IoT
Platform

IoT devices

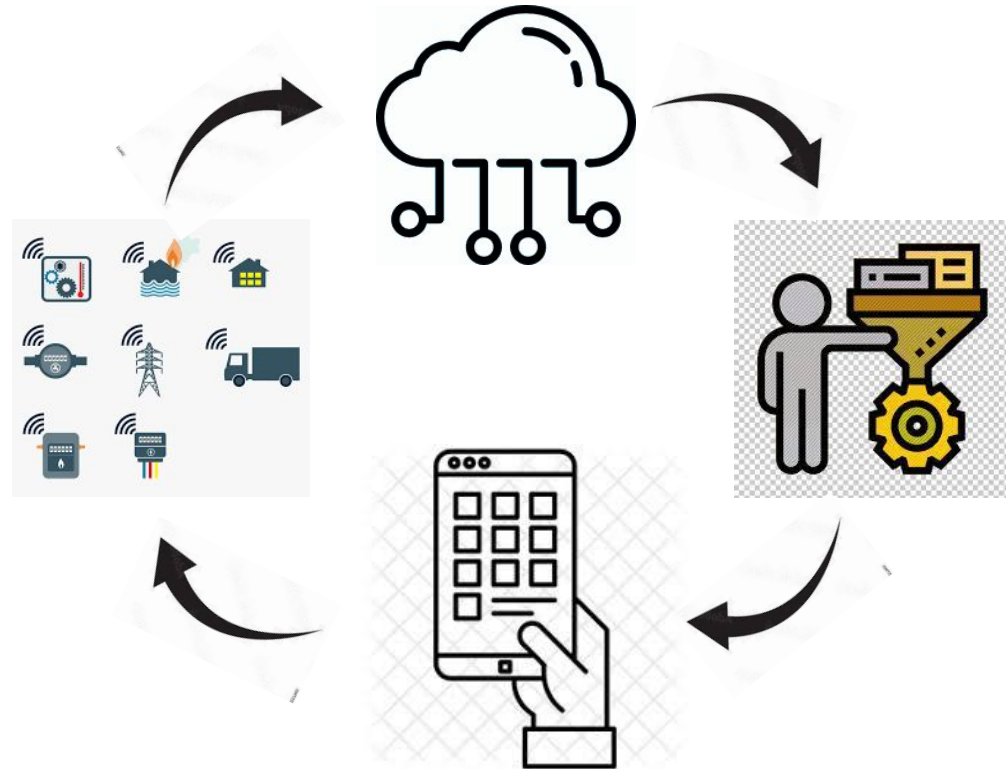Aditi Vaidya

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Introduction

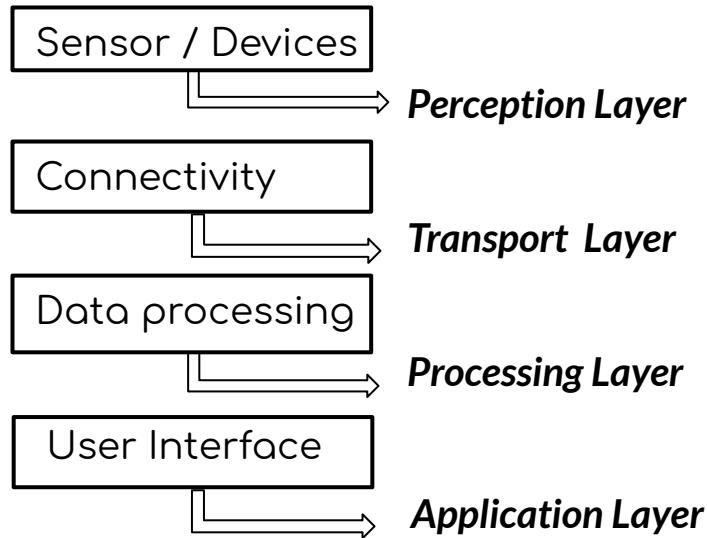- IoT platform connects devices ,collects data and create sights to build and run robust infrastructures that needs solid foundations .

