# **Systems Analysis and Design Eleventh Edition**

# **Chapter Two: Analyzing the Business Case**

# **A Guide to the Instructor’s Manual:**

We designed the Instructor’s Manual to supplement and enhance your teaching experience with classroom activities and a cohesive chapter summary.

This document is organized chronologically, using the same main heading in **red** that you see in the textbook. Under each heading you will find (in order): Lecture Notes that summarize the section, Figures and Boxes found in the section, if any, Teaching Tips, and Classroom Activities. Pay special attention to teaching tips and activities geared toward quizzing your students and enhancing their critical thinking skills.

In addition to the Instructor’s Manual, the Instructor Companion Site also contains PowerPoint Presentations, Solutions to Exercises, Figures, Test Banks, and other materials to aid you as an instructor.

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# **Learning Objectives**

Students will have mastered the material in Chapter Two when they can:

* Explain the concept of a business case and how a business case affects an IT project
* Describe the strategic planning process and why it is important to the IT team
* Explain the purpose of a mission statement
* Conduct a SWOT analysis and describe the four factors involved
* Explain how the SDLC serves as a framework for systems development
* List reasons for systems projects and factors that affect such projects
* Describe systems requests and the role of the systems review committee
* Define operational, technical, economic, and schedule feasibility
* Explain the factors that affect project priorities
* Describe the steps and the end product of a preliminary investigation

# **41: Introduction**

LECTURE NOTES

* Briefly describe the systems planning phase of the SDLC
* Define business case
* Briefly discuss the process of initiating a systems development

TEACHING TIPS

Explain that during the systems planning phase:

1) Project requests are studied and sanctioned

2) Project requests are listed

3) Resources, such as money, people, and tools, are allocated

4) Project development teams are designed

# **41: A Framework for IT Systems Development**

LECTURE NOTES

* Define strategic planning
* Discuss the importance of IT managers in strategic planning
* Discuss a mission statement
* Define critical success factor
* Explain the role of objectives in generating a set of business results that affect company stakeholders
* Define SWOT analysis, including the questions by which an enterprise SWOT analysis usually begins
* Use Figure 2-1 to discuss SWOT analysis
* List the benefits that can be assured if careful planning is done for IT projects
* Use Figure 2-2 to show the SWOT analysis of a corporate patent
* Use Figure 2-3, a tutorial screen from the Visible Analyst CASE tool, to illustrate the steps in the strategic planning process for IT projects
* Contrast the role of an IT department a few years ago with the role of an IT department today
* Consider the question of whether the IT department should perform an initial evaluation

FIGURES: 2-1, 2-2, 2-3

TEACHING TIPS

Explain that during strategic planning, company executives determine where the company is at present, where they want the company to be, and what they have to do to get there.

Remind the students that IT projects must have a well-defined scope and should support overall business strategy and operational needs.

CLASSROOM ACTIVITIES

1. Projects to Assign: As an extra-credit assignment, have students locate and print the mission statements of companies in which they are interested.

2. Projects to Assign: Assign Projects 1 and 3 on page 69.

3. Quick Quiz: Assign Questions 1 and 2 on page 69.

4. Critical Thinking: Assign Discussion Topics 3 and 4 on page 69.

5. Critical Thinking: Assign Project 4 on page 69.

# **43: Case In Point 2.1: Lo Carb Meals**

Lo Carb is a successful new company that has published several cookbooks and marketed its own line of low-carbohydrate meals. Joe Turner, Lo Carb’s president, has asked your opinion. He wants to know whether a mission statement really is necessary. After you review the chapter material, write a brief memo with your views. Be sure to include good (and not-so-good) examples of actual mission statements that you find on the web.

