

# Chapter 7

INTELLIGENT (SMART) E-COMMERCE

# Learning Objectives

1. Understand the reasons for intelligent e-commerce systems.
2. Become familiar with the essentials of artificial intelligence.
3. Cite the major AI applications in e-commerce.
4. Understand knowledge systems and their management.
5. Understand intelligent computerized personal assistants and their availability.
6. Gain knowledge about IoT.
7. Describe self-driving cars, smart homes and appliances, and smart cities.

# INTRODUCTION TO INTELLIGENT E-COMMERCE

- An Overview of Intelligent E-Commerce

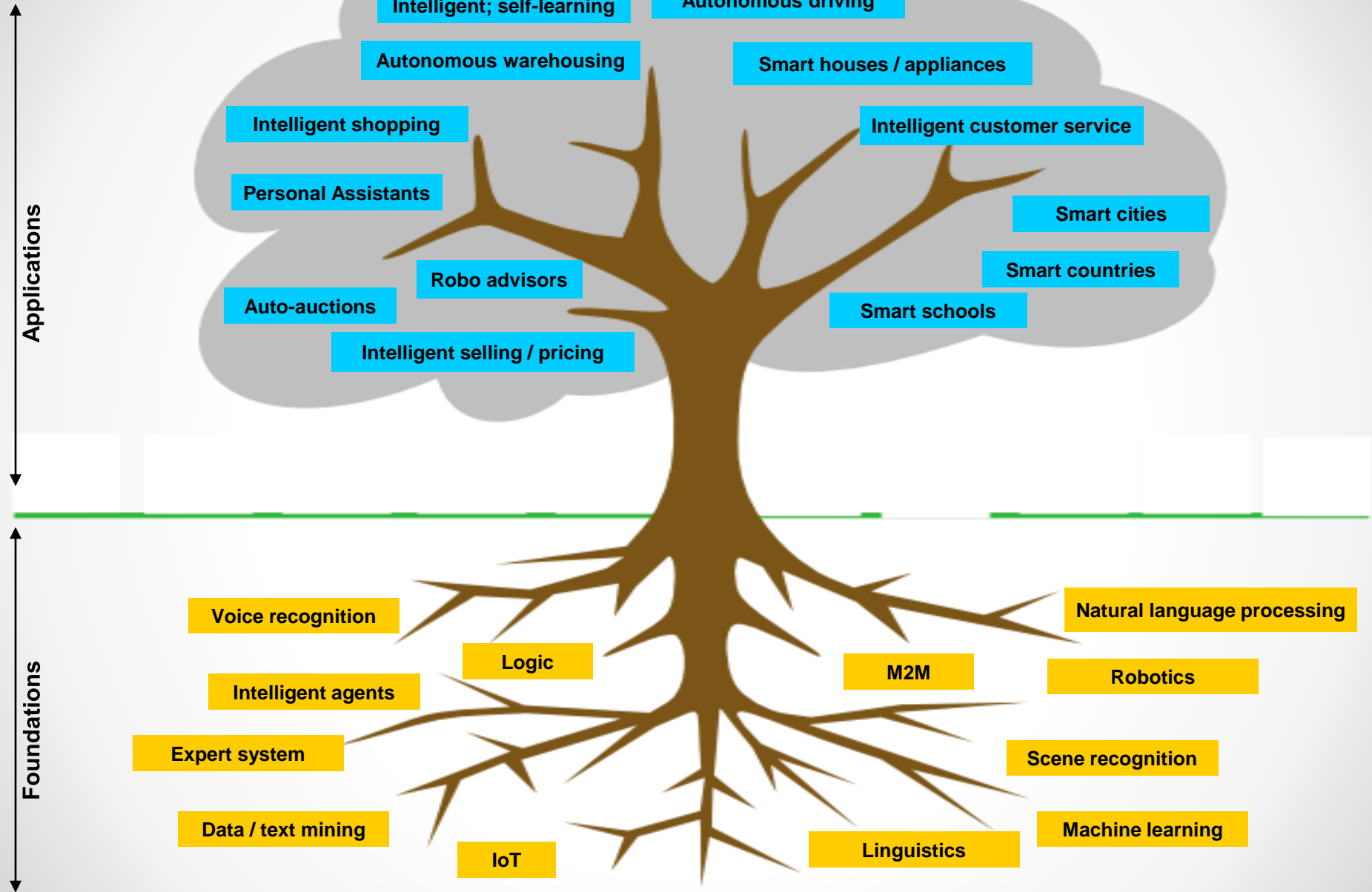


Figure 7.1 The foundations and applications of smart E-commerce

# THE ESSENTIALS OF ARTIFICIAL INTELLIGENCE

- **Artificial Intelligence (AI): Definitions and Characteristics**
- Abilities that are considered signs of intelligence.
  - Learning or understanding from experience
  - Making sense out of ambiguous, incomplete or even contradictory messages and information
  - Responding quickly and successfully to a new situation (i.e., the most correct responses)
  - Understanding and inferring in a rational way, solving problems, and directing conduct effectively
  - Applying knowledge to manipulate the environment and situations
  - Recognizing and judging the relative importance of different elements in a situation.

