Review Questions

1. Why are information systems (IS) essential in organizations?
2. Why do systems analysts need to know who the stakeholders are in the organization?
3. Who are the typical stakeholders in an information system? What are their roles?
4. Please explain what the consequences are if an information system lacks a system owner.
5. What are the differences between internal users and external users? Give examples.
6. What are the differences between the role of system analysts and the role of the rest of the stakeholders?
7. What kind of knowledge and skills should a system analyst possess?
8. In addition to the business and computing knowledge that system analysts should possess, what are the other essential skills that they need to effectively complete their jobs?
9. Why are good interpersonal communication skills essential for system analysts?
10. What are some of the business drivers for today's information systems?
11. What are the differences between electronic commerce (e-commerce) and electronic business (e-business)?
12. What are the differences between information and knowledge?
13. What are the most important technology drivers for today's information systems?
14. What are the four steps in a system development process? What happens in each step?
15. Why is system initiation essential in the system development process?

Problems and Exercises

1. Assume you are a systems analyst who will be conducting a requirements analysis for an individually owned brick-and-mortar retail store with a point-of-sale system. Identify who the typical internal and external users might include.
2. Assume you are a systems analyst for a consulting company and have been asked to assist the chief executive officer (CEO) of a regional bank. The bank recently implemented a plan to reduce the number of staff, including loan officers, as a strategy to maintain profitability. Subsequently, the bank has experienced chronic problems with backlogged loan requests because of the limited number of loan officers who are able to review and approve or disapprove loans. The CEO of the bank is interested in solutions that would allow the approval process to move faster without increasing the number of loan officers, and has engaged your company to come up with suggestions. What is one type of system that you might recommend to the bank?
3. How do communication and collaboration systems improve efficiency and effectiveness? What are some of the communication and collaboration systems that are being used by an increasing number of organizations?
4. Identify the type of information system that clerical workers in an organization would typically use and why.
5. As information systems increase in complexity and comprehensiveness, ethical issues regarding accessing and using data from these systems are also increasing. What are some of these ethical issues?
6. What are business to consumer (B2C) and business to business (B2B) Web applications, and what are some examples of each type?
7. While system development processes and methodologies can vary greatly, identify and briefly explain the "generic" phases of the system development process that are described in the textbook and which must be completed for any project. You are a contractor with a systems integration company.
8. Your company has a contract with a local firm to link all of their systems so they can transparently work together. Their applications include a number of existing legacy systems, which were built at different times by different developers using a variety of languages and platforms, as well as several newer contemporary applications. What is the term for this type of linking? What type of tool would you most likely use, and what are some examples of these tools?
9. Your company has asked you to develop a new Web-based system to replace its existing legacy system. There will be very little change in business requirements and functionality from the existing legacy system. Suggest which system development process you might use and why.
10. You recently joined a retail sales company which has recently bought out and assimilated a commercial industrial supply house. You have been asked to lead a project to develop a consolidated inventory-tracking system. Suggest which system development process you might use and why.
11. Your company president sits down beside you just before a meeting is to begin and tells you that people keep saying the customer needs to install a CRM, but doesn't really know what it is. The company president then asks you to explain it in nontechnical terms in the next 30 seconds.
12. Industry studies indicate that mobile and wireless technology has become one of the major technology drivers for designing new information systems. Why is this the case and what is the impact?
13. Briefly explain the impact of Web services on Web development. Give some examples of Web services.
14. Identify in which phase of the development process the following activities belong:
    a. Development of the technical blueprint or design document.
    b. Project scheduling.
    c. Integration testing.
    d. Interviewing system users to define business requirements.
15. What are the two most important advantages of object-oriented software technologies over structured software technologies?

Chap-03

Review Questions

1. Explain why having a standardized system development process is important to an organization.
2. How are system life cycle and system development methodology related?
3. What are the 10 underlying principles for systems development?
4. Why is documentation important throughout the development process?
5. Why are process management and project management necessary?
6. What is risk management? Why is it necessary?
7. Which stakeholders initiate most projects? What is the impetus for most projects?
8. Who are the main participants in the scope definition? What are their goals in the scope definition?
9. What are the three most important deliverables in scope definition?
10. Who are the main participants in the requirements analysis phase? Why are they the main participants?
11. What feasibility analyses are made in the decision analysis?
12. What is model-driven development?
13. Why is model-driven development popular?
14. What is rapid application development (RAD)?
15. What benefits can RAD bring to the system development process?
16. What is computer-assisted software engineering (CASE)? List some examples of CASE.