***Comments:*** *As the chapter points out, a mission statement is used to point out the company’s overall services, purpose, values, and product. It also describes a company for its stakeholders. Basically a stakeholder is someone who is affected by the company’s operations, such as customers, employees, suppliers, stockholders, and members of the community. Most firms feel strongly that a mission statement is an important part of their identity. You should encourage students to do research on the web to find examples of mission statements, to evaluate them, and to rate them.*

*You also might ask students for examples of mission statements at firms where they are employed. You could point out that one risk of having a mission statement is that the firm has to live up to it, or else the company’s credibility will be at risk, both internally and externally. If the mission statement really is based on the firm’s purpose, vision, and values, as explained on page 41, this will not be a problem.*

# **45: Case In Point 2.2: Attaway Airlines, Part One**

You are the IT director at Attaway Airlines, a small regional air carrier. You chair the company’s systems review committee, and you currently are dealing with strong disagreements about two key projects. Dan Esposito, the marketing manager, says it is vital to have a new computerized reservation system that can provide better customer service and reduce operational costs. Molly Kinnon, vice president of finance, is equally adamant that a new accounting system is needed immediately because it will be very expensive to adjust the current system to new federal reporting requirements. Molly outranks Dan, and she is your boss. The next meeting, which promises to be a real showdown, is set for 9:00 a.m. tomorrow. How will you prepare for the meeting? What questions and issues should be discussed?

***Comments****: The situation at Attaway Airlines is a common example of how systems projects compete for available resources. Although a systems review committee, which should be neutral, has been formed, students will notice that Molly is the boss. This should not influence the decision, but it could. The best course of action would be to apply a consistent set of standards when determining feasibility, especially if competing projects must be ranked. The real question is “What is the best course of action for the business?” Perhaps both projects could be addressed if the scope was redefined. It could be suggested that the committee should review the short-term and long-term consequences of doing, or not doing, each project. Perhaps a weighted index of factors could be devised. In the end, this is a business decision, and it needs to be made carefully, rationally, and professionally. The systems analyst’s job is to help make that happen.*

# **45: What Is a Business Case?**

LECTURE NOTES

* Discuss the characteristics a business case should posses
* Discuss the questions that a business case should answer

TEACHING TIPS

Prepare a few examples of business cases, both good and bad. Compare and contrast business cases for different areas, such as those for government contracts versus private enterprises.

CLASSROOM ACTIVITIES

1. Critical Thinking: Assign Project 2 on page 69.

# **45: Information Systems Projects**

LECTURE NOTES

* Define systems request
* Use Figure 2-4 to discuss the six main reasons for systems requests
* Explain the reason for having effective controls in a system
* Define encryption and biometric devices
* Discuss biometric devices using Figure 2-5
* List the various reasons for a current system to be expensive to maintain or operate
* Point out that a new system would be more cost effective than upgrading or maintaining a current system
* List examples of how insufficient or incomplete information can impact a company
* Explain the need to have systems that meet performance requirements for a specific hardware
* Discuss the ways in which systems requests can aim for improved service
* Summarize the concept of having more support for new products and services
* Use Figure 2-6 to identify the main internal and external factors that affect IT systems projects
* List the internal factors that affect IT systems projects
* Discuss the impact of strategic plan on IT projects
* Explain the role of top managers in systems projects
* Explain the impact of user requests on information systems, and point out that user requests often ask for enhancements to a current system
* Point out that an IT department can also be a source of project requests, noting that proposals can be technical or business oriented
* Explain the influence of errors or problems in existing systems
* Discuss the importance of identifying the underlying causes of problems
* Define legacy systems
* Discuss the role of a company’s financial status on system projects
* List the external factors that affect IT systems projects
* Give an example of how changing technology is affecting business and society in general
* Define electronic product code (EPC)
* Describe just-in-time (JIT) inventory systems
* Discuss customer relationship management (CRM) systems using Figures 2-8 and 2-9
* Discuss electronic proof of delivery (EPOD) as a technology-related cost control
* Explain the role of competitors in driving information systems decisions
* Discuss the influence of economic activity on corporate information management
* Discuss the role of government in the design of corporate information systems

FIGURES: 2-4, 2-5, 2-6, 2-7, 2-8, 2-9

TEACHING TIPS

Point out that a systems request can ask for an improvement or a correction in a current system, or an entirely new system. The forces that drive systems requests are:

1) Reaction to an opportunity

2) Resolution of a problem

3) Response to a directive

Explain that because passwords can be forgotten, and both passwords and encryption codes can be guessed, many organizations are turning to biometric devices to ensure security. Prepare a few images from the web to explain the different biometric devices available.

