17 Project Management

How do I:

✓ Keep projects on track?

✓ Help my team to meet deadlines?

✓ Know if a project is maintaining the necessary standards or quality?

✓ Handle multiple projects simultaneously?

✓ Incorporate my personal project time lines into my professional project time lines?

✓ Keep long-term objectives in mind while working on day-to-day objectives?

✓ Improve communication with my team members or employees?

✓ Handle unexpected events that interfere with my pre-planned schedule?

Carol Marshall is a bright young engineer in a large manufacturing facility. Although she's been out of college for three years, she's been promoted twice and is now in a supervisory position. She is very comfortable with projects in which she is the key contributor. She has high work standards and always goes the extra mile to bring projects in on time and budget. Working autonomously, she has developed good systems that allowed her to accumulate an enviable success record. Her managers, noticing her leadership potential, have given her a very important task force to oversee. A lot depends on the results of the task force. Carol is eager to show her bosses she can be just as effective working with others as she is working on her own. She has devoted a lot of energy to the task force. She has helped them build confidence in and rapport with each other. She has involved the group in several social gatherings to strengthen their comfort level in working with each other. She has good communication with the group as a whole and with each of the five other group members. They've been together for four months, and the deadline for their task force deliverable is drawing near. Carol is eager to see the results of her task force's efforts. She heard two weeks ago that they were on schedule and today she's expecting to see the final report.

In looking over the project report, Carol is shocked to discover the development subcommittee is behind schedule and needs more time to complete the report. Carol is worried. She has a presentation to senior management scheduled for the end of the week. There's no way she's going to be ready by then. She wonders, "What happened? What could I have done differently? How come this always happens?" She concludes she's not cut out for supervision and thinks she needs to go to her managers and request a reassignment. "From now on," she mutters, "I'll just do important things like this on my own. I'm not going to depend on anyone else but me."

1. Why was Carol left in this situation?

2. Why do you think Carol's team let her down?

3. Do you think Carol should give up supervision? Why or why not?

4. What could Carol have done over the four months to ensure timely completion of the project?

5. Has something like this ever happened to you before? How did you react?

6. Have you ever been in a position similar to Carol's—one in which you depended on others to get work done and were disappointed with the outcome? If so, what did you learn from this experience?

"Plan the work. Work the plan."

This old saying is the cornerstone of management today. If you don't plan, you will be reacting to situations constantly and will not have time to take advantage of new opportunities.[1] It's easy for most people to develop plans. What separates successful plans from unsuccessful ones is the implementation. For a plan to become reality, it needs to be operationalized—brought to life. This chapter introduces the concept of project management and discusses how this concept can be used to organize projects and assignments that are managed by teams. The definition and importance of project management are discussed, as are steps involved in managing projects, and strategies and tips for honing your project management skills. We also include information on tools available to help you manage projects. The chapter ends with exercises to help you assess and improve your project management skills.

What Is Project Management?

Have you ever been involved in a team project where team members had different definitions of quality? Or different perceptions of the meaning of the phrase "on time"? Or where everyone procrastinated until the last minute? When used effectively, project management can help prevent (or reduce the likelihood of) these problems from occurring. **Project management** is the coordination of your work and that of others such that organizational objectives can be achieved while meeting time, budget, and quality standards or expectations.[2]

Project management is a systematic process through which almost all of the steps involved in starting and completing a project are anticipated and outlined in advance.[3] We use the word "almost" because no one can predict everything that will happen between the present and the project deadline. In project management, the known steps are anticipated and accounted for; in addition, the schedule includes some "slack" to account for unforeseen difficulties or events that invariably arise. Project management involves tracking a project from its inception to completion. This includes scheduling steps, allocating tasks to various team members, creating and overseeing time budgets for projects, and monitoring progress made toward goals.

Why Project Management?

In today's rapidly changing and highly competitive workplace, managers are being asked to reduce costs while increasing productivity. This imperative forces managers to develop new models of operating for every aspect of the organization.[4] One way to "do more with less" is to encourage employees to be efficient in plotting their work flow—for projects that are worked on independently and for those that are implemented by teams. As employees work increasingly in teams, it is essential to have a system to help team members work collectively on a project that has multiple milestones or deadlines. This is especially true when individuals are involved in multiple projects. They, and their

managers, must juggle many balls simultaneously. Being involved in multiple individual and team-based projects, project managers and project team members have a lot—perhaps too much—on their plates today. Project planning and management becomes essential as project managers attempt to adapt to changing technology, coordinate with multiple people and departments, meet financial goals, and manage business strategy while simultaneously monitoring multiple projects with day-, week-, or year-long or more time spans. And all of this must get done while getting the day-to-day work done![5]

Projects that encompass many tasks and run over several weeks or months require planning and coordination with other projects and activities, both personal and professional. As a manager or employee, your ongoing job priorities and commitments have to be factored in when planning new projects. The same is true for students. Coursework and extra assignments need to be incorporated into your plans, as well as personal commitments. Vacations, medical appointments, sports competitions, community involvement, carpooling the children, child care, and elder care are examples of personal commitments that should be taken into account when planning project schedules either independently or with others.

Benefits of Project Management

Applying a project management approach to your work has numerous benefits for the organization and for individuals. We've mentioned the need to "do more with less" or perhaps "work smart, not hard." Project management helps organizations do this and ensures that:

■ Resources such as time, money, and personnel are appropriately allocated to the organization's numerous priorities and objectives.[6] Through advance planning, individual project calendars can be adjusted to be in sync with other organization commitments. For example, in planning a major new product rollout, a company can ensure that it occurs at a time when other projects aren't absorbing needed time and energy of the managers and employees involved in the rollout effort.[7]

■ Long-term objectives can be kept in mind while short-term objectives are being implemented. Through thinking strategically about an organization's long-term objectives, short-term activities that help move the organization toward the longer-term goal can be planned and implemented. Using project management, a company can ensure that weekly or monthly tasks and objectives—in addition to those responsible for them—are included in plans that support a new marketing strategy. If a company strives to expand sales by 20 percent by adding an online business to compliment its brick and mortar business within two years, they could set up multiple milestones that track this progress. Within 3 months, content for the website is researched; within 6 months, the website is up and running; within one year, sales should increase by 5 percent; within 18 months, sales should increase by 15 percent, and so on.

