



Project managers stay in charge and out front

by Tom DiVincenzo

When a new telescope is launched into space or a new software package is launched in the stores, its success depends on more than the engineers who made the product. Any complex endeavor requires managers who can coordinate the work of engineers, designers, and others. These managers take charge of the project, keeping resources and schedules on track.

Project managers fulfill this role. To the client and upper management, project managers are the face of a project. They solicit input and provide updates from concept through completion. And to the team performing the work, project managers remain a visible presence for its duration. They motivate and direct team members to achieve the goal of project completion—preferably on time and under budget.

The U.S. Bureau of Labor Statistics (BLS) does not classify project managers as an occupation. Instead, project managers are often counted as construction managers or computer and information systems managers when they work in the areas of construction or information technology; when they work in other areas, project managers are considered part of a residual category of unclassified managers.

Regardless of whether it constitutes a separate occupation, project management is an increasingly important

responsibility for many workers, as more organizations use teams and project-based methods to get work done. Project management is also a full-fledged career for a growing number of people. Membership in the Project Management Institute, the largest project management association in the United States, has more than quadrupled in 6 years, growing from about 43,000 members in 1999 to more than 208,000 in 2005. Not all members of the institute are full-time project managers, but nearly all have responsibilities that relate to project management.

Learning more about project managers, including their work, their earnings, and their skills and training requirements, can be helpful for anyone preparing to work in a team-based workplace. And for some, it could be the start of a unique career.

The work of managing projects

Project managers oversee all elements of a project. They lead and motivate a team of workers and coordinate their efforts. Project managers also make sure that work flows steadily, despite setbacks and changing circumstances.

Each project has a starting point, a deadline, and a concrete goal. Project managers see a project through from its inception to its completion. The direction that they provide often determines a project's success.

Tom DiVincenzo is an economist in the Office of Occupational Statistics and Employment Projections, BLS, (202) 691-5088.

The job: Providing direction

At the core of project management is the need to balance the time, money, and scope of the project. Under this “triple constraint,” project managers figure out which tasks are crucial and when they need to be done. Careful planning helps to prevent incomplete tasks from creating a domino effect of holdups down the line.

Unlike other managers, project managers do not supervise ongoing business functions, such as marketing,

sales, or accounting. Instead, project managers might deal with all of those tasks within a given project. Similarly, project managers are not always in charge of the same group of workers. Rather, they might oversee people’s work as it relates to a project.

Like other managers, however, project managers fill their work schedule with meetings, e-mails, and phone calls. They also spend time alone analyzing schedules, budgets, and the technical requirements of the projects that they manage.



The process: Goals, plans, progress, and wrap-up

Project managers oversee the same basic tasks for every assignment. They define the project’s goal, create a plan, monitor progress, and close out the project when it is done. Communication is critical throughout and is one of a project manager’s primary responsibilities.

Defining goals. Project managers set goals by first listening to what their organization or client wants out of a project. They meet with upper management and others to define specific objectives. Project managers then draft a document that states exactly what the project will produce—and get the project’s stakeholders to agree to those details. If goals change later in the project, the document helps the project manager to clarify what has changed and how those changes affect scheduling, budget, and other variables.

One project with an especially lofty goal is construction of the James Webb Space Telescope, currently under development by the National Aeronautics and Space Ad-

ministration (NASA) and other space agencies. The goal of this project is to deploy an instrument that will orbit nearly 1 million miles from Earth to gather images and data about the expanding universe. The telescope must meet ambitious technical requirements—more than 400 in all—and its mission will be to document the evolution of entire galaxies.

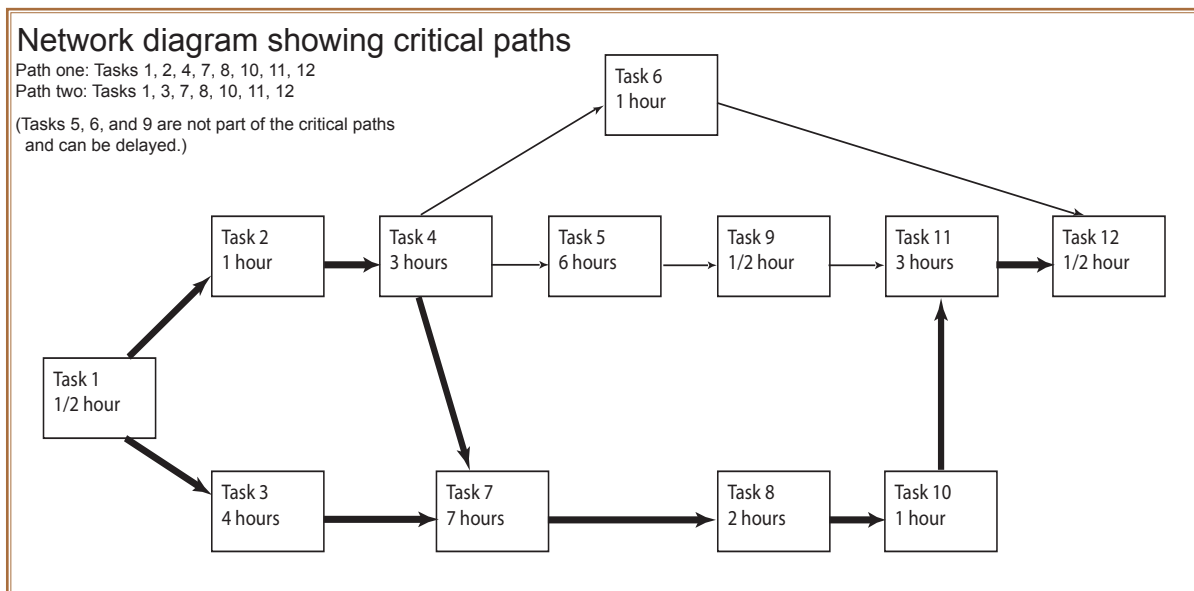
Setting goals for any project can be a challenge because of conflicting priorities. The publicly funded Webb telescope, for example, must deliver information that satisfies both the public and many different types of scientists.

