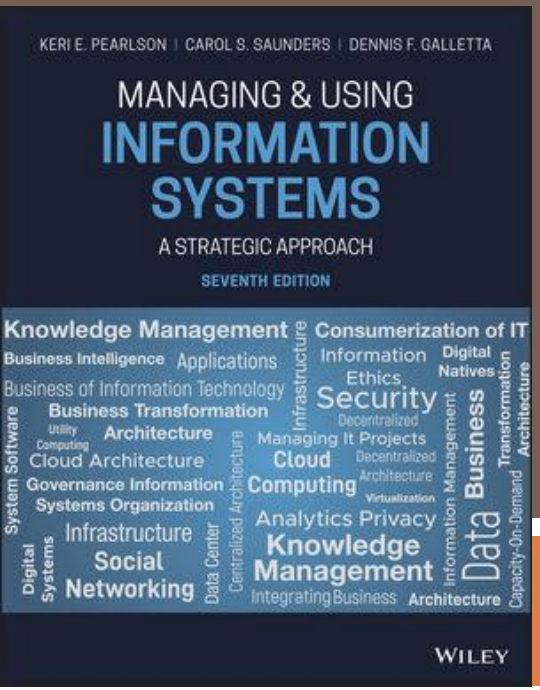
INTRODUCTION



Managing & Using Information Systems: A Strategic Approach (7th Edition), Pearlson, Saunders, & Galletta

Why Should a Manager Study Information Systems?

- After all, an entire department is in charge of IS.
- Nearly all decisions in organizations rely on information systems at some level.
- Personal devices are ubiquitous.
  - In 2014, 90% of US adults had a cell phone and 87% used the Internet.

Why Should a Manager Study Information Systems?

- Personal experience with technology helps but the corporate setting has many different requirements in the areas of:
  - Security, Privacy, Risks
  - Support
  - Architecture
- Firms use IS to enhance their business models or change entire industries.
- Managers need to know the basics.

The Case for Participating in Decisions about Information Systems

Reasons
• IS must be managed as a critical resource since it permeates almost every aspect of business.
• IS enables change in the way people work both inside and outside of the enterprise.
• IS is at the heart of integrated Internet-based solutions that are replacing standard business processes.
• IS enables or inhibits business opportunities and new strategies.
• IS can be used to combat business challenges from competitors.
• IS enable customers to have greater pull on businesses and communities by giving them new options for voicing their concerns and opinions using social media.
• IS can support data-driven decision-making.
• IS can help ensure the security of key assets.

FIGURE 1.1 Reasons why business managers should participate in IS decisions.

(1) A Business View of Critical Resources

- Spending is quite high: Worldwide $3.8 trillion in 2018
- Expenditures span 5 categories
  - Devices (e.g., PCs, tablets, mobile phones)
  - Data centers (e.g., servers, storage equipment)
  - Enterprise (companywide) software
  - IT Services (e.g., support and consulting services)
  - Communications (e.g., voice and data services)
- If these expenditures do not return value, they will dwindle(*diminish*) over time

(2) People and Technology Work Together

- Some of the most-used sites focus on Web 2.0
  - In Web 2.0, significant content comes from users
    - ✓ Information Sharing
    - ✓ User-centered design
    - ✓ Interoperability
    - ✓ Collaboration
  - Skilled business managers must balance:
    - ✓ The benefits of introducing new technology
    - ✓ The costs associated with changing the existing behaviors of people in the workplace
  - Does not require deep technical knowledge
    - ✓ Requires understanding the consequences of the choices made

(3) Integrating Business with Information Systems

- IS are integrated with almost every aspect of business and have been for quite some time.
- For example, the CTO of @WalmartLabs, Jeremy King, wrote in a blog, “Every company is a tech company”
- IS simplified organizational activities and processes such as moving goods, stocking shelves, and communicating with suppliers.
- For example, handheld scanners provide floor associates with immediate and real-time access to inventory in their store and the ability to locate items in surrounding stores, if necessary.