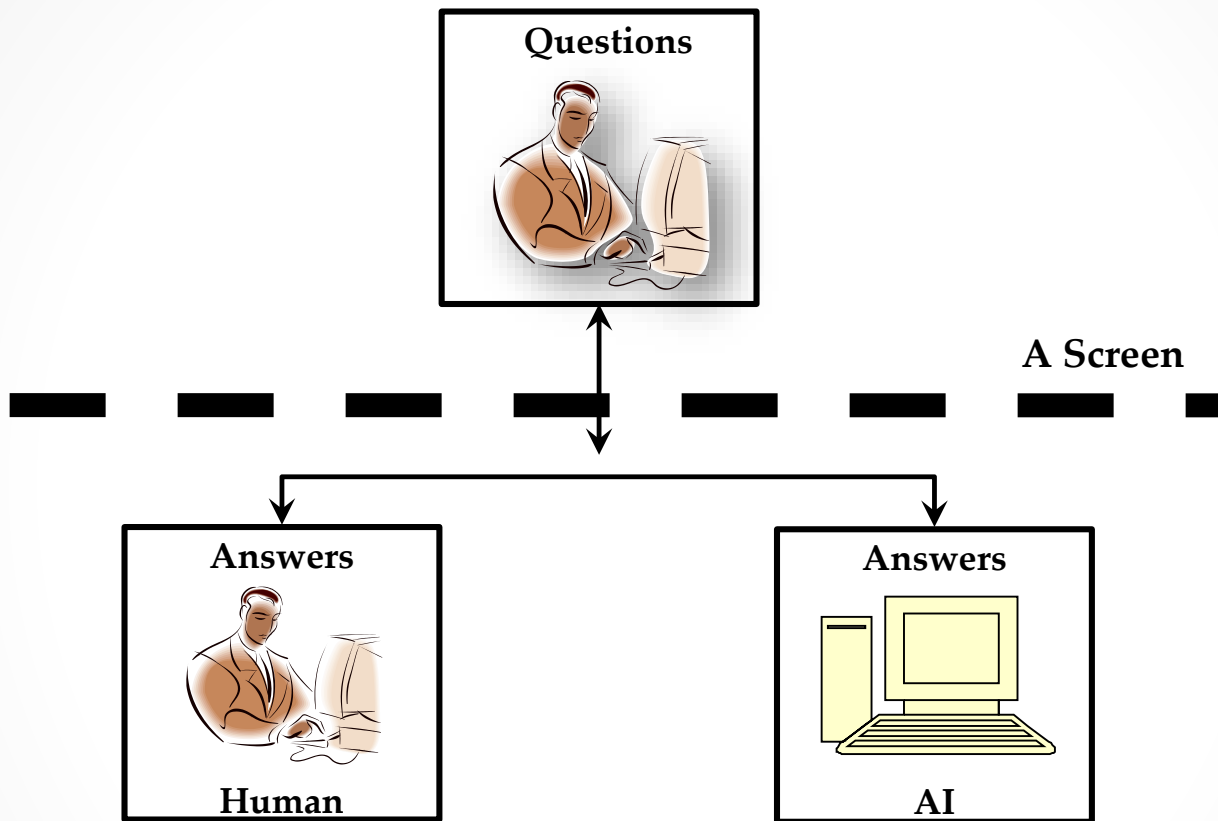


Figure 7.2 A pictorial representation of Turing Test

# THE ESSENTIALS OF ARTIFICIAL INTELLIGENCE

- *How Intelligent is AI?*
  - Turing Test
- *The Content of the AI Field*
  - *Intelligent Agents*
  - *Machine Learning*
  - *Robotics Systems*
- *Natural Language Processing*
- *Speech (Voice) Understanding*
- *Language Translation*
- *Knowledge Systems*

# Mobile Commerce: Concepts, Landscape, Attributes, Drivers, Applications, and Benefits

- **Basic Concepts, Magnitude, and the Landscape**
  - \*Mobile commerce (m-commerce)
  - The Magnitude of M-Commerce
  - The Landscape of M-Commerce
  - Mobile and Social: A Powerful EC Combination
- **The Attributes of M-Commerce**
  - Ubiquity
  - Convenience and capabilities
  - Interactivity
  - Personalization
  - Localization

