Project Management Practices: Assigning the Right Resources to Tasks

As the project manager, you consider several factors when deciding whom to assign to which tasks. One of the most important factors is the resource's skill set, competencies. and proficiencies. His or her ability to carry out the assigned task is essential to the success of the task. You can set up your resources in Microsoft Project so that you can find and assign resources based on their skill sets.

Another important factor is the resource's availability. If the perfect resource is 100 percent committed to another project during the same timeframe as your project, you can't use this resource. Microsoft Project can help you find resources that are available to work on your project.

There are other factors as well:

Experience Have the resources you're considering for the assignment done similar or related work before? How well did they do it? Perhaps you can use this assignment as an opportunity to pair a more experienced team member with a less-experienced one. This pairing can set up a mentoring situation in which both team members can benefit, and in which your team is strengthened in the long run.

Enthusiasm Are the resources you're considering personally interested in the assignment? In many cases, a resource with less experience but more enthusiasm can be more effective than a seasoned but bored resource.

Team dynamics Do certain tasks require several resources to work together? If so, are the resources you're considering likely to work well together? Do they have a history of conflicts with each other? Do certain team members have good synergy with one another?

Speed Is alacrity important to your project, all other things being equal? Some resources work faster than others. This speed can be a function of experience. Or it can be a function of working style or level of quality. Determine how important speed is to your project, and assign tasks accordingly.

Leveling Resources

Resource leveling is part of the broader topic of resource management. This is an area that has always created problems for organizations. Some of the situations that organizations have to deal with are these:

- Committing people to more than they can reasonably handle in the given time frame, reasoning that they will find a way to get it done
- Changing project priorities and not considering the impact on existing resource schedules
- The absence of a resource management function that can measure and monitor the capacity of the resource pool and the extent to which it is already committed to projects
- Employee turnover that is not reflected in the resource schedule

Resource leveling strategies

Three approaches :

- Slack
- Shifting the project finish date
- Smoothing

Slack was defined as the amount of delay expressed in units of time that could be tolerated in the starting time or completion time of an activity without causing a delay in the completion of the project.

Slack can be used to alleviate the over-allocation of resources.

Shifting the project finish date

Not all project are driven by the completion date. For some, resource availability is their most severe constraint.

If you find yourself caught between over-allocated resources on a schedule, you may have to consider reducing the scope of the project.

Smoothing

Occasionally, limited overtime is required to accomplish the work within the scheduled start and finish dates of the activity. Overtime can help alleviate some resource over-allocaiton because it allows more work to be done within the same scheduled start and finish dates.;

Alternative Methods of Scheduling Activities

Rather than treating the activity list as fixed and within that constraint leveling resources, you could resolve the leveling problem by considering further decomposition of one or more activities. One of the six characteristics of a complete WBS mentioned in Chapter 7, "Identify Project Activities," was activity independence. Activity independence means that once work has begun on an activity, work can continue without interruption until the activity is complete. Usually, you do not schedule the work to be continuous for a number of reasons, such as resource availability, but you could if you wanted. Other than for resource availability issues, the decision to do that may simply be a preference of the project manager.

Further Decomposition of Activities

Resource availability, or rather the lack of it, can require some creative activity scheduling on the part of the project manager. For example, suppose that an activity requires one person for three days within a five-day window. There are two days of slack in the schedule for that activity. In other words, the ES-LF window of the activity is five days and the activity duration is three days. The project manager would prefer to have the activity scheduled for its early start date, but the unavailability of the resource for three consecutive days beginning on the ES date will require scheduling the activity work to a longer period of time. One solution would be to have the resource work for three nonconsecutive days

as early as possible in the five-day window. Continuing with the example, let's say that the resource is available for the first two days in the five-day window and for the last day in the five-day window. To simplify the scheduling of the resource the project manager could decompose the five-day activity into two activities—one two-day activity and one one-day activity. The two-day activity would then have an FS dependency on the one-day activity. The scheduled start and finish dates of the two activities would be set so that they fit the availability of the resource. There are other solutions to this scheduling problem, but we do not discuss them here. The one we have presented is the best approach to situations similar to the example.

Stretching Activities

Another alternative that preserves the continuity of the activity work is to stretch the work over a longer period of time by having the resource work on the activity *at a percent per day lower than was originally planned*. Let's modify the previous example to illustrate what we mean by stretching the activity. Suppose the resource is available 80 percent of each day in the five-day window and you need four days of work. The resource is therefore available for .80 times five days, or four days of work, over the five-day window. You need only four days of work from the resource, so how do you schedule the work in the five-day window to accomplish the four days of work you need? The solution is to stretch the activity from four days to five and schedule the resource to work on the activity for those five days. Because the resource can only work 80 percent of the time on the activity, the resource will accomplish four days of work in five days.