(4) Opportunities and New Strategies Derived from Rapid Change in Technology

- New business opportunities spring up with little warning
- Managers must:
  - Frame the opportunities in an understandable way for business leaders
  - Evaluate them against business needs and choices
  - Pursue those that fit into an articulated business strategy.
- The quality of available information will impact the quality of their decisions and their implementation
- Managers will therefore lead the changes driven by information systems

(5) Competitive Challenges

- Competitors spring up—sometimes unexpectedly
- General managers are in the best position to
  - See those threats
  - Attempt to combat them, using technology as a tool
- They need an understanding of
  - The capabilities of the organization
  - How those capabilities, together with IS, can
    - ✓ Create competitive advantage
    - ✓ Change the competitive landscape for an entire industry

(6) Customer Pull

- Customers now have power using social media
- Entire business models sometimes need to be redesigned
- Redesigning the customer experience when interacting with a company is paramount for many managers and the key driver is IS.
- Social IT enables new and often deeper relationships with a large number of customers, and companies are learning how to integrate and leverage this capability into existing and new business models.

(7) Data-Driven Decision Making

- Now available: more data than ever before
  - From social media
  - From large data stores in firms
- Predictive analytics tools can help with analysis of that data
- Big data stores can be mined for insights that were unavailable with traditional IS, creating competitive advantage for companies with the right tools and techniques.

(8) Securing Key Assets

- A balance is needed
  - Too little security endangers assets of the firm and its customers
  - Too much reduces operational convenience
- Managers must be involved in decisions about risk and security to ensure that business operations are in sync with the resulting security measures.

What If a Manager Doesn't Participate?

- Breakdown in servicing customers
- Sales decline
- Damaged reputation
- Poor spending:
  - Overspending and excess capacity, or
  - Underspending and restricted opportunity
- Inefficient business processes

What If a Manager Doesn't Participate?

- Failing to Consider IS Strategy Leads to:
  - IS that fail to support business goals
    - ✓ e.g., Victoria's Secret site overload
  - IS that fail to support organizational systems
    - ✓ e.g., workers buying mobile devices but the IT department only supports desktop PCs
  - Misalignment between business goals and organizational systems

(1) IS Must Support Business Goals

- Victoria's Secret experienced this problem when a Superbowl ad promoting an online fashion show generated so many inquiries to its Web site that the Web site crashed.
- Spending large amounts of money on the advertisement was wasted when potential customers could not access the site.
- Likewise, Toys "R" Us experienced a similar calamity when its well-publicized Web site was unable to process and fulfill orders fast enough one holiday season.
- It not only lost those customers, but it also had a major customer-relations issue to manage as a result.

(2) IS Must Support Organizational Systems

- If the company's IS fail to support its organizational systems (people, work processes, tasks, structure, and control system), the result is a misalignment of the resources needed to achieve its goals.
- For example, it seems odd to think that a manager might add functionality to a corporate Web site without providing the training the employees need to use the tool effectively.
- Deploying technology without thinking through how it actually will be used in the organization-who will use it, how they will use it, and how to make sure the applications chosen will actually accomplish what is intended-results in significant expense.

Skills Needed to Participate Effectively in IT Decisions

- Participating in IT decisions means bringing a clear set of skills to the table.
- All managers are asked to take on tasks that require different skills at different times.
- Those tasks can be divided into three types:
  - Visionary tasks that provide leadership and direction for the group;
  - Informational/interpersonal tasks that provide information and knowledge the group needs to be successful; and
  - Structural tasks that organize the group.

Managerial Role	Skills
Visionary	• Creativity • Curiosity • Confidence • Focus on business solutions • Flexibility
Informational and Interpersonal	• Communication • Listening • Information gathering • Interpersonal skills
Structural	• Project management • Analytical • Organizational • Planning • Leading • Controlling

FIGURE 1.2 Skills for successful IT use by managerial roles

How to Participate in IS Decisions

- The way in which managers use and manage information is directly linked to business goals and the business strategy driving both organizational and IS decisions.
- Aligning business and IS decisions is critical.
- Business, organizational, and information strategies are fundamentally linked in what is called the *Information Systems Strategy Triangle*.

