

NodeMCU(ESP8266)

- It is a low cost Wi-Fi microchip with full TCP/IP stack
- It's a 32-bit microcontroller produced by Espressif Systems and operates at 2.4GHz



Hardware and Software

- Hardware required

NodeMCU(ESP8266)

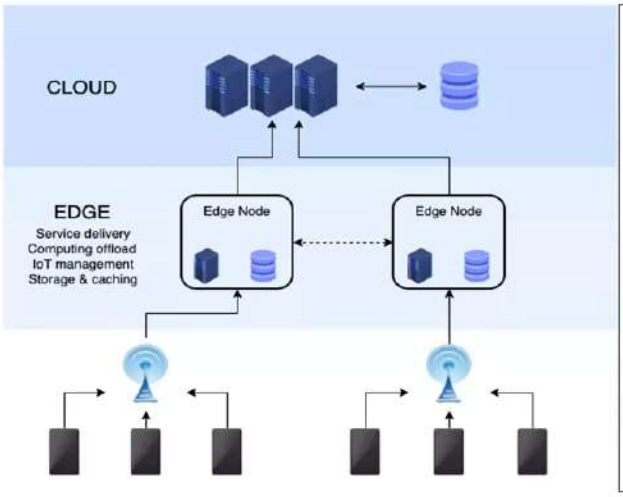
RaspberryPi

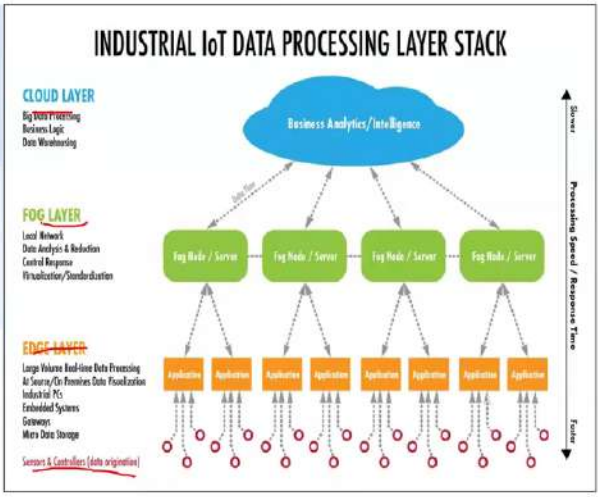
- Softwares required
  - Arduino.cc and IoT library – ESP8266
  - Python and IoT library - RPi

Introduction to MQTT

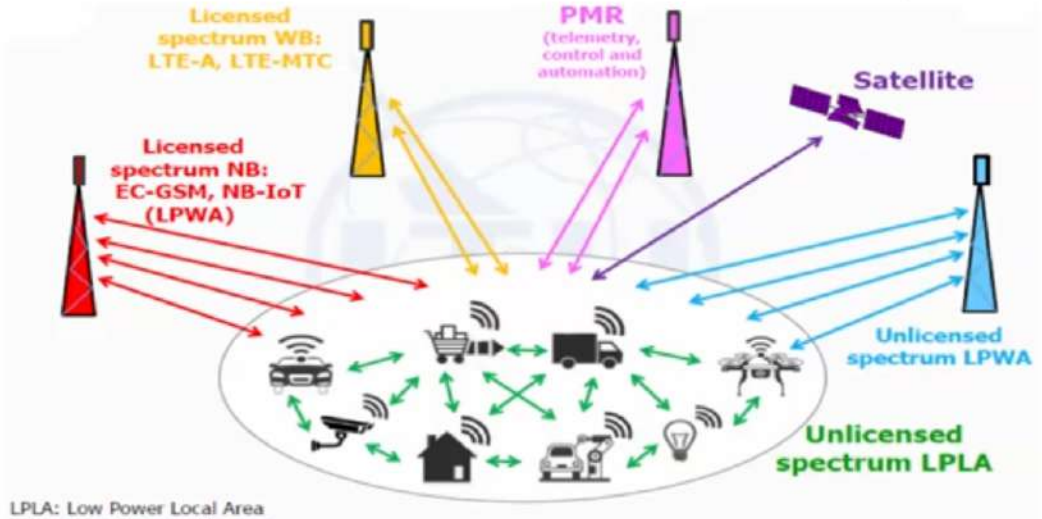
- Message Queue Telemetry Transport is a lightweight, open-source, client-to-client or client-to-server messaging protocol.
- Used in environments which require small source code and where communication bandwidth is limited.
- MQTT was created to implement the IoT concept with minimum battery requirements.
- Architecture of MQTT is based on the concepts of "publish" and "subscribe" .
- Publish is analogous to the transmitter and subscribe refers to the receiver.
- The subject to which the clients publishes the message or subscribes to is called the "topic".