Problems and Exercises

1. The Capability Maturity Model (CMM) was developed by the Software Engineering Institute at Carnegie Mellon, and is widely used by both the private and public sectors. What is the purpose of the CMM framework and how does it achieve this?
2. List the five maturity levels, and briefly describe each of them.
3. Table 3-1 in the textbook illustrates the difference in a typical project's duration, person-months, quality, and cost, depending upon whether an organization's system development process is at CMM level 1, 2, or 3. Between which two CMM levels does an organization gain the greatest benefit in terms of percentage of improvement? What do you think is the reason for this?
4. *Systems development methodology* and *system life cycle* are two terms that are frequently used and just as frequently misused. What is the difference between the two terms?
5. Describe how using a systems development methodology is in line with CMM goals and can help an organization increase its maturity level.
6. A number of underlying principles are common to all systems development methodologies. Identify these underlying principles and explain them.
7. The PIECES framework was developed by James Wetherbe as a means to classify problems. Identify the categories, then categorize the following problems using the PIECES framework:
   a. Duplicate data is stored throughout the system.
   b. There is a need to port an existing application to PDA devices.
   c. Quarterly sales reports need to be generated automatically.
   d. Employees can gain access to confidential portions of the personnel system.
   e. User interfaces for the inventory system are difficult and confusing, resulting in a high frequency of incorrect orders.
8. Each phase of a project includes specific deliverables that must be produced and delivered to the next phase. Using the textbook's hypothetical *FAST* methodology, what are the deliverables for the requirements analysis, logical design, and physical design/integration phases?
9. Scope definition is the first phase of the *FAST* methodology, and it is either the first phase or part of the first phase of most methodologies. What triggers the scope phase, which stakeholders are involved in this phase, what two essential questions need to be answered, and what three important deliverables come out of this phase?
10. The requirements analysis phase is an essential part of a system development methodology. According to the *FAST* methodology, which stakeholders typically participate in this phase? What is the primary focus of requirements analysis? What is *not* the focus? How should each proposed requirement be evaluated? What critical error must be avoided?
11. In the *FAST* methodology, as well as most system methodologies, system owners and system designers do not participate in the requirements analysis phase. What do you think the reason is for this?
12. What is the essential purpose of the logical design phase? How does it accomplish this? How are technological solutions incorporated in this phase? What are some common synonyms for this phase used by other methodologies? Who are the typical participants in this phase? What is agile modeling and what is its purpose? What are the deliverables coming out of this phase? In terms of the development team, what critical transition takes place by the end of this phase?
13. What is the essential purpose of the physical design phase? Who must be involved in this phase, and who may be involved? What are the two philosophies of physical design on the different ends of the continuum, and how are they different? Is this a likely phase in which a project might be canceled? With what other phase is there likely to be overlap, and what do you think is the reason for this?
14. A customer has engaged your software development company to develop a new order-processing system. However, the time frames are very tight and inflexible for delivery of at least the basic part of the new system. Further, user requirements are sketchy and unclear. What are two system development strategies that might be advantageous to use in this engagement?
15. What is the potential downside to using the strategies described in the preceding question?

Review Questions

1. What is a project?
2. Of the many different reasons that projects fail, what is the major cause of project failure?
3. What is the difference between scope creep and feature creep?
4. What are the five main categories of competencies that a project manager should have?
5. Why are business achievement competencies important?
6. What are the basic project management functions?
7. What are PERT and Gantt charts? How do we decide which one to use?
8. What are the eight major activities in the project management life cycle?
   - Negotiate scope
   - Identify tasks
   - Estimate task durations
   - Specify intertask dependencies
   - Assign resources
   - Direct the team effort
   - Monitor and control progress
   - Assess project results and experiences
9. Why is negotiating scope important? What is the deliverable in the process of negotiating the scope?
10. What is a popular tool used to identify tasks in the project management life cycle?
11. What are the factors to consider in estimating task durations?
12. What are the differences between forward scheduling and reverse scheduling?
13. What are the categories of resources to be allocated to the project?
14. What should project managers do to manage changes that occur and/or are requested during a project?
15. Why is critical path analysis important?