Biometric devices authenticate a person’s identity by verifying a personal characteristic, called a biometric identifier. Biometric identifiers include fingerprints, hand geometry, facial features, voice, signatures, and retinal (eye) patterns.

Explain Quick Response codes using Figure 2-7.

CLASSROOM ACTIVITIES

1. Class Discussion: Ask students how internal factors are different from external factors. Which would have a greater impact on systems projects? Why?

2. Group Activity: Ask students to suggest examples of technological changes that probably triggered information systems requests.

3. Critical Thinking: Assign Discussion Topic 2 on page 69.

4. Critical Thinking: What kind of business benefits result from improved service?

5. Critical Thinking: Considering the reasons for systems projects, is it possible to have too much of a good thing? Can service ever be too good? Can performance be too strong? Can there ever be too much information? Can controls be too strong? Can costs be reduced too much? Why or why not? If so, where should a line be drawn?

6. Critical Thinking: Assign Project 5 on page 69.

# **47: Case In Point 2.3: Trent College**

Trent College is a private school in a small Maryland town. The college has outgrown its computerized registration system and is considering a new system. Althea Riddick, the college president, has asked you to list the reasons for systems projects, which are described in Section 2.4.1, and assign a relative weight to each reason, using a scale of 1–10, low to high. She said to use your best judgment and support your conclusions in a brief memo to her. She also wants you to create a Microsoft Excel spreadsheet that will calculate the weighted values automatically for each reason.

***Comments****: The main reasons for systems requests are improved service to customers, better performance, support for new products and services, more information, stronger controls, and reduced cost. The objective is to assign a relative weight, on a scale of 1*–*10, for each item. Answers will vary, but students should be encouraged to think about the context—a small college—and to come up with reasons for their responses. For example, in a college setting, improved service might include an online course registration system, off-campus access to computing lab facilities, or a student-faculty network to facilitate communications and homework submissions.*

*Whatever the ratings, students should be able to construct a simple spreadsheet that can serve as a weighted model.*

# **51: Evaluation of Systems Requirements**

LECTURE NOTES

* Define systems review committee or a computer resources committee
* Discuss the ways in which many organizations use a special form for systems requests such as the online form in Figure 2-10
* Point out the characteristics of a properly designed systems request form
* Discuss the steps that are taken when a systems request form is received
* Discuss the functions of a systems review committee
* Consider the advantages and disadvantages of using a systems review committee
* Mention circumstances when a single person reviews systems requests
* Explain that the goal of a systems review is to evaluate requests and set priorities

FIGURE: 2-10

TEACHING TIPS

Explain that in small organizations systems request can be made in a telephone conversation or as part of an email message. Most large organizations, however, use a systems request form.

CLASSROOM ACTIVITIES

1. Class Discussion: With the advantages and disadvantages of using a systems review committee in mind, ask students when it is better for systems requests to be reviewed by a committee and when requests are better reviewed by an individual. Does the answer depend on the size of the company? Ask them if their answer is dependent on the anticipated impact and expense of the system. When evaluating a systems request, what criteria should be applied and how should priorities be determined?

2. Group Activity: Consider assigning students to different roles on a systems review committee as discussed on page 51. Have them discuss how their roles might introduce bias or create internal conflict when evaluating and prioritizing systems requests.

3. Quick Quiz: Assign Question 3 on page 69.

# **52: Overview of Feasibility**

LECTURE NOTES

* Discuss feasibility study
* Use Figure 2-11 to identify four yardsticks used to measure feasibility
* Mention the factors that determine the complexity of a feasibility study and the amount of effort that goes into a feasibility study
* Point out the fact-finding activities that can be used to obtain more information about a systems request
* Define operational feasibility, and list the questions that are to be considered when assessing operational feasibility
* Define economic feasibility and total cost of ownership (TCO), and list the areas in which an analyst must make cost estimates when determining TCO
* Differentiate between tangible costs and intangible costs and between tangible benefits and intangible benefits
* List examples of tangible and intangible benefits
* Define technical feasibility, and list the questions that are to be considered when assessing technical feasibility
* Define schedule feasibility, and list the issues that relate to schedule feasibility

FIGURE: 2-11

TEACHING TIPS

A fifth yardstick*—* organizational and cultural feasibility*—* is also employed by some organizations when deciding whether a project is worthwhile. Organizational and cultural feasibility attempts to determine if a proposed project is consistent with corporate norms.

