

# **Instructor's Manual**

to accompany

# **PROJECT MANAGEMENT**

A SYSTEMS APPROACH to PLANNING,  
SCHEDULING, and CONTROLLING

ELEVENTH EDITION

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**WILEY**

John Wiley & Sons, Inc.

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# CHAPTER 1

- 1-1** Each of the causes can produce each of the effects. Some students have commented that these cause and effect relationships look like their last project. This is the reason why project managers must continuously replan projects.
- 1-2** There is no correct answer to this problem, just preferred choices.
1. a, b, c, d, f, g, i, k, m, n, p
  2. b, d, e, h, i, j, k, m, n, o, p
  3. a, c, d, f, g, i, j, m, n, p
  4. b, d, e, h, i, j, k, m, n, o, p
  5. b, d, h, i, l, m, n, p
- Moral: Even in the best companies, differing views of project management are possible.
- 1-3** Organizations should be restructured in order to get better control of resources. Therefore, those individuals who directly control the resources, namely the middle and lower level managers, should have first insight that organizational restructuring is necessary. Labors are too involved in the details of the task to realize the resource problems, and executives are too involved with top management functions.
- 1-4** Project managers do not control resources directly and therefore have to rely on their own interpersonal skills in negotiations with the line managers. Project managers cannot rely upon executives for help because executives prefer not to interfere and tell their line managers how to control and assign resources.
- 1-5** Project management is designed for industries which have complex (as opposed to simple) tasks and which operate in an ever changing, dynamic (as opposed to static) environment. These include aerospace, defense, construction, computers, high technology, electrical instrumentation, etc. . . . Companies which have highly repetitive tasks, such as low technology manufacturing companies, do not need formal project management but can use informal project management for activities such as capital equipment projects. Furthermore, project management works best in situations where activities require the involvement of more than one functional group.
- 1-6** Project managers believe that since they control total project costs, they are the only ones that contribute to profits, since in "project driven" organizations all profits must come out of the projects. Line managers, on the other hand, believe that they are the ones who contribute to profits by assigning the right

salaried personnel at the right time to meet schedule commitments. Both groups are correct. Both project managers and line managers contribute to profits. It is a team effort.

- 1-7 In general, the most important attributes of a project manager are communicative skills and interpersonal skills. Individuals cannot be trained to be a project manager simply by taking courses or attending seminars. Project managers can only be developed by on-the-job training. Some companies prefer to train project managers by first rotating them through the various line organizations (say two weeks to two months each) and then assigning them as an assistant project manager. The question, of course, is how much they can learn in such a short period of time. Promoting from within is best because the first few project managers must know the total organization. If functional employees see promotions from within, then they feel that there are several career paths in the company. However, the new project managers must be able to divorce themselves from the functional organization. It is often best to hire from the outside so that you will have a project manager who does not have any functional ties and does not owe any favors.
- 1-8 Functional managers can make good project managers if they can divorce themselves from the functional details of the project and act as generalist managers worrying about time and cost as well as performance. The exception to the rule would be an R & D project manager. Generally speaking, line managers do not make good project managers if they have to wear two hats at the same time; a line manager and a project manager. In this case, the line manager may save the best resources for his project. His project will be a success at the expense of every other project that he has to supply resources for.
- 1-9 Functional managers would prefer to manage projects which stay within their functional groups. This greatly reduces authority problems. Sometimes, however, the line manager may be asked to manage an entire project even though only 60% of the work stays within his group. This can work if the line manager has good interpersonal skills and must interface with only one or two other departments.
- 1-10 All three items are more important on the horizontal line than on the vertical line. Because the project manager is under a time constraint, time management is vital. Communications are important because the project manager may be working with functional employees that he has never worked with before. Motivation is important because the project manager must try to motivate functional employees without the leverage of controlling their salaries and pay raises.

- 1-11** This definitely applies to project management since the project manager may have to negotiate for all resources on the project.
- 1-12** All are basic characteristics of project management.
- 1-13** Either executives or line managers usually look over the shoulder of the project manager. If the project is a high priority, then executives may get actively involved and act as a project sponsor. And even if there exists a project sponsor, line managers should still look over the shoulders of the project managers to verify that all decisions are in the best interest of the company as well as the best interest of the project.
- 1-14** In most organizations, power rests with the individuals that control the resources. If the project manager has to negotiate for all resources, and the resources are still attached administratively to the line manager, then project management may very well make line managers more powerful than before. Of course, senior management still retains the right to "glorify" the project management position.
- 1-15** In project-driven organizations, the fastest career path is in project management, with project engineering second and line management third. The major reason for this is because project management and project engineering may be viewed as having direct control and input to corporate profitability since each project has its own profit and loss statement. In non-project-driven organizations, where the profit is measured vertically, the career path opportunities are reversed.
- 1-16** Placing highly technical people in charge of a project can lead to micromanagement and over-design with very little regard for budget and schedule.
- 1-17** This is a very common situation. The project manager must be made to realize that he is now a generalist.

## CHAPTER 2

- 2-1 All organizational charts are examples of closed, dynamic systems as shown in Figure 2-2.
- 2-2 The major item here is time. Projects generally have severe time constraints whereas systems are ongoing entities (perhaps composed of several projects) with more flexible time requirements.
- 2-3 R & D is a system with feedback to top management, engineering, manufacturing, and marketing.
- 2-4
  - a. Open, closed, or extended
  - b. Extended
  - c. Closed
  - d. Closed
  - e. Closed
- 2-5 Organizations are static, schematic models although we would like them to be dynamic. Generally, the change is so slow that they cannot be considered as dynamic.
- 2-6 Projects can be subdivided into smaller elements such as tasks, subtasks, and work packages. This will be discussed in Chapter 11.
- 2-7 People can have "tunnel vision" and not realize how their efforts fit into the big picture, thus making integration more difficult.
- 2-8 People try to optimize each major or minor activity rather than the total package.
- 2-9 A cost-benefit analysis or feasibility study is generally easier in a horizontal structure because many diverse groups can pool their knowledge toward the achievement of a single objective.
- 2-10 Project management can be made to work effectively on short duration activities (i.e. short life cycles). For long life cycle activities, product rather than project management may be more applicable.
- 2-11 Usually this entails the establishment of major decision-making milestones, such as budget approval, project approval, schedule approval, and critical design reviews.
- 2-12 Because the project manager is under time, cost, and performance constraints, he often has to take risks and cut corners in order to get the task accomplished.

- 2-13** Yes, as long as the projects have some degree of similarity between them. But once a totally new project comes along, especially if it has some degree of complexity, the company may be in trouble.
- 2-14** This is usually an executive decision based upon how much control the executives want to have over the project management processes. It is also based upon how much trust they have in the project managers.
- 2-15** Assuming that maturity is accompanied by trust, the number of phases should decrease.
- 2-16** Executives are afraid that they may lose control and authority if they support project management. This is a serious fear that must be overcome.
- 2-17** If the corporate culture is based upon trust, cooperation and effective communications, the cost of implementation can be lessened.
- 2-18** If you discover early on in the project that the objectives are unrealistic and cannot be achieved, the project might be seen as a failure because the objectives are unreachable and also seen as a success because it clearly shows that you were going in the wrong direction and are no longer squandering resources.
- 2-19** With informal project management, there is generally less paperwork because the organization has faith in the project managers and their ability to perform.
- 2-20** Generally speaking, formalized project management comes first. Then, after trust is achieved, an informal project management approach is possible.