

# *Systems Analysis and Design in a Changing World, Fifth Edition*

## CHAPTER

# 1

## THE WORLD OF THE INFORMATION SYSTEMS ANALYST



# Learning Objectives

- ◆ Explain the key role of a systems analyst in business
- ◆ Describe the various types of systems an analyst might work on
- ◆ Explain the importance of technical, people, and business skills for an analyst
- ◆ Explain why ethical behavior is crucial for a systems analyst's career

# Learning Objectives (continued)

- ◆ Describe various job titles in the field and places of employment where analysis and design work is done
- ◆ Discuss the analyst's role in strategic planning for an organization
- ◆ Describe the analyst's role in a system development project

# Overview

- ◆ Information systems are
  - Crucial to success of modern business organizations
  - Constantly being developed to make business more competitive
  - Impact productivity and profits
- ◆ Keys to successful system development
  - Thorough systems analysis and design
  - Understanding what business requires

# Overview (continued)

- ◆ Systems analysis – process of understanding in detail what a system should accomplish
- ◆ Systems design – process of specifying in detail how components of an information system should be physically implemented
- ◆ Systems analyst – uses analysis and design techniques to solve business problems using information technology

# The Analyst as a Business Problem Solver

- ◆ Has computer technology knowledge and programming expertise
- ◆ Understands business problems
- ◆ Uses logical methods for solving problems
- ◆ Has fundamental curiosity
- ◆ Wants to make things better
- ◆ Is more of a business problem solver than a technical programmer

# Analyst's Approach to Problem Solving

Research and understand the problem

Verify benefits of solving problem outweigh the costs

Define the requirements for solving the problem

Develop a set of possible solutions (alternatives)

Decide which solution is best and recommend

Define the details of the chosen solution

Implement the solution

Monitor to ensure desired results

# Systems That Solve Business Problems

- ◆ System – a collection of interrelated components functioning together to achieve an outcome
- ◆ Information systems – collection of interrelated components that collect, process, store, and provide as output the information needed to complete business tasks
- ◆ Subsystem – part of a larger system
- ◆ Functional decomposition – dividing a system into smaller subsystems and components