Inform that while evaluating operational feasibility the central theme is to determine the impact of a proposed system on people.

Technical feasibility measures whether the company has the ability to obtain the necessary hardware, software, and people to deliver and support the proposed project. Generally, technical considerations are fairly straightforward, and solutions to possible problems are clear. For most systems, the technology exists; the challenge is to obtain the funds to pay for the resources. This leads to economic feasibility.

Inform that assessing economic feasibility requires cost/benefit analysis. Cost/benefit analysis consists of estimating development and operational costs, anticipated benefits, and then comparing the two. Costs can be intangible. For example, reduced employee morale would be an intangible cost.

Inform the students that it is very important to note the relationship between time and cost in schedule feasibility. Scheduling is a high-risk task as it requires a number of assumptions and estimates based on incomplete information. When a schedule proves unreasonable, either the schedule is revised or the scope of the project is modified.

CLASSROOM ACTIVITIES

1. Class Discussion: Discuss the way in which costs and benefits can be used to determine a project’s economic feasibility.

2. Quick Quiz: Assign Question 4 on page 69.

3. Critical Thinking: How do intangible benefits lead to tangible benefits? Can tangible benefits lead to intangible benefits?

4. Class Discussion: Assign Discussion topic 5 on page 69

# **55: Evaluating Feasibility**

LECTURE NOTES

* Point out that the first step in evaluating feasibility is to reject system requests that are not feasible
* Discuss with an example the concept of a request being feasible but not necessary
* Mention that requests currently infeasible may be feasible in the future, and requests currently feasible may be infeasible in the future
* Explain that feasibility analysis is an ongoing task

TEACHING TIPS

Explain that for a project to be feasible it must pass all feasibility tests. Some systems analysts believe that when a project’s feasibility is uncertain the best solution is to do nothing—for now. Beginning a project that is bound to fail can negatively impact a company and all those involved.

# CLASSROOM ACTIVITIES

1. Critical Thinking: Assign Discussion Topic 1 on page 69.

# **56: Setting Priorities**

LECTURE NOTES

* Describe projects that receive the highest priority
* List the factors that should be considered when assessing a project’s priority, pointing out that few projects will score high in all areas
* Differentiate between discretionary projects and nondiscretionary projects, and list examples of nondiscretionary projects that are predictable

TEACHING TIPS

Explain that, sometimes, intangible benefits can be more important than tangible benefits. For example, a simpler ordering system may do little to reduce costs or increase revenues (tangible benefits), but it may result in greater customer satisfaction (an intangible benefit), which in the future may lead to greater revenues (a tangible benefit).

Emphasize the point that whenever possible an analyst should use tangible costs and benefits for evaluating priority. Point out that intangible costs and benefits can also influence priorities.

Mention that nondiscretionary projects can result from internal factors (e.g., decisions by top managers) or external factors (e.g., laws by federal or local governments).

# **57: Case In Point 2.4: Attaway Airlines, Part Two**

Back at Attaway Airlines, the morning meeting ended with no agreement between Dan Esposito and Molly Kinnon. In fact, a new issue arose. Molly now says that the new accounting system is entitled to the highest priority because the federal government soon will require the reporting of certain types of company-paid health insurance premiums. Because the current system will not handle this report, she insists that the entire accounting system is a nondiscretionary project. As you might expect, Dan is upset. Can part of a project be nondiscretionary? What issues need to be discussed? The committee meets again tomorrow, and the members will look to you, as the IT director, for guidance.