Organization of the Book

1. Information Systems Strategy Triangle: Alignment of IT and the business
2. Links between IS and business strategy
3. Links between IS and organizational strategy
4. Collaboration and individual work
5. Business processes
6. Architecture and infrastructure
7. Participating in decisions about IS security
8. The business of IS
9. Governance of IS resources
10. Sourcing
11. Project and change management
12. Business intelligence
13. Ethical use of information

Assumptions About Management

- Interpersonal
  - Figurehead
  - Leader
  - Liaison
- Informational
  - Monitor
  - Disseminator
  - Spokesperson
- Decisional
  - Entrepreneur
  - Disturbance Handler
  - Resource Allocator
  - Negotiator

Types of roles	Manager's roles	IS examples
Interpersonal	Figurehead	• CIO greets touring dignitaries.
	Leader	• IS manager puts in long hours to help motivate project team to complete project on schedule in an environment of heavy budget cuts.
	Liaison	• CIO works with the marketing and human resource vice presidents to make sure that the reward and compensation system is changed to encourage use of the new IS supporting sales.
Informational	Monitor	• Division manager compares progress on IS project for the division with milestones developed during the project's initiation and feasibility phase.
	Disseminator	• CIO conveys organization's business strategy to IS department and demonstrates how IS strategy supports the business strategy.
	Spokesperson	• IS manager represents IS department at organization's recruiting fair.

FIGURE 1.3.1 Manager's roles

Types of roles	Manager's roles	IS examples
Decisional	Entrepreneur	• IS division manager suggests an application of a new technology that improves the division's operational efficiency.
	Disturbance handler	• IS division manager, as project team leader, helps resolve design disagreements between division personnel who will be using the system and systems analysts who are designing it.
	Resource allocator	• CIO allocates additional personnel positions to various departments based upon the business strategy.
	Negotiator	• IS manager negotiates for additional personnel needed to respond to recent user requests for enhanced functionality in a system that is being implemented.

FIGURE 1.3.2 Manager's roles

Assumptions About Business – Functional View

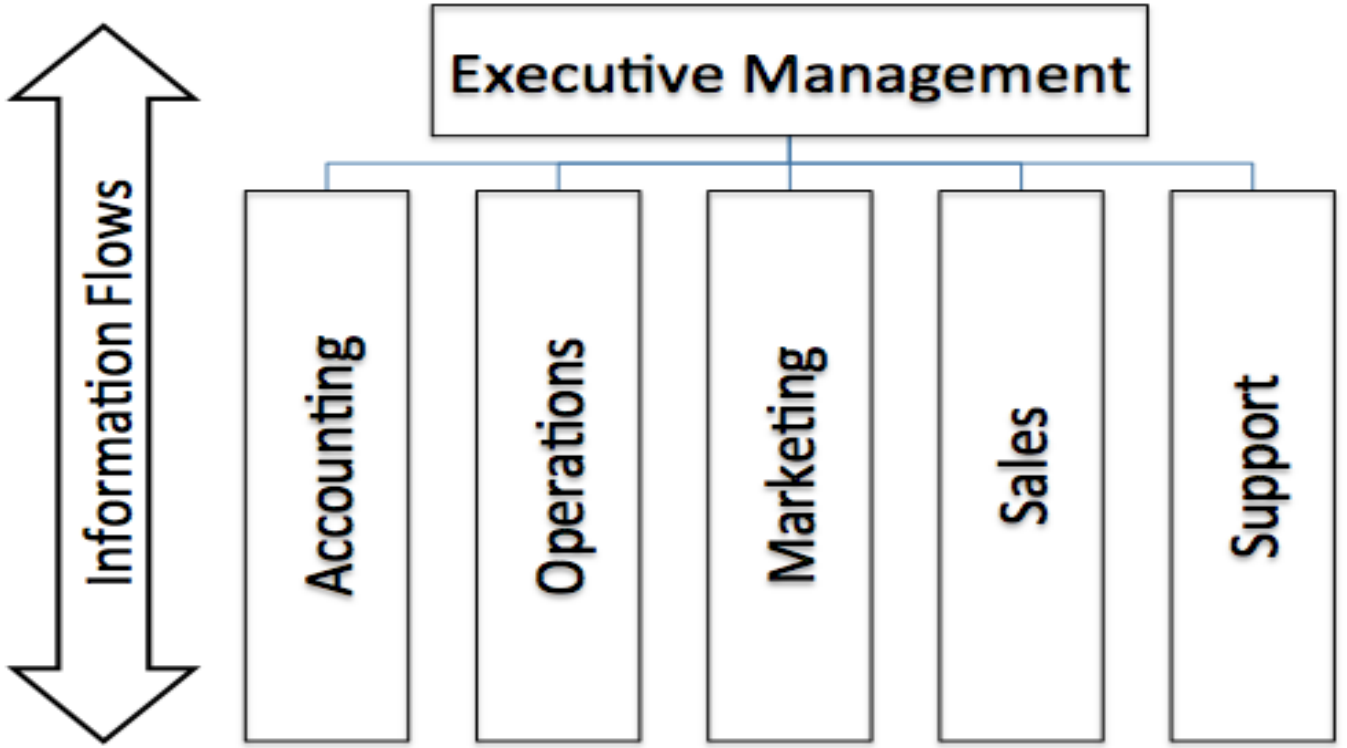


FIGURE 1.4 Hierarchical view of the firm.