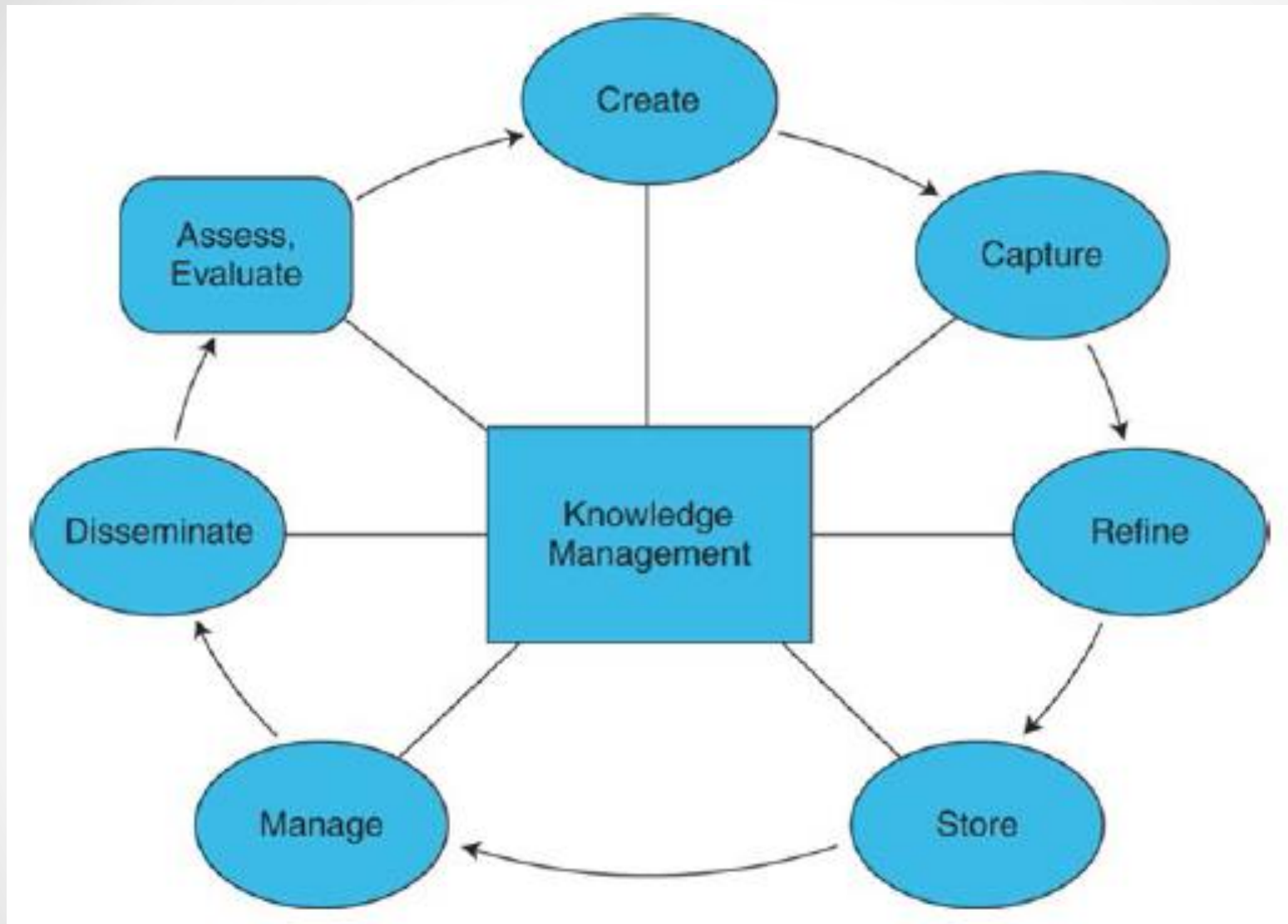


# RECENT AI APPLICATIONS IN E-COMMERCE

- **The AI Contribution to E-Commerce**
- **AI in E-Commerce: Some Illustrative Examples**
  - *Marketing and Advertising*
  - *Customer Service and Advice*
  - *AI in B2B*

# KNOWLEDGE (EXPERT) SYSTEMS

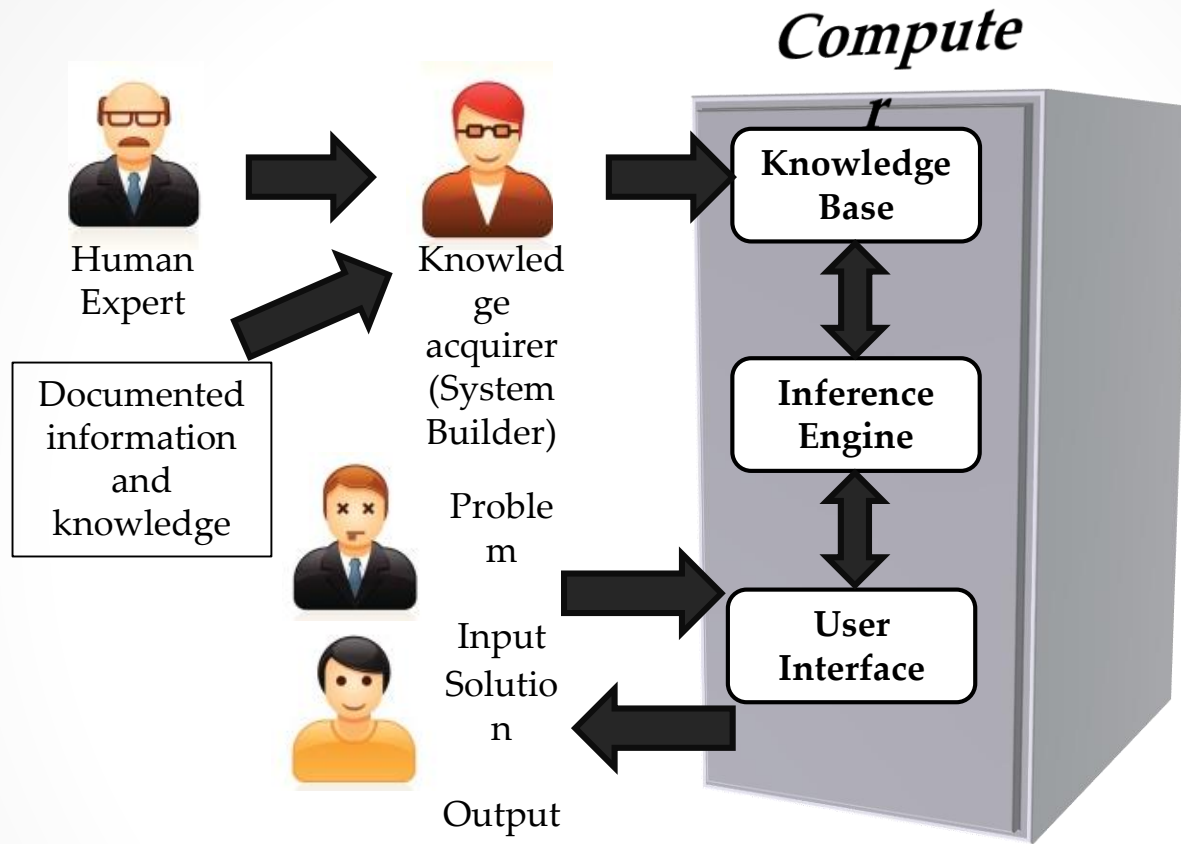
- **An Overview of Knowledge Management**
- **Knowledge Management Types and Activities**
  - Major tasks:
    - Create knowledge.
    - Capture knowledge.
    - Refine knowledge.
    - Store knowledge.
    - Update knowledge.
    - Disseminate knowledge.



