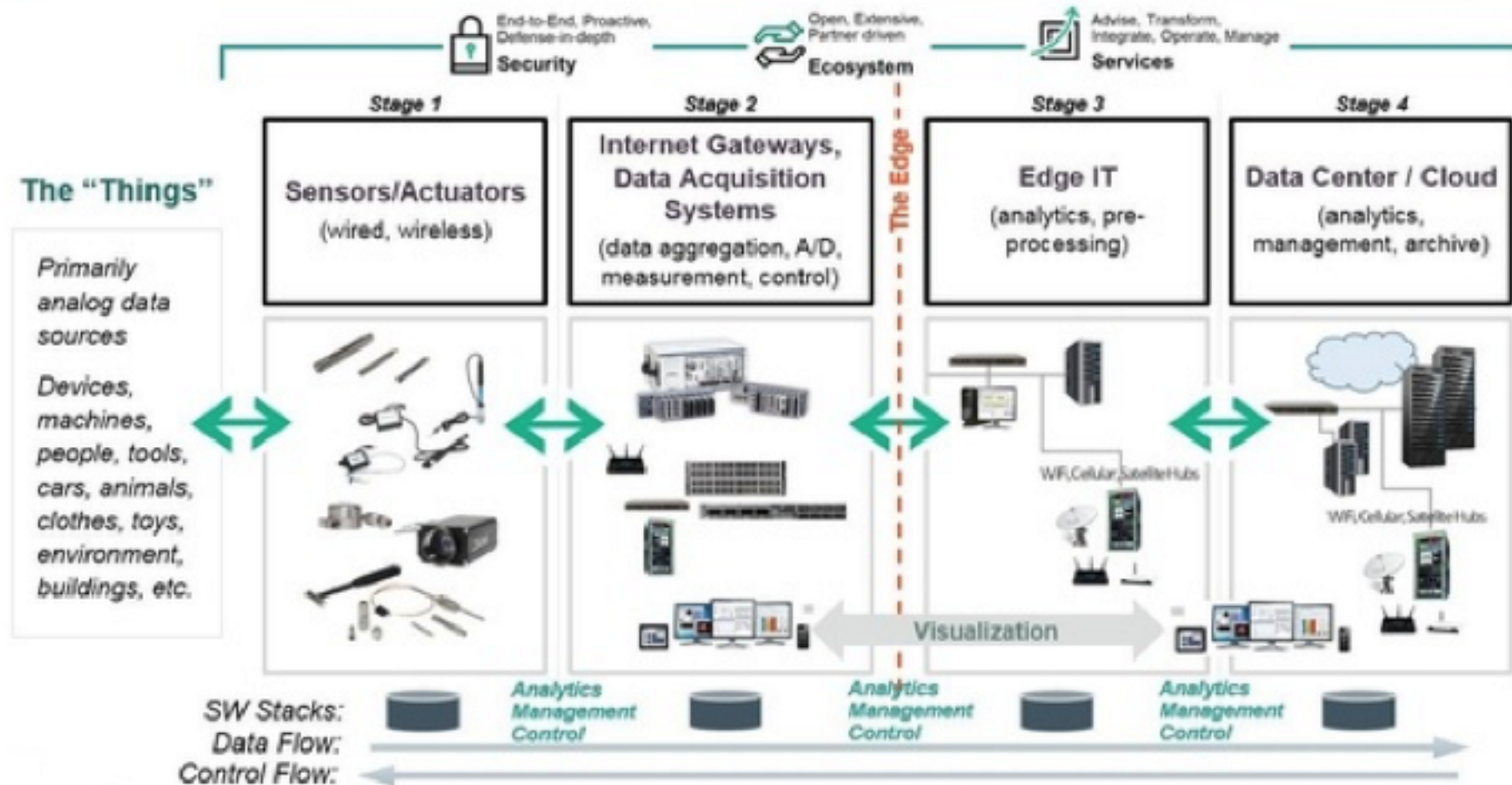
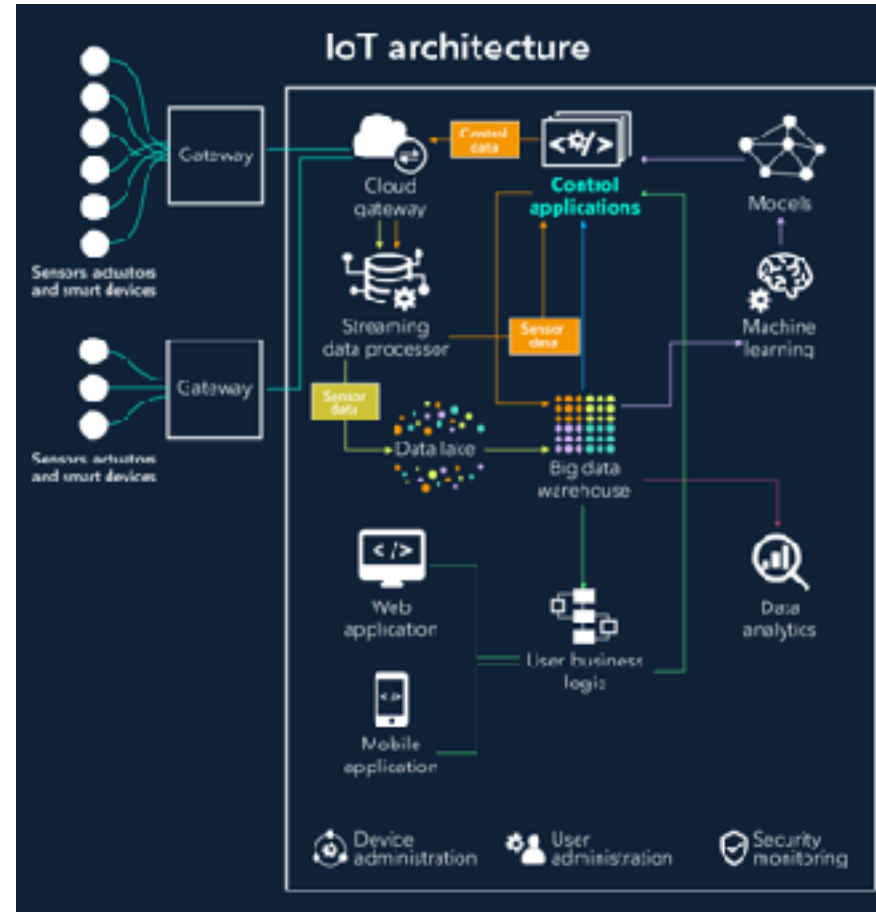