# Information Systems and Subsystems

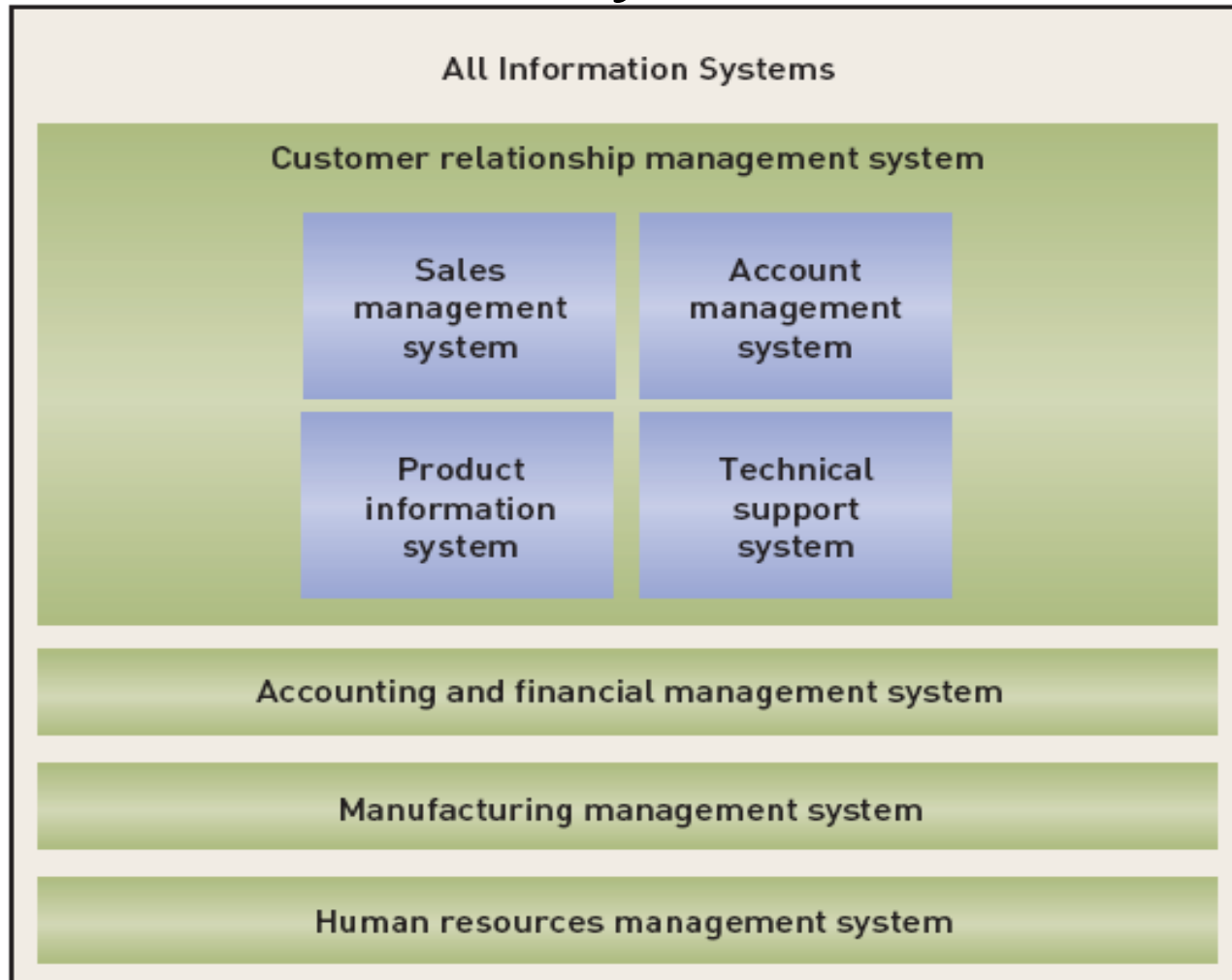


Figure 1-2

# Information Systems and Component Parts

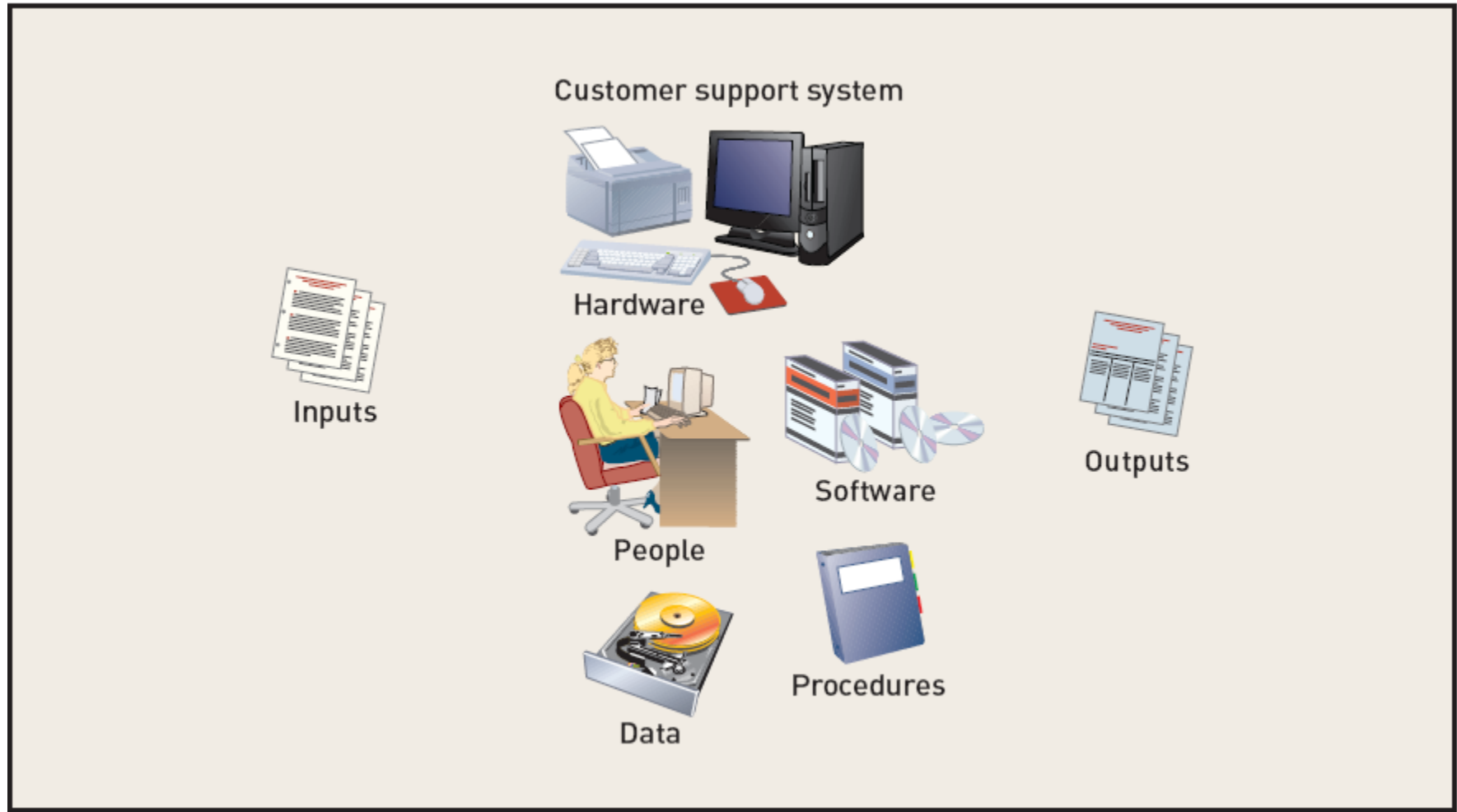


Figure 1-3

# System Boundary vs. Automation Boundary

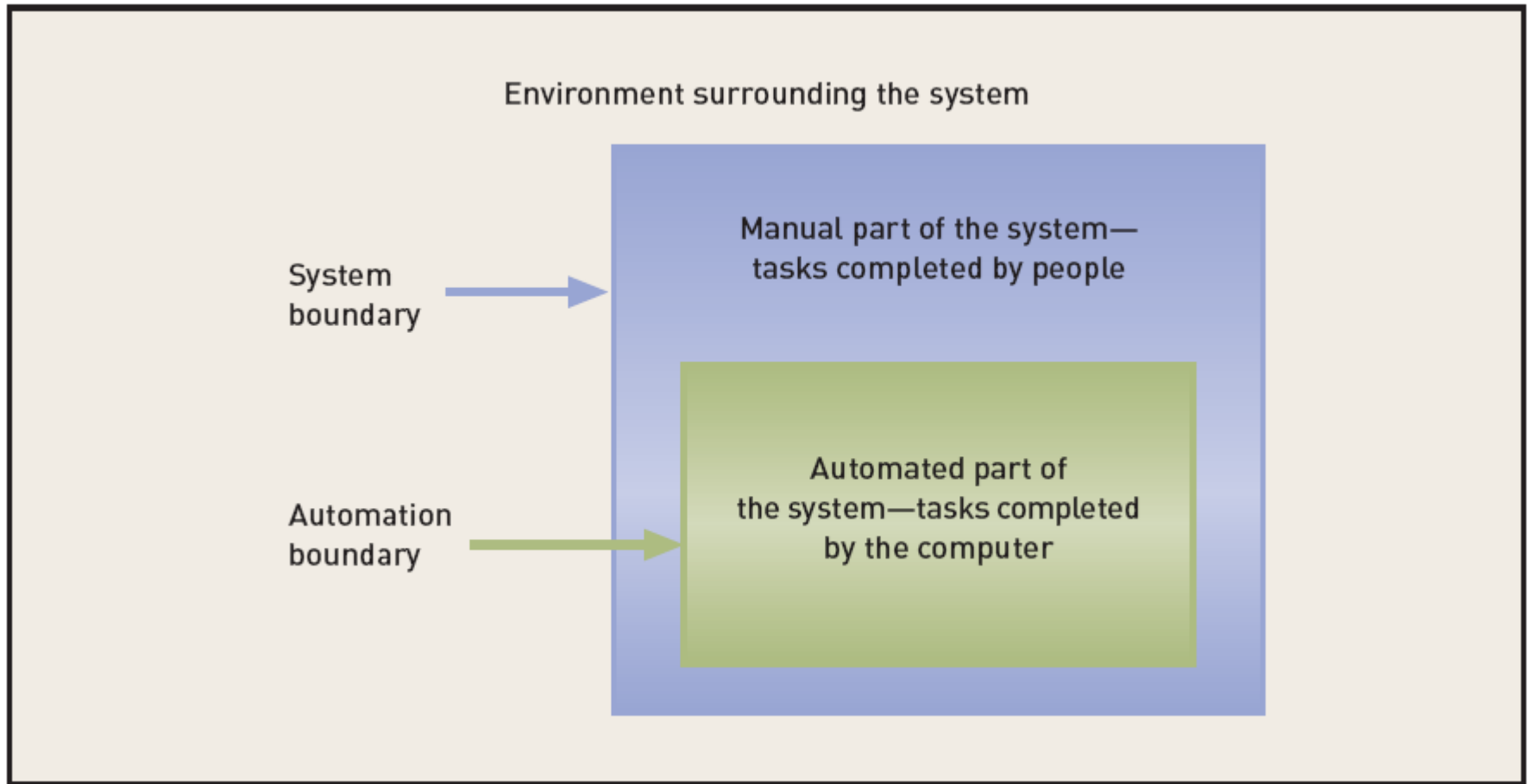


Figure 1-4

# Types of Information Systems

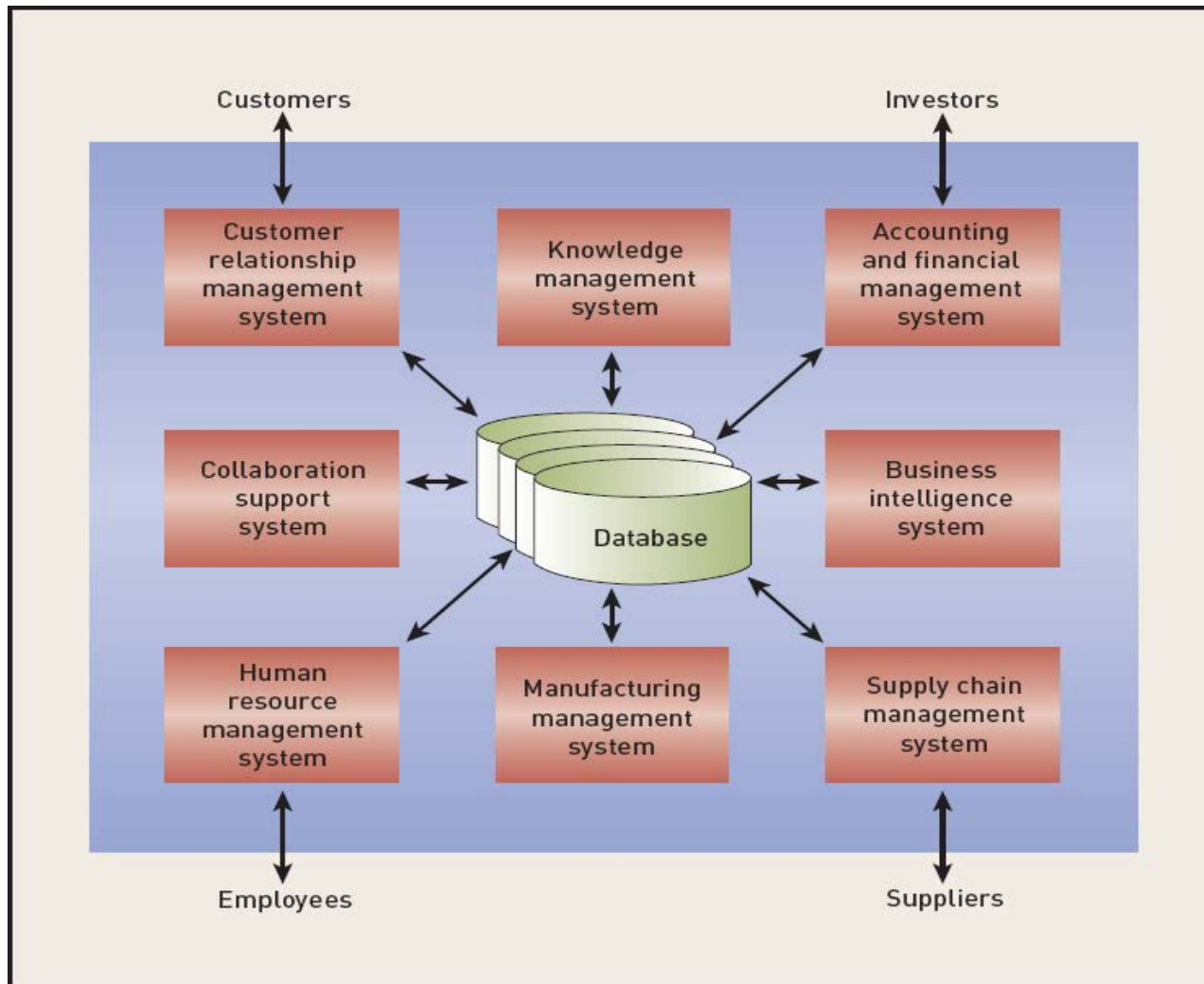


Figure 1-5

# Required Skills of the Systems Analyst

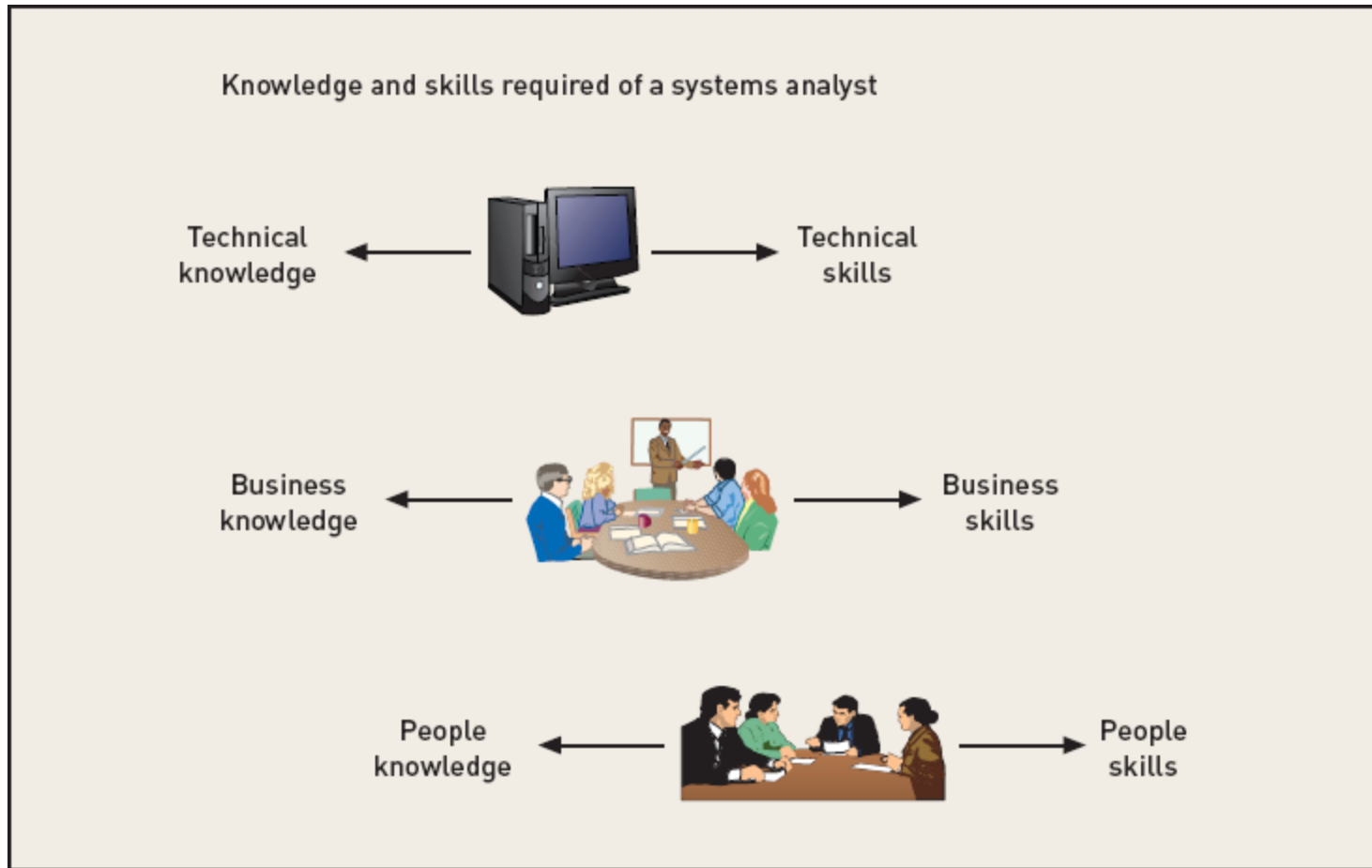


Figure 1-6

# Technical Knowledge and Skills

- ◆ An analyst should have fundamental technology knowledge of
  - Computers / peripheral devices (hardware)
  - Files and database systems
  - Input and output components and alternatives
  - Computer networks and protocols
  - Programming languages, operating systems, and utilities
  - Communication and collaboration technology

# Technical Knowledge and Skills (continued)

- ◆ Analyst uses tools
  - Software productivity packages
  - Integrated development environments (IDEs) for programming languages