**Figure 7.3** The knowledge management system cycle

# KNOWLEDGE (EXPERT) SYSTEMS

- How Is Knowledge Management Related to E-Commerce?
- KM and Social Networks
- Expert Systems
- ***Major Components of an Expert System***
  - The major components :
    - *Users – who need the expertise*
    - *Human experts*
    - *System builders*
    - *Knowledge base*
    - *Inference engine*
    - *User interface*
    - *Explanation mechanism*



**Figure 7.4** The component of expert systems

# INTELLIGENT PERSONAL ASSISTANTS AND ROBOT ADVISERS

- Amazon's Alexa
  - *Alexa Skills*
  - *Voice Interface and Speakers in Alexa*
  - *Amazon Echo*
  - *Amazon Echo Dot*
  - *Amazon Echo Tap*
- Apple's Siri
- *IBM Watson*
- Alfie
- Personal Robots
- *Robo Advisers*



See video:  
<https://www.youtube.com/watch?v=KkOCeAtKHlc>

Figure 7.5 Amazon Echo and Alexa

# THE INTERNET OF THINGS AND E-COMMERCE

- **The Essentials of IoT**
- **The Structure of IoT Applications**
- **The Major Benefits of IoT**
  - Creates new revenue stream
  - Optimizes asset utilization
  - Improves sustainability
  - Improves workers' productivity
  - The Internet of Things is changing and improving everything (McCafferty 2015)
  - Systems will anticipate our needs
  - People will make smarter decisions/purchases
  - Greater accuracy
  - Identify problems quickly (even before they occur)
  - Reduces cost by automating processes
  - Instant information availability
  - Quick and inexpensive tracking
  - Expedites problem resolution and recovery
  - Supports facility integration