The goal-setting stage also includes forming teams to do the work. The project manager leads the teams and upper management to create a charter that states team goals and responsibilities.

down work until each task is estimated to take about 80 hours to complete.

Project managers also create network diagrams that show the deliverables, or concrete results, of a project and the order in which they need to be completed. One type of diagram uses boxes, representing deliverables, which are linked together to show how tasks build on one another. The diagram also lists the time needed to finish each task and group of tasks.

The most useful part of a network diagram is that it helps project managers find the project's critical path or paths—the sequence of tasks that must be completed on time to maintain the project's schedule. (See the diagram.) Diagrams also show which tasks can be delayed, if necessary. Project managers can divert resources from these tasks if there are problems later.



Planning. The next step in a project is to establish a plan. This might start with a kickoff meeting and brainstorming sessions. Project managers take informal ideas from these sessions and create detailed plans that are rooted in management science. Because planning large projects is complex, managers almost always use computer software packages.

Typically, project managers develop a plan by creating an outline of the work required. This outline separates the elements of the project into successively more detailed tasks. A common practice is to continue breaking

Another part of planning is cost estimating, which can be done in several ways. Project managers might start with total cost and evaluate the work breakdown structure, assigning ever smaller budget allocations to each level of detail. Or they might begin at the bottom of the structure and add costs up. Each of these methods—and other alternative methods—yields different results.

Planning also requires the project manager to make decisions about future issues. These issues include how labor, equipment, and facilities will be used; how parts and resources will be purchased; how communication



within and outside the team will be handled; and how, and how often, the quality of results will be measured.

Finally, dealing with risk is a critical part of any plan. It is up to the project manager to know which parts of a project are most likely to go off track. “In status meetings with my team and my clients, I remind them that risk is not a four-letter word,” says Tammy Ellison, a project manager in software development. “I encourage anyone to bring up a risk that they see looming. Developing trust, so they feel comfortable sharing issues rather than hiding them from me, is critical.”

Monitoring progress. When a project starts, project managers work to inspire their team. Managers need to understand what team members want and what motivates them because it is up to managers to make sure that the work gets done.

Managers use different methods to measure progress, but nearly every method compares where a project is with where the plan says it should be. Monitoring can take the form of diagrams that show milestones. Another common technique is to measure the value of the completed work

packages against the value of the work packages scheduled to be completed.

When a project isn’t progressing, these methods help to identify why. The culprits could be mistakes by team members; changing circumstances, such as new requirements imposed by the client; or some other factor.

If there is deviation from the project plan, the project manager must decide whether the plan should change—and how. He or she evaluates options for their effect on cost, time, quality, and more. Managers might use reserve funds, request other resources, change goals, or, perhaps, eliminate the project altogether.

Communication continues to be crucial at this phase of a project, especially because a project’s goals can shift unexpectedly. “I’ve had customers tell me, ‘That is exactly what I asked for, but it’s not what I want,’” says Ellison. “That’s why I find that a more interactive and phased approach is better than going into seclusion and coming out with the end-result.”

The link between management and the team is the project manager. He or she keeps a project’s clients

informed, gets feedback, and manages changing expectations. At the same time, the project manager frequently reminds team members of what needs to be done and when it should be completed.

Project managers also help team members communicate with each other about problems and the work that needs to be done. Veteran managers say that they never assume that other people will communicate with each other on their own. Even small miscommunications can wreak big havoc.

Wrapping up. When a project is complete, the manager closes it out. Often, he or she meets separately with the core project team and clients to ensure that the results are satisfactory.

After the project receives final approval, its financial books are closed. The project manager makes sure that contracts are paid, rented equipment is returned, and files are in order. He or she might also do some public relations or other work. Finally, the project manager commemorates the end of the project and makes sure that the team is rewarded.

Earnings

BLS does not collect data on project managers, but industry sources suggest that earnings for project managers depend on education, experience, and geographic location—the same factors that affect earnings for most workers. Project managers in urban areas often earn considerably more than those in rural areas.