  - Visual modeling tools and code generation tools
- ◆ Analyst understands SDLC techniques
  - Project planning, cost/benefit, interviewing
  - Systems requirements modeling including
  - Design, database design, network configuration

# Business Knowledge and Skills

- ◆ Analyst must understand
  - Business functions performed by organization
  - Strategies, plans, traditions, and values of the organization
  - Organizational structure
  - Organization management techniques
  - Functional work processes
- ◆ Systems analysts typically study business administration/management in college with a major in CIS or MIS



# People Knowledge and Skills

- ◆ Primarily a systems analyst must be an effective communicator
- ◆ A systems analyst must be able to perform various roles such as negotiator, teacher, mentor, collaborator, and manager

# Integrity and Ethics

- ◆ Analyst has access to confidential information, such as salary, an organization's planned projects, security systems, and so on.
  - Must keep information private
  - Any impropriety can ruin an analyst's career
  - An analyst plans the security in systems to protect confidential information

# Systems Analyst Related Careers

- ◆ Employment picture is complex with traditional programming jobs not as prevalent as previously
- ◆ Many new opportunities exist in areas such as consulting, compliance, security, Web development, ERP support
- ◆ Typical job titles include:
  - Consultant – Business, Systems, Technical
  - Analyst – Business systems, Systems support
  - Developer – Web, systems
  - Architect – Web, System, Software

# The Analyst's Role in Strategic Planning

- ◆ Special projects affecting executives
  - Business process management – redesign and improvements to existing processes
- ◆ Strategic planning process
- ◆ Information systems strategic planning
  - Application architecture plan (business focus)
  - Technology architecture plan (infrastructure focus)