# Enterprise IoT - Microservices and Platforms

# A Quick Recap - IoT



# A Quick Recap - IoT



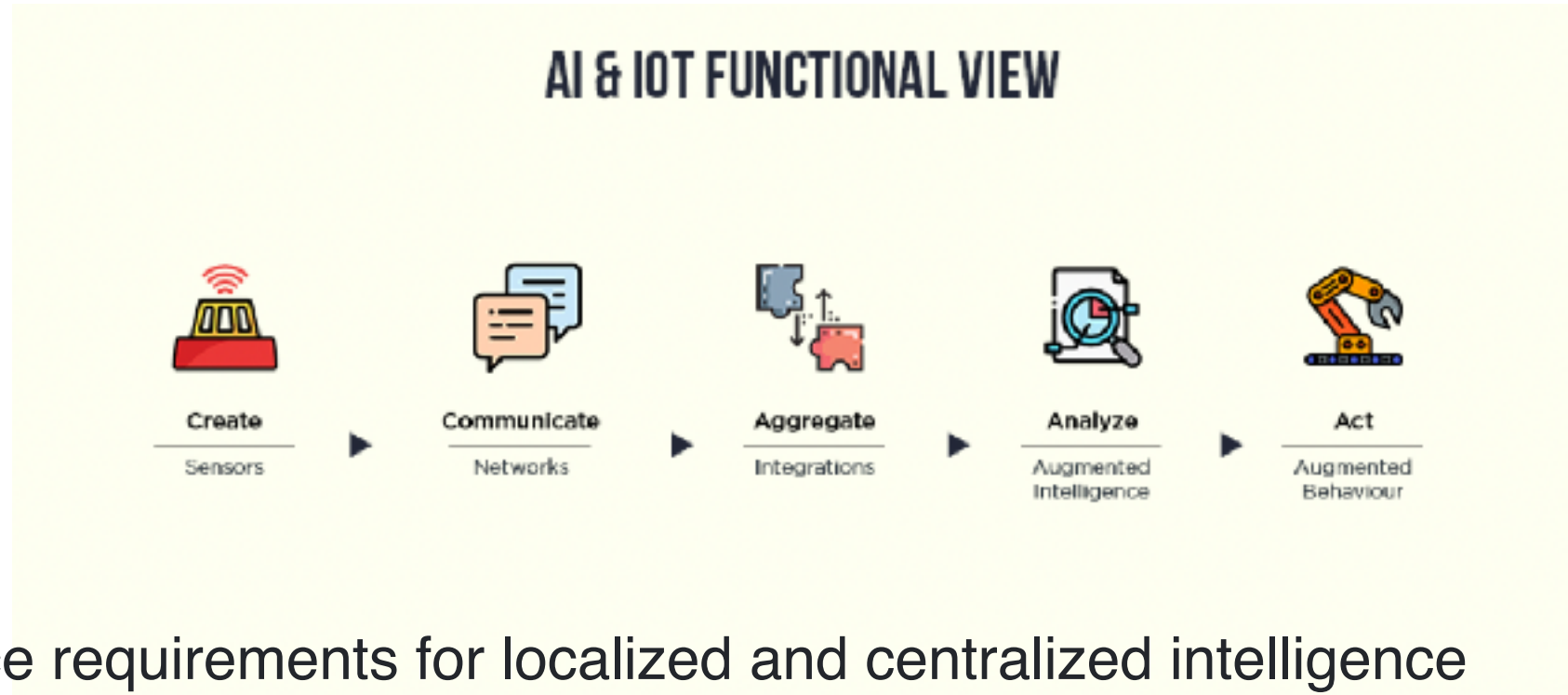
# Enterprise IoT

- Large scale commercial systems
- Industry 4.0
- Smart Grids
- Construction and Maintenance
- Smart city, E Governance solutions
- Distributed healthcare
- Environmental monitoring
- Supply chain management

# Enterprise 'Grade' IoT - Differentiators

- Communication - 5G
- Edge and Fog computing
- Security standards
- Latency – Ability to analyze data on real time
- Application Layer Complexity
- Development and Deployment Platforms

# Latest Trends and Enabling Technologies – AI & ML



- Balance requirements for localized and centralized intelligence
- Balance personalization with confidentiality and data privacy
- Maintain security against cyber attack

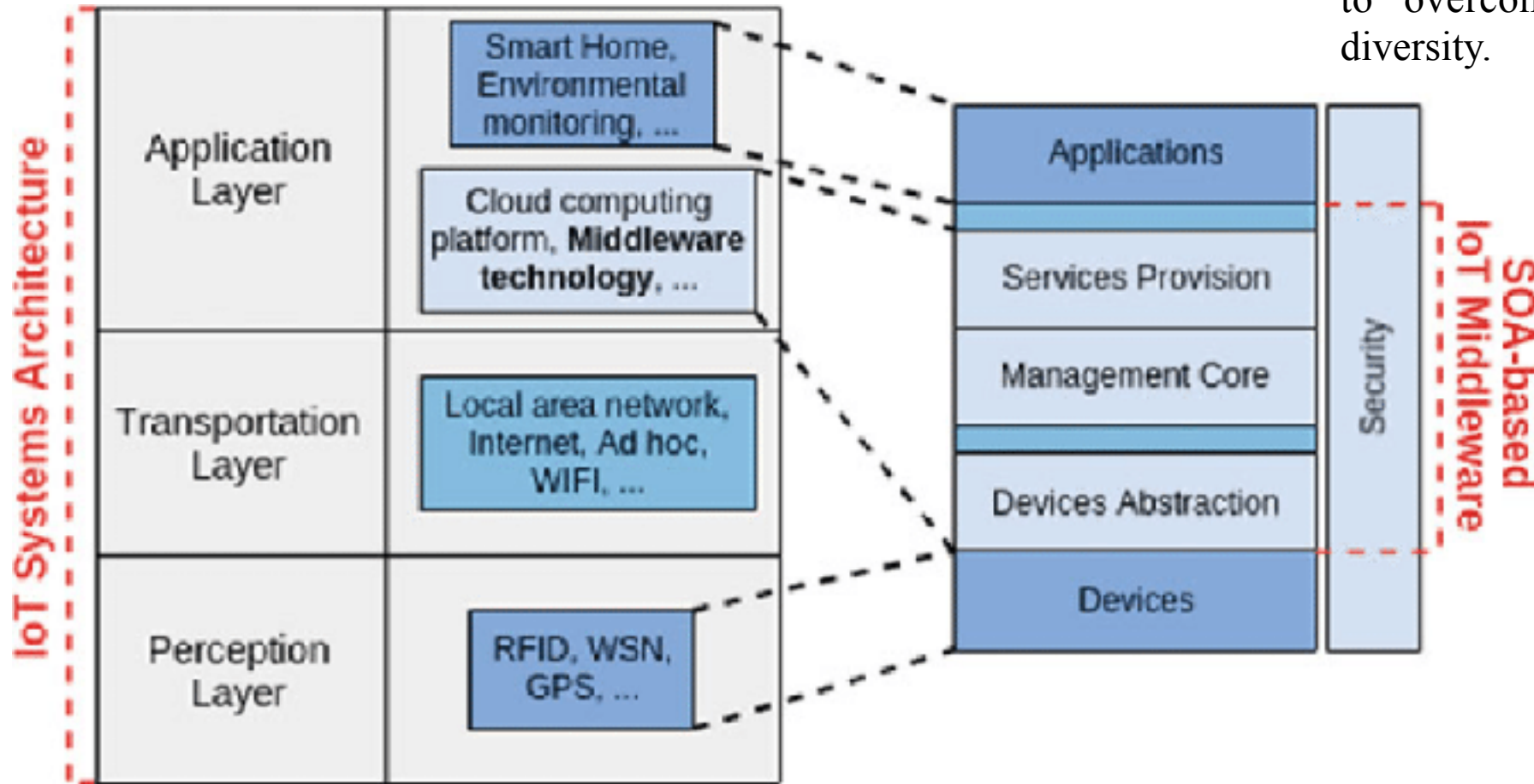
[A QuickLook \(Video\)](#)

# Enterprise IoT - Middleware

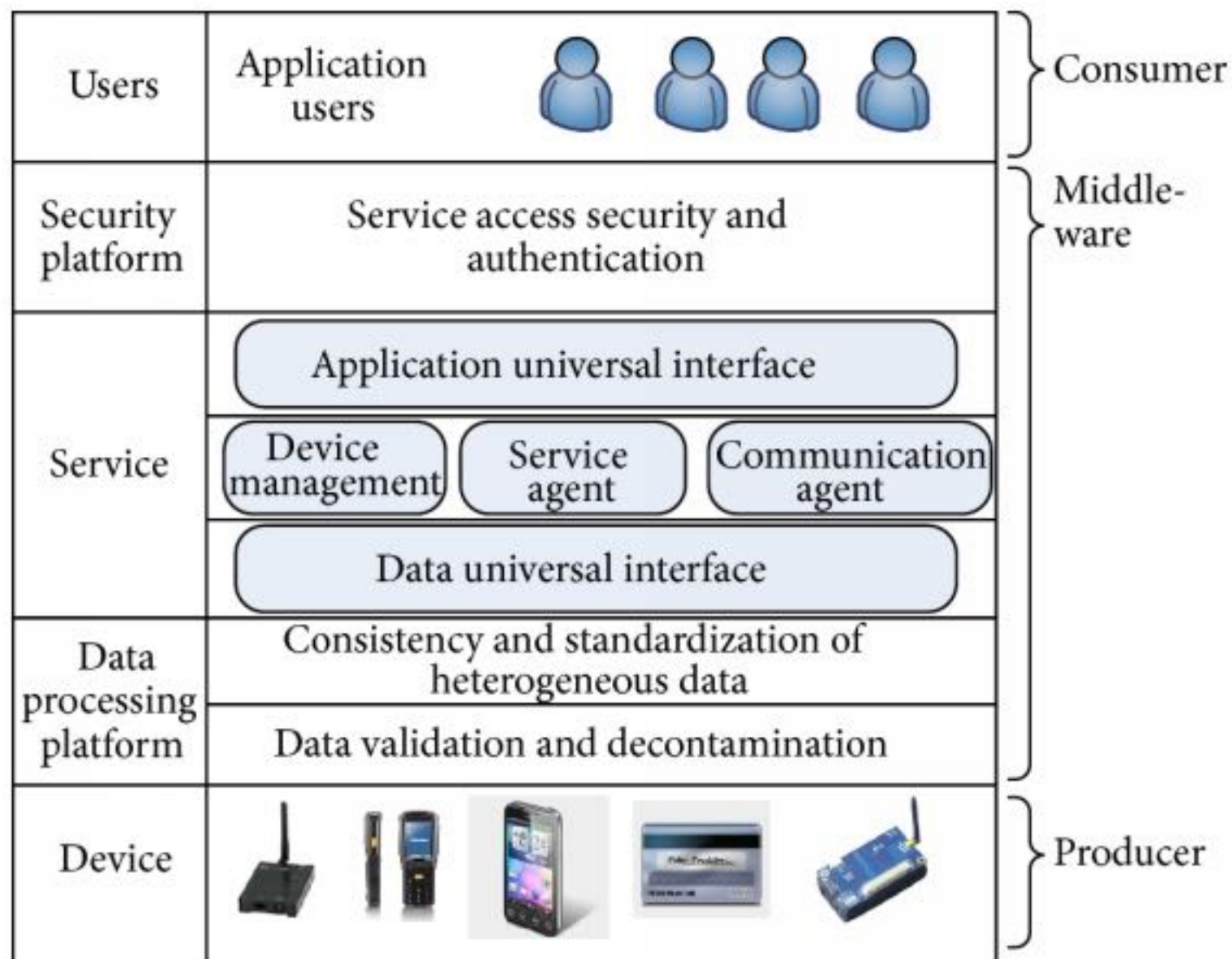
- [Middleware](#) connects different, often complex and already existing programs that were not originally designed to be connected.
- Middleware is part of the architecture enabling connectivity for huge numbers of diverse Things by providing a connectivity layer for [sensors](#) and also for the [application layers](#) that provide services that ensure effective communications.
- These products provide API management as well as basic messaging, routing and message transformation.