Assumptions About Business – Process View

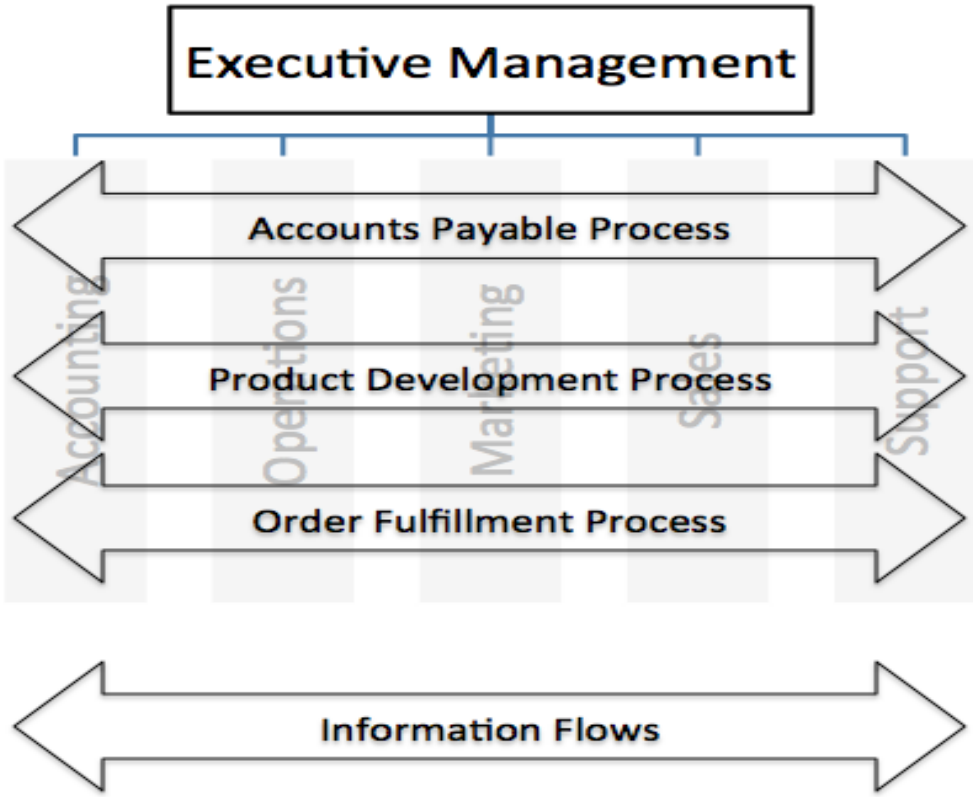


FIGURE 1.5 Process view of the firm: Cross-functional processes.

Assumptions about Information Systems

- Information Hierarchy
  - Data = simple observations
  - Information = data + relevance + purpose
  - Knowledge = information + context + synthesis + reflection
- Figure 1-6 Comparison of Data, Information, and Knowledge
- Figure 1-7 Information Characteristics across Hierarchical Levels

	Data	Information	Knowledge
Definition	• Simple observations of the state of the world	• Data endowed with relevance and purpose	• Information from the human mind (includes reflection, synthesis, context)
Characteristics	• Easily structured • Easily captured on machines • Often quantified • Easily transferred • Mere facts	• Requires unit of analysis • Data that have been processed • Human mediation necessary	• Hard to structure • Difficult to capture on machines • Often tacit • Hard to transfer
Example	• Daily inventory report of all items	• Daily inventory report of items with low levels of stock	• Report of which items need to be reordered after considering inventory levels, anticipated labor strikes, and a flood affecting a supplier

