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Chapter 1: The World of the Modern Systems Analyst

Systems Analysis and Design in a Changing World, 3rd Edition

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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

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Learning Objectives (continued)

- Describe the many types of technology an analyst needs to understand
- Describe various job titles 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

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Overview

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

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Overview (continued)

- Systems analysis – what system should do
- Systems design – how components of information system should be physically implemented
- Systems analyst – uses analysis and design techniques to solve business problems with information technology

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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 technical programmer

Analyst's Approach to Problem Solving

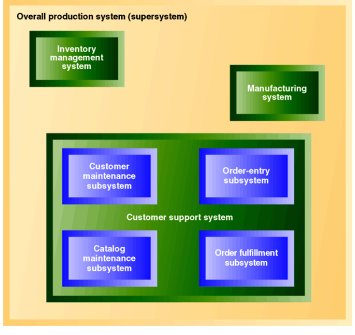
- Research and understand the problem
- Verify that the benefits of solving the problem outweigh the costs
- Define the requirements for solving the problem
- Develop a set of possible solutions (alternatives)
- Decide which solution is best, and make a recommendation
- Define the details of the chosen solution
- Implement the solution
- Monitor to make sure that you obtain the desired results

Systems That Solve Business Problems

- System – interrelated components functioning together to achieve outcome
- Information systems – collection of interrelated components that collect, process, store, and provide as output information needed to complete tasks
- Subsystems – part of larger system
- Supersystem – larger system contains subsystem
- Functional decomposition – dividing system into smaller subsystems and components

Information Systems and Subsystems

FIGURE 1-2
Information systems and subsystems.

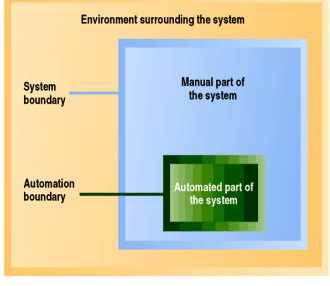


Information Systems and Component Parts

FIGURE 1-3
Information systems and component parts.

System Boundary vs. Automation Boundary

FIGURE 1-4
The system boundary versus the automation boundary.



Types of Information Systems

- Transaction processing systems (TPS)
  - Capture and record information about organization's transactions
- Management information systems (MIS)
  - Take information captured by TPS
  - Produce reports for planning and control
- Executive information systems (EIS)
  - Monitoring competitive environment and strategic planning

Types of Information Systems (continued)

- Decision support systems (DSS)
  - Explore impact of available options or decisions (What-if scenarios)
- Communication support systems
  - Facilitate communication internally and with customers and suppliers
- Office support systems
  - Help employees create and share documents

Types of Information Systems (continued)

FIGURE 1-5
Types of information systems.

Required Skills of the Systems Analyst

- An analyst should have fundamental technology knowledge of:
  - Computers / peripheral devices (hardware)
  - Communication networks and connectivity
  - Database and database management systems (DBMS)
  - Programming languages (for example: VB.NET or Java)
  - Operating systems and utilities

Technical Knowledge and Skills

- Analyst uses tools:
  - Software productivity packages (MS Office)
  - Integrated development environments (IDEs) for programming languages
  - CASE tools / coding, testing, and documentation support packages
- Analyst understands SDLC phase techniques:
  - Project planning
  - Systems analysis, systems design
  - Construction, implementation, systems support

Business Knowledge and Skills

- Analyst must understand:
  - Business functions performed by organization
  - Organizational structure
  - Organization management techniques
  - Functional work processes
- Systems analysts typically study business administration in college

People Knowledge and Skills

- Systems analysts need to understand how people:
  - Think
  - Learn
  - React to change
  - Communicate
  - Work (in a variety of jobs and levels)

People Knowledge and Skills (continued)

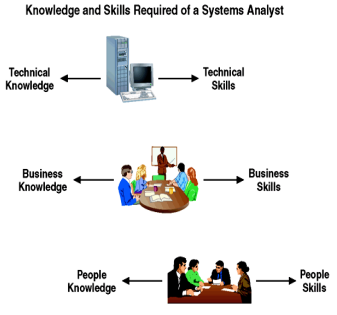
- Interpersonal and communication skills are crucial to:
  - Obtaining information
  - Motivating people
  - Getting cooperation
  - Understanding the complexity and workings of an organization in order to provide necessary support

Integrity and Ethics

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

Required Skills of the Systems Analyst

FIGURE 1-6
Required skills of the systems analyst.



The Environment Surrounding the Analyst

- Types of Technology Encountered
  - Desktop
  - Networked desktops
  - Client-server
  - Mainframe
  - Internet, intranet, and extranet
  - Wireless, PDAs, Cell Phones (mobile workers)

Typical Job Titles and Places of Employment

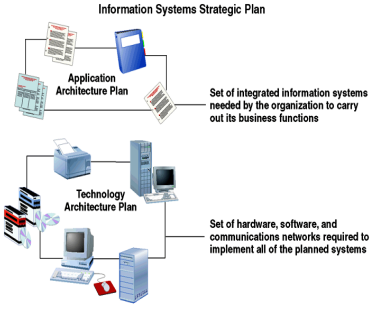
- Job titles of systems analyst vary greatly, but entail same thing
- Places of employment vary from small businesses to large corporations
- Analysts can be internal employees or outside consultants
- Analysts can be developing solutions for internal business managers or for external clients and customers

The Analyst's Role in Strategic Planning

- Special projects affecting executives
  - Business process reengineering – radical improvements to existing processes
- Strategic planning development process
- Information systems strategic planning
  - Application architecture plan (business focus)
  - Technology architecture plan (infrastructure focus)
- Enterprise resource planning (ERP) integrated systems

Components of an information systems strategic plan

FIGURE 1-7
Components of an information systems strategic plan.