In this simple example the percentage was constant over the five days, but it might also follow some profile. For example, suppose you needed the resource for three days and the resource was available full-time for the first and second days but only half-time for the remaining three days of the five-day window. You could first split the activity into two activities—a two-day activity and a one-day activity. The two-day activity would fully use the resource and get two days of work completed. The second activity would be stretched to two days, and the resource would be assigned half-time for two days to complete the remaining day of work on the activity. In other words, you got the three days of work in four days—the first two days at full-time and the next two days at half-time. Resource availability can be the determining factor for how the

Assigning Substitute Resources

Our estimate of activity duration was based on the assumption that a typically skilled resource will be available to work on the activity. That may not be possible, though, because of unavailability of the resource. This will be especially true in the case of scarce resources such as some of the newer technologies. The project manager needs to find some other strategy. One approach would be to use less-skilled resources and add to the total number of hours requested. Here, the thinking is that a less-skilled resource would require a longer period of time to complete the activity work. Be careful in using this tactic, however, because there will be additional risk in using a less-skilled person and it is not clear exactly what increase in activity duration is needed to account for the lesser skilled person. This strategy will work only for noncritical path activities. Using it for a critical path activity would extend the completion date of the project.

Work Packages

At this point, you have essentially completed all JPP session activities. The project work has been defined as a list of activities; activity duration and resource requirements are specified, the project network is built, the activity schedule is done, and resources have been scheduled. The JPP session attendees have reached a consensus! Whew, that's a lot—and you probably wondered if it would ever be finished. There is one more step to go before project work can commence—that is, to define the work to be done in each activity but at the task level. Recall from Chapter 7 that activities are made up of tasks. The work to be done within an activity is called a *work package*.

This is really the final test of the feasibility of the schedule and resource leveling decisions. The work package is a statement by each activity manager as to how he or she plans to complete the activity within the scheduled start and finish dates. It is like an insurance policy. For the project manager, the work package is a document that describes the work at a level of detail so that if the activity manager or anyone work-

ing on the activity were not available (if he or she were fired, hit by a bus on the way to work, or otherwise not available), someone else could use the work package to figure out how to continue the work of the activity with minimal lost time. This is especially important for critical path activities for which schedule delays are to be avoided.

A work package can consist of one or several tasks. They may be nothing more than a to-do list, which can be completed in any order. On the other hand, the work package can consist of tasks that take the form of a mini-project, with a network diagram that describes it. In this case, work packages are assigned to a single individual, who we call an activity manager or work package manager. This manager is responsible for completing the activity on time, within budget, and according to specification. Sounds like a project manager, doesn't it? That person has the authority and the access to the resources needed to complete the assignment.

Purpose of a Work Package

The work package becomes the bedrock for all project work. It describes in detail the tasks that need to be done to complete the work for an activity. In addition to the task descriptions, the package includes start and end dates for the activity.

The *work package manager* (or activity manager) may decide to include the start and end dates for each task in the package so that anyone who has occasion to use the work package will have a sense of how the plan to complete the work would be accomplished. Be careful if you adopt this approach because you encourage micro-management on the part of the project manager. The more you say, the more you encourage objections; the trade-off, though, is to protect the project schedule. There is always a trade-off between the need for detail and the need to spend work time accomplishing work, not shuffling papers.

The work package also can be adapted to status reporting. Tasks constitute the work to be done. Checking off completed tasks measures what percent of the activity is complete. Some organizations use the percent of tasks completed as the percent of activity completion. This is a simple yet effective metric that serves as the basis for earned value calculations. Earned value is discussed in detail in Chapter 13, "Monitor and Control Progress."

Format of a Work Package

We recommend two work package documents. The first is a very special type of telephone directory, called a *work package assignment sheet*. It is used as a ready reference for the project manager and contains some basic information about each work package and its manager. The second is a detailed description of the activity plan, called the *work package description report*. It contains much of the same information that is in found in a project plan but focuses on activities, not projects. It is therefore a much simpler document than a project plan even though it contains the same type of information as the project plan.

Work Package Assignment Sheet

The work package assignment sheet, shown in Figure 10.2, is a report for the project manager only. It includes the earliest start and latest finish times for each activity. This is one of the few resources available to the

WORK PACKAGE ASSIGNMENT SHEET		Project Name		Project No.		Project Manager	
Work Package			Schedule				
Number	Name		Early Start	Late Finish		Work Package Manager	Contact Information
A	DESIGN		03/01/00	04/01/00		ANNA LYST	
B	PROD. EVAL		04/02/00	07/02/00		HY ROWLER	
C1	PLACE.LOCATE.PT1		04/02/00	03/04/01		SY YONARA	
C2	PLACE.LOCATE.PT2		07/03/00	03/04/01		HY ROWLER	
D	PROD.FCAST		07/03/00	03/04/01		SY YONARA	
E	PROD.DELETE		03/05/01	06/02/01		HY ROWLER	
F	PROMO.REGION		03/05/01	07/06/01		TERRI TORY	
H	PRICE		08/04/01	02/05/02		HY ROWLER	
I	PLACE.DESIGN		06/05/01	08/03/02		HY ROWLER	
J	PROMO.SALES.LEAD		07/07/01	11/05/01		TERRI TORY	
G	PROMO.MEDIA		07/07/01	02/05/02		SY YONARA	
K	PROMO.SALES.RPT		10/07/01	02/05/02		TERRI TORY	
L	SYSTEM.TEST		02/08/02	05/10/02		ANNA LYST	
M	SYSTEM.ACCEPT		05/10/02	06/10/02		ANNA LYST	
Prepared by		Date	Approved by			Date	Sheet 1 of 1