■ Contingencies can be anticipated. By articulating in advance the known steps to complete a project and building in some slack in the schedule, each unanticipated event that occurs during the project time line does not have to be treated as a crisis that affects the ultimate deadline or deliverable. Let's say a company is implementing a new integrated computer system that tracks inventory, sales, costs, and so on. The consultants who are installing the package estimate that complete installation and implementation will take eight months. This includes installation of software, training all employees, testing and debugging the system, and making modifications. For project planning purposes, it's best to add 10 to 20 percent additional time to each phase. This will ensure that slack is built into the schedule to accommodate the unexpected, such as incompatibility with previous hardware, heavier than usual sales, or vacations or even holidays. By allocating extra time to projects at the outset, you have a better chance of getting ahead of your workload and staying there.[8] Sarah Gavit, an experienced project manager at NASA's Jet Propulsion Laboratory, notes, "Manage the risk. There always will be certain parts more susceptible to going wrong. Before we ever lay out a schedule, we look at four or five

areas with high risk. We develop contingency plans and watch extra closely. Other project managers sometimes don't look until they're up against the wall."[9]

■ Project output is made more consistent. By developing quality standards in advance, team members, managers, and employees have the opportunity to discuss and clarify their perceptions of the project objectives and their expectations for the end product, or project deliverable(s). For example, when developing a new interviewer training program, a company can outline the legal requirements, research industry benchmarks or best practices, and develop a set of specifications for the project that are agreed to in advance by all members of the planning team. By getting all involved on board before any project output is generated, the quality of the components comprising the end product is going to be higher and more harmonious than if everyone established his or her own quality standards independently.

Project management has numerous benefits for the individuals involved as well as the organization. In addition to enabling individuals to be more efficient and organized, through project planning and management:

■ Collegiality is enhanced. Through meeting with other team members and organizational employees who have a stake in the success of a project, you have the opportunity to build relationships that contribute to a sense of belonging in the organization.[10] Let's say you are part of a group tasked with implementing a new budget tracking system for the company. By meeting regularly as a team and with department heads and other stakeholders, you are able to form relationships that contribute to the success of the project at hand and last beyond the duration of the project. These relationships facilitate your knowledge and understanding of where you and your work fit with that of others in the organization. This enhances your perspective and enables you to think more "globally" in how you do your work. In addition, by being connected or networked with others in the organization, trust and helping behaviors—part of collegiality—are increased.

■ Morale is enhanced. No one likes feeling that they're all alone in overcoming a mountain of work at the office. Planning work in advance and achieving the desired outcome successfully boosts your morale and the morale of others involved in the effort. For example, tackling a thorny problem such as designing a new budget monitoring system can be a tedious task. When the various components of the task are articulated, planned for, and carried out systematically and in increments, what might be an overwhelming task appears more manageable. And when you are able to make progress on this task—even one small component at a time—your self-efficacy increases along with your morale. "Projects that succeed are just about the most satisfying work experience you can have. It's as much fun as you can have and still get paid," notes Steve McMenamin, Vice President of Customer Service at Southern California Edison Co.[11]

■ Job satisfaction is increased. Once we have mastered the basics of any job, most of us want more. Once we prove our capabilities, most people want to be involved in greater levels of responsibility, more variety of work, more complex work.[12] Being involved in multiple projects or tasks affords you this opportunity to stretch and grow further and, as a result, become more satisfied in your job. Let's say that in recognition for your outstanding capabilities as a waiter, the owner of a busy restaurant asks you to participate in a task force that is evaluating ways to improve customer service. Project management gives you the tools needed to juggle both roles simultaneously, facilitating your ability to take on both roles and, in so doing, increase your ability to multitask and to contribute to the organization beyond your daily job.

■ Learning is enhanced. Project management results in learning about others' jobs and work styles, not just your own. Working with others on projects increases your understanding of how your and others' roles and responsibilities fit into the whole. This increases your knowledge of the complexities and interdependencies in the organization, enabling you to make more substantive and appropriate contributions to the organization's success. For example, you might be involved in a group project at school where the ultimate deliverable is a presentation on a cutting-edge business topic. By planning the project in advance with other team members, you exchange ideas about preferred ways to approach the project, manage time, communicate with each other, make decisions, and solve problems. This collaboration increases everyone's skills and knowledge base.

■ Creativity and synergy are enhanced. Through planning a project in advance with your manager and team members, you are more likely to envision a new way to approach the situation than if you simply dove in and got the work done in the same way it's always been done. Imagine you are part of a team charged with implementing a membership expansion campaign for a fraternity. By planning the project in advance, you can ask big picture questions such as, "What do we want to accomplish?" "How can we do things better than before?" "What worked and what didn't work previously?" "Ideally what would we like the new program to look like?" "What do we want to accomplish?" By brainstorming with other team members to answer these questions, you're likely to tap into the synergistic potential that resides in most diverse groups. This process energizes and synergizes a group toward identifying more creative, innovative, and better solutions than could have been produced by any one team member working on their own.

Let's face it. Despite, or perhaps because of, all the technology that is now available, working today is harder and more pressure filled than ever. The average workday for today's white-collar worker is longer today than it was in the 1960s.[13] With the availability of e-mail, fax machines, and voice mail, our expectations for quick turnaround have changed from a week or so to an hour or two! Customers want service now. Managers want deliverables yesterday. With all this pressure, it's a wonder that any projects with a time line of more than a few days get done. Managing projects can be tedious and time-consuming work. The time that an organization or individual invests in planning will yield paybacks and returns through reduced implementation time and costs.[14] A project management mindset can serve as a way to spread the work around, making working on projects more effective and, just as important, fun!
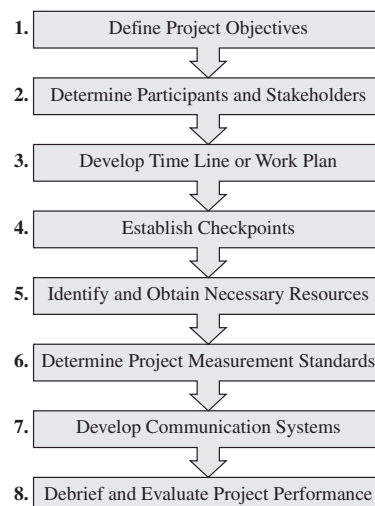
Eight Steps to Managing Projects

Knowing what you are managing is as important, if not more so, as how you manage it. To gain clarity on the task or project, follow the eight steps for managing projects (Figure 17–1).

