

Bahan Ajar

Chapter 1



Materi Pembelajaran

Matakuliah :

Internet of Things (IoT) Security

Kode Matakuliah : SKO 21431

Prodi : **SISTEM KOMPUTER**

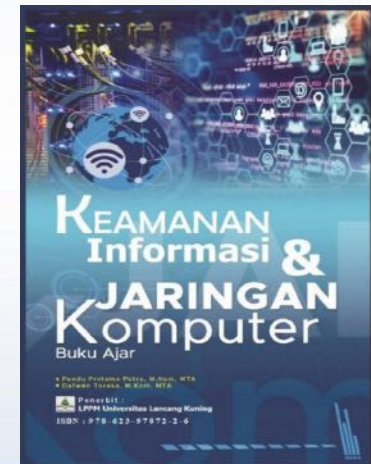
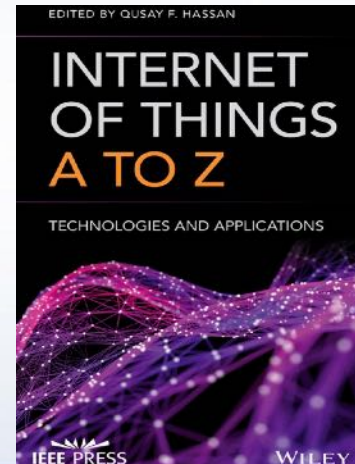
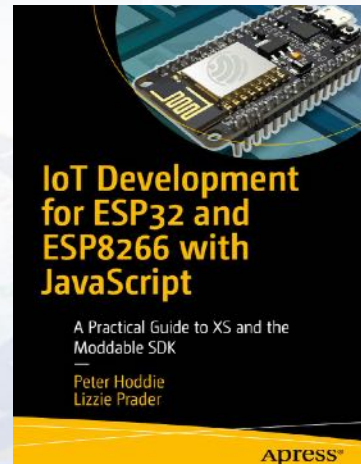
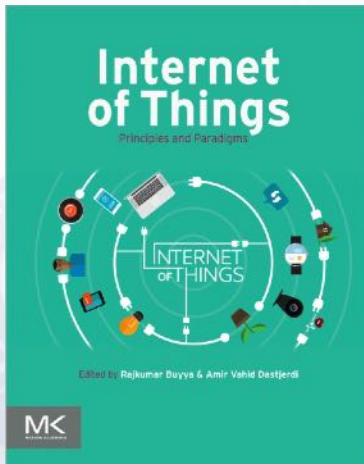
Dosen Pengampu Matakuliah:

Bayu Nugroho, S.Kom., M.Eng

Introduction

IoT Application

- Kontrak Perkuliahan & Instrument Assessment
- Rencana Pembelajaran Semester (RPS)
- Tugas Mandiri (Teori & Praktikum)
- Buku Acuan :