***Comments****: If Molly’s project really is mandatory, then it must be pursued before Dan’s. Even though the atmosphere might be tense, you should attempt to learn whether any other options are available. Perhaps a stand-alone reporting module would satisfy government requirements and then Attaway could reach a decision based on business-related factors rather than external reporting requirements. Perhaps some type of compromise is possible. The real objective is to strike a sensible balance that is in the best interest of Attaway, not an individual department.*

# **57: Preliminary Investigation Overview**

LECTURE NOTES

* Describe the concept of preliminary investigation
* Use Figure 2-12 to illustrate a model of a preliminary investigation
* Explain the need to schedule meetings with key managers, users, and other stakeholders
* Discuss the reason to use the word *problem* properly
* Discuss the way in which a systems project can change company operations and the way these changes can affect employees
* Use Figure 2-13 to discuss the steps in a preliminary investigation
* Point out the scenario for which a systems analyst might need to develop a business profile
* Mention that a change in one system can affect other systems, and tell how a systems request can reveal only a symptom of a problem instead of the underlying problem itself
* Use Figure 2-14 to describe a fishbone diagram
* Define project scope
* Define project creep
* Discuss a solution to avoid project creep
* Define constraint, and list examples of constraints
* Use Figure 2-15 to discuss examples of various constraints
* Contrast present and future constraints
* Compare internal and external constraints
* Distinguish between mandatory and desirable constraints
* Discuss fact-finding as a process to gather data about various aspects of a project
* Use Figure 2-16 to point out that organization charts can be constructed if they are unavailable
* Discuss the need to verify the accuracy of organization charts
* List the series of steps in an interview process
* Discuss the objective behind conducting interviews
* Describe the technique of review documentation
* Point out different ways to observe operations
* Discuss the importance of sampling system inputs and outputs
* Point out the advantage and disadvantage of a survey when compared with an interview
* Use the Pareto chart in Figure 2-17 to illustrate its role in analyzing data
* Use Figure 2-18 to discuss the use of the XY chart (scatter diagram)
* Discuss the various steps that are to be followed before evaluating feasibility
* Discuss the various guidelines that are to be considered when evaluating a project’s feasibility
* Discuss the alternatives available after evaluating a project’s feasibility
* Define case for action
* Discuss the eight sections in a typical preliminary investigation report: Introduction, Systems Request Summary, Findings, Recommendations, Project Roles, Time and Cost Estimates, Expected Benefits, and Appendix

FIGURES: 2-12, 2-13, 2-14, 2-15, 2-16, 2-17, 2-18

TEACHING TIPS

Inform the students that the end product of the preliminary investigation is a report to management.

Point out to the students that when interacting with users, it is better to emphasize new features or enhancements than problems. Explain them the reason.

Figure 2-14 shows a fishbone or Ishikawa diagram, which is a popular tool used to identify the root causes of a problem. This type of diagram shows the possible causes of a problem as a graphical outline and is helpful during preliminary investigation to reveal actual causes rather than just symptoms of problems.

Mention to the students that organization charts do not show important informal alignment of a group.

Interviewing stakeholders is the most important fact-finding technique and the most effective way to understand business functions. Offer that closed-ended questions (e.g., How many forms a day do you process?) that have simple, factual answers can be important to obtain specific facts. Generally, however, open-ended questions are best to get an interview started and encourage an interviewee to explain his or her perception of the project.

Share with students that the old saying, “a picture is worth a thousand words,” is also true in systems analysis. Observing operations helps clarify current business processes and can help an analyst visualize a new system. Workers can become nervous or overcautious when they are being watched, changing the way they usually perform their jobs.

Surveys can contain closed-ended questions (e.g., How many telephone calls do you receive?) and open-ended questions (e.g., What would you like the new system to do?). In general, surveys should contain a limited number of open-ended questions because stakeholders often will not take the time to complete surveys with many open-ended questions.

Inform the students that the format of a preliminary investigation report varies.

CLASSROOM ACTIVITIES

1. Group Activity: Have students draw a fishbone diagram for a problem with which they are familiar. They should include a main bone to represent the problem, sub-bones to indicate possible reasons for the problem, and horizontal sub-bones to indicate possible causes. Does the diagram help clarify the problem? How? How can the diagram be used to solve the problem?

2. Group Activity: Have students suggest instances of present and future constraints. For example, a present constraint may be that an order entry system must accept input from 15 remote sites. A future constraint may be that the system eventually should be able to accept input from 50 remote sites.