Edge & Fog Computing



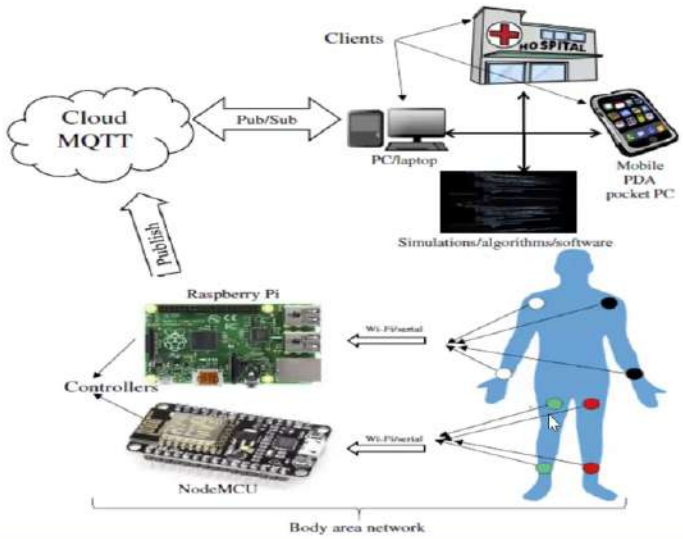


IoT Connectivity Options

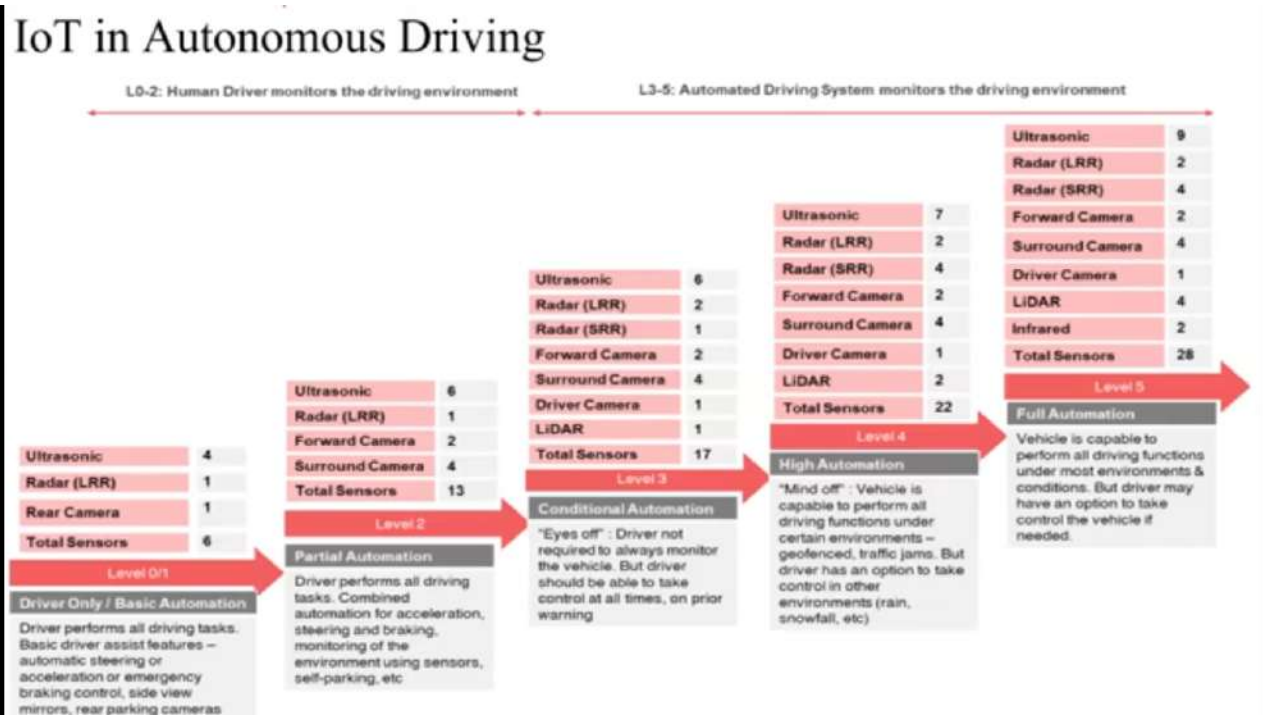


LPLA: Low Power Local Area
LPWA: Low Power Wide Area

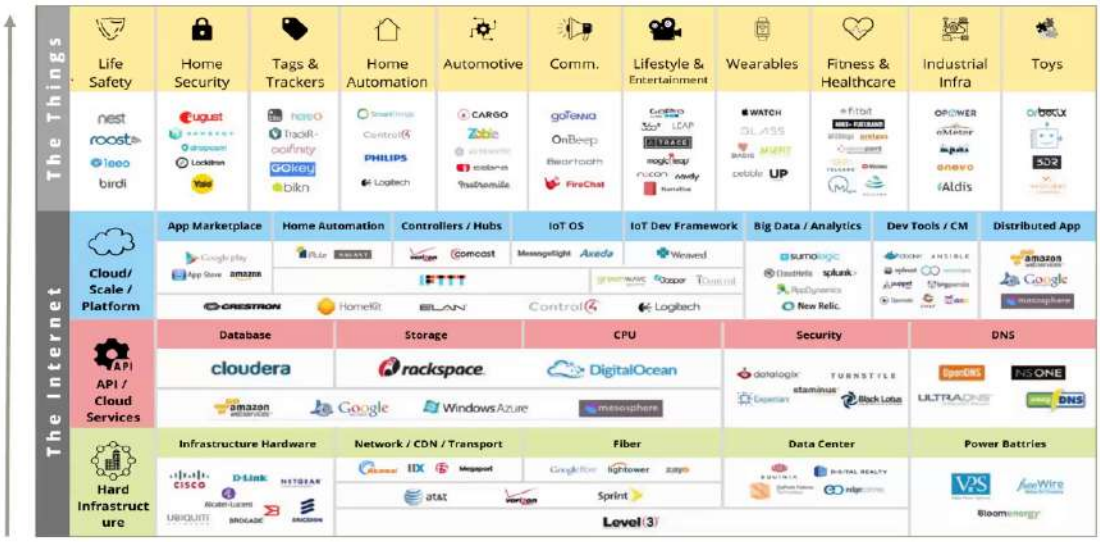
IoT-based model of U-healthcare system



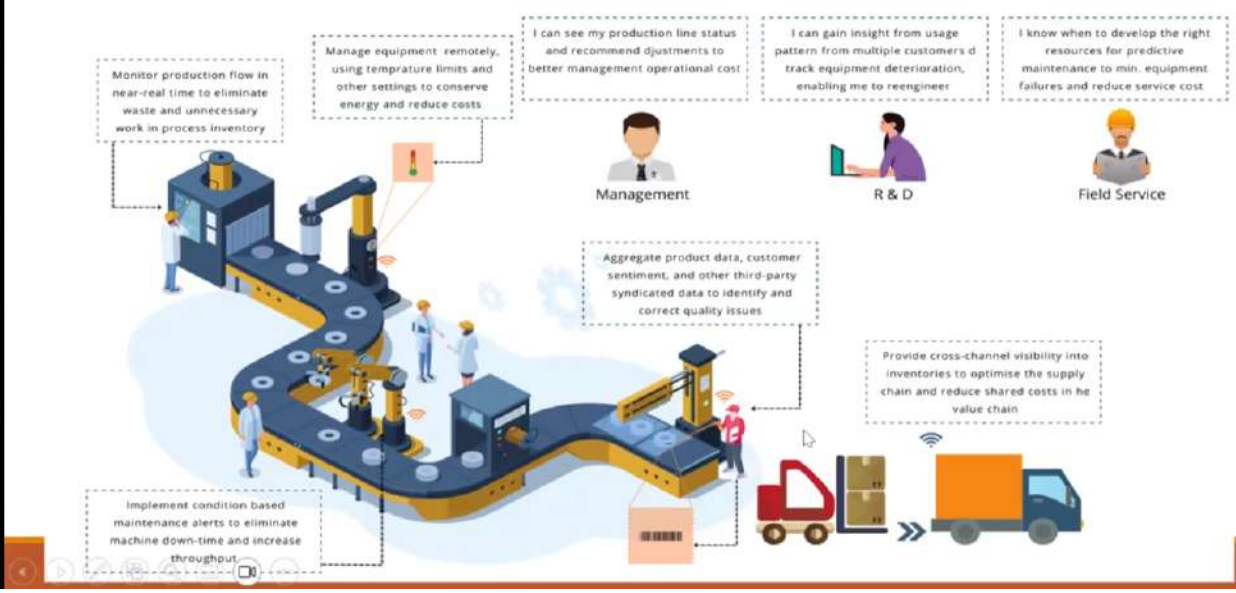
IoT in Autonomous Driving