Step One—Define Project Objectives and Scope

First, as a group, assess the goals of the project. What deliverables and outcomes are expected? What would you ideally like to accomplish? The answers to these questions may be different. If so, focus first on the essentials or must haves, and then, if there is room in the schedule, incorporate the optionals or nice to haves. For example an essential element would be to meet the deadline imposed by the instructor or manager. An optional element would be to have deliverables prepared a week ahead of time. After going

Figure 17–1
Steps to Managing Projects

1. Define Project Objectives
2. Determine Participants and Stakeholders
3. Develop Time Line or Work Plan
4. Establish Checkpoints
5. Identify and Obtain Necessary Resources
6. Determine Project Measurement Standards
7. Develop Communication Systems
8. Debrief and Evaluate Project Performance

through all the steps of project management, you'll then be able to assess whether getting done a week early is possible.

■ Relate the project goals to overall organizational goals and strategy. For example, if your team's goal is to produce a set of recommendations for consideration by senior management, determine your boss's objectives—as well as those of his or her boss—to ensure your project goals support the organization's broader goals. Without taking this step, you risk "doing things right" instead of "doing the right things."

■ Once you've determined the project objectives, clarify these with the project manager or instructor to ensure everyone's on the same page about the expected outcome. This might surprise you, but the phrase zero defects means different things to different people. Quality of 99.9 percent is impressive, unless you consider that a .1 percent error rate equates, for example, to Americans consuming over 14,000 cans of "bad" soda in a single year. The clarification of objectives can be one of the most critical steps in the process of project management.

Step Two—Determine Project Participants and Stakeholders

Now that you are clear about what to do, it makes sense to consider who should be included in the project. Even though some people may not seem necessary at first, the fact that their work or organization is affected by the outcomes of the project, thereby making them **stakeholders,** may suggest that their inclusion is more important than you might think. Key considerations for this stage include:

■ Make sure that vital employees and teammates are made and kept a part of the project and that key stakeholders—those who have a stake in the outcome such as your manager or instructor—are either involved or kept apprised of the group's efforts throughout the project.[15] For example, a functional organization charged with procuring materials for projects became frustrated with a system that took anywhere from four weeks to 18 months to obtain even simple, low cost items. The group worked together and devised a new system designed to save countless hours and, hence, costs. But they weren't done. The proposed system required extensive changes in the way accounts payable did its work. The group presented their plan to their management as well as members of accounts payable, and then asked representatives from the latter to join their group to flesh out the details and then implement the new system. Had they not included this step, the group might have faced an uphill battle—even though their proposed new system could save valuable resources.

■ Once the project group has been assembled, begin a master calendar on which members' availability (and lack thereof) is noted. Indicate specific dates in which one or more of the team members will not be available to work on the project. Holidays, vacation days, anticipated personal days, travel days, meeting days, or commitments to other projects should be noted and accounted for when designating project steps and entering "to do" items on the project calendar. Some dates may have to be skipped completely if key group members are unavailable, while others may be okay to include as long as tasks performed by others are unaffected by individual absences.

■ Discuss what the group members' interests are—their strengths and desired contributions to the project. For example, one might volunteer they would like to contribute by doing research, another by doing data entry, and a third by doing analysis, and so on. Two considerations: (1) if possible, allow members not only to do what they do best but also afford them the opportunity to develop other skills, and (2) if individuals don't volunteer, or if all members lack needed skills, roles will have to be assigned regardless of personal interest or strengths. For example, give someone with a computer background the chance to take on a marketing role if possible and if desired by the person. While they may be better equipped to prepare the final report or presentation, allowing members to stretch and possibly cross functional lines builds their skills for future projects as well.

■ Consider the team members' planning and organizing skills. Discuss expectations regarding meeting project deadlines and discuss what each person can contribute to the task. When allocating project steps to specific team members, assign tasks that stretch but don't overextend any one team member.

Step Three—Develop a Time Line or Work Plan

The next step is to create a specific plan, one that takes into account all the various steps—large and small—as well as the relationship among the steps. For example, in

**Figure 17–2
Sample Work Plan**

Project: Team presentation on business topic of current interest

Due Date: End of quarter

Team Members Names and Initials: James Smith (JS), Mary Conover (MC), Jesse Baron (JB), Nomi Hussein (NH), Maria Santanella (MS)

Step	Date	Initials
1. Meet with team; decide topic	Week one	All
2. Research topic	Week one	All
3. Re-group to share results	Week two	All
4. Further research and develop outline	Week two	JS, MC
5. E-mail to group and solicit and incorporate feedback	Week three	JS, MC
6. Develop presentation and share draft with others, edit	Week four	JB, NH
7. Plan presentation, prepare slides, and share with group	Week five	MS
8. Rehearse	Week five	All
9. Prepare copies for distribution	Week six	JS, JB
10. Present	Week six	All
11. Prepare and pass out evaluation	Week six	NH
12. Debrief	Week six	All

building a car, you would never install the headrests before installing the seats. Figure 17–2 shows a work plan for a five-member team project and presentation. It includes all the steps necessary to complete the project, a time frame to allow for completion of the project, and assignment of responsibilities for individual team members. Following are some tactics for developing a time line or work plan.

■ Working with a large blackboard, whiteboard, easel and newsprint, or computer program (something that can be seen by all involved), begin brainstorming all of the steps that will be needed to complete the project. Ideally, start with the end goal and work backwards from there. This process is called **backscheduling** and involves looking backward from a target date, beginning with your goal or objective and then plotting out the means to achieve it. This is done by[16]

1. Identifying the individual tasks necessary to achieve the objective.

2. Estimating how long it will take you to complete each task and determining the best time to do it.

3. Listing each task on a calendar, appropriately backdating each task from the project due date.

Let's take you away from business to share an example of backscheduling. If you were preparing a meal, the Spanish *paella* to be exact, you wouldn't put all the ingredients in at the same time. This complex dish includes meats (sausage, chicken), seafood (fish, shrimp, mussels), and vegetables (carrots, peppers), each of which has an optimal cooking time. If you were planning to serve the dish in 40 minutes, you would put the meats in first, as they would take the longest to cook. Then you'd add the vegetables, and finally the seafood. Shrimp that has cooked for 40 minutes tastes mushy, and the fish would fall apart and taste dried out. If you put the meats in last, say with only 10 minutes to go, you may subject your guests to undercooked meats (and the problems that brings). When you backschedule, you determine what happens last, next to last, next to next to last, and so on. For the example in Figure 17–2, the team would need to start with the presentation date and work backwards to determine when they would need to begin the project to ensure quality and timely completion. By doing so, they would determine that they will need six weeks to allow for creating this particular presentation.