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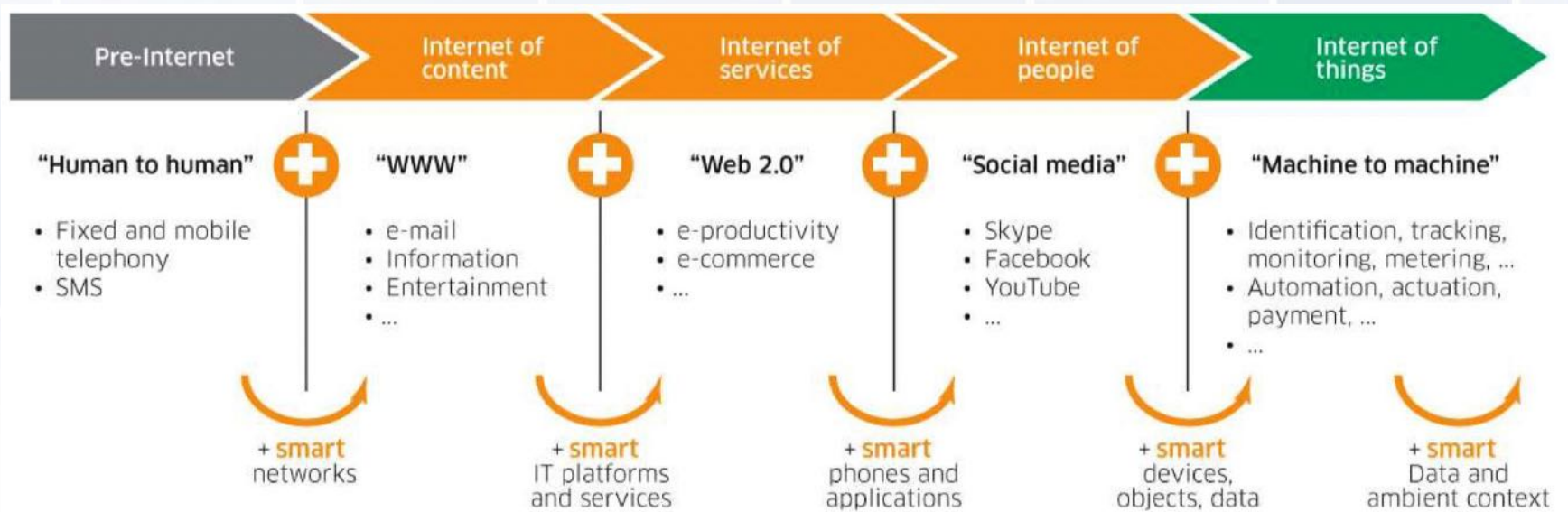
Tugas Mandiri

Internet of Things (IoT) Introduction

- IoT comprises things that have unique identities and are connected to the Internet.
- The focus on IoT is in the configuration, control and networking via the Internet of devices or “Things” that are traditionally not associated with the internet.
- IoT is a new revolution in the capabilities of the endpoints that are connected to the internet.

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IoT Evolution



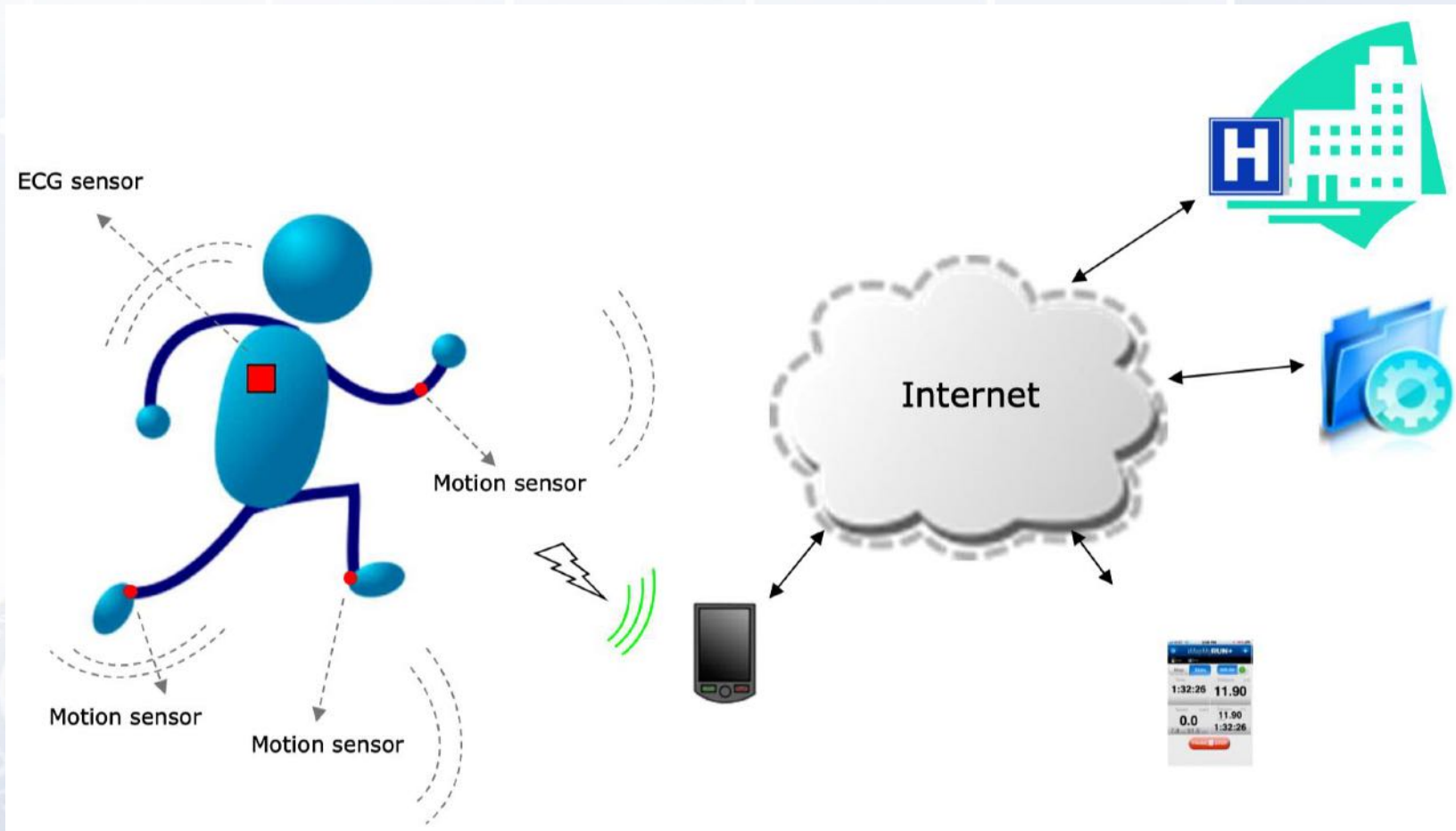
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M2M vs IoT