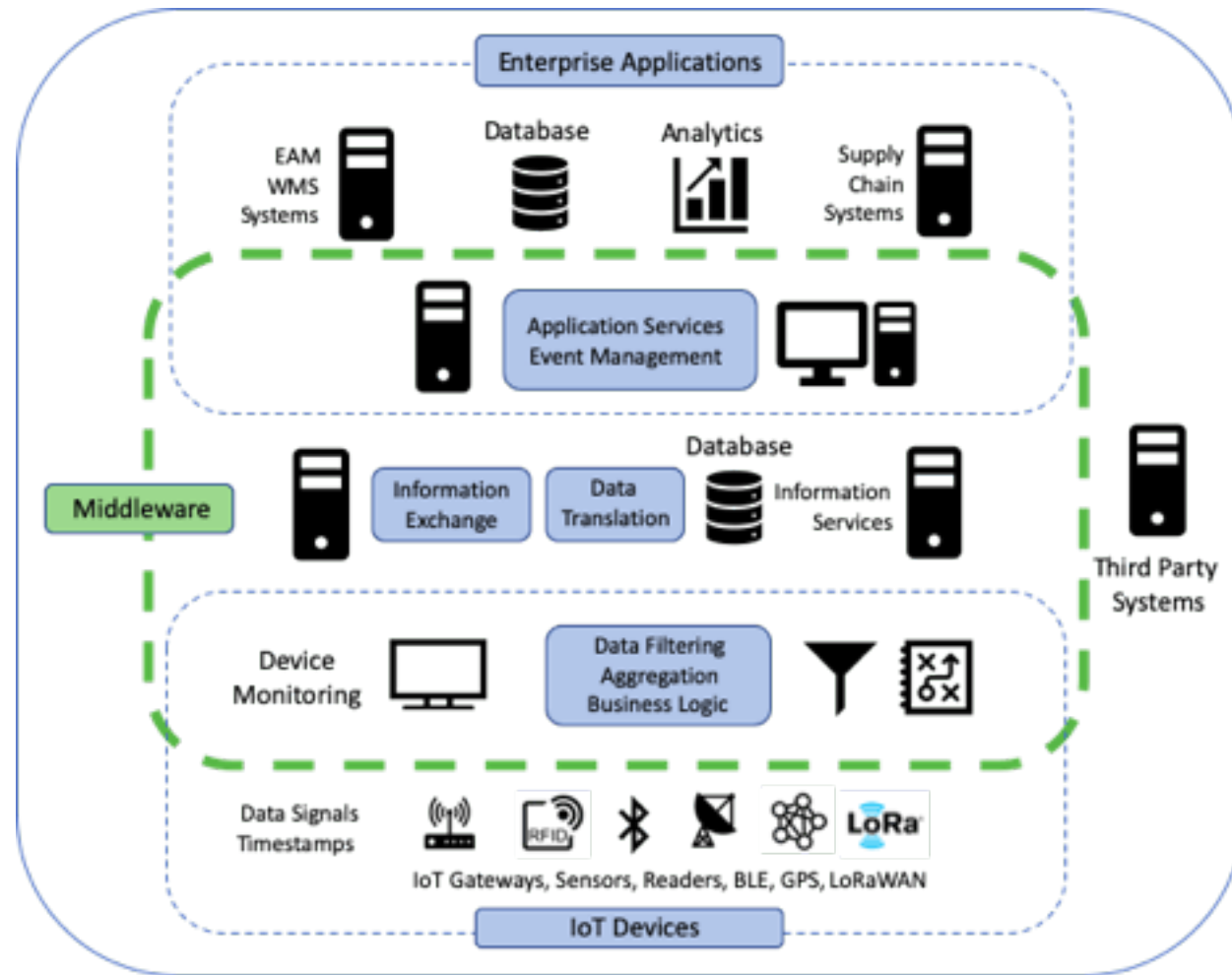
# Reference Architecture

Middleware layers provide necessary abstraction between the device layers and the application development layers to overcome the challenges related diversity.