If the project is complex and it's easier to start at the beginning, do so. List each step and allocate all steps to specific dates on the calendar. Realize that some tasks are serial (one must precede another) while others are parallel (two noninterrelated tasks can occur simultaneously).

■ Determine and specify the dependencies that exist between all the tasks, participants, and activities in a project plan. Each step relates to others in the plan. Understanding these interrelationships can help the group know where potential problems could arise or where a delay or lag in one could change the process.[17] If employees at the manufacturer supplying the upholstery material for the car seats are on strike, this impacts not only car seat readiness, but also the installation of the headrests.

■ As a group, clarify the objectives when specific tasks are assigned. Clearly communicate the expected deliverables and the desired results. Monitor tasks delegated and record to whom specific tasks are allotted. Set precise and realistic deadlines for short-term deliverables, adjusting the time line as necessary throughout the project.

■ Build in time for the unexpected. Planning and communication with teammates are essential here. Watch for the tendency to try and make up losses late in the project cycle. It's not atypical for a project to stay on schedule for the first 80 percent of the time and then fall apart due to overconfidence ("We're practically done"), reduced attention to the schedule ("We know what we have to do . . . who needs to see the schedule"), or just procrastination. Once group members recognize this slippage, they stress and rush to completion, resulting in lower quality output than would have been the case had the original time line been adhered to. Many people and teams grossly underestimate the time needed toward the end to complete details that bring a final deliverable up to quality standards. Let's say your team is assembling a report based on a survey conducted over a six-month time period. Who's going to check the accuracy of the data? Who will proofread? Edit? Check for content? Run the report by the research and legal departments? Share a preview copy with a few stakeholders to ensure buy-in? Copy and prepare presentation materials, or ensure they're available online? All these minute details take much more time than most people imagine. It's wise to build them into the schedule from the outset of the project.

Talking through these kinds of details with a project group has several benefits. It helps the group become realistic about what can and cannot be accomplished. It helps individuals think of additional steps that might otherwise have been omitted from the planning phase. And it helps team members to begin defining in real terms quality standards for the project.

■ Avoid the tendency to wait until late in the project to buy time for these important details. Budget for them up front. Stay vigilant and look at the whole project to determine where time can be bought earlier on in the process. Taking time for this discussion will pay off in a higher quality outcome, and with less stress than "winging it!"[18]

■ Some final advice from a veteran project manager. "Be very flexible. In this day where we're on these faster, better, cheaper programs, with very high turnaround and very high-risk technologies, you can come up with a great master plan, but things never go according to plan. You have to be flexible when changes come in to rapidly replan and not be discouraged by it."[19] The goal of your project is set, but the action plan or means of getting to your end result must constantly be adapted to address deviations from the original path. Effective project managers recognize when and how to change directions and ask for help when extra resources are needed.[20]

Step Four—Establish Checkpoints and Control Mechanisms

Step four involves setting up a series of checkpoints, or points at which progress on the project will be checked, and entering these onto the project calendar. Even after your group lists all the tasks, identifies interdependencies, and assigns specific due dates, it is wise to establish periodic checkpoints. These may be progress meetings that entail status checks, expectation clarification, or raising issues. If unanticipated problems arise, these checkpoint meetings can be used to problem-solve and make necessary adjustments to the schedule.

■ Evaluate your project for important steps or tasks to be completed and insert interim deadlines or checkpoints in the project plan. In the previous step, we broke the project into smaller tasks or objectives. In this step, break these down further into milestones or incremental steps in order to determine when checks and tests should be

completed. For example, break a 30-day project into three 10-day subsections, and check after each one. This will help to shorten the time between when an error or misunderstanding occurs and when it can be discovered and corrected.[21] It will also help to prevent or reduce the possibility of time line slippage.

■ Review and update the project plan regularly. Monitor other projects and events that might interfere with your project schedule and adjust accordingly. One suggestion is to post the project plan in an area visible to all group members. Don't confine the schedule to the conference room in which you meet only monthly. Instead put it in a hallway that all members pass through, such as the hallway to the bathroom or breakroom. By keeping the plan highly visible, potential interferences and problems can be raised and dealt with before they impact the expected outcomes.

Step Five—Identify and Obtain Necessary Resources

Project managers and their teams need to identify and obtain the resources that are needed to complete the project within the specified time frame, cost parameters, or budget in order to meet quality standards. It is therefore necessary to:

■ Look through the tasks and objects and discuss what will be required to carry out the assignment. Be realistic about what can be accomplished given the resources that are available and the time constraints that are inherent in the project. If your group anticipates a shortfall of personnel, budget, time, computer support, administrative support, or supplies, now is the time—before you roll up your sleeves and begin the project—to discuss these needs with your manager. If the resources can be provided, great. If not, it's important to "push back" on management and negotiate which elements of the deliverable can be achieved, given the resources available. Don't assume you can get these resources later. Get what you need before you start or, if the resources are not forthcoming, manage stakeholders' expectations about the group's ability to achieve a desired outcome.

■ Know when to let a project go or when to start over. Sometimes a project team discovers early on that the project expectation is unrealistic or the scope of the project is more complex than originally envisioned. Perhaps the team thought its job was to make recommendations when their manager saw the task as ending with implementation of the recommendations. These perceptions differ substantially. Or perhaps a pilot project is expanded to include the entire organization. The project team might need to reconsider its objectives and change course. If this happens to you, consult with your manager or instructor. Possibly the task can be reconceived. Don't let politics, pride, or the thought of failure keep you from asking for help or from scrapping a project that is not going to contribute to the organization. Use active decision making throughout to help you make these determinations.[22] Maintain constant and clear communication about these determinations with appropriate stakeholders.