Problems and Exercises

1. Assume you are a systems analyst and a proud member of a project team that has just completed a major project that spanned several years and that touched almost every business unit in your organization. The project was completed ahead of schedule and well within budget. Development and implementation went very smoothly with virtually no disruption of business operations. A postimplementation survey indicates that system users have been able to use the system with minimal training, although there have been some comments from the more vocal users that it wasn't quite what they expected and doesn't do some of the things they thought it would. Should the project be considered a success?
2. Executive management is concerned that some users are less than satisfied with the new system described in the preceding question and have assigned you to lead a postimplementation work group to determine the cause. Of the dozen project mismanagement problems described in the textbook, which ones do you think were most likely to have contributed to user dissatisfaction?
3. As a newly appointed project manager, you are eager to get started on your first project. What should your first activity be? How important is it? Who is typically involved? What questions do you need to make sure are answered? What's the ultimate outcome from this activity, and what is included in this deliverable?
4. You are the project manager of a medium-size project that is scheduled to take 10 months from project initiation on September 1st through delivery on June 30th. It is now April 1st, seven months since the project began, and the project is slightly behind schedule, by perhaps a week. Draw a Gantt chart (you may use the style shown in Figure 4.2 or another Gantt chart style if you prefer). Assume you are using the *FAST* methodology, and that project phases can overlap.
5. You are the project manager for a company that is building a behavioral health system for some of the counties in your state. The project is slightly ahead of schedule and there haven't been any significant problems to date. In reviewing some of the screens under construction, you are surprised to

find a number of features that were not part of the design. The system builder was one of your most talented and creative programmers. When you ask about these features, the builder proudly tells you that they add to the functionality of the system without taking any additional programming time, and that they were intended to be a surprise. You can see that the features definitely do add to the functionality of the system. The code has already been written for them—should you allow them to be included in the system, even though they were not part of the approved technical design?

6. The methodology used in your organization calls for change requests to be considered by a change control board (CCB). After some reflection and a discussion with the programmer, you have decided to submit a change request to the CCB to add the new features. In your presentation to the CCB, what reason might you give for the change request and what things should you take into consideration?
7. The CEO of your organization was so impressed with your last project that you have been given responsibility with a larger, even more important project. The CEO calls you in for a discussion regarding the importance of the project, and tells you that the very survival of the organization may hinge upon completing this project and rolling out the new system to customers before a certain date when a competitor is expected to complete a similar project. The company can afford to budget only up to a certain maximum, although if other, less critical projects-in-progress are delayed, there may be some additional funding available if absolutely necessary. Finally, in order to be a competitive product in the market, the new system must contain at least a certain minimum feature set, although more would be desirable, and the quality must be of the highest level. At the conclusion of this discussion, the CEO shakes your hand and wishes you good luck. Use the priorities set by the CEO to create an initial management expectations matrix.
8. Now suppose that during the course of this project, it becomes apparent that costs were significantly underestimated and the budget is rapidly becoming depleted. In addition, the head of marketing has picked up a trade magazine and read that your organization's main competitor is adding some really exciting features to their product without changing their release date. The budget overage is not the major problem; you know additional money can be allocated, although it may delay other projects. But you also know that your marketing stakeholders will be demanding that similar features be added to the system you are developing while keeping to the original schedule. This presents an expectations conflict since scope is the constrained measure of success. What should you do at this point?
9. Suppose the CEO decides that no matter what, the new features absolutely must be added in order for the new system to be competitive. What issues does this raise, and how would this be reflected in the expectations matrix?
10. You are working on the schedule for the system design phase and are trying to estimate the duration of a complex design task. From breaking this task down into smaller tasks similar to ones that you've had experience with on other projects, you estimate the task should normally take an expected duration (ED) of three workdays, given a typical 75 percent worker efficiency rate and 15 percent interruption factor. But you also know of some instances where absolutely nothing went right, and it took up to two full workweeks, or a pessimistic duration (PD) of 80 hours, to complete the design task. Using the classic technique described in the textbook, calculate the most likely duration of the task.
11. In the preceding question, what technique did you use to estimate the expected duration of the design task? Describe some of the other techniques you could use to estimate task duration.
12. During one phase of the project, you review the project schedule and realize that a member of your project team has been assigned multiple tasks that add up to more hours than the person has available to work during that period. What technique could you use to resolve this?
13. You have been asked to complete a project in shortest time possible. The project tasks, most likely duration (in days), and predecessors are shown below. What are the different paths (sequence of tasks) and the number of days for each? What is the critical path, that is, the shortest time in which the project can be completed? Is it actually important in the business world for project managers to understand critical path analysis, or is this just theoretical knowledge?

Tasks	Duration	Predecessors
A	2	None
B	2	None
C	1	None
D	4	A
E	5	B
F	1	C, D
G	6	A, E
H	4	F
I	7	G,H

14. As a new project manager in a rapidly growing organization, you have been asked to lead a project team for an important project. The scope of the project is not too broad, project time frames are somewhat on the tight side but definitely doable, and the budget is more than generous. In fact, you have been given the authority to hire as many people as you want for your project team. You estimate that 5 people would be about right for this type of project, 8 would provide a healthy amount of backup, and 10 could give you the resources to deliver an outstanding system in record time. What is something you might want to keep in mind before making your decision on how many people to hire?