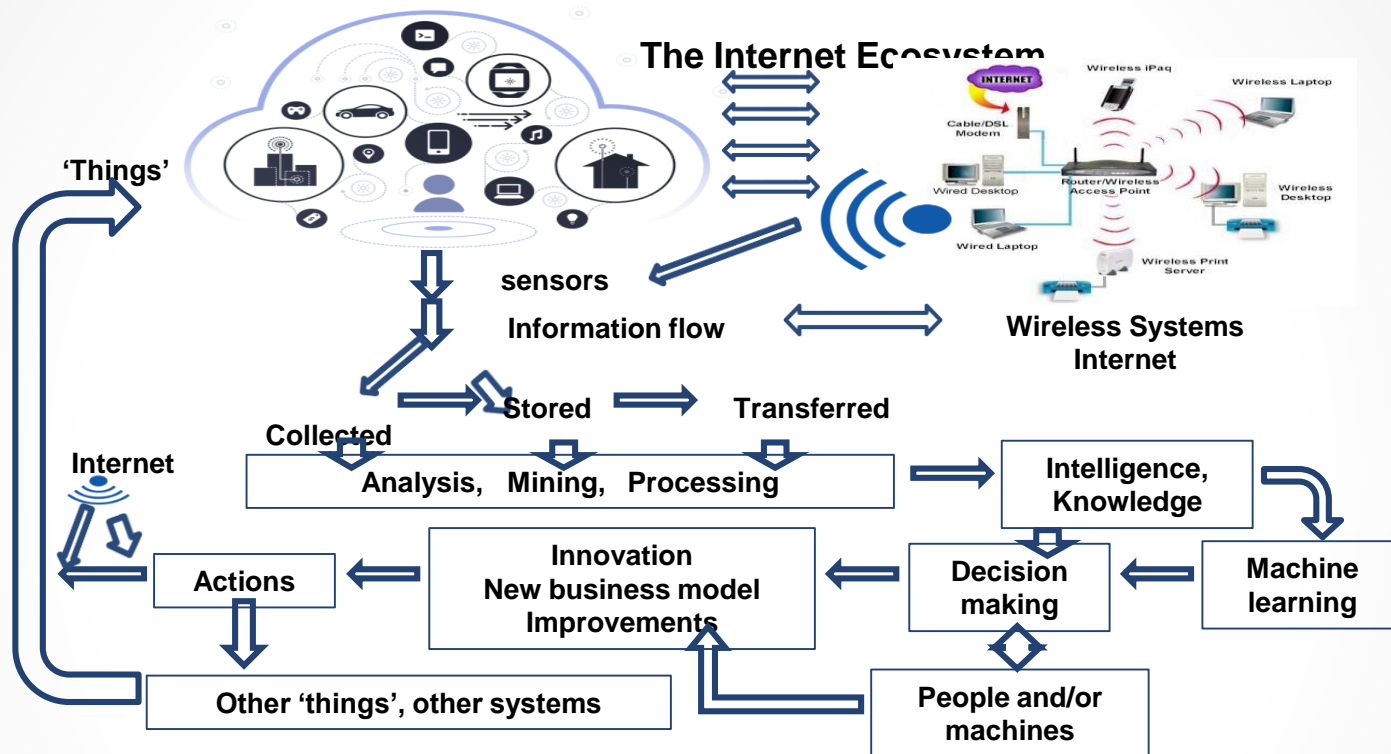


Figure 7.6 The process of the IoT

# THE INTERNET OF THINGS AND E-COMMERCE

- **The Drivers of IoT**

- 50 to 75 billion 'things' - may be connected (by 2020 - 2025)
- Connected autonomous 'things'/systems (e.g., cars) are all over the IoT
- Broadband Internet is more widely available and increasing with time
- Cost of connecting devices is decreasing
- More devices are created (via innovation) and they are inter-connected (e.g., see Fenwick 2016)
- More sensors are built into devices
- Smartphones' penetration is sky-rocketing
- Wearable devices are all over
- Speed of moving data is increasing; to 60Hz
- Protocols are developing for IoT (e.g., WiGig)
- Customer expectations are on the rise



**Figure 7.7** Google's self-driving cars

# Managerial Issues

1. How can one justify the investment in AI systems?
2. Chatbots are all over. Should we follow?
3. Our employees contribute their wisdom to the company's knowledge base. Should we give them extra compensation?
4. Robots and other AI innovations will result in some people losing their jobs in our business. What to do?
5. Our company considers the introduction of robo assistant. How to approach the issue?
6. Internet-of-Things' applications have lots of promises and potential benefits. Is it for us?

# Summary

1. The reasons for intelligent EC systems.
2. The essentials of AI.
3. The major AI applications.
4. Knowledge systems and management.
5. Intelligent personal assistants.
6. The essentials of the Internet of Things (IoT).
7. Self-driving cars, smart homes and appliances, and smart cities.