# Components of an Information Systems Strategic Plan

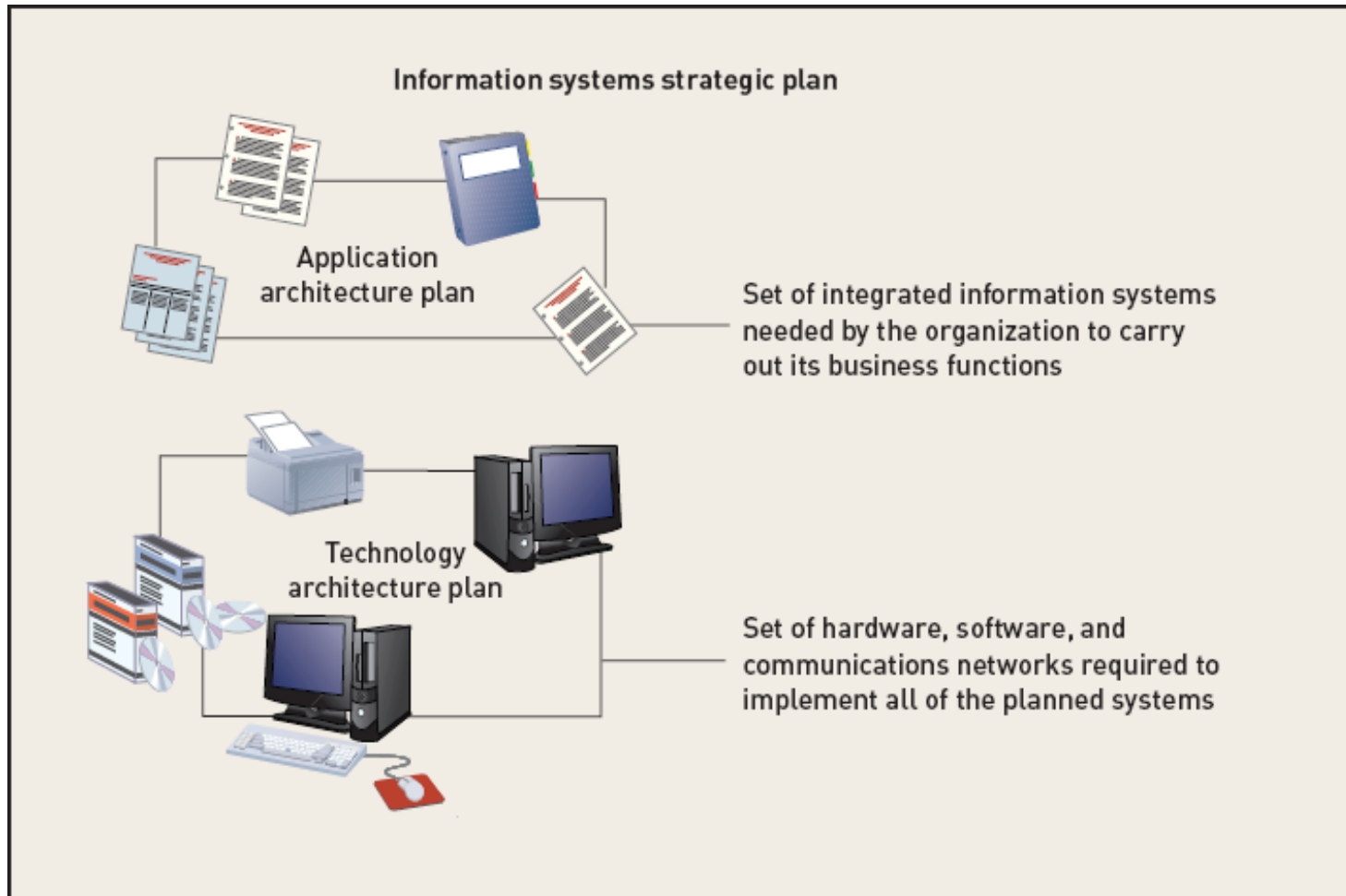


Figure 1-7

# Rocky Mountain Outfitters (RMO) and Its Strategic Information Systems Plan

- ◆ RMO sports clothing manufacturer and distributor about to begin customer support system project
- ◆ Need to understand the nature of the business, approach to strategic planning, and objectives for customer support system
- ◆ RMO system development project used to demonstrate analysis and design concepts
- ◆ Reliable Pharmaceutical Service (RPS) is a second case study for classroom purposes

# Introduction to Rocky Mountain Outfitters (RMO) Business

- ◆ Began in Park City, Utah supplying winter sports clothes to local ski shops
- ◆ Expanded into direct mail-order sales with small catalog—as catalog interest increased, opened retail store in Park City
- ◆ Became large, regional sports clothing distributor by early 2000s in Rocky Mountain and Western states
- ◆ Currently \$180 million in annual sales and 600 employees and two retail stores
- ◆ Mail-order revenue is \$90 million; phone-order revenue is \$50 million