Review Questions

1. What does a creeping commitment approach to feasibility analysis mean?
2. What are the feasibility analysis checkpoints in the development cycle? What should be done at each checkpoint?
3. What are the objectives of the operational feasibility test?
4. Why is it important to find out how the end users and managers feel about the problem solution that the system analyst has identified?
5. When is usability analysis performed? What is the objective of the usability analysis?
6. What is the objective of the technical feasibility test?
7. What are the characteristics of development costs and operating costs? List three examples of each kind of cost.
8. List five examples of tangible benefits.
9. Why is the time-value-of-money concept an essential consideration when accessing economic feasibility?
10. What are the most commonly used techniques to determine the cost-effectiveness of a project?
11. For what are the candidate systems matrix and feasibility analysis matrix used?
12. For written reports, what is the difference between the factual format and the administrative format?
13. What are the steps in writing a report?
14. What are the advantages and disadvantages of presentations?
15. What should be done to follow up the formal presentation?

Problems and Exercises

1. The textbook describes a creeping commitment approach to feasibility.
   a. Explain this approach and why the textbook recommends it.
   b. What are the some of the changes or events that might occur which make this approach advisable?
   c. Should an organization cancel a project if it becomes infeasible?
2. The textbook describes three checkpoints for measuring feasibility.
   a. What are these checkpoints?
   b. Typically, how accurately can feasibility be determined at each checkpoint?
   c. Which checkpoint, if any, is the most critical one?
3. What are the four categories of feasibility tests, and what is the criteria each of them uses to measure feasibility?
4. You are a systems designer on a project which is getting close to finishing the systems design phase. A working prototype has been developed, and you've been tasked with doing a usability analysis. Draft a one- or two-page plan detailing your approach to conducting the usability analysis.
5. You are a systems analyst working in the IT shop of a medium-size organization with about 300 employees. The organization is in the system design phase of a project to develop an

electronic activity reporting system for all employees, replacing the current hard copy method. All of the work is being done in-house except for several consultants, who are providing ancillary services, such as IV&V. The application will use employees' existing desktops, although several dedicated servers will need to be acquired. The user interface is very intuitive, but the project calls for about a half day of training for all employees on policies and procedures for using the new application. The system is not using any new technology, and the IT technical staff have a great deal of expertise. Create a worksheet, detailing the estimated one-time development costs and ongoing operating costs. By the way, in your organization, salary and benefits for systems analysts average $40 per hour; you can use this as a basis for estimating salary and benefits for other classifications involved in the project.

6. In the project described above, it was noted that the electronic activity reporting system will be replacing the current manual system. Describe the tangible benefits that might be expected. Take a "best guess" approach, and calculate the annual savings to the organization. Show your assumptions in the calculations.
7. You are designing a Web-based system where your regional offices can submit their sales reports online instead of filling them out by hand and mailing them in. Three candidate solutions have been identified. Their estimated lifetime benefits and estimated lifetime costs are shown below. All have been time-adjusted over the projected five-year lifetime of each alternative.

	Estimated Lifetime Benefits	Estimated Lifetime Costs
Candidate Solution 1:	$640,000	$172,000
Candidate Solution 2:	$640,000	$160,000
Candidate Solution 3:	$640,000	$185,000

According to return-on-investment analysis, which candidate solution offers the highest ROI? If the organization sets a minimum lifetime ROI of 80 percent, which of these solutions is economically feasible?

8. What are the different techniques or methods for identifying candidate solutions? If you had to choose just one of these methods, which would it be and why?
9. You are working as a system designer for a company that manufactures heavy-duty power tools used by contractors. Every month, your regional sales and service centers batch together the hard copy repair orders for work performed under warranty. They are sent to headquarters, where they are run through a legacy mainframe batch process. A report is then generated, which the engineers analyze for signs of any problem trends in the new models. The company's CEO has decided that this process is far too slow in today's highly competitive business environment and wants to replace the legacy system as soon as possible with something more contemporary. Identify at least three candidate solutions, and describe them in a candidate systems matrix, using Figure 11-7 as an example.
10. Prepare a feasibility analysis matrix, using the candidate solutions you identified and described in the preceding question. Use Figure 11-9 as your template, but choose the weighting factors that you feel would be most appropriate in this situation. For purposes of this exercise, you may provide an estimate of the economic feasibility.
11. Once the feasibility analysis matrix has been completed, it is time to write the feasibility report. For this exercise, prepare a feasibility report to executive-level managers, using the appropriate format shown in Figure 11-10.
12. You have been asked to present the feasibility analysis and recommendation to the executive managers of every department in your organization at their weekly meeting. Prepare a set of PowerPoint slides to be used as a visual aid during your presentation.
13. Name at least 10 things you should *not* do if you want your presentation to be informative, persuasive, and well-received.