FIGURE 1.6.1 Comparison of Data, Information, and Knowledge

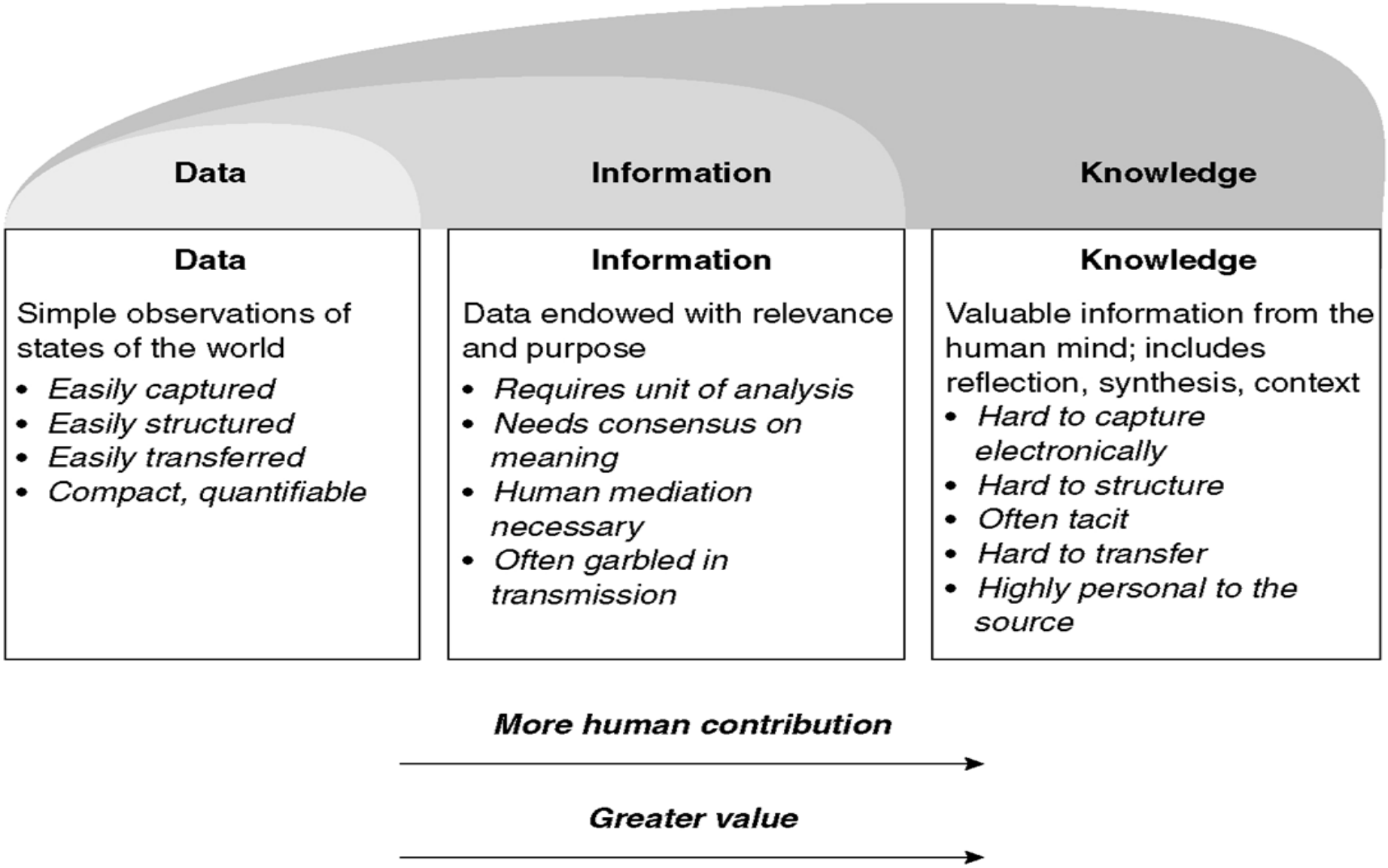


FIGURE 1.6.2 The Relationships between Data, Information, and Knowledge.

	Top Management	Middle Management	Supervisory and Lower-Level Management
Time Horizon	• Long: years	• Medium: weeks, months, years	• Short: day to day
Level of Detail	• Highly aggregated • Less accurate • More predictive	• Summarized • Integrated • Often financial	• Very detailed • Very accurate • Often nonfinancial
Source	• Primarily external	• Primarily internal with limited external	• Internal
Decision	• Extremely judgmental • Uses creativity and analytical skills	• Relatively judgmental	• Heavy reliance on rules

FIGURE 1.7 Information Characteristics across Hierarchical Levels

Economics of Information vs Things

Things	Information
• Wear out	• Doesn't wear out but can become obsolete or untrue
• Are replicated at the expense of the manufacturer	• Is replicated at almost zero cost without limit
• Exist in a tangible location	• Does not physically exist
• When sold, possession changes hands	• When sold, seller may still possess and sell again
• Price based on production costs	• Price based on value to consumer

FIGURE 1.8 Comparison of the Economics of Things with the Economics of Information.