# Early RMO Catalog Cover (Fall 1978)

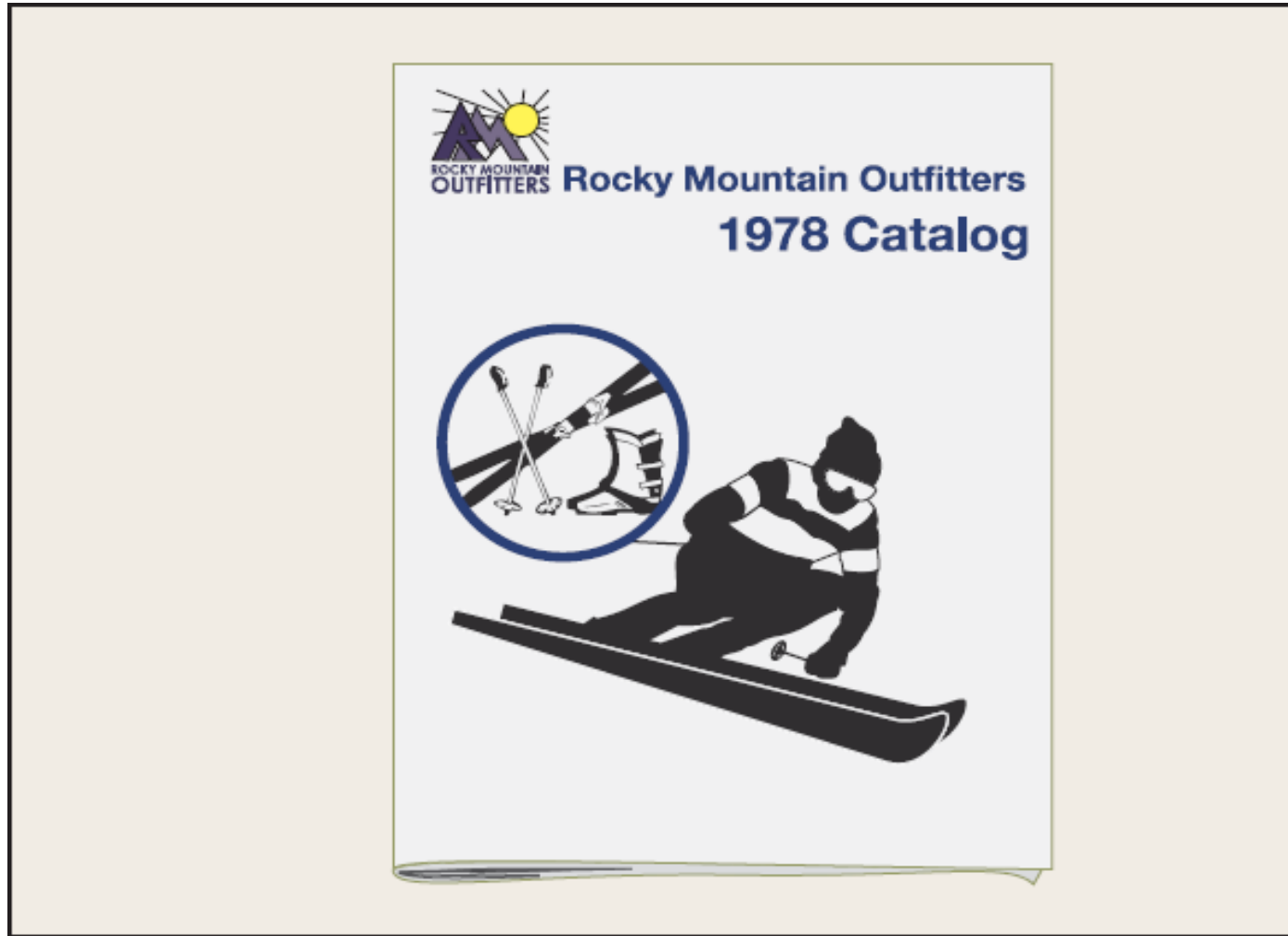


Figure 1-8



# Current RMO Catalog Cover (Fall 2007)

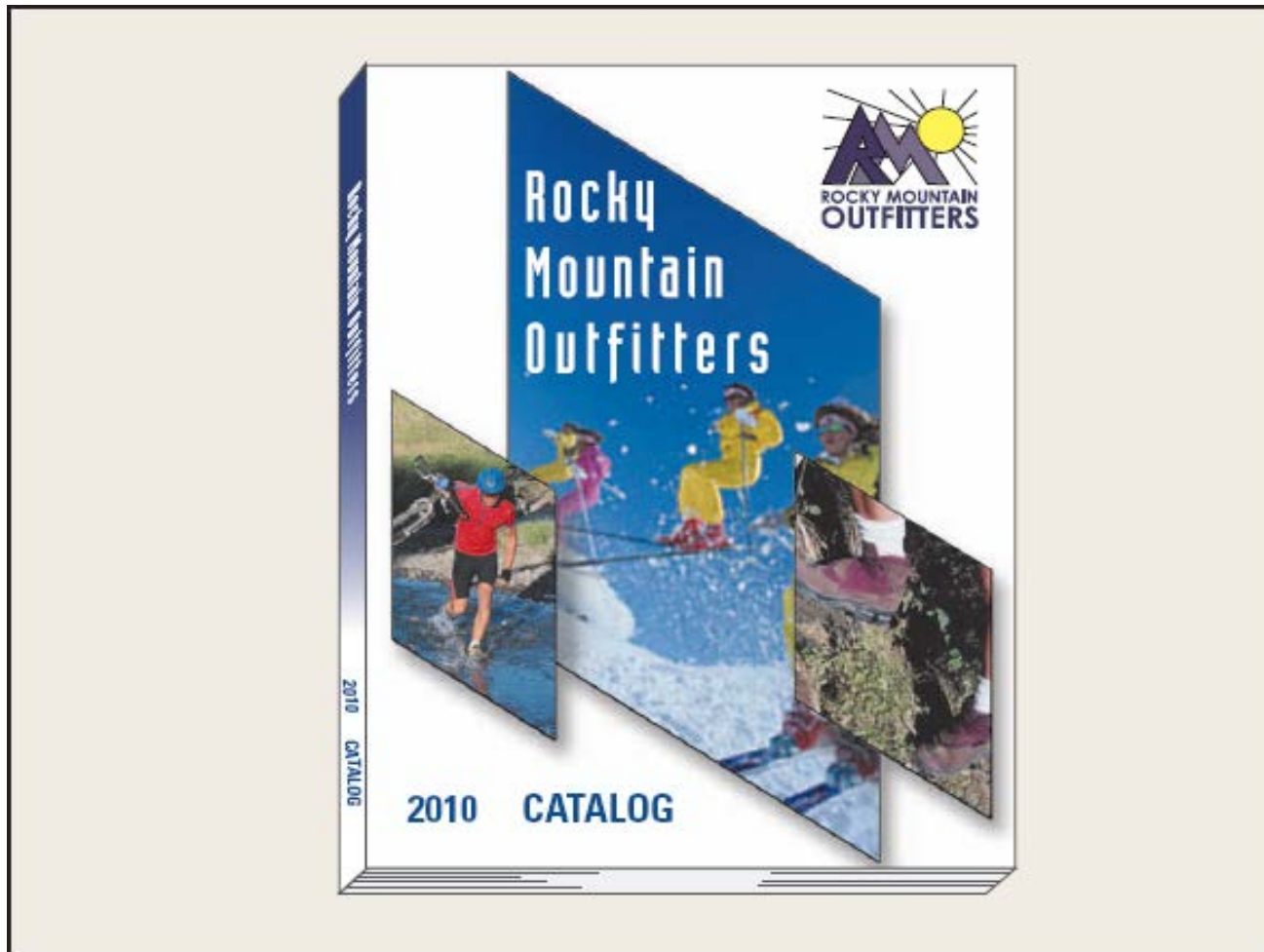


Figure 1-9

# RMO Strategic Issues

- ◆ Innovative clothing distributor; featured products on Web site ahead of competitors
- ◆ Original Web site now underperforming
  - Slow, poor coordination with in-house, poor supply chain management, poor technical support
- ◆ Market analysis showed alarming trends
  - Sales growth too slow, age of customers increasing, Web sales small percentage of total

# RMO Strategic Issues (continued)

- ◆ Enhanced Web site functions
  - Add specific product information, weekly specials, and all product offerings
- ◆ Detailed IS strategic plan
  - Supply chain management
  - Customer relationship management

# RMO's Organizational Structure

- ◆ Managed by original owners
  - John Blankens – President
  - Liz Blankens – Vice president of merchandising and distribution
- ◆ William McDougal – Vice president of marketing and sales
- ◆ JoAnn White – Vice president of finance and systems
  - Mac Preston – Chief Information Officer