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

- RMO sports clothing manufacturer and distributor about to begin customer support system project
- First understand: nature of the business, approach to strategic planning, and objectives for customer support system
- RMO systems 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

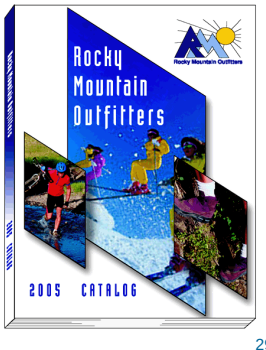
- Began Park City, Utah in 1978 supplying winter sports clothes to local ski shops
- Expanded into direct mail-order sales with small catalog – as catalog interest increased, opened retail store in Park City
- Became large, regional sports clothing distributor by early 2000's in Rocky Mountain and Western states
- Currently $100 million in annual sales and 600 employees and two retail stores
- Mail-order revenue to $60 million, phone-order revenue is $30 million

Early RMO Catalog Cover (Spring, 1978)

FIGURE 1-8
Early RMO catalog cover (Fall 1978).

Current RMO Catalog Cover (Fall 2005)

FIGURE 1-9
Current RMO catalog cover (Fall 2005).



RMO Strategic Issues

- Innovational clothing distributor, featured products on Web site ahead of competitors
- Original Web site functions:
  - Enhance image, request copy of catalog, portal to Outdoor sports Web sites
- 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 (married) 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
  - Background in finance and accounting

RMO Locations

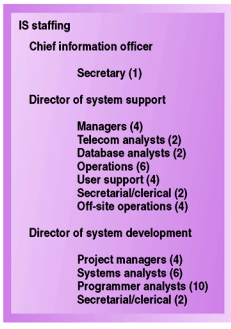
FIGURE 1-11
Rocky Mountain Outfitters' locations.

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
  - IS department will report directly to the CEO … if CIO can successfully implement new strategic IS plan

RMO IS Department Staffing

FIGURE 1-12
RMO information systems department staffing.



Existing RMO Systems

- Small mainframe-based system
  - Supports inventory, mail-order, accounting and human resources
  - Has dedicated connectivity to distribution and mail-order sites
- LANs and file servers
  - Supports central office functions, distribution centers, and manufacturing centers
  - Manufacturing has dial-up capability

Existing RMO Systems (continued)

- RMO informational Website
  - Hosted by Internet service provider (ISP)
- Merchandising/Distribution
  - 12 year old mainframe COBOL/CICS, DB2, VSAM application
- Mail order
  - 14 year old mainframe COBOL application
- Phone order
  - Oracle and Visual Basic system built 6 years ago

Existing RMO Systems (continued)

- Retail store systems
  - 8 Year old point-of-sale and batch inventory package, overnight update with mainframe
- Office systems
  - LAN with office software, Internet, email
- Human resources
  - 13 year old mainframe-based payroll and benefits
- Accounting/Finance
  - Mainframe package bought from leading vendor

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, direct customer orders via Internet

RMO Technology Architecture Plan

- Distribute business applications
  - Across multiple locations and systems
  - Reserve mainframe for Web server, database, and telecommunications
  - Allow incremental and rapid growth in capacity
- 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 resource (HR) system
  - Purchase intranet application to maximize employee access to human resource forms, procedures, and benefits information

Timetable for RMO Application Architecture Plan

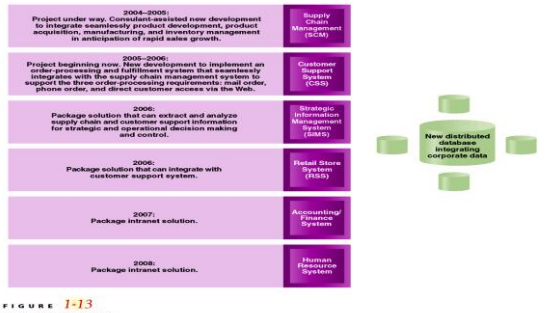


FIGURE 1-13
The timetable for RMO's application architecture plan.

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The Customer Support System

- RMO core competency is their ability to develop and maintain customer loyalty
- Supply chain management (SCM) must be defined before CSS can begin
- CSS is a core system supporting customer relationship management
- Systems analysis phase will define system requirements in detail
- Strategic plan's stated objectives will form guidelines as project proceeds

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Analyst as a System Developer

- Part 1: The modern systems analyst
  - Chapter 1: Nature of the analyst's work
  - Chapter 2: Systems development life cycle (SDLC)
  - Chapter 3: How projects are planned and managed

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Analyst as a System Developer (continued)

- Part 2: Systems analysis tasks
  - Chapter 4: Investigating systems requirements and information gathering
  - 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

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Analyst as a System Developer (continued)

- Part 3: Systems design tasks
  - Chapter 9: Overview of systems design
  - Chapter 10: Traditional approach to design
  - Chapter 11: Object approach to design
  - Chapter 12: Object-oriented development
  - Chapter 13: Database design
  - Chapter 14: User interface design
  - Chapter 15: System interfaces and controls

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Analyst as a System Developer (continued)

- Part 4: Implementation and support
  - Chapter 16: Making the system operational
- Current Trends
  - Chapter 17: Spiral model, extreme programming (XP), unified process (UP), prototyping, component-based development
  - Chapter 18: Software packages and enterprise resource planning (ERP)
- Appendices:
  - Project management, planning, interviewing

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Summary

- 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 systems 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
- System analyst works on strategic plans and then systems development projects