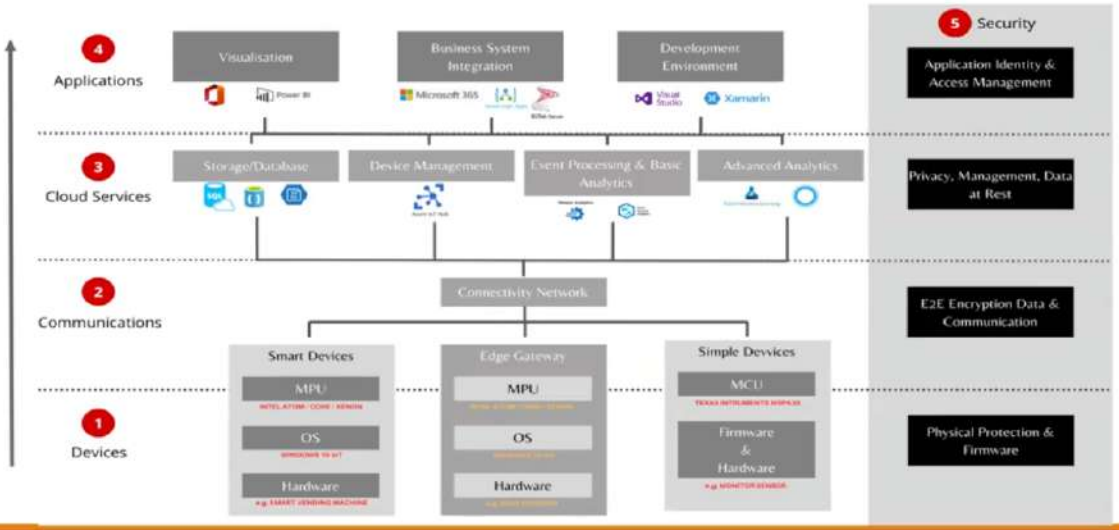
IoT Market


The Things
Life Safety
Home Security
Tags & Trackers
Home Automation
Automotive
Comm.
Lifestyle & Entertainment
Wearables
Fitness & Healthcare
Industrial Infra
Toys
The Internet
Cloud/ Scale / Platform
App Marketplace
Home Automation
Controllers / Hubs
IoT OS
IoT Dev Framework
Big Data / Analytics