- In june 2021 , IOT Analytics mapped more than 1200 companies.
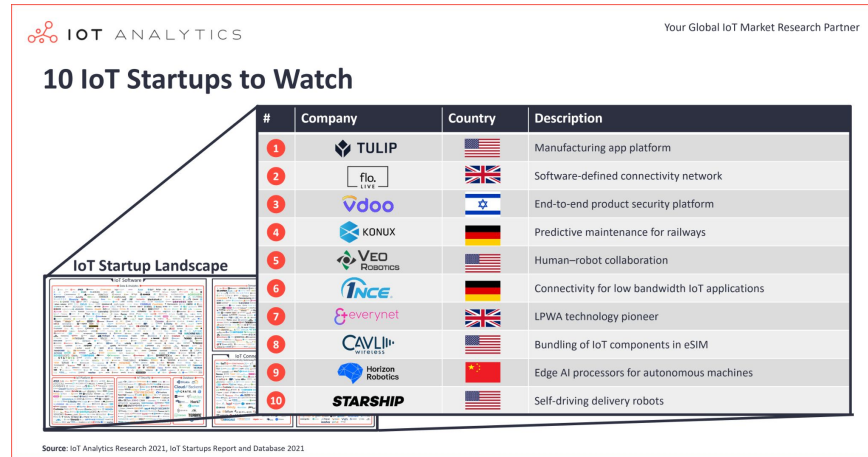
- The listed 10 companies offering are as diverse as the IoT landscape, ranging from companies focused on manufacturing to those covering all verticals and software, to those covering hardware or connectivity components.

Design Implementation

A complete IoT system integrates four distinct components :

Sensor / Devices

→ *Perception Layer*

Connectivity

→ *Transport Layer*

Data processing

→ *Processing Layer*

User Interface

→ *Application Layer*

Perception Layer

- The basic purpose of perception layer is to gather and deal with heterogeneous data.

- It senses some physical parameters or identifies other smart objects in the environment

- Collection of real time information from sensors and actuators etc.
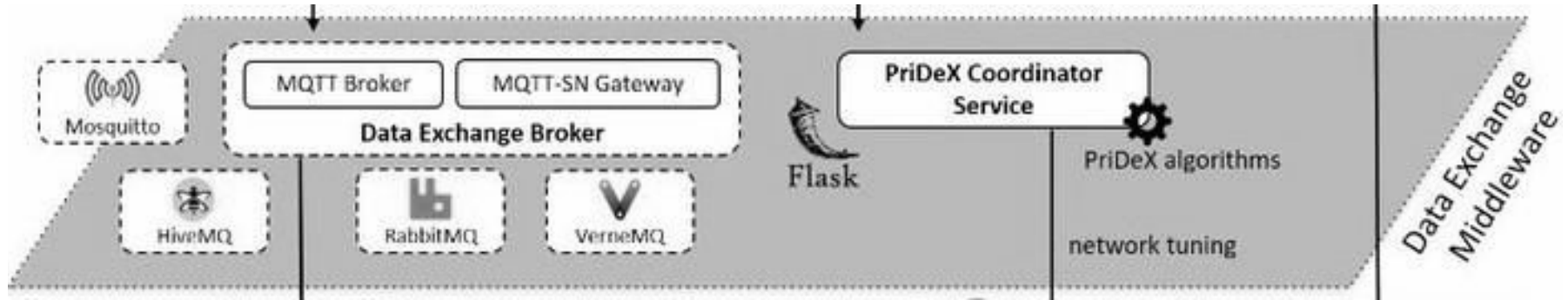
Transport Layer

- Transport layer aims at service point addressing using a lightweight TCP/IP network protocol for data exchange.

- It encompasses wired or wireless networks and a gateway.

- A hardware or software module that consolidates data from devices, analyzes it, performs translation between different protocols, and forwards information to the cloud.

# Processing Layer

- The processing layer is also known as the **middleware layer**.

- It stores, analyzes, and processes huge amounts of data that comes from the transport layer. It can manage and provide a diverse set of services to the lower layers.

Application Layer

- The application layer is the interface between the IoT device and the network with which it will communicate.
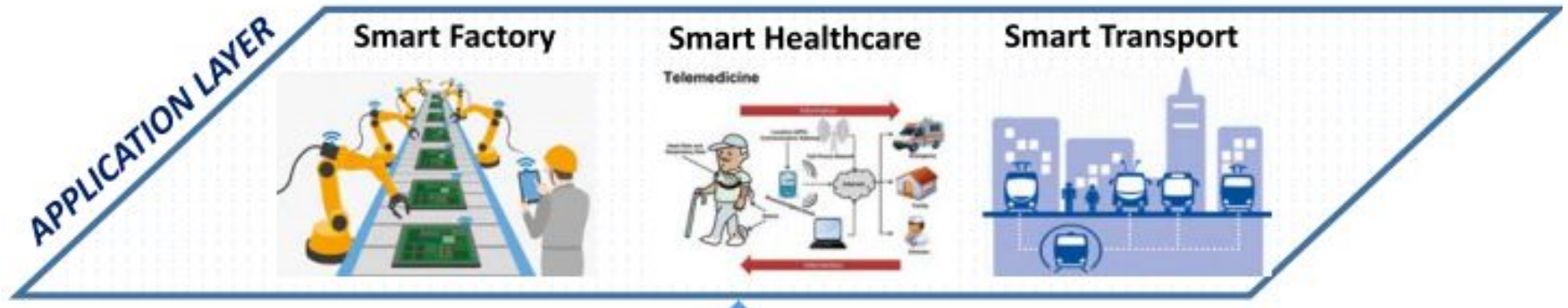
- It handles data formatting and presentation and serves as the bridge between what the IoT device is doing and the network handoff of the data it produces.