Step Six—Determine How Project Results Will Be Measured

This is important to consider before the project starts. Understand how the project will be evaluated and who will assess it. This will ensure that steps are built into the process to obtain the data needed to evaluate the success of the project. If your group's task is to improve customer satisfaction, how will you know whether you've done it? Are they happier? Do they file fewer complaints? Is the wait time for help shorter? Especially in a case like this, your group might first have to measure and establish a baseline. How do you know if the wait time is shorter after your recommendations are implemented if you don't assess the wait time before you begin?

Step Seven—Set Up an Ongoing Communication System

There is no substitute for effective communication in project management. Typically, projects get in trouble when people are confused. Avoiding confusion requires seeing over the horizon and conveying to others your ideas, your perceptions, and the objective with clarity and confidence. It also requires listening skills.

■ Communicate with team members and stakeholders. The ability to deal with people—using your interpersonal skills—can be the primary factor in success of a project.[23] Important skills to use throughout the process are listening, giving and receiving feedback, persuasion, delegation, seeing things from another's perspective, and getting people to respond to you.[24]

Figure 17–3
Project Management Tips from Bill Gates[30]

1. Choose carefully. Projects should be large enough to be worthwhile and should suit your skills and qualifications.
2. Establish a realistic time line.
3. Let employees know how important the project is.
4. Keep employees informed and involved so they understand the constraints under which they're operating.
5. Meet across boundaries—involve people from various parts of the organization if possible.
6. Keep in touch with the progress and morale of the crew.
7. Share bad news and information when things aren't going well—don't keep employees in the dark.
8. Make trade-off decisions crisply to minimize big changes, but be flexible to adjust to marketplace developments and changes.
9. Know when to give up.
10. Breed healthy competition.

■ Start the project with face-to-face or telephone contact if possible. E-mail contact can occur once the group is formed and people are clear on their roles and responsibilities. Misunderstanding is less likely to occur when members are able to meet and fully discuss project expectations and concerns in real time, with the benefit of nonverbal language.

■ Meet regularly (in person or virtually) to check on project status and progress. Meetings are usually a necessary element that can keep a project on task. Meetings are a good place to check and recheck all members' understanding of dates and deliverables. To be effective, meetings should be primarily decision oriented. In addition to sharing status, meetings can be used to maintain agreed-upon deadlines, discuss changes that might be necessary in the plan or work schedule, address questions and issues, and clarify roles and expectations.

■ Revisit initial decisions made by the group if they are not working. An important aspect of project management is continuously reviewing the initial prioritizing of steps. Perform continuous "triage" or cross-checking of all interrelated project components to make sure that the critical aspects and requirements are getting implemented. Constantly review and modify where necessary, ensuring your ability to deliver what is promised by your deadlines.[25]

■ Keep people informed by issuing progress reports. This can be done face to face, but written methods (e.g., an e-mail sent to the team) may provide an easier means for keeping track of individual and collective progress. Err on the side of going overboard on updating people on how your objectives or tasks are measuring up to the goals of the project.[26]

■ Ensure a positive, open atmosphere. Provide encouragement throughout the project. If the project occurs over an extended period of time, plan some fun get-togethers to build camaraderie, trust, and rapport among team members.

■ Monitor performance and catch problems early on. If this is not done, you risk marginalization, wherein the poor performers bring down the group's standards rather than the other way around. Since a change to a single step can have a ripple effect on the whole project and system, communicating instantly is critical in keeping projects on time and on budget.[27] Providing constructive feedback as soon as possible can do this. A good project manager will be able to question others and give feedback without alienating the members.[28]

■ Give less experienced team members more initial attention and direction. As they acquire experience and confidence, you can be less involved in overseeing their work.

■ Be clear on accountability and clarify where overall responsibility for the ultimate quality of the deliverable lies. Make sure everyone understands and is held accountable for the responsibilities they assume.

■ Develop records that document the group's progress on the project. This will help the group stay on track without having to replicate earlier discussions. This also aids future groups working on similar projects. The records can be print or electronic and

**Figure 17–4
A Gantt Chart on the Development of a Team Presentation**

Week		1	2	3	4	5	6	7	8	9
A Decide Topic	Plan	■								
	Actual	▨								
B Research Topic	Plan	■								
	Actual	▨								
C Meet to Share Results	Plan		■							
	Actual		▨							
D Further Research and Develop Outline	Plan		■							
	Actual			▨						
E Get Team Feedback and Incorporate Ideas	Plan			■						
	Actual			▨						
F Develop Presentation and Discuss Draft	Plan				■					
	Actual									
G Plan Presentation, Develop Slides	Plan					■				
	Actual									
H Rehearse Presentation	Plan					■				
	Actual									
I Prepare Audience Handouts	Plan						■			
	Actual									
J Present	Plan						■			
	Actual									
K Prepare and Pass Out Evaluation	Plan						■			
	Actual									
L Debrief	Plan						■			
	Actual									

should include the original project plan and changes that are made, meeting schedules and minutes, team to-do lists, memos and e-mail correspondence, and samples of interim and final deliverables.

Step Eight—Debrief and Evaluate the Process and Results at Project End

Remember that all processes and efforts can be improved. Keep notes of lessons learned throughout the process and share them with group members at the end of the project. Discuss what worked well and what didn't. Discuss what everyone learned from the group's mistakes and how similar mistakes can be prevented when engaged in future team projects. This allows for all involved to offer feedback and to share ideas for improving group behaviors and processes in the future.

Project Management Tools

Several tools are available to help you track progress on projects. One of the more common and simple tools is the **Gantt chart.** Named after its developer, Henry Gantt, this chart describes the temporal relationships of events of tasks that unfold over time.[29] It can also show projected and actual schedules. Figure 17–4 shows how the earlier

presentation project (illustrated in Figure 17–2) has been made into a Gantt chart. From this chart the team can track the planned activities, control individual activities, and identify delays or deviations from the original plan. The team can see where they have lost time and can plan and make adjustments to complete the project on time. The Gantt chart will also be helpful when debriefing the project and team process for future improvements on their next assignment.

To make a Gantt chart,

1. Brainstorm all the tasks necessary to complete the final project.

2. Reorganize this list in order from beginning to ending tasks.

3. Create a grid (or use graph paper) wherein the columns represent weeks (or days if the project is very short) and the rows represent specific tasks. Plan to post this where all group project members can see it.