Dev Tools / CM
Distributed App
API / Cloud Services
Database
Storage
CPU
Security
DNS
Hard Infrastructure
Infrastructure Hardware
Network / CDN / Transport
Fiber
Data Center
Power Battries

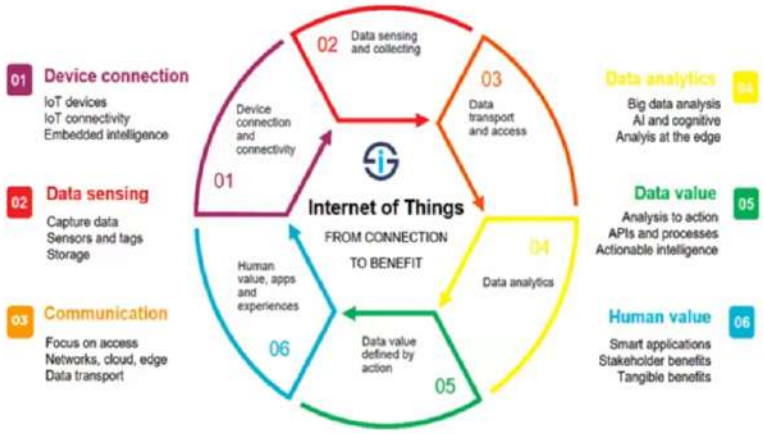
How can we leverage IoT in Smart Factories - Manufacturing & Assembly



What is required for IoT Implementation?