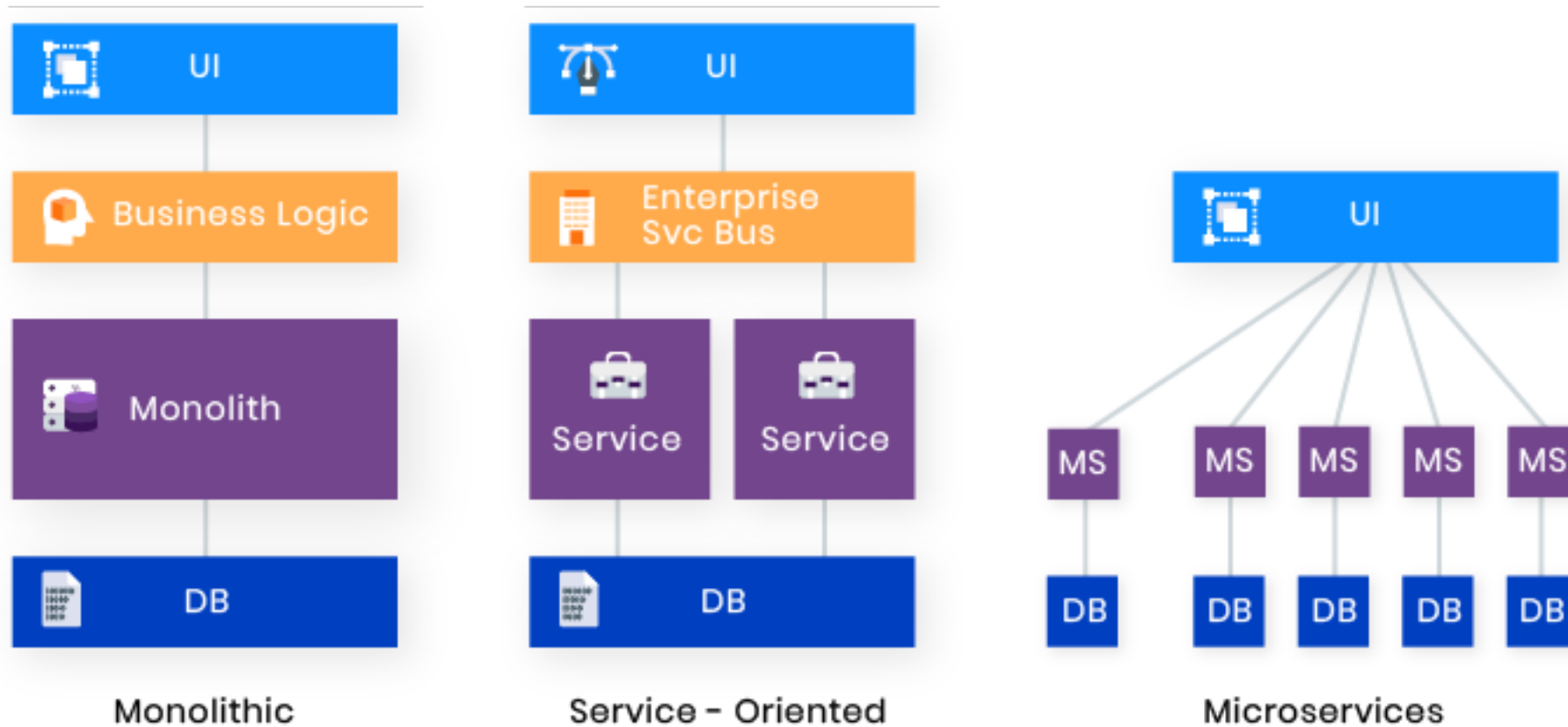




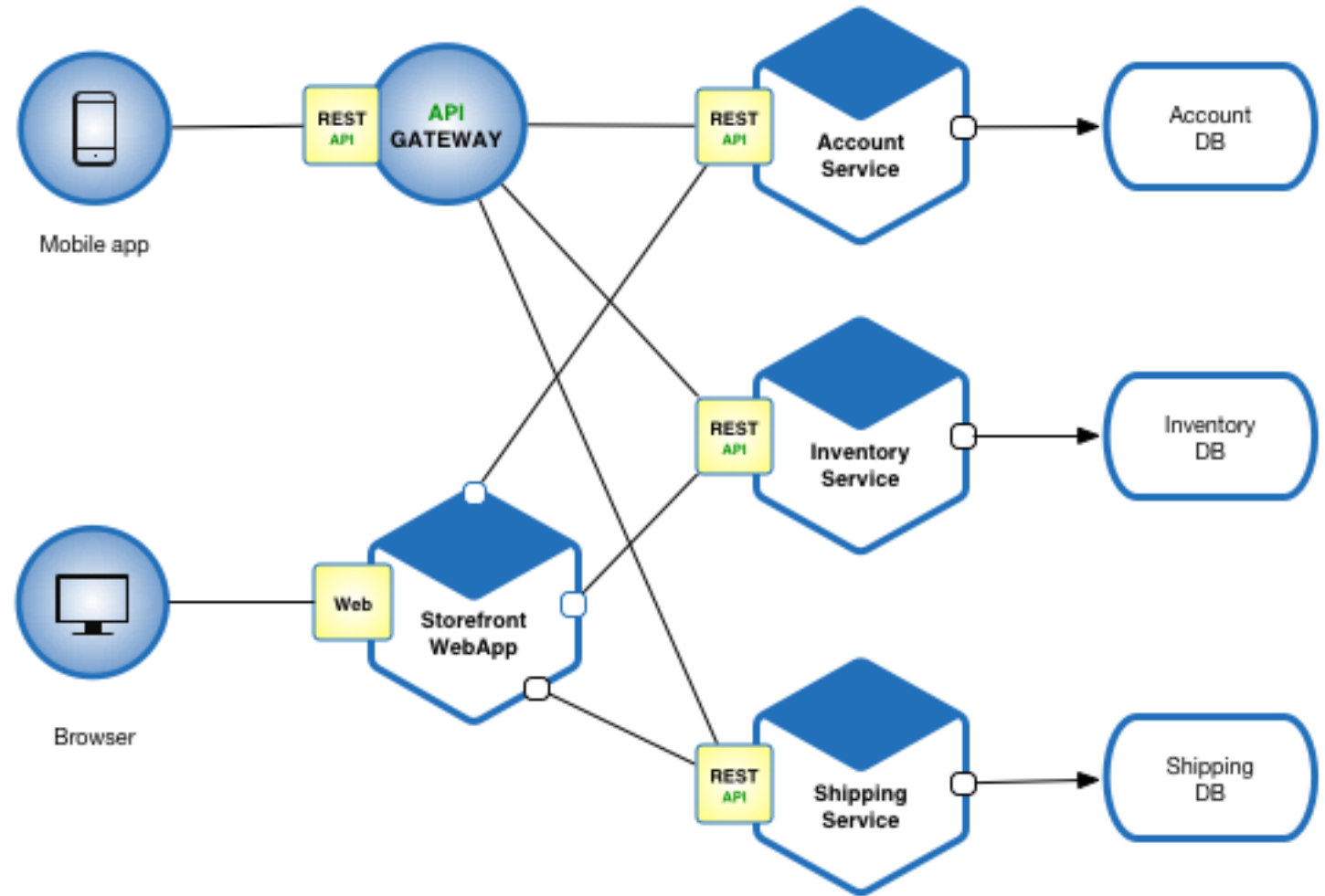




# Middleware - Architectural concerns



# Microservices



# Merits of Microservices

- Independent components
- Application scaling
- Improved fault isolation
- Easier Maintenance
- Removes technology barriers
- Fast releases
- Decreases Development Cost and Time

# Why Microservices for Enterprise IoT ?

- To handle the difficulties in developing, integrating and scaling applications in a way that is manageable or secure.

# Connectivity

- IoT depends on a complex network of devices linked to cloud-based applications, databases, software platforms and communication points. To that end, containerized microservices are lightweight, scalable and deployable on premises or in the cloud, providing the modularity needed for ubiquitous communication.
- Software teams will need to connect a whole new collection of endpoint devices, application servers, databases and AI-based analytics tools. Also to integrate these technologies with legacy software and development processes.

# Security.

- Organizations need to manage and mitigate the risk factors associated with the physical device breaches and sensitive data exchanges associated with IoT. Due to the loose coupling found in a microservices architecture, services become less attractive doorways into larger systems and can be patched with security updates quickly.



# Flexibility

- The ability to quickly adapt application functionality and provide ever-growing support for evolving technologies is a must, especially given the rate that IoT has evolved over the past few years. The adaptive nature of a microservices architecture enables you to quickly introduce new services or replace old services without disrupting the application.

# Data integrity

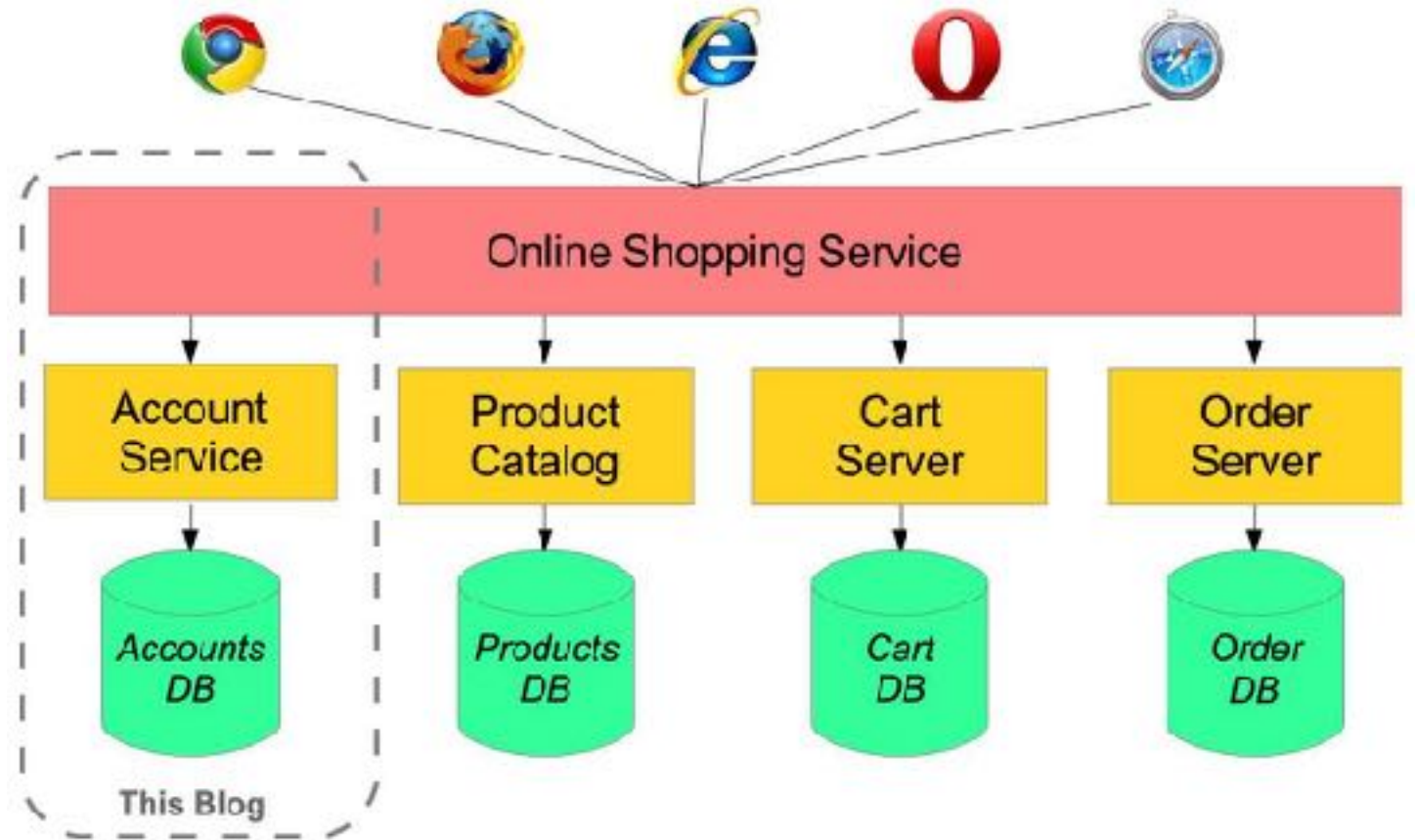
- IoT absolutely relies on an organization's ability to design a sensible and reliable plan when it comes to collecting and processing critical data, especially when that data lives in legacy systems. While specific microservices that need significant computing can be moved to the public cloud, those that need faster response times or more security can readily deploy services locally.