Internet of Things (IoT)

- Combine information and things = IoT
- From the 1970s: Coke machine at Carnegie Mellon University
- From the 1980s: Elevators that call for service without people knowing there is a problem

Internet of Things (IoT)

- Today:
  - Self-driving cars
  - Internet-connected (and controllable) thermostats, stoves, alarm systems
  - Pets that are trackable online
  - Heart monitors that alert doctors or hospitals of a problem

Internet of Things (IoT)

- Today:
  - Digital video recorders that can be controlled around the world
  - Quad-copters (drones) that can
    - ✓ Record video marked with location data
    - ✓ Return to the point of origin if it goes out of range of the “pilot”
    - ✓ Notify regarding its location and avoid objects in a database

Consumerization and Social Business

- IT consumerization means that technologies such as social tools, smartphones, and web applications targeted at individual, personal users are creating pressures for companies in new and unexpected ways.
- At the same time, technologies initially intended for the corporation, such as cloud computing, are being retooled and "consumerized" to appeal to individuals outside the corporation.

Consumerization and Social Business

- Social business refers to an enterprise using social IT for business applications, activities, and processes.
- We sometimes say that social business has infused social capabilities into business processes.
- Social IT: The technologies used for people to collaborate, network, and interact over the web.
- These include social networks and other applications that provide for interaction between people.

Consumerization and Social Business

- Social networks are IT-enabled networks that link individuals together in ways that enable them to find experts, get to know colleagues, and see who has relevant experience for projects across traditional organizational lines.
- Social networking is the use of these types of social IT tools in a community.

System Hierarchy

- IS are composed of three main elements: technology, people, and process (Figure 1-9).
- When most people use the term information system, they actually refer only to the technology element as defined by the organization's infrastructure.

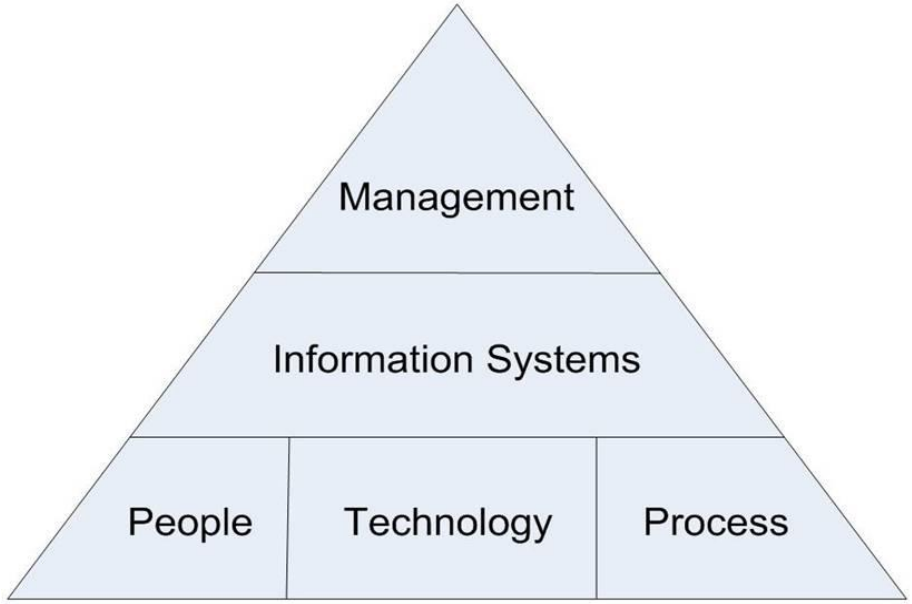
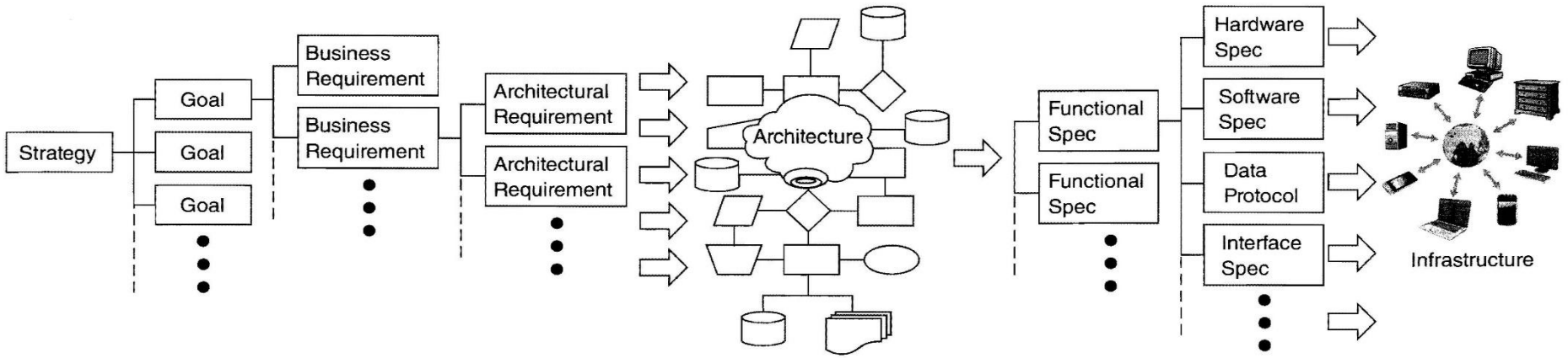


