

## Topic One: Introduction to Project planning

Project planning is an elusive concept to characterize in a few words or graphics. This is because “project plans” tend to assume many different shapes, sizes, and forms. The other reason why project planning is so difficult to describe definitively is because project plans are always evolving. In addition, organizations tend vary considerably in their general approach to project planning. The specific procedures that one organization prescribes reflects its philosophy toward planning and control. For example, if an organization’s management tends to be extremely action oriented or to not believe in the value of planning, it’s likely that project planning procedures will be minimal. In this environment, projects may be hastily initiated and a significant amount of upfront planning is done without much thought or without properly considering alternatives or risks. Conversely, if an organization’s management has a bias toward certainty or control, that’s likely to be reflected in the development and use of rigorous planning procedures.

Despite the difficulties in describing project planning, project plans are generally considered to consist of three fundamental “dimensions”:

1. **Cost:** how much money will be spent on the project and how it’s budgeted over time.
2. **Time:** how long it will take to execute the work – individually and, as a total project.
3. **Scope:** what is to be done – all activities necessary to successfully complete the project?

### Definition

Project planning is quite simply answering the questions; “who, what, when, why, how much, how long?” It is that simple. And it is that hard – hard because answering some of these questions requires a crystal ball – especially questions like “How long will that take?” On tasks for which no historical data is available, this is a very hard question to answer (Heagney, 2012).

Project planning can further be described as *a disciplined process supporting the coordination and direction of resources such as time, people, finance and others to achieve product/service and project objectives set by management*. It emphasizes the process of planning the work required to produce project output(s) rather than the technical aspects necessary to produce project output (Knutson and Bitz, 1991).

**Five essential questions must be answered during project planning:**

**What? (Technical objectives):**

The question of what is to be accomplished is addressed through the review of the **technical objectives** by the project manager and the team.

**How? (Work breakdown structure):** The technical objectives are achieved by developing a work breakdown structure, which is a checklist of tasks that must be performed.

**Who? (Resource commitment and utilization plan):** The issue of who will perform the work is addressed, and the organizational units responsible for components of the work are incorporated into the work breakdown structure at the appropriate level of detail.

**When? (Schedule):** Further into the planning process, the questions of how long each element of work will take, when it will be performed, and what resources and assets will be used in its performance are addressed.

**How much? (Budget):** How much will it cost to perform the project?

The answers to these questions can be used as the basis for a **feasibility report**. Feasibility report outlines the project and its formal justification. That is, the business case for the project.

Any project has to satisfy three **feasibility criteria**:

**The *technical* criterion** – is it going to work?

**The *business* criterion** – are the costs and timescales right for the business/organisation as a whole? Is the **return on investments** big enough to justify the risk?

**The *functional* criterion** – will the result satisfy the end users?

Approval to go ahead with the project should not be given unless it satisfies all **three criteria**. Once it has been decided that the **project is feasible**, the rest of the planning can be carried out (Knutson and Bitz, 1991).

## **Benefits of developing a project plan**

There are three benefits to developing a project plan:

### **1. Planning reduces uncertainty**

Even though the project team would never expect the project work to occur exactly as planned, planning the work allows the team to consider the likely outcomes and to put the necessary corrective measures in place.

### **2. Planning increases understanding**

The mere act of planning gives the project team a better understanding of the goals and objectives of the project. Even if the team were to discard the plan, it would still benefit from having done the exercise – increased understanding of the project and its expected results.

### 3. Planning improves efficiency

Once the project team have developed the project plan and the necessary resources to carry it out, they can schedule the work to take advantage of available resource by:

- a. Scheduling work in parallel; that is, tasks can be done concurrently, rather than in series. By doing tasks concurrently, the total duration of the project is shortened.
- b. Maximizing use of resources and complete the project work in less time than by taking other approaches. Moreover, not knowing the parameters of a project prevents measurement of progress and results in never knowing when the project is complete. Thus, the plan provides a basis for measuring work planned against actual work performed (Wysocki and McGary 2003).

It is often said that project management consists of two major phases: 1) doing the right project and, 2) doing the project right. Ensuring that the project is based upon a true need and that it's justified from a business standpoint are two important aspects of doing the right project. Project planning, on the other hand, is all about doing the project right.

### Steps in Project Planning

Note that there is no standard procedure to be followed in project planning. However, in this course, the following steps are considered key to successful project planning. Note that some of these topics are covered in the subsequent topics in the course.

- a. Define the problem to be solved by the project.

The need, problem or opportunity should be clearly defined with respect to factors such as its **size, shape, and extent**.

- b. Develop the project's main goal, followed by specific objectives.

The goal and the specific objectives must be SMART.

- c. Develop a project strategy that will be used to achieve project goal and objectives.
- d. Write a scope statement to define project boundaries (what *will* and *will not* be done).
- e. Develop a Work Breakdown Structure (WBS).

- f. Using the WBS, estimate activity durations, resource requirements, and costs (as appropriate for your environment).
- g. Prepare the project master schedule and budget.
- h. Decide on the project organization structure—whether matrix or hierarchical (if you are free to choose).
- i. Create the project plan.
- j. Get the plan signed off by relevant officer(s).