# To capitalize the benefits of..

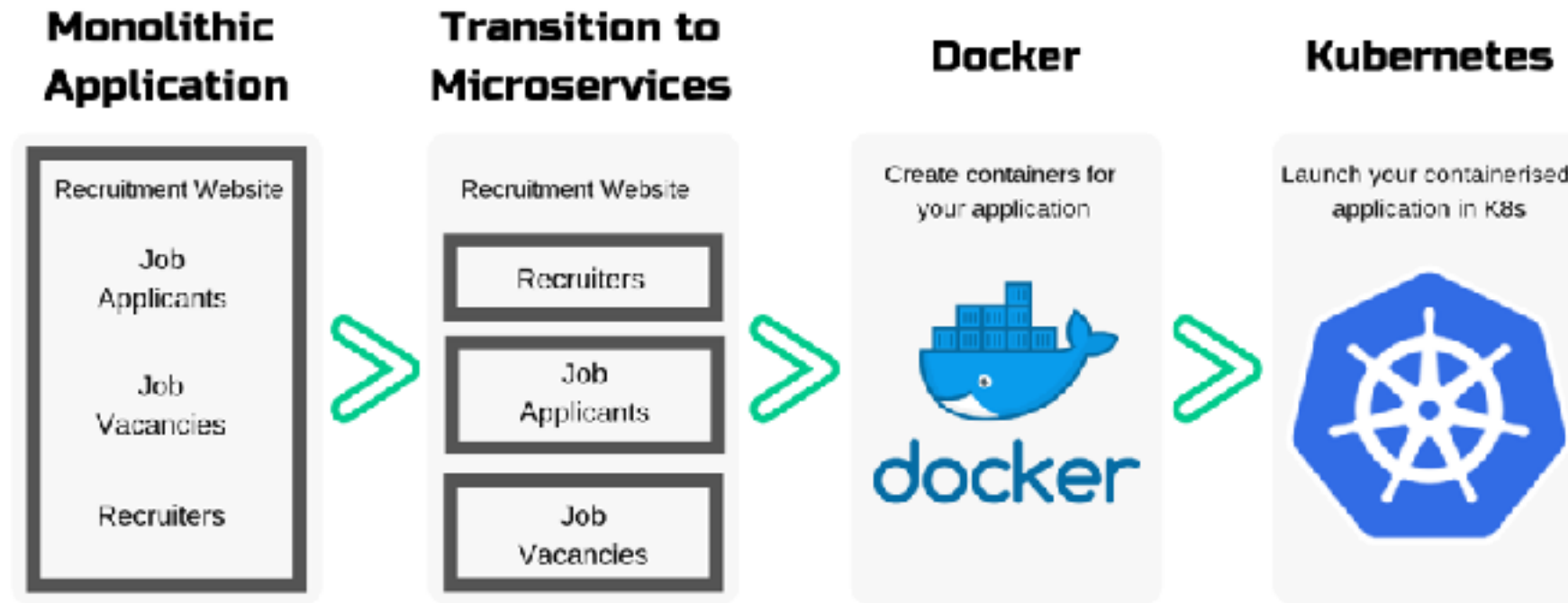
- Containerization
- Independent deployment
- Devops
- CI and CD.
- Cloud native application development.

# Hands on Microservices

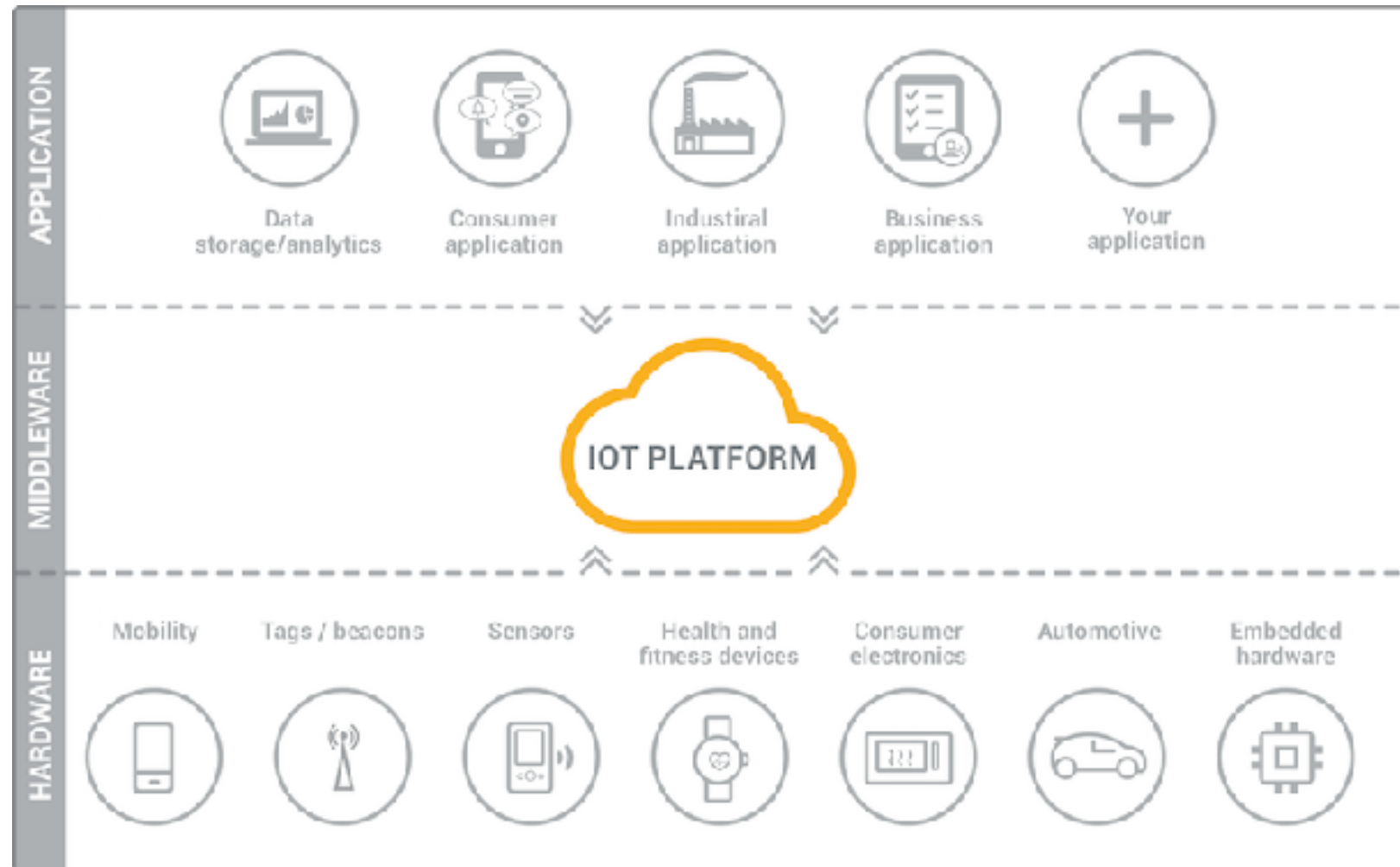
<https://spring.io/blog/2015/07/14/microservices-with-spring>



