Online Chapter A – The Role of the Systems Analyst

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Why read this chapter?

This chapter is important if you are going to be a systems analyst, obviously. Also, if you are not going to be a systems analyst, but an IT professional then you will need to learn to work with many different types of team members. It is good to understand their perspective. And, some CIS students change their majors from networking, programming, Web development, etc. to systems analysts either during school or later in their careers.

Chapter Overview

This chapter describes the role of the systems analyst—the nature of the work, the knowledge and skills that are important, and the types of systems and projects that analysts work on.

Information systems (IS) are crucial to the success of modern business organizations. New information systems are constantly being developed to make businesses more competitive. People are attracted to IS careers because information technology can have a dramatic impact on productivity and profits. People develop information system solutions to apply information technology to obtain business benefits.

The analyst’s work is defined as organizational problem solving, and the analyst follows a standard problem-solving process. The key to successful system development is thorough systems analysis and design to understand what the business requires from the information system.

This chapter surveys several types of business information systems that are used by organizations today. The information systems listed in the text are the types of systems that IS, MIS, and CIS graduates should be able to develop and deploy.

A systems analyst is a business professional who requires extensive technical, people, and business skills. There are numerous career options for people who have graduated with a degree in information systems. Job titles range from programmer analyst to business consultant to Web developer.

Learning Objectives

After reading this chapter, you should be able to:
- Explain the key role of a systems analyst in business
- Describe the various types of systems and technologies an analyst might use
- Explain the importance of technical skills, people skills, and business skills for an analyst
- Explain why ethical behavior is crucial for a systems analyst’s career
• Describe various job titles in the field and places of employment where analysis and design work is done

Notes on Opening Case and EOC Cases

**Opening Case**

**A Systems Analyst at Consolidated Refineries:** This case describes the career of a college graduate in information systems. Mary Wright describes her career as a systems analyst and how she had to learn all about the industry, the company, and company procedures and priorities. In addition, she was involved in all kinds of technical activities to help evaluate options and alternatives for the project. She had anticipated that her career would start as a junior programmer, but instead she became an integral part of the team for fact finding, systems analysis, and defining requirements and specifications.

**EOC Cases**

**Association for Information Technology Professionals Meeting:** This case describes some of the methods used by company executives when they interview and hire new college graduates. For example, most companies are interested in the problem solving skills of potential employees. You are asked to evaluate the discussion of hiring a new employee, especially a college graduate. You are asked to think about preparing for a career and some of the important issues that they should be thinking about.

**Overview Section**

**Key Terms**

- **systems analysis** – the process of understanding and specifying in detail what the information system should accomplish
- **systems design** – the process of specifying in detail how the many components of the information system should be physically implemented
- **systems analyst** – a business professional who uses analysis and design techniques to solve business problems by using information technology

The key to successful system development is thorough systems analysis and design to understand what the business requires from the information system. **Systems analysis** means understanding and specifying in detail what the information system should accomplish. **Systems design** means specifying in detail how the many components of the information system should be physically implemented. This text is about systems analysis and design techniques used by a **systems analyst**, a business professional who develops information systems. This online chapter describes the world of the systems analyst—the nature of the work, the knowledge and skills that are important, and the types of systems and special projects an analyst works on.
The Analyst as a Business Problem Solver

Key Terms

none

Systems analysts need to know about computers and programming, but they also should know and have a desire to use computers to solve problems. The solution to the “problem” is generally a new information system. Systems analysts solve problems for business organizations, such as the following:

- Problems getting orders from customers twenty-four hours a day.
- Problems planning production amounts to satisfy customer demands.
- Problems reducing inventory holding costs and obtaining supplier discounts.
- Problems anticipating customer needs by tracking buyer trends.
- Problems limiting complete information about the organization’s financial position.
- Problems limiting employee flexibility in benefits plans.

A systems analyst uses a generic problem-solving approach. The analyst uses a series of steps to systematically understand and solve the problem. These steps include the following:

1. Research and understand the problem.
2. Verify that the benefits of solving the problem outweigh the costs.
3. Define the requirements for solving the problem.
4. Develop a set of possible solutions (alternatives).
5. Decide which solution is the best, and make a recommendation.
6. Define the details of the chosen solution.
7. Implement the solution.
8. Monitor to make sure the desired results are obtained.

When a new information system will be a solution to a problem, it is important to understand the problem itself. This is the essence of systems analysis—understanding and defining what it takes to solve the problem. A business case must be made for solving the problem—if the benefits don’t outweigh the costs, then why should the problem be solved at all?

There are often many alternative solutions that will solve the problem. These solutions must be identified and carefully evaluated. A solution is chosen based on a variety of factors. The best solution has the greatest benefits and the fewest risks. The chosen solution is defined in detail, and then it is implemented. While the new system is being used, it is important to monitor the new system to be sure it is doing what is needed to solve the problem. Over time, the new system will need to be supported and perhaps modified.
Systems That Solve Business Problems