# RMO Current Organization

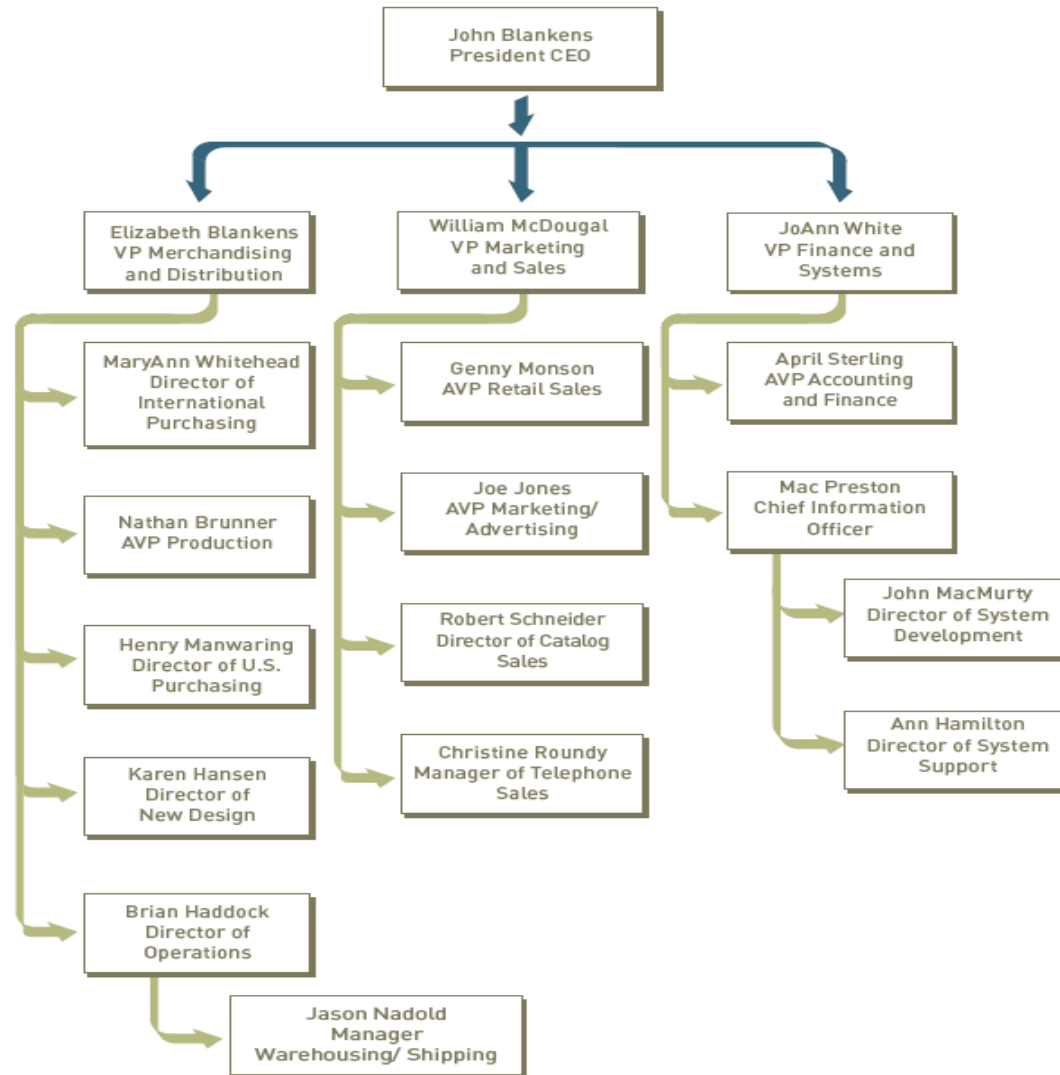


Figure 1-10

# RMO Locations



Figure 1-11

# RMO Information Systems Department

- ◆ Mac Preston – Assistant vice-president and chief information officer (CIO)
  - Recent promotion made after IS strategic plan created
  - CIO reports to finance and systems VP
  - CIO is increasingly important to future of RMO
  - Given its strategic importance, IS department will eventual report directly to the CEO

# RMO Information Systems Department Staffing



Figure 1-12



# Existing RMO Systems

- ◆ Small server cluster system
  - Supports inventory, mail-order, accounting, and human resources
  - High capacity network connects distribution and mail-order sites
- ◆ LANs and file servers
  - Supports central office functions, distribution centers, and manufacturing centers

# Existing RMO Systems (continued)

- ◆ Supply Chain Management System
  - Client/Server system in C++ and DB2
- ◆ Mail Order System
  - Mainframe COBOL/CICS. Unable to handle phone orders
- ◆ Phone order system
  - Oracle and Visual Basic system built 6 years ago
- ◆ Retail store systems
  - Eight-year-old point-of-sale and batch inventory package, overnight update with mainframe

# Existing RMO Systems (continued)

## ◆ Office systems

- LAN with office software, Internet, e-mail

## ◆ Human resources system

- Thirteen-year-old mainframe-based payroll and benefits

## ◆ Accounting/finance system

- Mainframe package bought from leading vendor

## ◆ Web Catalog and Order System

- Outside company until 2011. Irregular performance

# The Information Systems Strategic Plan

- ◆ Supports RMO strategic objectives
  - Build more direct customer relationships
  - Expand marketing beyond Western states
- ◆ Plan calls for a series of information system development and integration projects over several years
- ◆ Project launch: New customer support system to integrate phone orders, mail orders, and direct customer orders via Internet

# RMO Technology Architecture Plan

- ◆ Distribute business applications
  - Across multiple locations and systems
  - Reserve data center for Web server, database, and telecommunications
- ◆ Strategic business processes via Internet
  - Supply chain management (SCM)
  - Direct customer ordering via dynamic Web site
  - Customer relationship management (CRM)
- ◆ Web-based intranet for business functions

# RMO Application Architecture Plan

- ◆ Supply chain management (SCM)
  - Product development, product acquisition, manufacturing, inventory management
- ◆ Customer support system (CSS)
  - Integrate order-processing and fulfillment system with SCM
  - Support customer orders (mail, phone, Web)
- ◆ Strategic information management system
  - Extract and analyze SCM and CSS information for strategic and operational decision making and control

# RMO Application Architecture Plan (continued)

- ◆ Retail store system (RSS)
  - Replace existing retail store system with system integrated with CSS
- ◆ Accounting/finance system
  - Purchase intranet application to maximize employee access to financial data for planning and control
- ◆ Human resources (HR) system
  - Purchase intranet application to maximize employee access to human resources forms, procedures, and benefits information