# Microservices with Containers



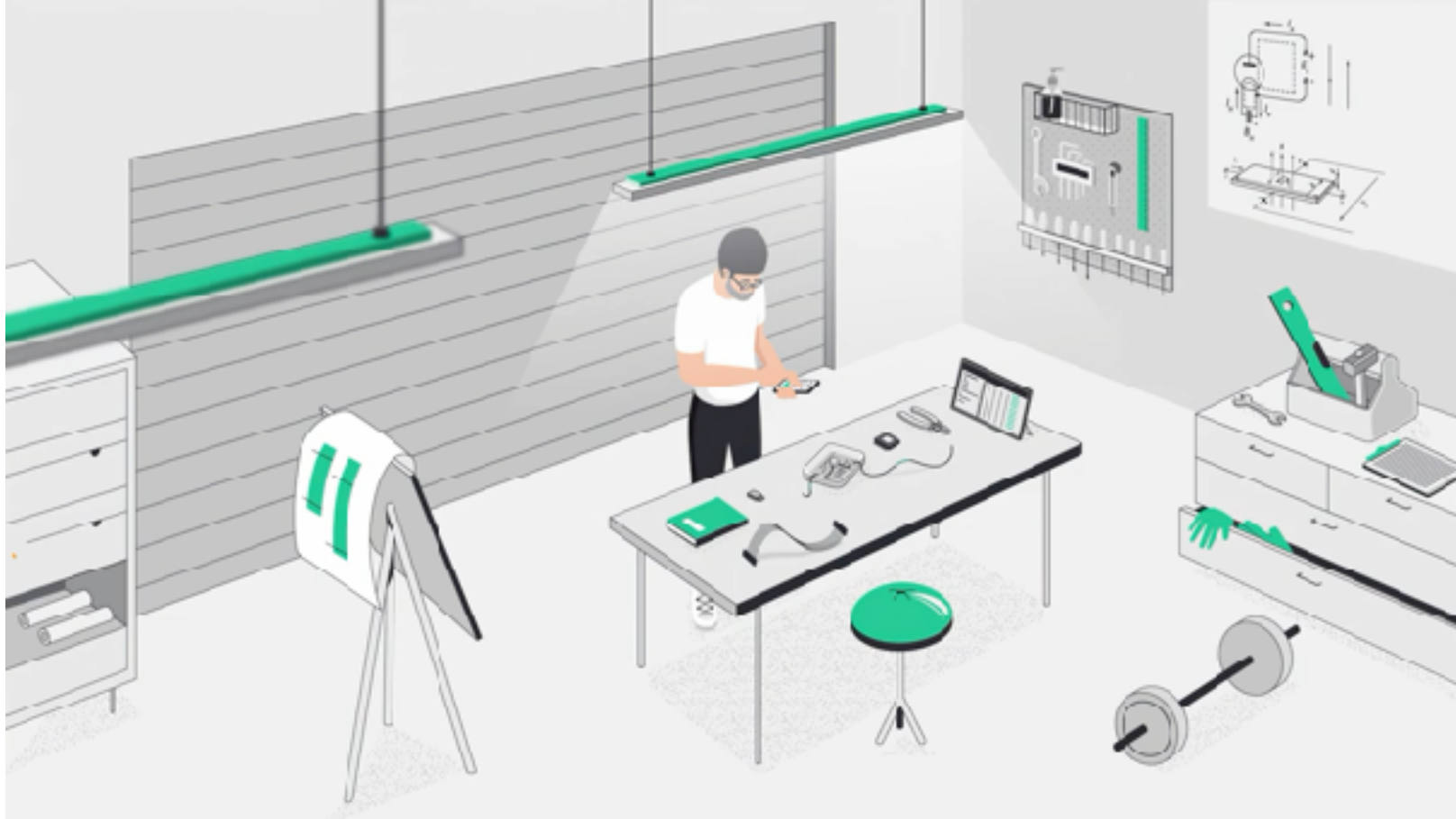
# IoT Platform



# Enterprise IoT - Platforms

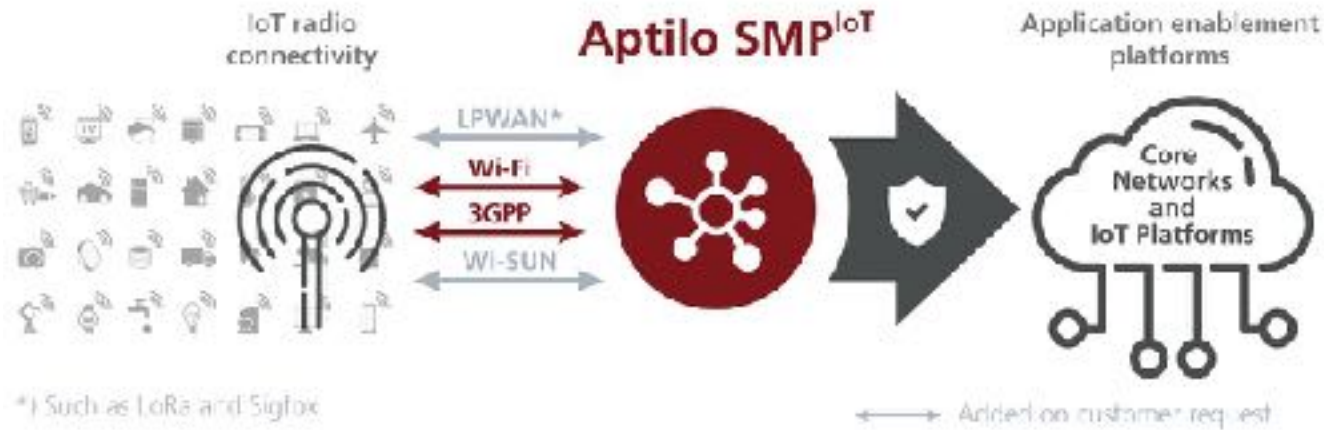
- A multi-layer technology which is used to manage and automate the connected devices, interfaces, applications is known as the **IoT platform**.
- It is a service which helps us in bringing the physical objects online. This platform will provide us with the services to connect the devices for a machine to machine communication.
- Industrial IoT platforms are generally cloud eco systems also known as IoT platforms-as-a-service (PaaS) available for anyone to build cyber-physical connected solutions.

# Blynk IoT Platform





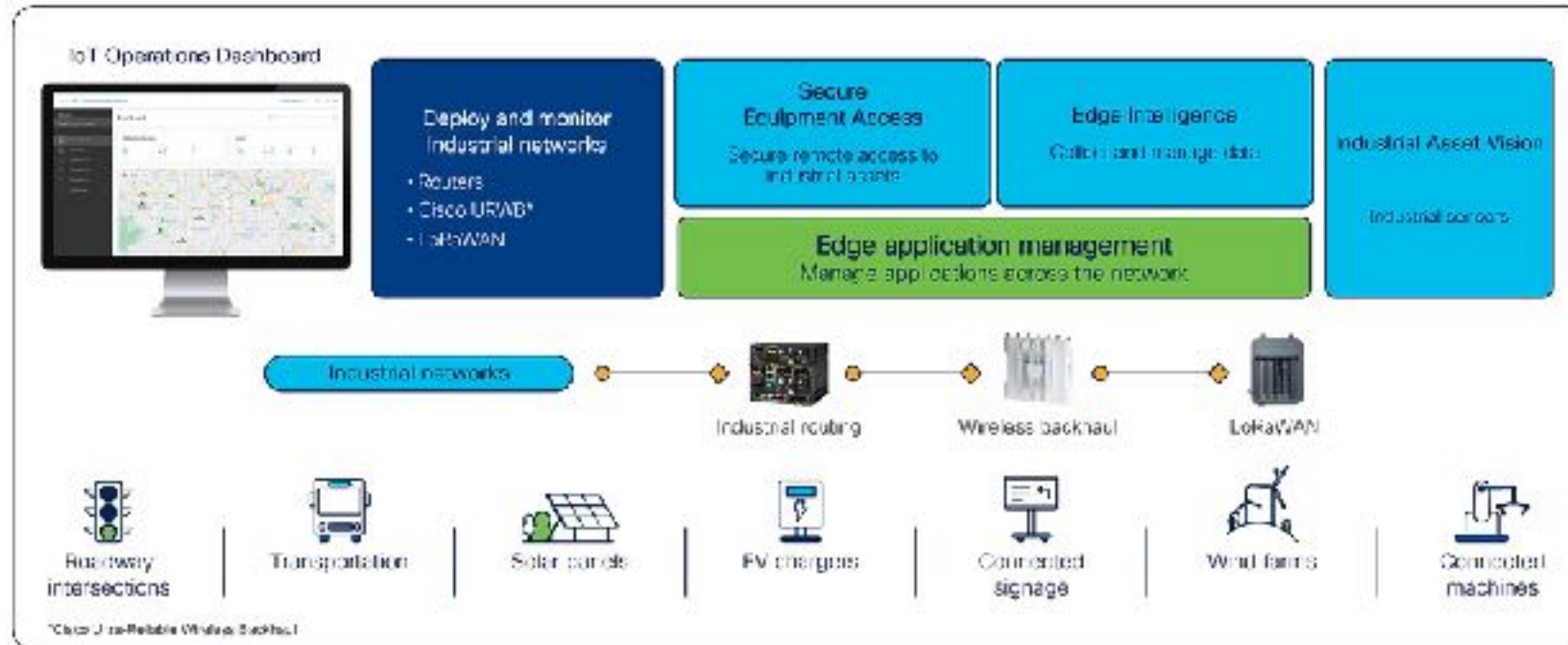
# 1. IoT Connectivity Platforms



- An IoT Connectivity Platform is used to manage and monitor the communication protocols that connect devices across WiFi, bluetooth, and mobile internet. These platforms provide a user-friendly interface for the provisioning and management of devices.
- Running connected devices on a platform like this helps organizations reduce operating costs by making their networks more efficient and more stable. This reduces the cost of deploying these systems into new locations and maintaining them over time.