FIGURE 1.9 System Hierarchy.

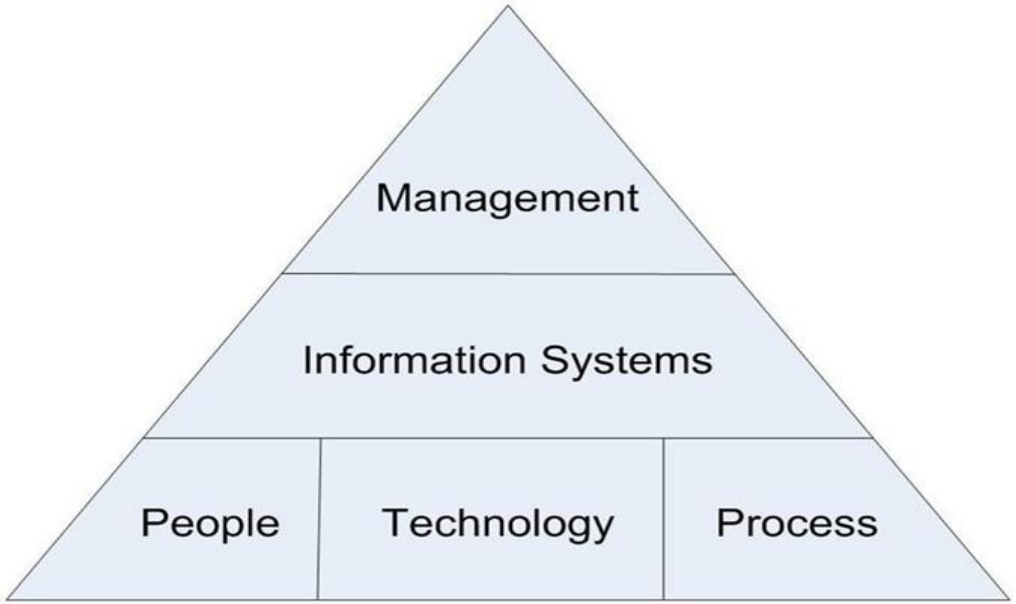
System Hierarchy

- Infrastructure refers to everything that supports the flow and processing of information in an organization, including hardware, software, data, and network components.
- Architecture refers to the blueprint that reflects strategy implicit in combining these components.



System Hierarchy

- IS are defined more broadly as the combination of technology (the "what"), people (the "who"), and process (the "how") that an organization uses to produce and manage information.
- In contrast, IT focuses only on the technical devices and tools used in the system.



System Hierarchy

- We define information technology as all forms of technology used to create, store, exchange, and use information.
- Many people use the terms IS and IT interchangeably.
- In recent years, "IT" has become more fashionable, but terminology in IS can change quickly when new important technologies are introduced.