# Timetable for RMO Strategic Plan

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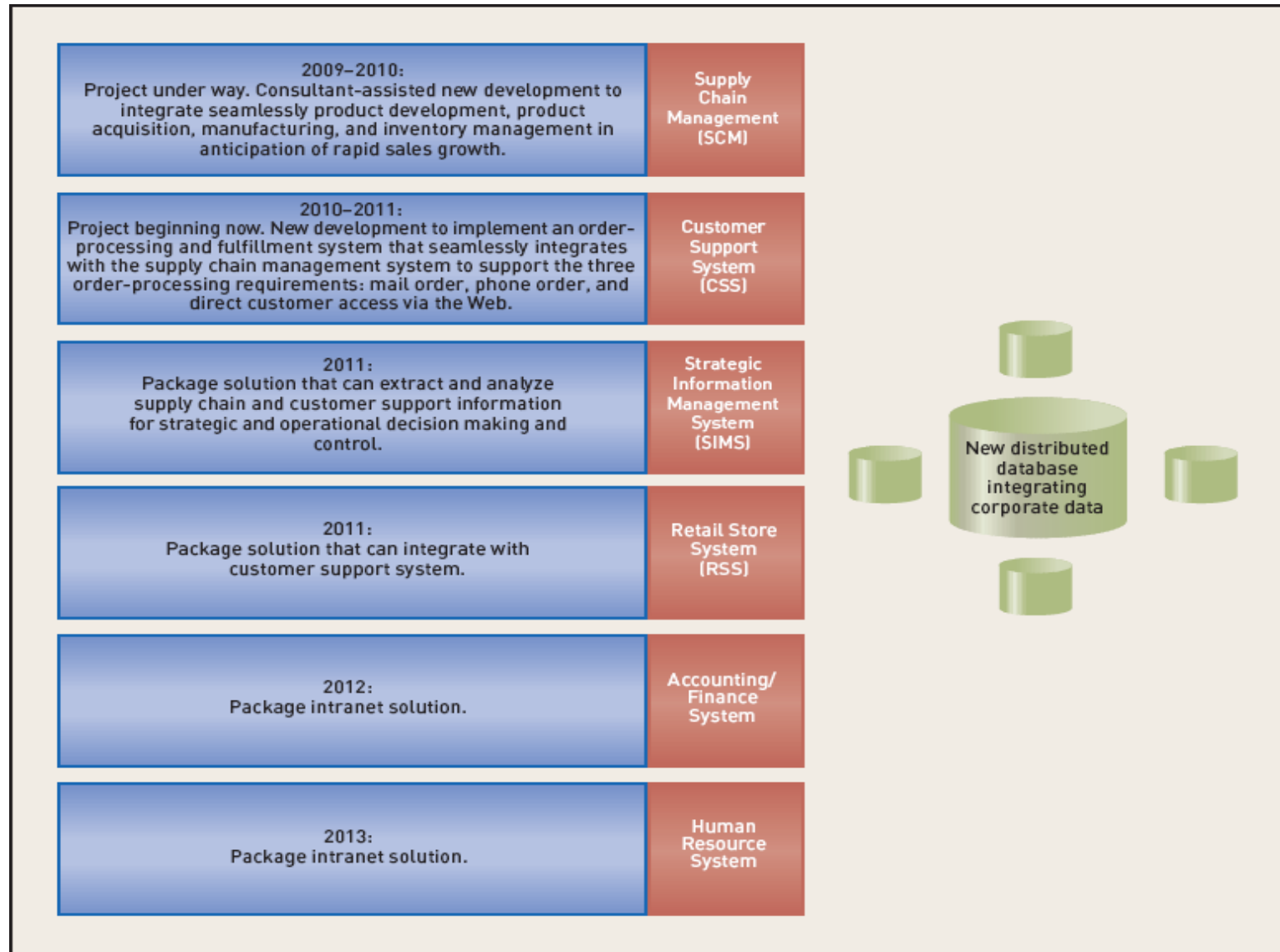


Figure 1-13



# The Customer Support System (CSS)

- ◆ RMO core competency is their ability to develop and maintain customer loyalty
- ◆ CSS is a core system supporting complete customer relationship management
  - Inquiries, order entry, order tracking, shipping, back ordering, returns, sales analysis
- ◆ Systems analysis activities will define system requirements in detail
- ◆ Strategic plan's stated objectives will form guidelines as project proceeds

# Analyst as a System Developer

- ◆ Part 1: The systems analyst
  - Chapter 1: The world of the information systems analyst (this chapter)
  - Chapter 2: Approaches to system development
    - ◆ Predictive and adaptive SDLCs
    - ◆ Traditional approach
    - ◆ Object-oriented approach
  - Chapter 3: The analyst as a project manager

# Analyst as a System Developer (continued)

- ◆ Part 2: Systems analysis tasks
  - Chapter 4: Beginning the analysis: Investigating system requirements
  - Chapter 5: Modeling system requirements
  - Chapter 6: Traditional approach to requirements
  - Chapter 7: Object-oriented approach to requirements
  - Chapter 8: Evaluating alternatives for requirements, environment, and implementation

# Analyst as a System Developer (continued)

- ◆ Part 3: Systems design tasks
  - Chapter 9: Moving to design
  - Chapter 10: Traditional approach to design
  - Chapter 11: Object-oriented design: Principles
  - Chapter 12: Object-oriented design: Use Case Realizations
  - Chapter 13: Designing databases

# Analyst as a System Developer (continued)

- Chapter 14: Designing the user interface
- Chapter 15: Designing system interfaces, controls, and security
- ◆ Part 4: Implementation and support
  - Chapter 16: Making the system operational
  - Chapter 17: Current trends in system development
- ◆ Supplemental Online Chapters
  - Online Chapter 1: Software packages and ERP

# Analyst as a System Developer (continued)

## ◆ Online Appendices:

- Project management, finance, planning, interviewing
- Project schedules with PERT/CPM charts
- Calculating net present value, payback period, and return on investment
- Presenting the results to management

# Summary

- ◆ A systems analyst solves business problems using information systems technology
- ◆ Problem solving means looking into business problem in great detail, completely understanding problem, and choosing best solution
- ◆ Information system development is much more than writing programs

# Summary (continued)

- ◆ System – collection of interrelated components that function together to achieve some outcome
- ◆ Information systems outcome – solution to a business problem
- ◆ Information systems, subsystems, and components interact with and include hardware, software, inputs, outputs, data, people, and procedures



# Summary (continued)

- ◆ Systems analyst has broad knowledge and variety of skills, including technical, business, and people
- ◆ Integrity and ethical behavior are crucial to success for the analyst
- ◆ Systems analyst encounters a variety of rapidly changing technologies
- ◆ Systems analyst works on strategic plans and then system development projects