4. List each task in order and estimate the time needed to complete each task. Traditionally, this would be represented by a rectangle whose endpoints show the start and finish time of the task; the longer the rectangle, the longer it would take to complete this task.

5. You could also include two rows for each task—one that shows the projected or planned time (using an opaque rectangle) and one that shows the actual time (using a shaded rectangle).

While it may not be critical to have the planned and actual schedules on a Gantt chart, adding the actual schedule helps in at least two ways. First, you will be able to make real-time adjustments to the schedule, especially when a preceding, interdependent task was delayed in starting or finishing. Second, the comparisons will help in the overall project debrief and provide feedback and lessons learned for future projects and planning.

Another common tool used in project management is the **PERT (Program Evaluation and Review Technique)** chart. A PERT chart diagrams all of the steps involved in completing a project and estimates the length of time needed in each phase of the project. By mapping out tasks in a flowchart pattern, the PERT helps identify sequences of dependent activities (see sample below).[31] It answers the questions of what are the most optimistic estimates of the time to complete the project under the best conditions, what's the most pessimistic under the worst conditions, and what is the most likely under normal conditions.[32] The PERT process can also determine the longest anticipated single line of activity from start to finish,[33] which is known as **critical path method (CPM).**

The procedures for PERT and CPM are:[34]

1. Define the project and all of its significant activities and tasks.

2. Develop the relationships among the activities. Decide which activities must precede and follow others.

3. Draw the network connecting all of the activities.

4. Assign time and/or cost estimates to each activity.

5. Compute the longest time path through the network; this is called the critical path.

6. Use the network to help plan, schedule, monitor, and control the project.

The critical path represents tasks and activities that, if delayed, will cause the entire project to be delayed. This information can be used by teams to identify noncritical tasks for replanning, rescheduling, and relocating resources to gain flexibility and allow for alterations. Therefore, PERT and CPM can play a major part in controlling a project. Figure 17–5 illustrates the team presentation project (from Figure 17–2) showing the relationship between the activities and the estimated time needed to complete the presentation. The critical path shows that they will need a minimum of 33 days to complete all the steps as well as identifying which steps are critical for keeping on schedule and which activities have some slack time.

Figure 17-5
PERT Chart for Development of Team Presentation
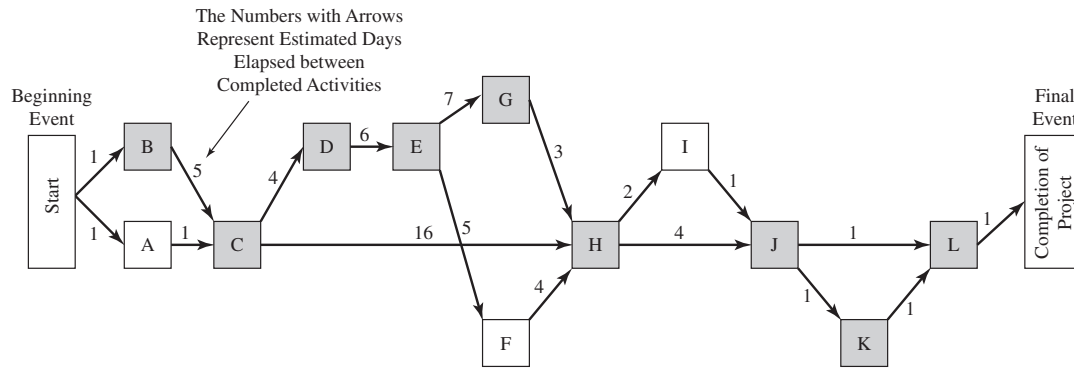
Note: Shaded boxes shows critical path (B→C→D→E→G→H→J→K→L) of 33 days

Both of these methods are immensely helpful in planning out a project. By creating either chart, most groups discover missing steps, clarify whether the anticipated time line is realistic (or not), and identify critical dependencies and resources. One recommendation for creating a first draft Gantt or PERT chart is to use Post-Its or other easily movable notes. Since so many hidden tasks or issues arise in the building of these charts, the use of Post-Its can reduce group members' frustration in the process. Software programs can also be used to create PERT charts; the team identifies the tasks and time estimates, and the programs prepare the charts.

Numerous Web-oriented software programs are available. These programs enable group members to enter tasks, estimate time lines and other dependencies, and create the project management chart.[35] One benefit of these programs is that changes—added tasks, modified time lines—create instant adjustments to the overall schedule, enabling members to see the immediate impact of a midterm slippage. Another benefit is that many of these programs can be "connected" to company systems, enabling stakeholders such as department heads and customers to access information on how a project that concerns them is progressing, while the project team maintains control over the project.[36] This allows for others, besides the team members, to participate and have easy access to project information. Of course, as is true of any computer program, their availability does not replace the need for human interaction. Keeping people informed through personal contact is an important complement to electronic communication about project status.[37]

Summary

In today's environment, company and individual success comes more readily to those who can do more with less while working smarter, not harder. One way to do this is to make effective use of project management skills and tools. This becomes especially important when you are involved in one or more complex projects. Taking time to clarify project expectations, determine contributors and stakeholders, establish specific objectives or milestones, create contingency plans, and communicate regularly with stakeholders are among the steps needed to make all your projects a success. In the final analysis, others expect project outcomes or deliverables—on time and on budget—not excuses or explanations!

Key Terms and Concepts

Backscheduling

Critical path method (CPM)

Gantt chart

Program Evaluation and Review Technique (PERT)

Project management

Project time line

Stakeholders

Work plan

Endnotes

1. David L. Coles, "Step Back to Get Ahead; The Key to Completing Projects on Time Is Working Backward from Your Deadlines," *Coles and Associates,* March–April 1988, p. 14.

2. Joe E. Beck, Worley Johnson, and R. Steve Konkel, "Project Management Insights," *Occupational Health and Safety,* June 2000, p. 22.

3. Alexander Laufer, "Project Planning: Timing Issues and Path of Progress," *Project Management Journal,* June 1991, p. 39.

4. Robert D. Landel and J. Robb Dixon, "Assessing the Potential for Office-Productivity Improvement," *Operations Management Review,* Fall 1983, pp. 3–8.

5. Kathleen Melymuka, "Born to Lead Projects: Some People Have Innate Talents for Managing Projects," *Computerworld,* March 27, 2000, p. 62.