M2M	IoT
Point-to-point communication usually embedded within hardware at the customer site	Devices communicate using IP Networks, incorporating with varying communication protocols
Many devices use cellular or wired networks	Data delivery is relayed through a middle layer hosted in the cloud
Devices do not necessarily rely on an Internet connection	In the majority of cases, devices require an active Internet connection
Limited integration options, as devices must have corresponding communication standards	Unlimited integration options, but requires a solution that can manage all of the communications

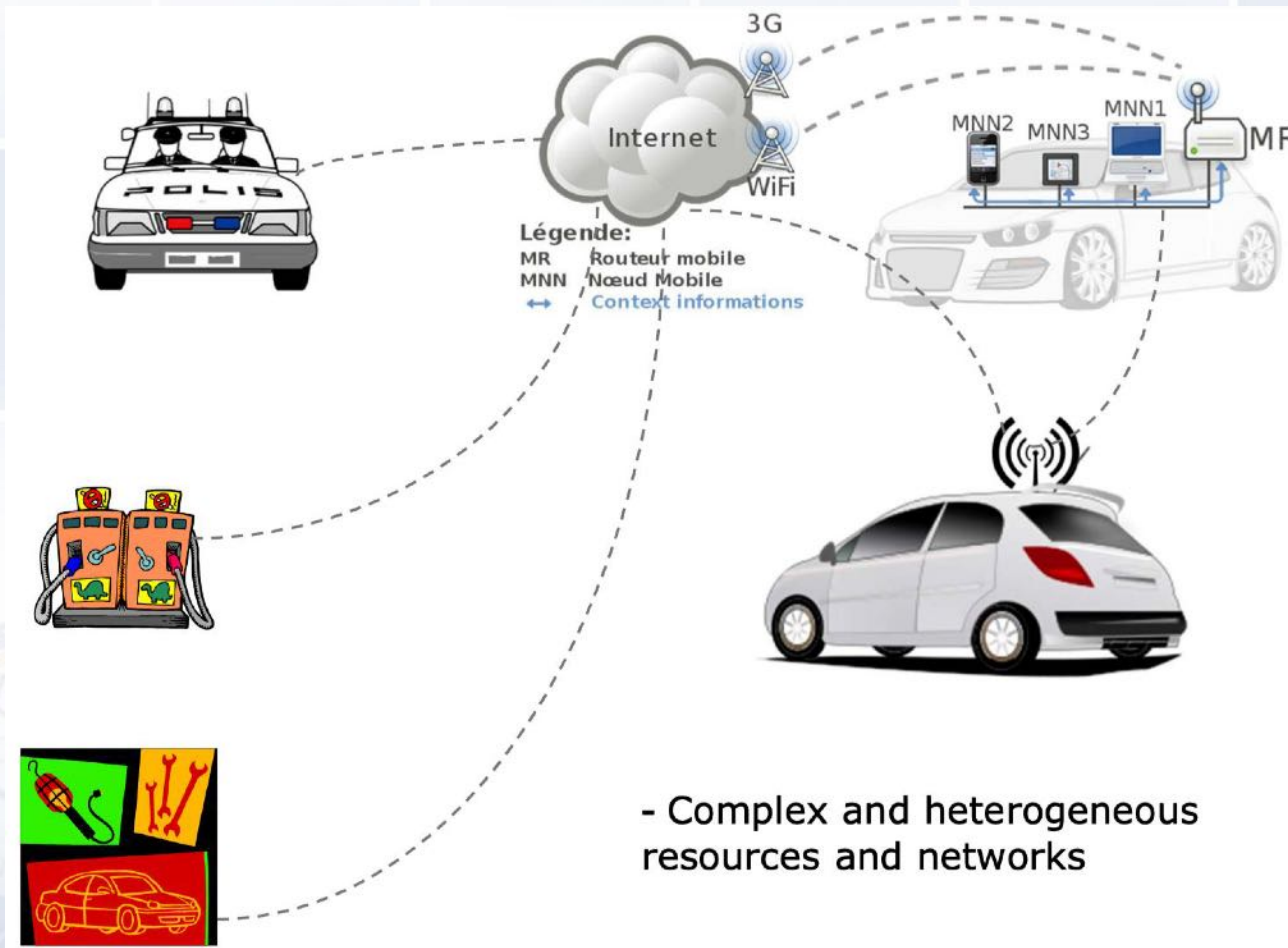
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IoT: People Connecting with Things



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IoT: Things Connecting with Things