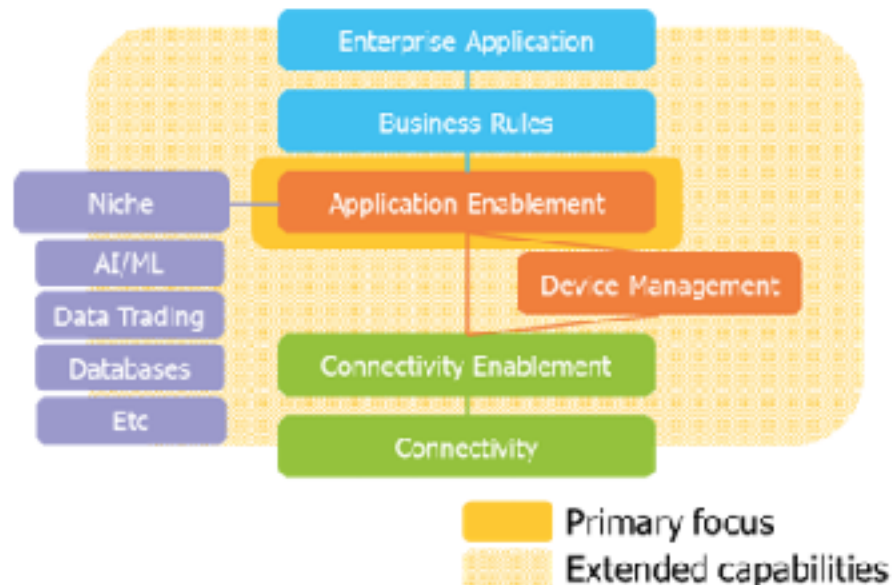
## 2. IoT Device Management Platforms

- IoT Device Management Platforms provide tools for large organizations to monitor, troubleshoot, and update connected devices remotely. These platforms can handle the secure provisioning, configuration, and tracking of thousands of connected devices in real-time.
- Device management platforms also provide support for over-the-air software updates. These platforms allow organizations to keep their devices up-to-date, secure, and compliant with industry standards without the need for IT staff to spend hours upgrading every system on-site.



# 3. IoT Application Enablement Platforms

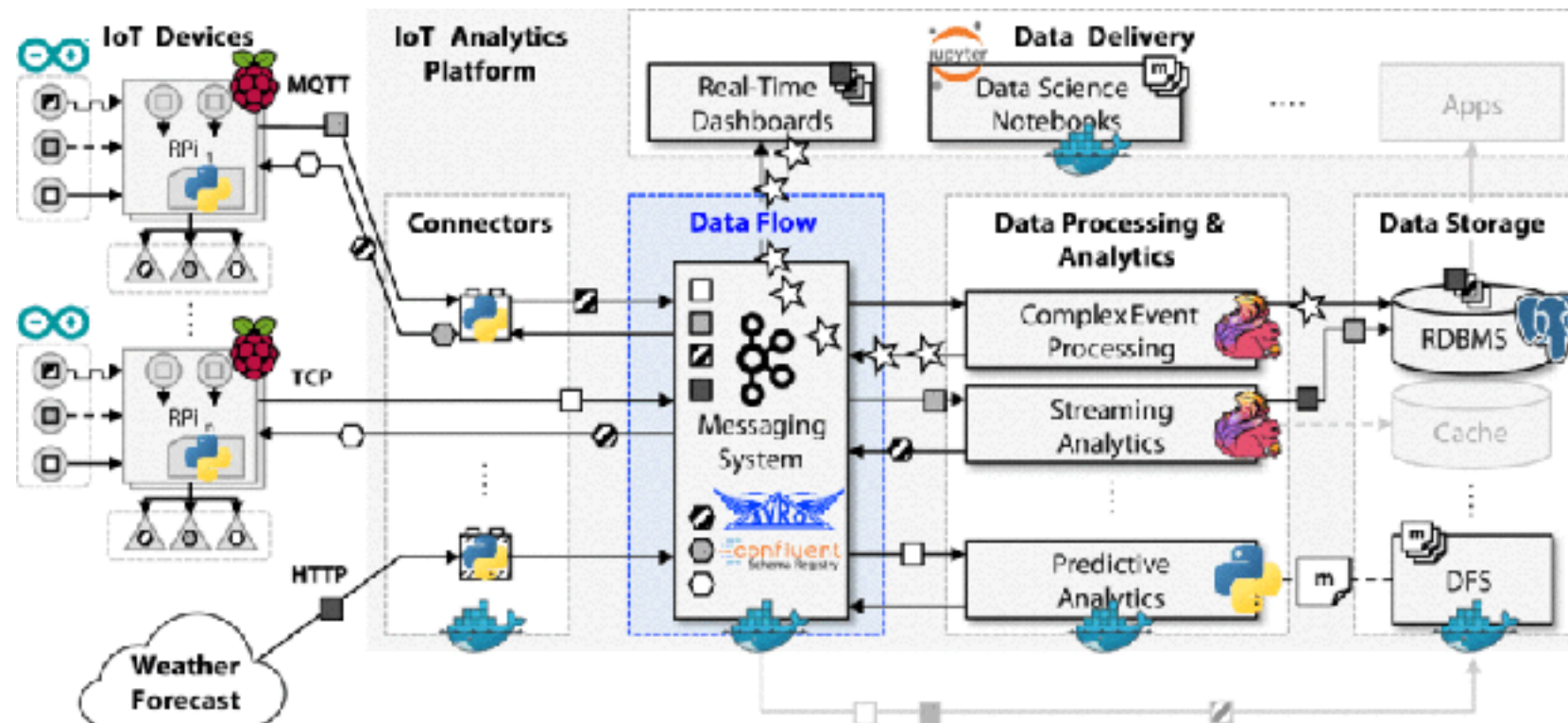
- IoT Application Enablement Platforms create and deploy applications that leverage IoT data, whether they're smart home devices or industrial control systems.
- They also allow organizations to quickly develop scalable, secure, and feature-rich applications that are ready to be integrated with a wide range of IoT platforms, such as HomeKit or Google Cloud Platform, and gather the usage data they need to improve their operation.

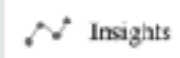


- **Application Enablement:** central orchestration, often includes other platform functions (below).
- **Device Management:** where necessary, for specific devices.
- **Connectivity Enablement:** supports provision of connectivity.
- **Connectivity:** provides connectivity services.
- **Business Rules:** ITTT (If this, then that).
- **Enterprise Application:** enterprise application integration and enterprise platforms.
- **Niche:** wide range of specialist niche platforms.