6. Howard Millman, "On Track and in Touch," *Computerworld,* June 26, 2000, p. 88.

7. Sonia Tellez, "Think Globally When Designing a PM Solution," *Computing Canada,* Dec. 10, 1999, p. 28.

8. Coles, 1988.

9. Quoted in article by Kathleen Melymuka, "Project Management Top Guns," *Computerworld,* Oct. 20, 1997, pp. 108–109.

10. Lawrence Todryk, "The Project Manager as Team Builder: Creating an Effective Team," *Project Management Journal,* Dec. 1990, p. 17.

11. Melymuka, 1997.

12. See J. Richard Hackman, "Motivation through the Design of Work—Test a Theory," *Organizational Behavior and Human Performance,* Aug. 1976, p. 250; J. R. Hackman, "Is Job-Enrichment Just a Fad," *Harvard Business Review,* Sept.–Oct. 1975, p. 129.

13. See Frank Swoboda, "Workers Generally Worse Off Than a Decade Ago, Study Finds," *The Washington Post,* Sept. 7, 1992, p. 25; and Susan Cartwright, "Taking the Pulse of Executive Health in the U.K.," *The Academy of Management Executive,* May 2000, p. 16.

14. Lloyd A. Rogers, "Project Team Training: A Proven Key to Organizational Teamwork and Breakthrough in Planning Performance," *Project Management Journal,* June 1990, p. 9.

15. Robert Thompson, "More Heads Better Than One in Project Management," *Computing Canada,* Dec. 10, 1999, p. 27.

16. Coles, 1988.

17. Paul S. Adler, "Never-Ending Mission to Find Magic Solution," *Computing Canada,* Oct. 1, 1999, p. 17.

18. Don Reinertsen, "The Best-Laid Plans Become the Enemy of Vigilance," *Electronic Design,* March 20, 2000, p. 57.

19. Quote attributed to Uwe Weissflog, manager of strategic planning Structural Dynamics Research Corp., as captured by Kathleen Melymuka, 1997.

20. Rogers, 1990.

21. Don Reinertsen, "Projects Can Slip by More Than One Day at a Time," *Electronic Design,* March 6, 2000, p. 56.

22. Daphne Main and Carolyn L. Lousteau, "Don't Get Trapped," *Strategic Finance,* Nov. 1999, p. 74.

23. Melymuka, 1997.

24. Melymuka, 2000.

25. Yourdon, Ed, "The Value of Triage," *Computerworld,* March 20, 2000.

26. "Ask Bill Gates (Project Management Tips)," *Management Today,* Feb. 2000, p. 38.

27. Tellez, 1999.

28. Melymuka, 2000.

29. Peter R. Scholtes, *The Leader's Handbook* (Washington, DC: McGraw-Hill, 1998), p. 205.

30. Haymarket Publishing, 2000.

31. Scholtes, pp. 99 and 205.

32. Haidee E. Allerton, "How To," *Training and Development,* Nov. 1999, p. 15.

33. Scholtes, 1998, p. 205.

34. Barry Render and Ralph M. Stair, Jr., *Introduction to Management Science* (Boston, MA: Allyn & Bacon, 1992), p. 368.

35. "Get a Grip," *Fortune,* Summer 2000, Supplement, pp. 74–90.

36. Matthew J. Liberatore, "A Decision Support System Linking Research and Development Project Selection with Business Strategy," *Project Management Journal,* Nov. 1988, p. 14.

37. Thompson, 1999.

Exercise 17–A
Assessing Yourself

Circle the response that most closely correlates with each item below.

	Agree		Neither		Disagree
1. I am in the habit of planning my daily, weekly, monthly, and annual priorities and commitments.	1	2	3	4	5
2. I maintain a day planner and incorporate personal, academic, family, and professional responsibilities into it.	1	2	3	4	5
3. I outline all the steps that are likely to be involved in a project and enter these steps into my personal day planner.	1	2	3	4	5
4. I constantly monitor my planner and make adjustments to the time line as necessary.	1	2	3	4	5
5. I develop project quality standards and discuss these with my team, manager and/or instructor prior to beginning a project.	1	2	3	4	5
6. I allow slack in my schedule to allow for contingencies or the unexpected.	1	2	3	4	5
7. I assess the ultimate goals of a project and relate these to my overall goals or those of the organization.	1	2	3	4	5
8. I focus first on completing essentials or must-haves.	1	2	3	4	5
9. I identify and gain input from key stakeholders.	1	2	3	4	5
10. I volunteer to take on assignments that give me exposure to functions outside my known area of expertise.	1	2	3	4	5
11. When possible, I take on assignments related to my interests and assign tasks to others based on their interests.	1	2	3	4	5
12. I backschedule, listing all project steps starting with the final deadline and working backwards to the present.	1	2	3	4	5
13. I identify the dependencies that exist in a plan.	1	2	3	4	5
14. I monitor tasks that I have taken on or delegated and keep record of who was assigned each task and when.	1	2	3	4	5
15. I set specific and realistic deadlines for each step involved in a project.	1	2	3	4	5
16. I don't procrastinate.	1	2	3	4	5
17. I include in my planning all details such as clerical steps.	1	2	3	4	5
18. I set up specific times throughout a project when I monitor progress and check for understanding.	1	2	3	4	5
19. I break projects into small, manageable components.	1	2	3	4	5

	Agree	Neither	Disagree
20. I determine in advance how results will be measured.	1 2	3	4 5
21. I evaluate projects midstream and am willing to make changes if necessary.	1 2	3	4 5
22. I estimate in advance the resources that will be required to do a job and adjust my expectations so they are in line with the available resources.	1 2	3	4 5
23. I ensure that project-planning meetings I attend or lead are decision oriented and that notes are kept about the issues and outcomes discussed.	1 2	3	4 5
24. I keep people informed by issuing regular progress reports.	1 2	3	4 5
25. I communicate regularly with team members, my manager, and key stakeholders.	1 2	3	4 5
26. I encourage a positive, open atmosphere for all with whom I work on group projects.	1 2	3	4 5
27. On projects, I give my all and help others to do the same. I resist the tendency to let myself or others marginalize the quality of the group's ultimate deliverable.	1 2	3	4 5
28. I give less experienced team members more attention and direction at the outset of a project.	1 2	3	4 5
29. I clarify roles, responsibilities, and accountabilities with my team members and manager or instructor.	1 2	3	4 5
30. I maintain records that document my and my team's progress on a project and share these with future project managers as appropriate.	1 2	3	4 5
31. I debrief with myself and/or my team and manager at the end of each project.	1 2	3	4 5

If your score was 93 or less, you may want to create a plan to further your project management skills.