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IoT: Application Areas

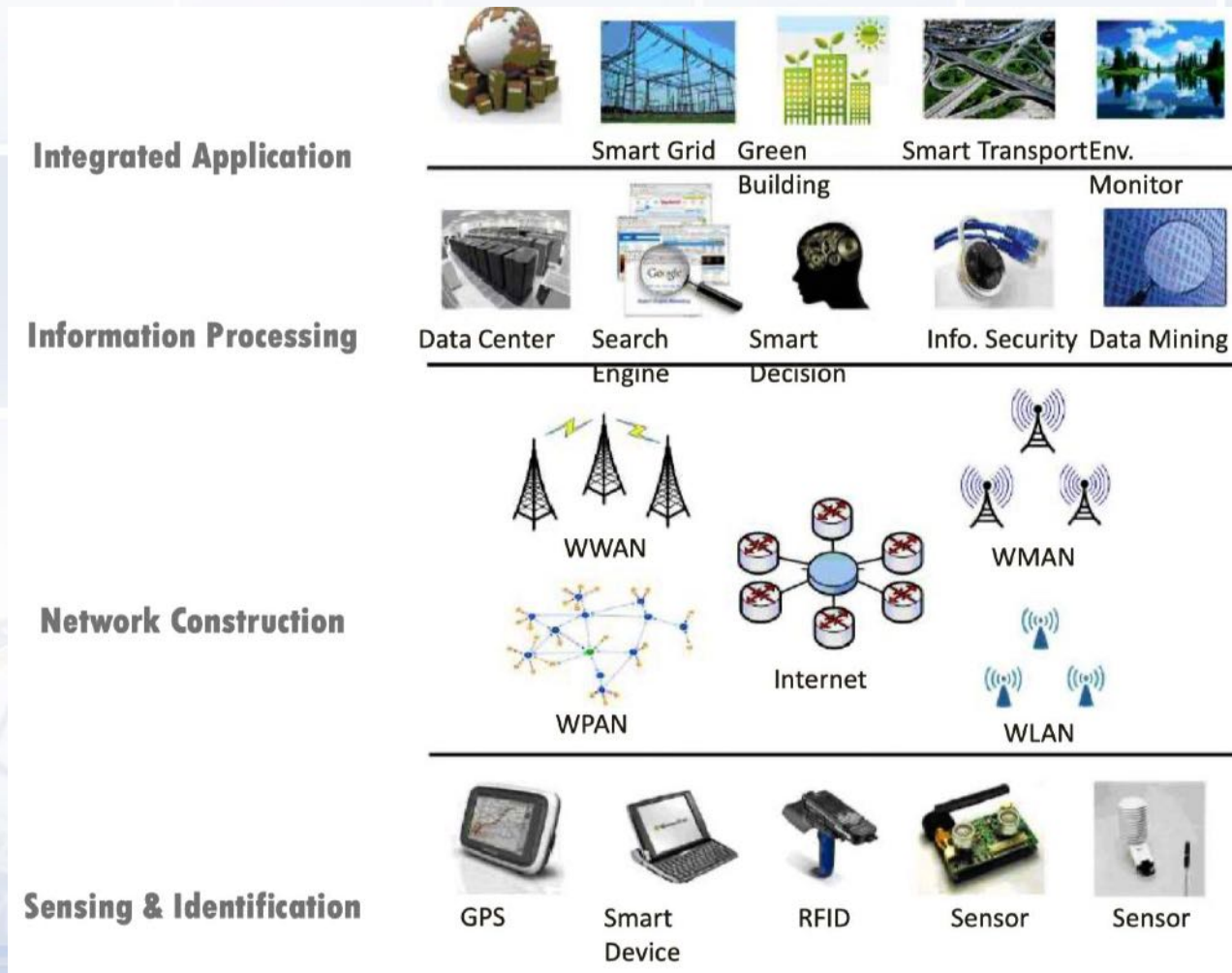
-  **Consumer**
 - Smart home control (lighting, security, comfort)
 - Optimized energy use
 - Maintenance
-  **Retail**
 - Product tracking
 - Inventory control
 - Focused marketing
-  **Medical**
 - Wearable devices
 - Implanted devices
 - Telehealth services
-  **Military**
 - Resource allocation
 - Threat analysis
 - Troop monitoring



-  **Industrial**
 - SmartMeters
 - Wear-out sensing
 - Manufacturing control
 - Climate control
-  **Automotive**
 - Parking
 - Traffic flow
 - Anti-theft location
-  **Environmental**
 - Species tracking
 - Weather prediction
 - Resource management
-  **Agriculture**
 - Crop management
 - Soil analysis

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IoT Architecture



IoT: Sensors and Actuators

Integrated Application



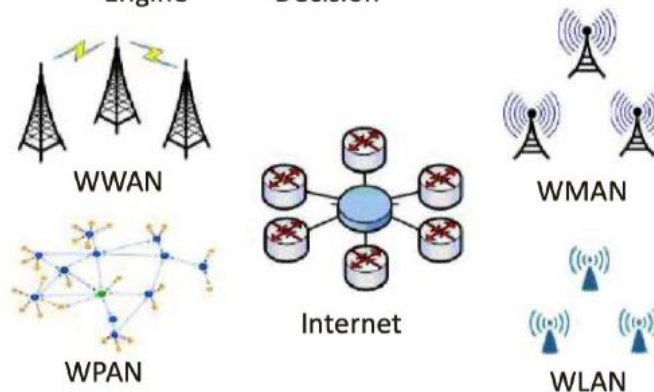
Smart Grid Green Building Smart Transport Env. Monitor