TOP 5 IoT Solutions in Market Share

IoT Solutions	amazon	CISCO	G Cloud	IBM	Azure
Communication Protocol	HTTP MQTT Web Socket	MQTT	HTTP MQTT	HTTP MQTT	HTTP,MQTT, AMQP over Web Sockets
Key Offerings	Connectivity Authentication	e-SIM , Machine Learning	Device Management	Blockchain, real- time analytics	Device Monitoring
Uses	Agriculture ,Home connectivity	Connected Vehicles,Manufacturing	Smart Parking, Manufacturing	Smart Building, Manufacturing	Retail, Healthcare

Amazon Web Services

The services provided by AWS cloud include :

DATABASE	COMPUTE	NETWORK	STORAGE
Amazon RDS	Amazon EC2	Amazon VPS	Amazon S3
Amazon Dynamo DB	AWS Lambda	Amazon Route 53	Amazon Glacier
	AWS Elastic Beanstalk		

CISCO IoT

"Zones" Is the CISCO official partner offering some best of IoT solutions:

- ■ Smart NET total care

- ■ Meraki Now

- ■ CISCO One Software

- ■ CISCO kinetic architecture

EDGE and FOG processing Module ⟵⟶ Data Control Module(DFM)
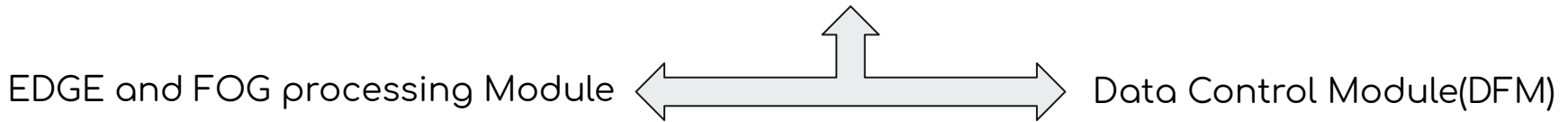
Google Cloud IoT

The industry leading infrastructure of public cloud computing service offers :

- Compute engine
- Cloud Storage
- Cloud SDk
- Cloud SQL
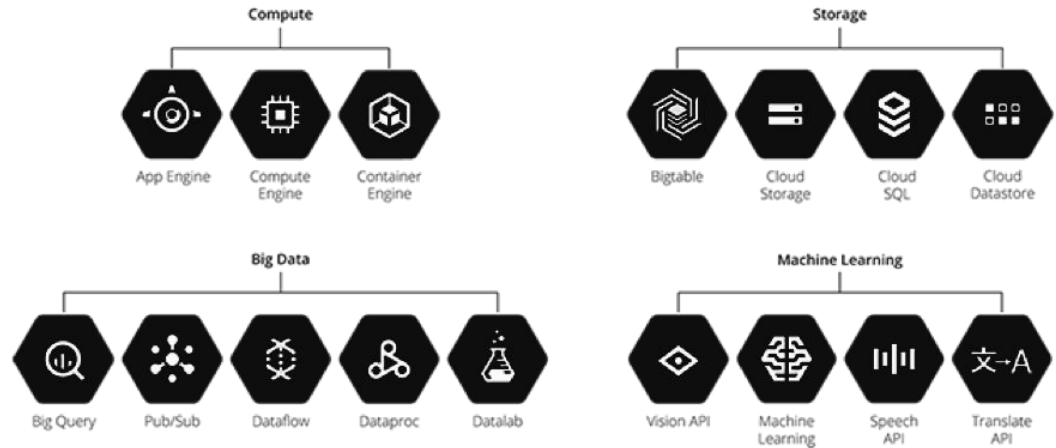- Google Kubernetes Engine
- Big Query
- Cloud CDN
- Data Flow
- Vision AI
- Cloud Run
- Cloud Function
- Anthos