3. Group Activity: Have students suggest instances of internal and external constraints. For example, an internal constraint may be that an order entry system must join the sales, warehousing, and transportation departments. An external constraint may be that the system must log all sales for tax purposes.

4. Group Activity: Have students suggest instances of mandatory and desirable constraints. For example, a mandatory constraint may be that an order entry system must maintain records of individual item sales for inventory purposes. A desirable constraint may be that the system track individual customer purchases for promotional purposes.

5. Quick Quiz: Assign Questions 5 through 10 on page 69.

6. Critical Thinking: Ask students why an interview should include open-ended questions. What is the advantage of open-ended questions? What are the possible disadvantages?

7. Critical Thinking: According to a study in Hawthorne, Illinois, when people were observed they often performed above and beyond their usual levels. This finding, which was dubbed the Hawthorne Effect, states that the mere act of observing behavior can impact that behavior. Ask students if they feel the Hawthorne Effect is legitimate. Why? If the Hawthorne Effect is real, does it lessen the value of observation? Why or why not? What can be done to reduce the impact of the Hawthorne Effect?

# **65: A Question of Ethics**

As a new systems analyst at Premier Financial Services, you are getting quite an education. You report to Mary, the IT manager, who also chairs the systems review committee. Several months ago, the committee rejected a request from Jack, the finance director, for an expensive new accounts payable system, because the benefits did not appear to outweigh the costs.

Yesterday, Mary’s boss called her in and asked her to reconsider Jack’s request, and to persuade the other members to approve it. Mary wanted to discuss the merits of the request, but he cut her off rather abruptly. Mary happens to know that Jack and her boss are longtime friends.

Mary has confided in you. She is very uncomfortable about the meeting with her boss, and she believes that his request would undermine the integrity of the systems review process. Mary feels it would be unethical to grant preferred treatment just because a friendship is involved. She is thinking of submitting a request to step down as review committee chair, even though that might harm her career at the company.

Is this an ethical question, or just a matter of office politics? What would you say to Mary?

***Comments:*** *This is a gray area—it is difficult to apply black-and-white rules in this fact situation. First of all, the systems review process is not 100% scientific—it is a business process, and like all other business operations, it is influenced by many factors, including personal relationships, degrees of trust, and personal credibility. However, if Jack is making a decision that is clearly wrong for the firm, simply because of a personal friendship, that would strike most people as highly unethical. Perhaps the larger problem is that Jack does not want to allow a full review of the request. That position seems to undermine the integrity of the process itself and, unless there is a very compelling reason (such as an urgent time line or crisis situation), Mary is right to be concerned. What should she do? This is a classical problem that many employees face at one time or another. It is really a question of degree. If she is unhappy about the decision and does not want to be in this role long-term, then maybe she should let this pass and not disrupt her focus on other matters. On the other hand, if she has strong feelings and has lost respect for Jack, then it might be more dangerous for her to stay in the role.*

*Instructors should encourage students to relate any similar situations they might have faced and how they responded*.

# 

# **[Key Terms](#_Glossary_of_Key_Terms)**

* biometric devices (46)
* business case (41)
* case for action (64)
* computer resources committee (51)
* constraint (59)
* critical success factor (42)
* customer relationship management (CRM) (49)
* discretionary projects (56)
* economic feasibility (53)
* electronic product code (EPC) (49)
* electronic proof of delivery (EPOD) (49)
* encryption (46)
* fishbone diagram (58)
* intangible benefit (54)
* intangible cost (54)
* just-in-time (JIT) (49)
* mission statement (41)
* nondiscretionary project (56)
* operational feasibility (53)
* Pareto chart (62)
* project creep (59)
* project scope (58)
* scatter diagram (62)
* schedule feasibility (55)
* strategic planning (41)
* SWOT analysis (42)
* systems review committee (51)
* tangible benefit (54)
* tangible cost (54)
* technical feasibility (54)
* total cost of ownership (TCO) (53)
* XY chart (62)

**End of Chapter Material**

* **Chapter Exercises:** The Chapter Exercises include questions, discussion topics, and projects that reinforce concepts and provide opportunities to practice skills.

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