Information Processing



Data Center Search Engine Smart Decision Info. Security Data Mining

Network Construction



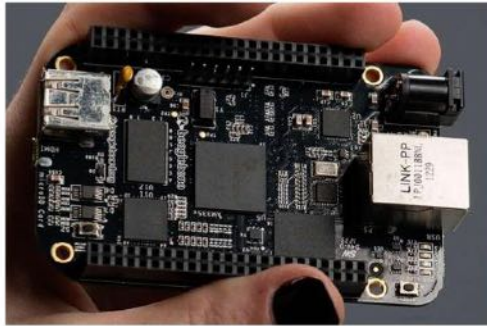
Sensing & Identification



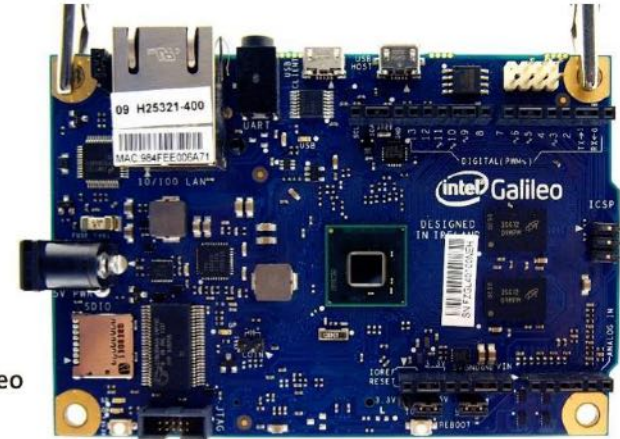
GPS Smart Device RFID Sensor Sensor

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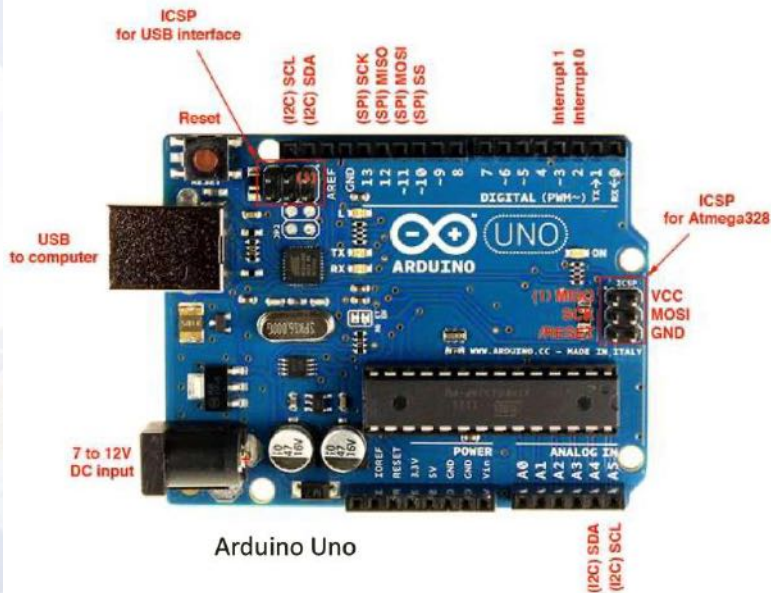
IoT: Smart Objects (examples)