Industry sources also suggest that most project managers receive bonuses in addition to their salary, especially at the end of a successful project.

According to a 2006 survey commissioned by the Project Management Institute, full-time project managers in the United States reported median annual earnings of \$96,000, including salary and bonuses. That means that half of the project managers surveyed earned more than that amount, and half earned less.

The survey also confirmed that experience is one of the most important determinants of earnings; entry-level project managers should expect lower earnings while they are learning to lead.

Traits and training

Most of today's project managers began assuming their roles before they had completed any formal training. Because they demonstrated technical expertise, they

were asked to run a project—and, later, a few more. They trained on the job, occasionally taking project management courses as they could.

But as the profession of project management has developed, so have its entry requirements. Formal training programs are becoming increasingly common.

Traits and skills

Project managers need to be able to direct teams toward a goal. Along with leadership and other personality traits, project managers need some core skills and some knowledge about the subject of the project. Developing these traits and skills can begin early.

Traits. Successful project managers are often confident and extroverted, interacting comfortably with people and groups every day. Project managers must be assertive enough to set clear goals but remain approachable enough for workers to alert them to problems that may occur.

The ability to delegate to others is essential. For example, the NASA deep-space telescope would encounter serious difficulty if that project's managers insisted on designing and building individual components themselves as well as managing the project.

Managing projects also requires being able to coordinate ideas of the many people involved. When managing software projects in her job, Ellison balances the desires of marketing experts, who know what customers want; software engineers, who know what can be built; and financial managers, who pay for the project. "When large numbers of people are all giving input, it can be hard to make them come to a decision," she says. "A lot of your role as project manager is to be a facilitator."

Project managers must also be flexible. Objectives shift. Setbacks occur. Chains of command can be fuzzy. Project managers must anticipate and adapt to change without losing focus of the goals.

Similarly, dealing well with risk and stress is imperative. There are numerous ways that project managers can make mistakes. Project managers must be able to handle the frustration that may arise when risks and failures materialize to derail a project.

Skills development. Would-be project managers can begin developing leadership and other skills as early as high school. Students should seek out formal and informal leadership roles on school projects, sports teams, and other activities. To learn how to adapt to change, future managers can develop their problem-solving skills by



imagining “what if” scenarios and trying to prepare solutions to problems that might emerge.

Classes that emphasize communication, perhaps speech or drama, are a good way to develop both leadership and speaking skills. Project managers also need a background in mathematics, as cost estimation includes everything from basic addition to sophisticated modeling. Familiarity with personal computers is helpful for learning to use software that is essential to planning projects.

In addition, project managers must have at least some knowledge about the assignment that they are leading. High school students can begin developing ideas about their areas of interest by taking a variety of classes in preparation for more indepth study.

Training and other preparation

Project managers generally need to have at least a bachelor’s degree, although it need not be in a business- or management-related concentration. In fact, a degree in a

specific subject area is helpful for providing expertise and guidance on projects that require background knowledge.

And although it is not required, certification may make it easier for a project manager to prove credentials. Maintaining a network of professional contacts is also helpful during the job hunt.

Formal training. Several universities and colleges offer a master’s degree in project management, and many others offer individual courses or certificates in the field. Private training companies also offer courses, seminars, and certificates.

Subjects of study in project management include planning, ethics, risk management, and team building. Students also learn mathematics skills, such as statistical analysis, decision science, and cost-benefit analysis. In addition, students work to hone their written and oral communication skills so that they can compose plans and reports and make clear presentations to team members and managers.

Many project managers take additional courses in construction science, information technology, or engineering, depending on the industry in which they wish to work. At many schools, in fact, project management courses are offered through the engineering, construction management, or computer science departments rather than through the business department.

Additional preparation. In organizations that have established project management departments, an entry-level project manager typically begins by assisting experienced managers, perhaps by overseeing one specific task within a larger project. “With experience,” says LeRoy Ward, an executive vice president at a project management training company, “managers can work their way up to leading large projects.”

Certification through a professional organization can help project managers demonstrate their knowledge. The Project Management Institute offers certification to people who pass an exam and who have at least 3 years of project management experience. People who do not have a bachelor’s degree are required to have more experience.

Networking is also suggested for project managers, especially for those who plan to become self-employed. Ward recommends attending conferences and other industry events and becoming involved with local professional associations.

Developing a network takes patience and persistence, Ward says, but it also plays to the communication strengths of project managers.

Career resources

To learn more about becoming a project manager, visit your local library or career counselor. Look for books,

trade journals, Web sites, and other resources about project management and its specialties.

General information on project managers and a list of accredited graduate schools offering degrees in project management are available from:

Project Management Institute
4 Campus Blvd.
Newtown Square, PA 19073-3299
(610) 356-4600
www.pmi.org

Additional information is available from:
American Society for the Advancement of
Project Management
6547 N. Academy Blvd., 404
Colorado Springs, CO 80918
(931) 647-7373
www.asapm.org