Figure 10.2   Work package assignment sheet.

project manager and should not be made available to anyone other than the project manager. The project manager is unlikely to tell an activity manager that the activity is scheduled for completion on July 15, for example, but the activity manager really has until August 15 because of slack. Activity managers should be given only the scheduled start and end dates for their activities.

The work package assignment sheet has limited value in smaller projects but can be invaluable in larger ones. We were involved in a project that consisted of more than 4000 activities. Over the seven-year life of the project more than 10,000 activity managers were involved. This report became a phone directory that needed constant updating as team members came and went. Because of the complexity and personnel changes that accompany these large projects, the project manager needs an effective and efficient way of keeping up with the project team membership, who is assigned to what, and how will they accomplish their work.

Work Package Description Report

A work package is a document prepared by the activity manager in which he or she describes the details of how he or she will accomplish the work of the activity. A very simple example of a work package, or statement of work, is shown in Figure 10.3.

Once the project plan has been approved, it is the activity manager's responsibility to generate the work package documentation. Not all activities will require or should require work package documentation. The documentation can be limited to critical path activities, near-critical path activities, high-risk activities, and activities that use very scarce or highly skilled staff. It is the project manager who will decide which activities need a work package description report.

The descriptions must be complete so that anyone could pick them up, read them, and understand what has to be done to complete the activity. Each task must be described so that the status of the work package can be determined easily. Ideally, the task list is a check-off list. Once all the tasks have been checked off as being completed, the activity is completed. Each task will also have a duration estimate attached to it. In some project planning sessions these estimates may have been supplied as a bottom-up method of estimating activity duration.

WORK PACKAGE DESCRIPTION			Project Name		Project No.		Project Manager		
Work Package Name			Work Package No.		Work Package Manager			Contact Info.	Date
Start Date	End Date	Critical Path Y N	Predecessor Work Package(s)			Successor Work Package(s)			
TASK									
No.	Name	Description		Time (days)	Responsibility		Contact Info.		
Prepared by		Date	Approved by			Date		Sheet 1 of 1	

Figure 10.3 Work package description report.

The work of planning the project is now complete. All that remains is to document the plan in the form of a project proposal and forward it to the appropriate manager(s) for approval. Approval at this stage is approval to do the project as defined in the project plan. In the next chapter we bring together all the discussions from earlier chapters on the Joint Project Planning session. While we have discussed various parts of project planning, we have not given you a complete picture of exactly how a project planning session is planned, organized, who should attend, and how one is conducted.

To assign a work resource to a task, follow these steps:

1　In the Gantt Chart or other task sheet, click the task to which you want to assign resources.

2　On the Standard toolbar, click Assign Resources.
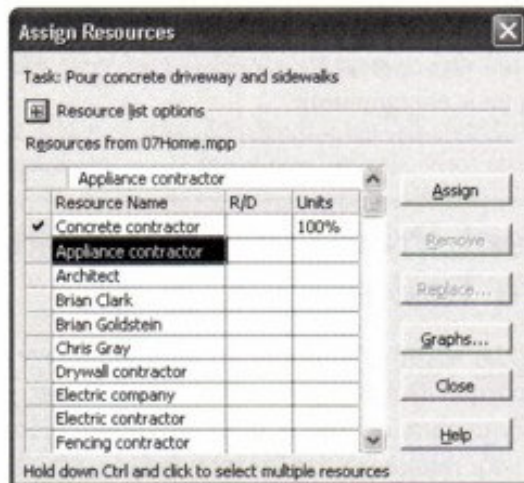
The Assign Resources dialog box appears (see Figure 7-1).

Figure 7-1. Use the Assign Resources dialog box to specify which resources are to be assigned to which tasks, and for how much of their available time.

3　In the dialog box, click the name of the work resource you want to assign to the task and then click the Assign button.

The resource name moves to the top of the Resources list in the table, and a default percentage appears in the Units field for the resource. For individual resources, the default assignment units are the same as the resource's maximum units. For consolidated resources with more than 100 percent maximum units, the default assignment units are 100 percent.

4　Review the Units field to make sure that it's appropriate for this assignment.

5　If you want to assign a second resource, click that resource name and then click the Assign button. Modify the Units field as necessary. If you change the Units field, you need to press Enter or click another field.

This procedure ends the edit mode for the field, sets your change, and makes the Assign button available.