Google Cloud Platform

Compute

- App Engine
- Compute Engine
- Container Engine

Storage

- Bigtable
- Cloud Storage
- Cloud SQL
- Cloud Datastore

Big Data

- Big Query
- Pub/Sub
- Dataflow
- Dataproc
- Datalab

Machine Learning

- Vision API
- Machine Learning
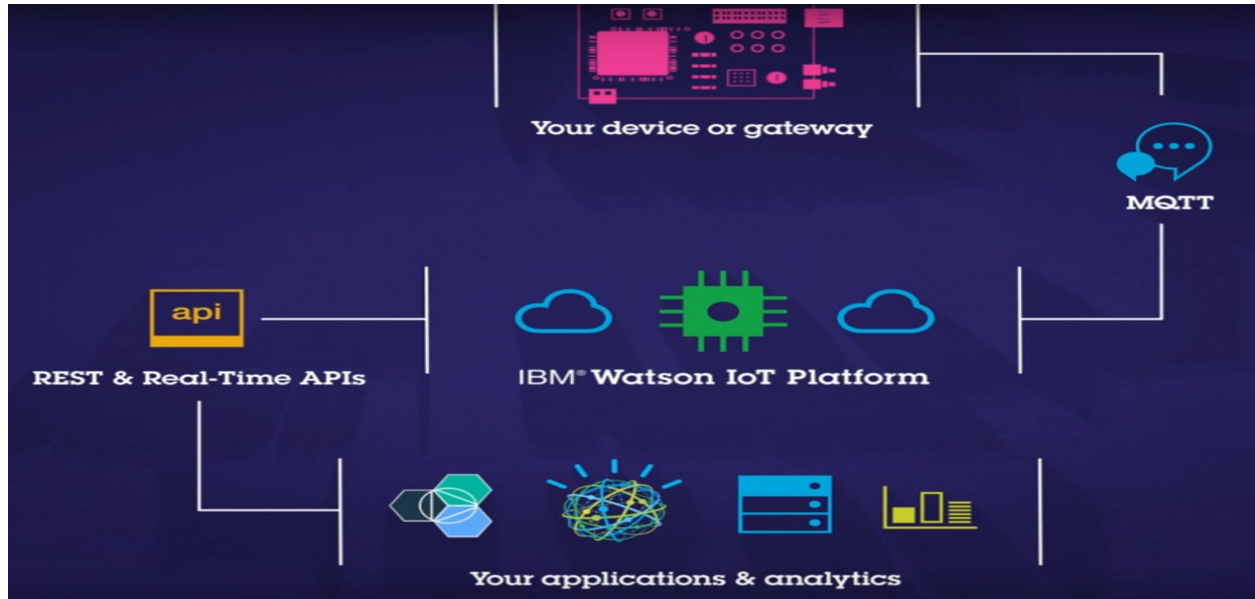- Speech API
- Translate API

IBM Watson IoT Platform

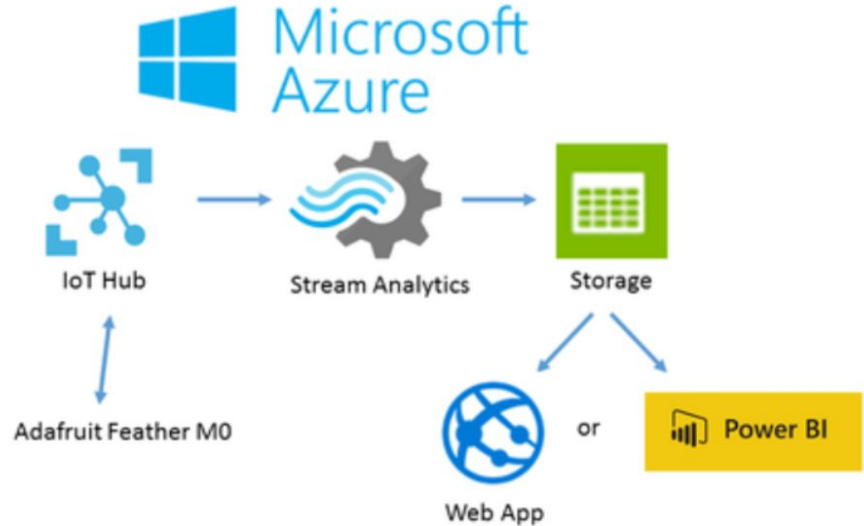✔ IBM Watson IOT   ✔ IBM Maximo   ✔ IBM TRIRIGA