Key Terms

- **system** – a collection of interrelated components that function together to achieve some outcome
- **information system** – a collection of interrelated components that collect, process, store, and provide as output the information needed to complete business tasks
- **subsystem** – a system that is part of a larger system
- **functional decomposition** – dividing a system into components based on subsystems that are further divided into smaller subsystems
- **system boundary** – the separation between a system and its environment that inputs and outputs must cross
- **automation boundary** – the separation between the automated part of a system and the manual part of a system
- **customer relationship management (CRM) system** – a system that supports marketing, sales, and service operations involving direct and indirect customer interaction
- **supply chain management (SCM) system** – a system that seamlessly integrates product development, product acquisition, manufacturing, and inventory management
- **accounting and financial management (AFM) system** – a system that records accounting information needed to produce financial statements and other reports used by investors and creditors
- **human resource management (HRM) system** – a system that supports such employee-related tasks as payroll, benefits, hiring, and training
- **manufacturing management system** – a system that controls internal production processes that turn raw materials into finished goods
- **knowledge management system (KMS)** – a system that supports the storage of and access to documents from all parts of the organization
- **collaboration support system (CSS)** – a system that enables geographically distributed personnel to collaborate on projects and tasks
- **business intelligence system** – a system that supports strategic planning and executive decision making
- **enterprise resource planning (ERP)** – a process in which an organization commits to using an integrated set of software packages for key information systems
- **database** – a centrally managed collection of data that is accessible to many users and systems at the same time
Information Systems

Although the approach to problem solving presented above can be applied to solving any type of problem, this text is about problems that are solved with information systems. The first part of this section presents many basic concepts that you should be familiar with. Essentially, the discussion for this section can focus on the key terms and their definitions: System; Information system; Subsystem; Functional decomposition; System boundary; Automation boundary.

Types of Information Systems

Various types of information systems are found in business organizations. These systems are often integrated through the use of shared data. The types of systems include the following: Customer relationship management (CRM) system; Supply chain management (SCM); Accounting and financial management (AFM) system; Human resource management (HRM) system; Manufacturing management system; Knowledge management system (KMS); Collaboration support system (CSS); and Business intelligence system.

In addition, many companies today use enterprise resource planning (ERP) systems which incorporate most or all of the functionality of many of the above mentioned systems.

Required Skills of the Systems Analyst

Key Terms

- **tools** – a software application that assists developers in creating models or other components required for a project
- **techniques** – strategies for completing specific system development activities

Technical Knowledge and Skills

These are the most obvious areas of expertise: computers, peripheral devices, communications networks, connectivity, databases, programming languages, and operating systems. Analysts also use tools and techniques to build systems.

**Tools** are software products that are used to develop analysis and design specifications and completed system components. Examples include development packages (such as Microsoft Access, Oracle Developer, and IBM Websphere Studio), integrated development environments (IDEs), computer-aided system engineering (CASE) tools, program code generators, documentation support tools, testing tools, and project management tools.

**Techniques** are strategies for completing specific system development activities. Examples include project planning techniques, cost/benefit analysis techniques, interviewing techniques, requirements modeling techniques, architectural design techniques, network configuration techniques, and database design techniques.
Business Knowledge and Skills

Systems analysts need to understand business organizations and how they operate. It is important to understand how organizations are structured and managed in addition to understanding the business functions that are performed in finance, accounting, manufacturing, marketing, human resources, and customer service.

It is also important to understand the specific organization involved. What does it do? What makes it successful? What are its strategies and plans? What are its traditions and values? A system solution is tailored specifically for the needs of a specific organization.

People Knowledge and Skills

Because systems analysts often work on development teams with other employees, they need to understand a lot about people and possess many interpersonal skills. Analysts need to understand how people think, learn, react to change, communicate, and work in a variety of jobs and levels.

A Few Words about Integrity and Ethics

It is also important for systems analysts to recognize the importance of ethical behavior. They are trusted with private information, such as salary, health, and job performance information. They might also work with confidential corporate information about products, strategic plans, business tactics, and security systems and processes.

Analysis-Related Careers

Key Terms

none

Rapid changes in technology, business practices, and the structure of the global economy have changed related jobs. Typical information system graduates of the late twentieth century were employed as programmer analysts. Job tasks consisted primarily of programming with some analysis and design. The employment picture is much more complex in the twenty-first century. the number and nature of the jobs, their titles, and the organizations that fill those positions are much more complex than in the past.

Changes in software development, technology, and business practices have created many new career opportunities for analysts, including:

- Sales and support of ERP software
- Business analysts for user organizations
- Auditing, compliance, and security
- Web development

People doing systems analysis and design work have many different job titles. Sometimes analysis and design work is only a part of their job responsibilities. Sometimes systems analysts also manage the
project and are referred to as project leaders or project managers. Other job titles include:

- Programmer analyst
- Business systems analyst
- System liaison
- End-user analyst
- Business consultant
- Systems consultant
- Systems support analyst
- Systems designer
- Software engineer
- System architect
- Webmaster
- Web developer

The career prospects for analysts are bright, but the nature of related jobs, their location, and the typical career development path for analysts and other information system professionals has changed significantly over the last two decades.

**Websites**

If you are interested in employment opportunities and careers, then explore the links below. Be sure to search with different titles such as the ones listed above

http://promotions.monster.com/
http://www.employment.com/
http://www.jobs.com/
http://www.jobs.net/

**Final Thoughts**

You may struggle with understanding how titles, roles, and responsibilities compare. Organizational and project responsibilities are fluid and may change frequently depending on business needs. The role and responsibilities of the systems analyst will change with the project phases of planning, analysis, design, and implementation.

Some developers may have a preference regarding development languages and technology platforms, but the systems analyst should resist being influenced by implementation decisions and technical details. The systems analyst needs to take a high-level view and focus on understanding the business problem completely before considering the technology details that are needed to solve that problem.

Similarly, the applications architecture plan and the technology architecture plan are separate documents that support first an analysis view and then a design view to offer a complete problem
definition. The RMO information systems strategic plan can be effectively used to describe the differences between the applications architecture plan and the technology architecture plan and to explain why both documents are necessary.