Beaglebone black



Intel Galileo



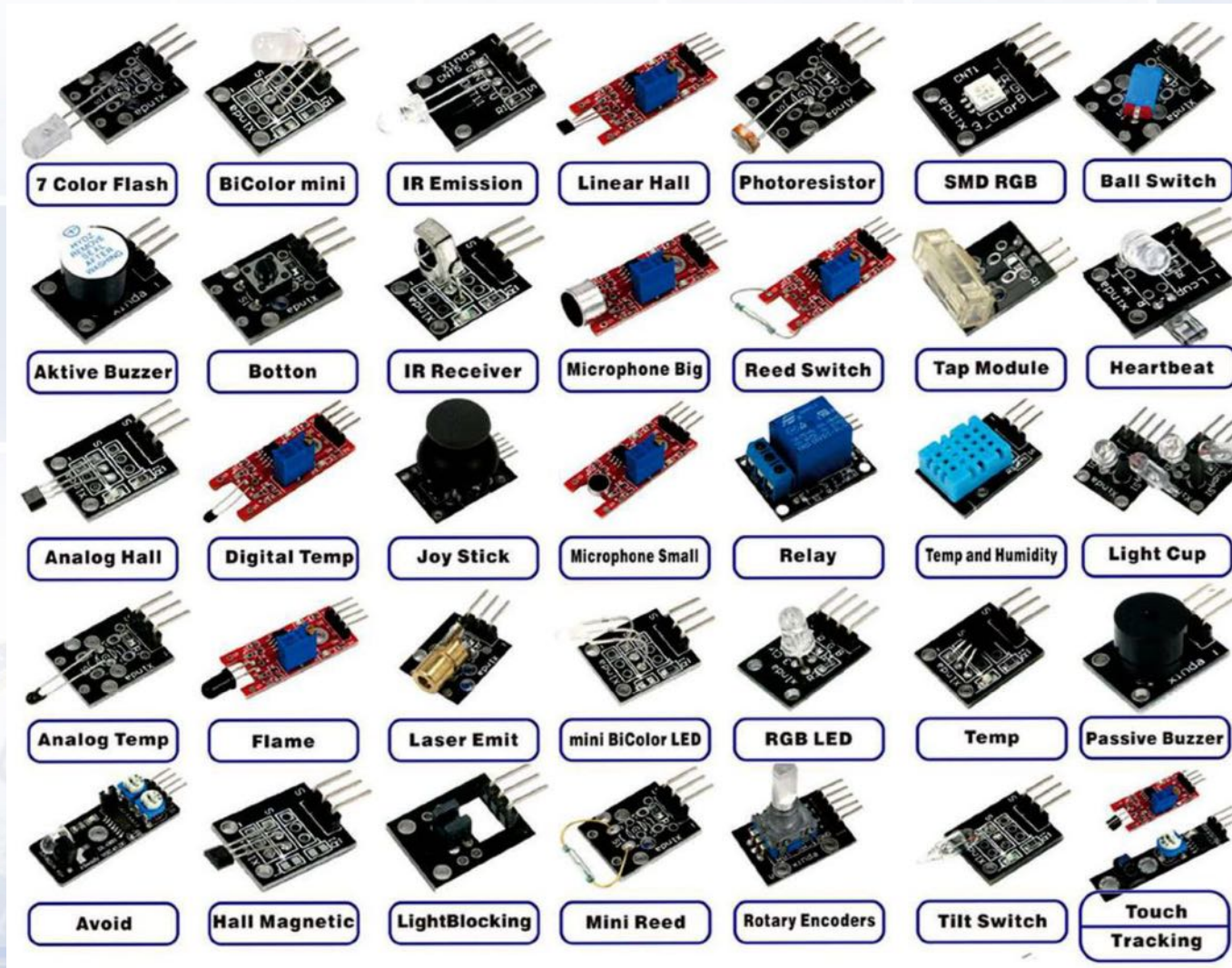
Arduino Uno



Raspberry Pi

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IoT: Sensors Available in the Market (examples)



Tugas Mandiri (teori):

1. Jelaskan Prinsip Dasar IoT dan Berikan contoh penerapan IoT di keseharian.
2. Jelaskan Perbedaan metode Wireless Sensor Network dan IoT.

Tugas Mandiri (praktikum):

Sebutkan Teknologi IoT yang ada sesuai kategori dibawah ini.

1. Short Range Communication, Low Data Rate, Low Power.
2. Short Range Communication, High Data Rate.
3. Long Range Communication, High Data Rate, Low power.
4. Long Range, Low Data Rate, Low Power Consumption.
5. Long Range, Low Data Rate, High Power Consumption.

end