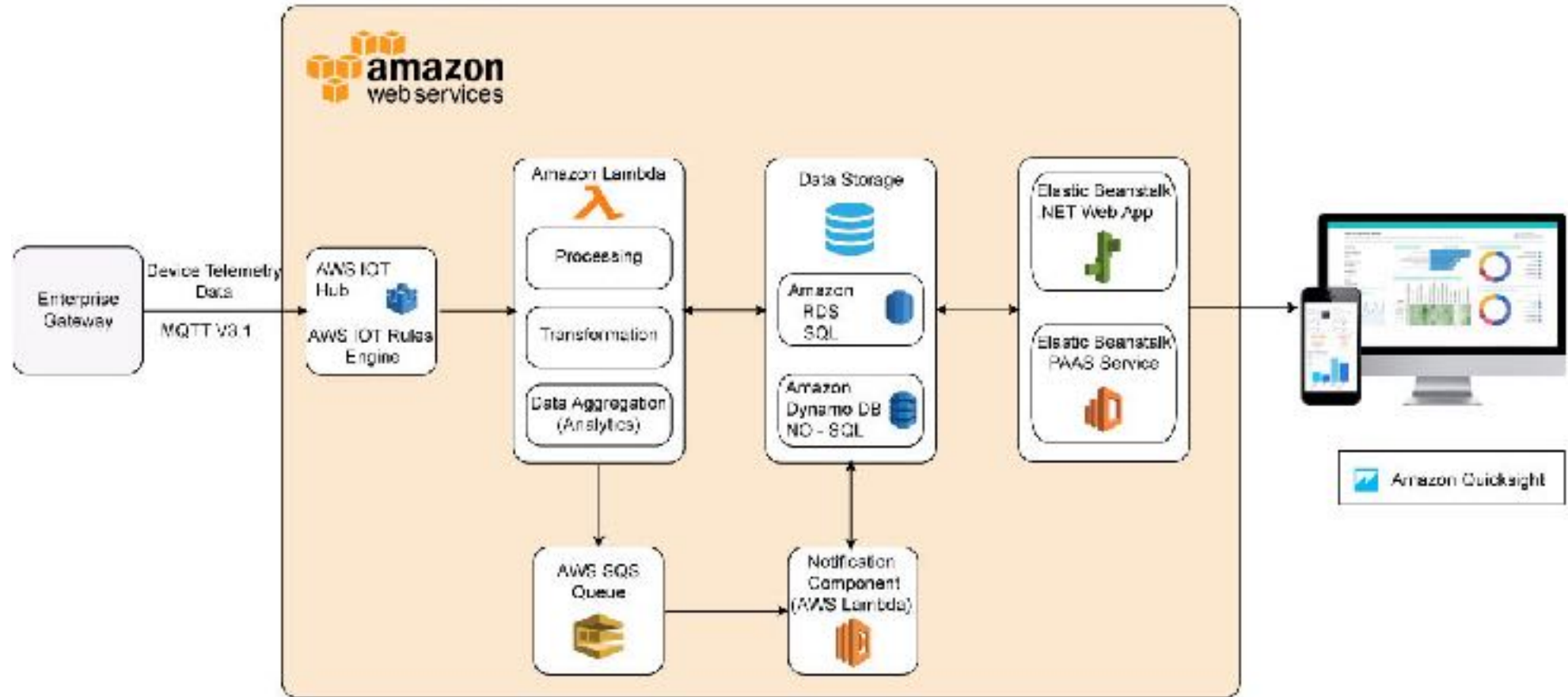
# 4. IoT Analytics Platforms

IoT Analytics Platforms help organizations gain insight into the data generated by their connected devices. Similar to something like Google Analytics, these platforms make it easy to perform in-depth analysis of the data gathered from connected devices, helping organizations to unlock the full potential of the IoT data.



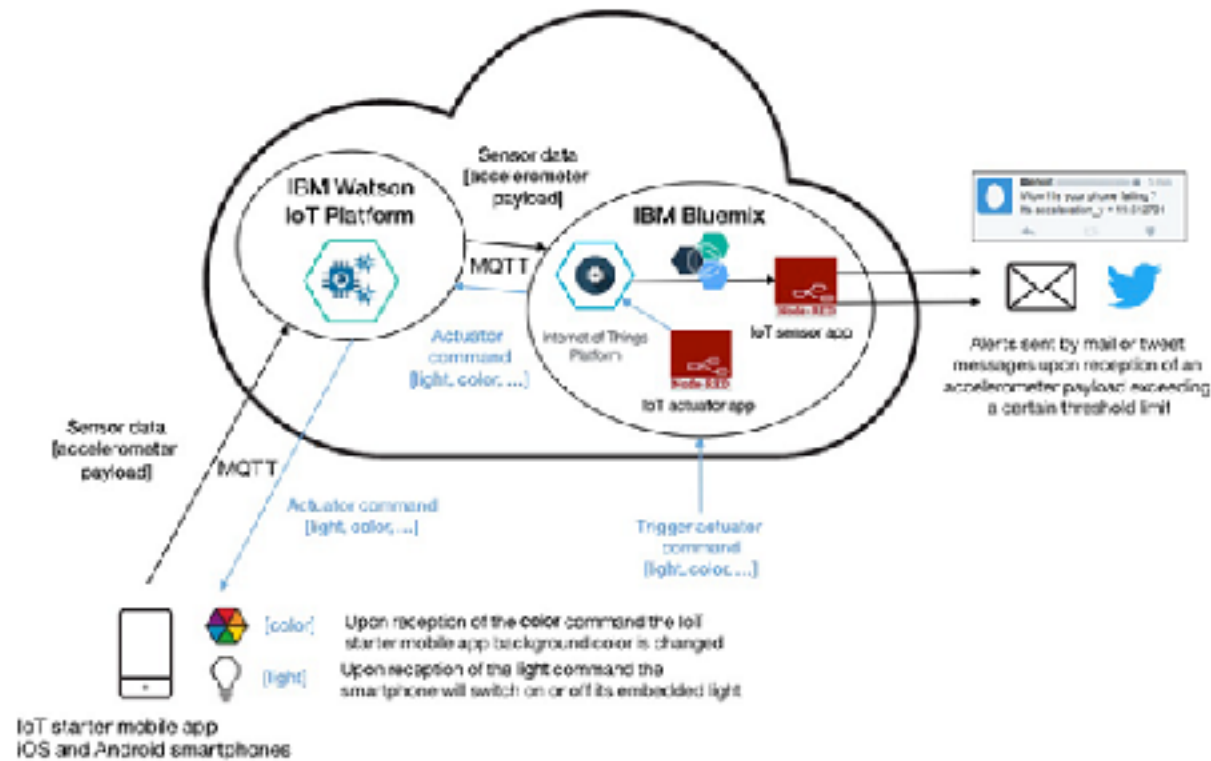


# Amazon IoT platform

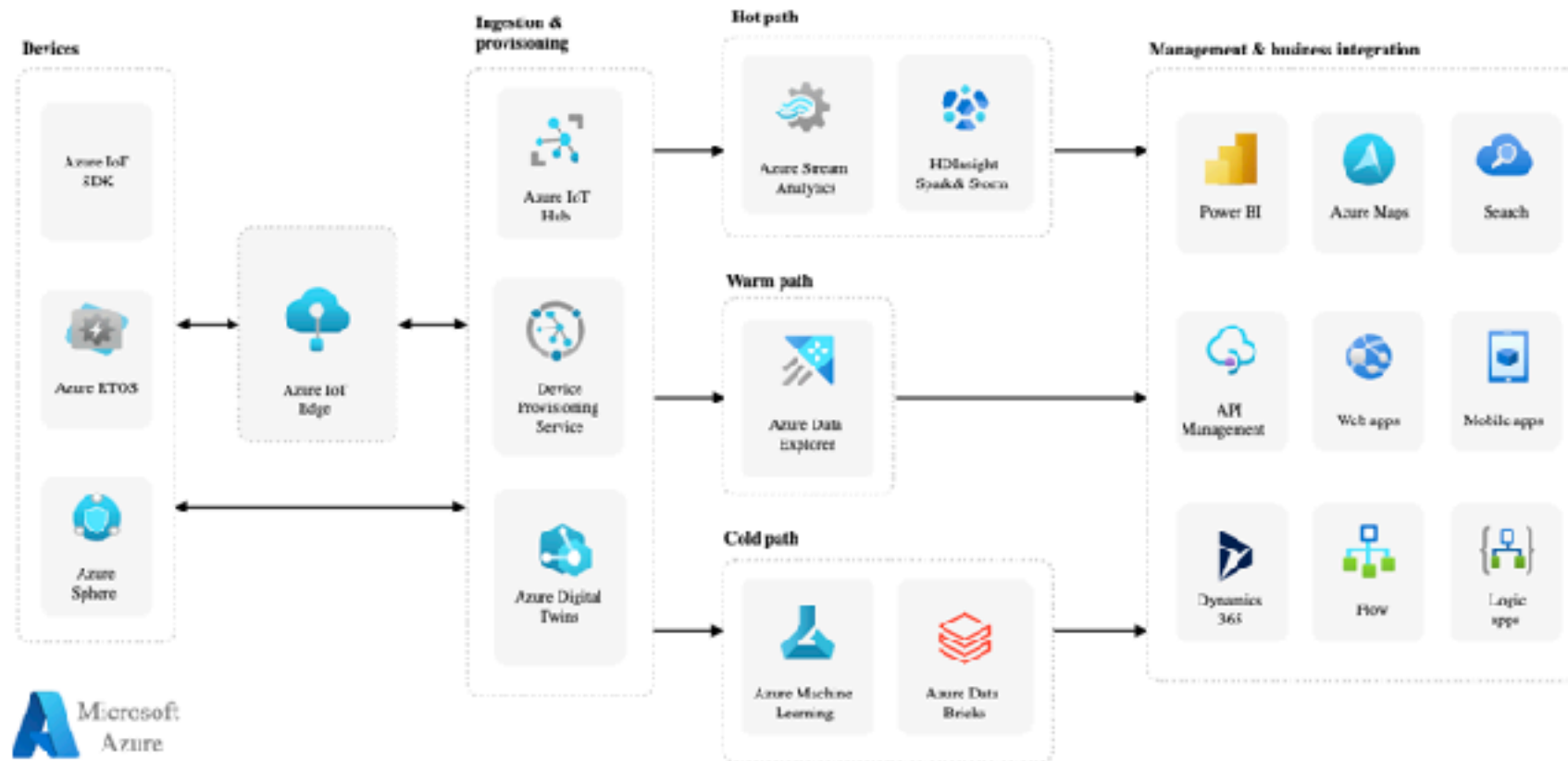




# IBM Watson IoT Platform



# Microsoft Azure IoT Platform







Thank you.

# Top 10 IoT Platforms