Microsoft Azure IoT

- Azure IoT solution accelerators

- Azure IoT Edge

- Azure IoT Hub

- Azure Digital Twins

- Azure Time Series Insights

- Azure Sphere

- Azure RTOS

- Azure SQL Edge

Enhancement Idea

IoT presents a real opportunity to establish a more data driven and analytical point of view, for example:
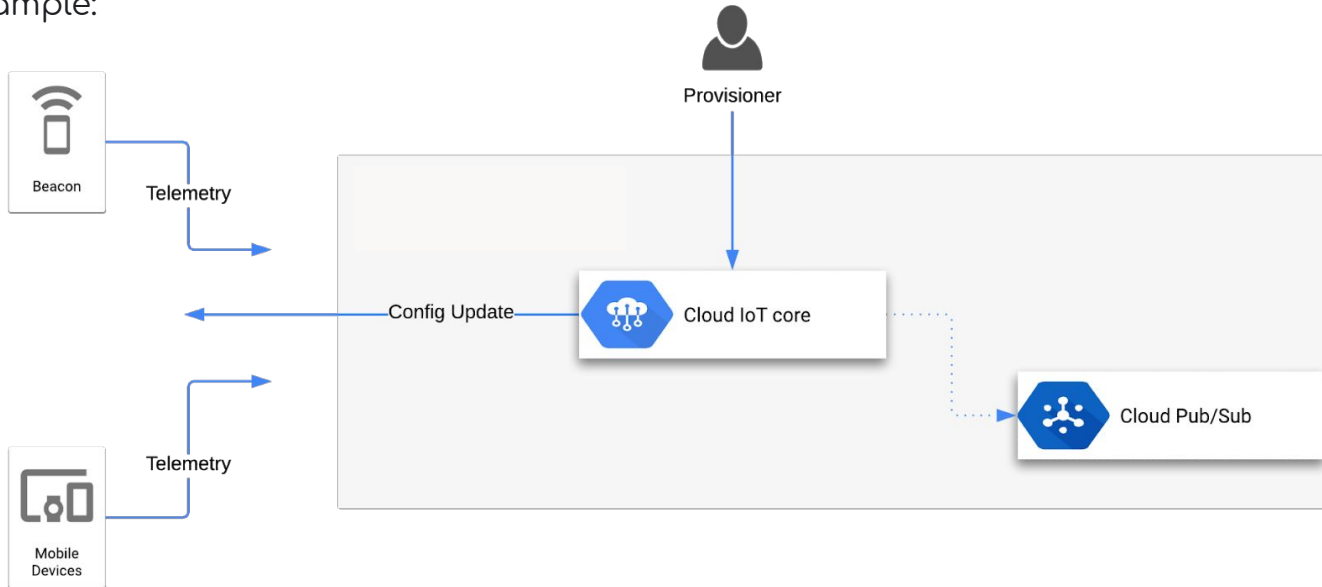
- Healthcare applications such as patient sensor monitoring
- In-home devices like smart thermostats
- Public sector applications, including monitoring pollution levels or parking

Benefits

- ✓ Ubiquitous global connectivity : achieve over 99.8% device connectivity uptime across more than 190 countries globally

- ✓ Out-of-the-box, zero-touch provisioning: automatic over-the-air (OTA) connection and setup of the device with no on-site configuration

- ✓ Central management: one global point of contact for service, support and billing for all IoT device connectivity; no need for multiple MNO contracts and associated support agreements

- ✓ Future proofed SIM technology: 5G and NB-IoT ready with support for LTE networks, which will benefit applications using all 4G networks including Cat-M1 Devices.

- ✓ Flexible integration: multiple out-of-the-box integration options with Cloud providers and device manufacturers

- ✓ Improved connectivity resilience: Fully eUICC compliant eSIM with multi-IMSI capability to allow complete autonomy to switch networks whilst preserving multiple fallback bootstraps in the event of an OTA switch under eUICC

Conclusion

- Internet of Things (IoT) is a technology that connects devices to the internet and allows them to communicate together through the medium of the internet. It is one of the most powerful and exciting developments in the Information Technology age. It involves interaction between the physical and digital world.

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Bibliography

- IOT Analytics

- How IOT works

- Top 5 solution for building IOT

- Google Cloud platform

- AWS web page: *Azure IoT Products and Services*

- Microsoft product categories

- IBM web page: *Digital Twin components.*

THANK YOU