Overview: Skills required to exploit IoT

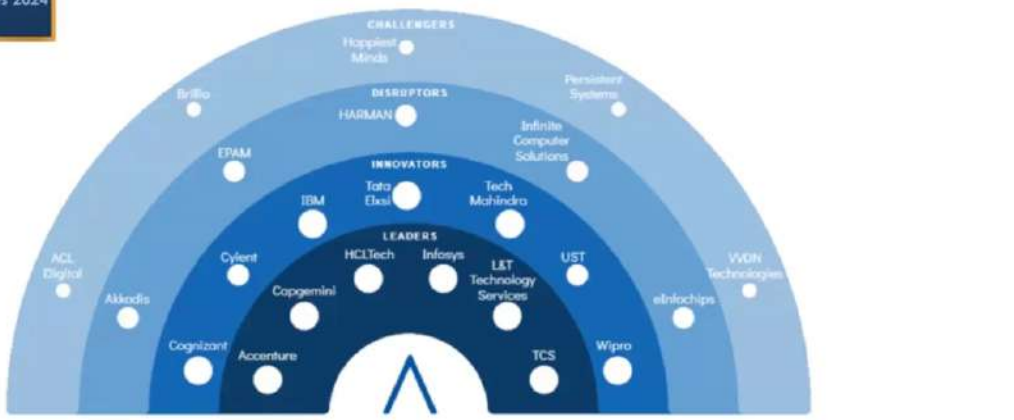


HFS Horizons

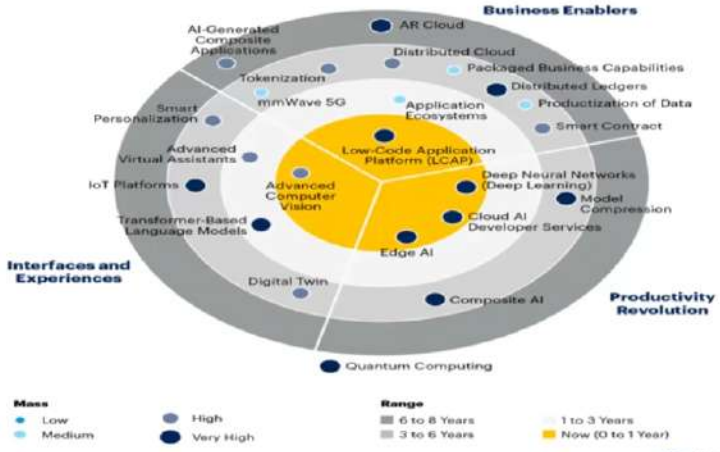
HFS Horizons: IoT Service Providers, 2024

Note: All service providers within a Horizon are listed alphabetically.
Source: HFS Research, 2024

AVASANT
RADARVIEW™
LEADER
Digital Engineering
Services 2024


Practice maturity
CHALLENGERS
Happiest Minds
Persistent Systems
Brillio
DISRUPTORS
HARMAN
Infinite Computer Solutions
EPAM
INNOVATORS
Tata Elxsi
IBM
Tech Mahindra
LEADERS
ACL Digital
Cyient
HCLTech
Infosys
UST
VVDN Technologies
Akkodis
Capgemini
L&T Technology Services
eInfochips
Cognizant
Accenture
TCS
Wipro

Trends in IoT



Gartner

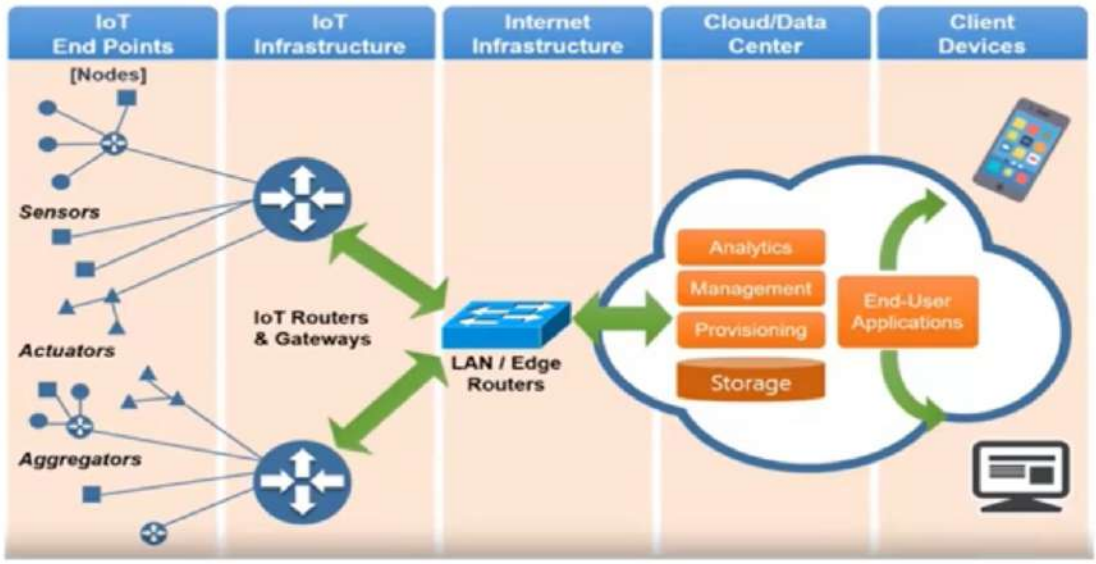
1999

*Term **IoT** was Coined*

WEB3.0

*has **IOT** as one of the key components of its ecosystem*

Architecture of IoT - Enhanced



Source: drajivdesaind.com