

# Introduction to IoT



- 1. Define Internet of Things (IoT)
  - 1. who coined the term
  - 2. internet
  - 3. things
- 2. IoT Proliferation
- 3. IoT Architecture/Stack

# **Defining Internet of Things (IoT)**



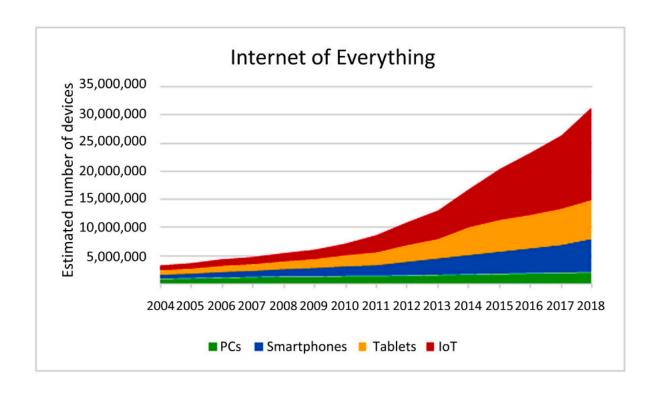
- Kevin Ashton (1999):
  - Things
    - RFID Sensors
    - Supply Chain
  - Internet



- New way of thinking IoT:
  - Ubiquitous and Heterogenous
  - Lots of Data
  - Services and Value
  - Scalable and reliable

## **IoT Proliferation**







# **Internet of Things Uses By Industry**



#### **HOME**

- · Smart Temperature Control
- · Optimized Energy Use



#### **INDUSTRIAL**

- Machine-to-Machine Communication
- · Quality Control



#### **AUTOMOTIVE**

- · Vehicle Auto-Diagnosis
- Optimized Traffic Flow
- · Smart Parking



#### **AGRICULTURE**

- Offspring Care
- · Crop Management
- · Soil Analysis





#### **MILITARY**

- · Situational Awareness
- · Threat Analysis



#### **MEDICAL**

- · Optimized Patient Care
- Wearable Fitness Devices
- · Quality Data Reporting



#### **ENVIRONMENTAL**

- Forest Fire Detection
- · Species Tracking
- · Weather Prediction



#### RETAIL

- · Theft Protection
- · Inventory Control
- Focused Marketing



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### IoT Architecture/Stack



**API Management** Dashboard/Web Portal **Event Processing and Analytics** Service Repository Authorization, Resource Management and Discovery and Access Control Enterprise Shared Bus and Message Broker Identification, Communications Layer Devices, Sensors, Human Operators

Device Management

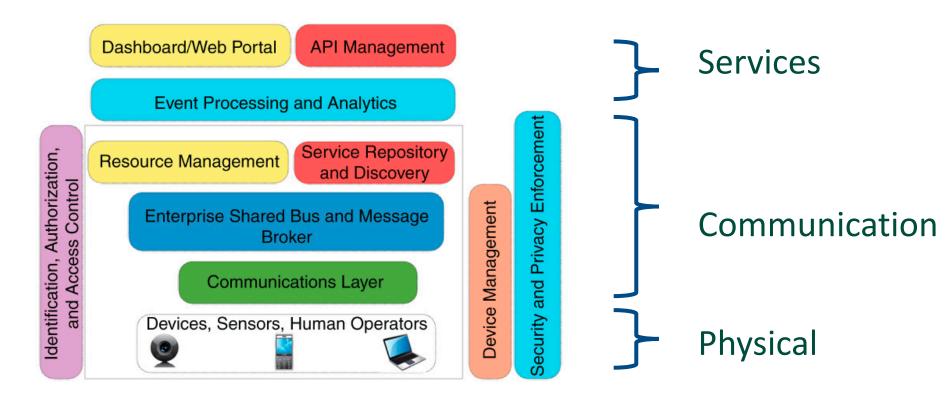
Enforcement

Privacy

Security and

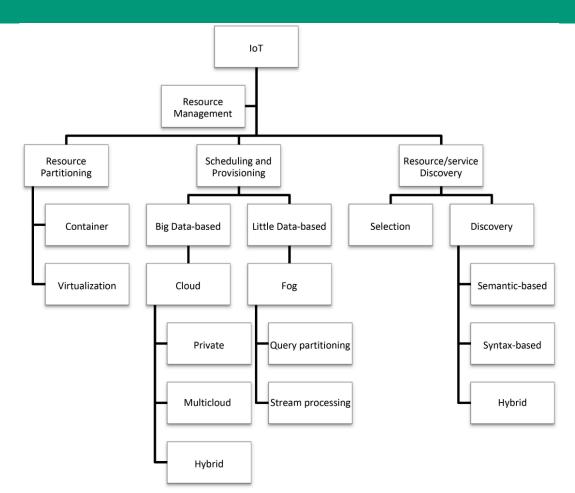
### **IoT Architecture/Stack**





## **Resource Management**





## **Cloud Vs Fog**



Table 1.1 Cloud Versus Fog		
	Fog	Cloud
Response time	Low	High
Availability	Low	High
Security level	Medium to hard	Easy to medium
Service focus	Edge devices	Network/enterprise core services
Cost for each device	Low	High
Dominant architecture	Distributed	Central/distributed
Main content generator—consumer	Smart devices—humans and devices	Humans—end devices