Exercise 17–B Individual Day Planner Update

Each person should bring two sharpened pencils and his or her own personal day planner to this session. Have extra pencils on hand, as well as copies of blank calendars (8 $\frac{1}{2}$" x 11"—one-sheet per month for 9 to 12 months) for those who don't have personal calendars.

1. Make a list of all activities and projects, personal and professional, in which you're currently involved. This can include work activities or classes in which you're enrolled, children's commitments such as carpooling or after-school activities, family, church or community obligations, exercise, planned travel (trip, vacation, holidays), and medical appointments.

2. Working through the list, enter all known dates for all commitments, activities, and appointments into your personal day planner, using a pencil. Be as thorough as possible. For example, if you are a student, enter all class sessions, exams, paper and project due dates, and vacation schedules. If you are unsure of a specific date, write the activity in the expected week, month, quarter, or semester in which it is likely to occur.

3. Make adjustments as you discover conflicts.

4. Keep this list up to date. As your schedule changes or as additional activities and deadlines are made known, add these into your day planner on a regular basis.

Exercise 17–C
Personal Project
Time Line

You will need your up-to-date individual day planner and project sheet or computer project management program.

1. Working on your own, consider a project in which you're currently involved or in which you anticipate being involved soon.* The project can be personal, such as planning a trip; academic, such as preparing to give a class presentation; or professional, such as conducting an analysis of available products that compete against those of your company.

2. Develop a work plan for the project, following the steps outlined in this chapter. Starting backwards from the project deadline, list every step needed to complete the project. Use a pencil if working on paper. Be as thorough as possible. Assign initials to each step and projected dates for each step.

3. Now transfer each of these dates (in pencil if using paper) to your personal day planner. If there are conflicts between this project and other classes, projects, or activities that are already in your planner, adjust the dates accordingly on both the project work plan and in your personal day planner.

4. Share your project work plan with a partner and obtain feedback on how realistic your plan is, how detailed it is, and on any suggested steps for adding or deleting. Modify your plan accordingly.

*If you can't think of a project, imagine it is the start of the fall semester and you are asked to prepare a 20-page term paper and presentation on a cutting-edge business topic by the end of the semester. You have twelve weeks in which to plan and complete this project. Other ideas: Building a new house, opening a retail store, producing a TV documentary, manufacturing and marketing a new product.

Exercise 17–D
Team Project
Worksheet

1. As a team, use the following sheet to develop a work plan for your team project. Use the guidelines outlined in this chapter.

2. Transfer the dates that affect you into your individual day planner (in pencil). Apprise the group of any potential conflicts. As a team, discuss how to adjust the project calendar to ensure that personal, academic, and professional commitments of all team members are incorporated into the overall project planning process.

3. Present your team's work plan to the class or group. Obtain feedback from them about steps that might have been overlooked or time lines that may be unrealistic. Adjust accordingly. Remember to make adjustments both on the team work plan and in your own day planner.

Team Project Work Plan

Project:

Due Date:

Names and Initials of Team Members:

Project Step: **Date:**   **Initials:**

 1.

 2.

 3.

 4.

 5.

 6.

 7.

 8.

 9.

10.

11.

12.

13.

14.

(continue with additional steps on reverse or on blank sheet of paper)

**Exercise 17–E
Product Recall**

The Scenario

You are part of the Yum Yum Bubblegum's management team. Yum Yum Bubblegum manufactures and sells bubble gum in the United States and Canada.
  You have three manufacturing plants:

- Chewing, Mississippi
- Bubbleton, Alabama
- Poppingsburg, South Dakota

The same products are manufactured at all plants and then sent to Yum Yum's distribution center in Shipit, Arkansas, where they are then shipped to customers via distribution trucks. Assume that the company has no contingency or preventive product recall plans.

The Problem

- The company has just been notified that six people have been hospitalized for toxic poisoning related to substances found in Yum Yum Bubblegum.
- Three of the hospitalized individuals purchased gum in Dallas, Texas; one in San Antonio; one in San Diego, California; and one is believed to have purchased the gum in an airport in Utah.

Questions and Task

Using the tips and techniques provided in the chapter, work as a team to manage the clean-up project.

1. How should you as managers attack this problem? What's your plan? Create a list of key steps and time frame for each.
2. Next, choose your project team. Who should be on this team? What is each team member's role? Who should be the leader?
3. Determine a contingent plan of attack. How to approach the problem? How to control the process?
4. Finally, determine a preventive plan for the future, assuming that this fiasco does not *blow* the company's ability to continue to do business.

Source: Permission provided by creator Sherry Ghodes, JMU MBA Student, presented Fall 2000.

**Exercise 17–F
Try This . . .**

1. Get on the Internet and research existing project management tools and resources. New products are becoming available all the time. Bring an example of a new product that you think looks particularly effective to your class or group.
2. Contact your computer department and ask them for recommendations of new software programs that can be used easily for tracking projects. Try one out and report to your group on its effectiveness and potential applicability to your group's project.
3. Visit a local office supply or stationery store and investigate the current day planner systems that are available. Make a note of the particular strengths and limitations of each. Report to the class or group on the top one or two that you believe are the best available for your group's purposes.
4. Interview someone you know or work with who is a project manager. Ask that person about the job—the highs, the lows, the lessons learned, tips, and so on. What advice would they give you for applying principles of project management to school projects? To workplace projects?

Exercise 17–G
Reflection/Action Plan

This chapter focused on project management—what it is, why it's important, and how to improve your skills in this area. Complete the worksheet below upon completing all reading and experiential activities for this chapter.

1. The one or two areas in which I am most strong are:

_____

_____

_____

_____

2. The one or two areas in which I need more improvement are:

_____

_____

_____

_____

3. If I did only one thing to improve in this area, it would be to:

_____

_____

_____

_____

4. Making this change would probably result in:

_____

_____

_____

_____

5. If I did not change or improve in this area, it would probably affect my personal and professional life in the following ways:

_____

_____

_____

_____