## **Common Project Planning Failures**

In this section, we discuss some of the common mistakes that some project managers make in their approach to project planning. This will not only help you to avoid them, but also provide valuable background for what will be discussed later in the course. The following are some of the common mistakes some project managers make in their approach to project planning:

### **I. Failure to Plan**

Many factors influence the degree to which you should plan your project. Sometimes, a relatively small amount of planning effort will suffice. However, some project managers feel (or are pressured into feeling) that planning is not worth doing at all. Some project managers – particularly new ones – are extremely action-oriented. They feel that time spent in planning is lost. Others are pressured by their management, their organizational culture, or some stakeholders into cutting short any meaningful planning effort. To those groups, when people are sitting around planning, it simply doesn't seem that progress is being made. However, project managers who don't plan chronically suffer from an interesting irony. Because they don't plan, they spend a great deal of time "fighting fires," so they are always going full speed. Since they are going at full speed, they are able to rationalize their negligence in planning because they are too busy and don't have the time.

### **II. Failure to Plan in Sufficient Detail**

Sometimes, project managers make an attempt to plan, but don't do it in enough detail. It's a question of how they size and compose elements of work – specifically the ones they put on their schedule and attempt to watch closely. Failing to plan and schedule project work in enough detail can result in three significant, undesirable effects, which you can avoid by asking these questions:

1. Will all involved participants readily understand what the tasks includes?

You should describe and define elements of work in enough detail that there's no confusion. There are cases where defining work elements poorly has resulted in rework, as people simply misunderstood what was expected.

2. Can you prepare a reasonably accurate estimate of duration and cost?

If a reasonably accurate estimate is needed, the work must be broken down to a point where you can estimate its duration and cost with a high degree of confidence. In other words, the less time and effort you put into defining your project, the greater the uncertainty in your estimate.

3. Will you be able to effectively monitor its progress?

The principle is quite simple. To make sure that your project is staying on schedule, you will need to be able to gauge that team members are making progress as expected. The most convenient way to gauge their progress is by observing the completion of relatively small elements of work routinely – typically at your project team meetings. Therefore, elements of work need to be broken down enough that you can verify their completion readily.

### **III. Failure to Involve Task Performers in Planning**

Creating an accurate, credible project plan requires a significant amount of effort and the input of many people. Attempting to create a project plan single-handedly has caused the downfall of many a project manager.

The principle is simple: the people who will be working on your project should be heavily involved in planning their portion of it. There are at least two good reasons for this.

- a. First, the planning outputs will undoubtedly be more accurate as the task performers are probably more knowledgeable than you – after all, it's what they do.
- b. Second, involving them during the planning stage is likely to make them significantly more willing to participate and more committed to succeeding. People often feel compelled to live up to what they have promised.

### **IV. Failure to Reflect Risk and Uncertainty in Plans**

Nearly all projects that go awry do so because risk and uncertainty were left untreated. Risk management techniques use statistics and other scientific methods to allow you to make the most reasonable prediction of an outcome in conditions of high uncertainty. Yet many who plan projects do not properly assess, accommodate, or plan for the inherent risk in projects. There are at least two reasons why this happens:

- a. The project managers does not understand risk management. Although risk management techniques have been available for quite some time, many project managers still don't know how to properly deal with risk, so they ignore it.
- b. Project managers are victims of the “rose-coloured glasses” syndrome. When they prepare project plans, they tend to plan to an all-success scenario. They simply visualize that everything will go perfectly. Projects that are planned this way have only one direction to go – downhill.

## **V. Failure to Keep the Plan Current**

For some project managers, planning is a one-shot deal. They create a plan and then store it away on their shelf for the remainder of the project. Our argument is that project plans must be kept current. They must continuously reflect what's occurring on the project. Variations from the original plan are inevitable. If you don't take these variations into account, it's harder to maintain control, chaos is more likely, and you hurt your chances of bringing the project in on time and within budget.

### **How Much Planning Is Enough?**

As is true of so many questions that arise in project management, the answer to this question is ... it depends. In this case, it depends upon many factors. Among the most important are the following:

#### **a. Organizational Expectations**

As mentioned previously, organizations have different perspectives on the value of planning. This will reflect directly upon the time and effort teams are expected to put into planning. It's absolutely vital that you understand your organization's expectations relative to planning. If they're very low, the project manager must exceed them – to improve their chances of success.

#### **b. Project Importance**

This factor is associated more with organizational politics than technical or logistical criteria. If the project manager is politically astute, they will realize that there's likely to be much more attention paid to the so-called “hot project” than to other, more mundane (ordinary) projects. This is not to suggest that the project manager should neglect planning for less glamorous projects – you just may be wise to put a little more into the planning and control of the high-visibility ones.

#### **c. Project Complexity**

Projects can vary considerably in complexity. Those that require a significant amount of coordination among parties, that have intricate timing, or that include a lot of participating work groups, for example, will ordinarily require more effort and forethought in planning.

#### **d. Project Size**

Obviously, large projects require more planning than small ones. However, the time allocated to planning and the control of large projects can often be proportionately less. One of the reasons this is true goes back to the point of project importance. In many organizations, mega-projects get more visibility and therefore more attention. Another reason is that smaller projects have a smaller margin of error. In other words, it doesn't take much of an incident to throw a small project well off target proportionately.

#### **e. Amount of Uncertainty**

When the level of uncertainty is extremely high, detailed planning of the entire project at the outset may not be advisable. In fact, it may be a waste of time, due to amount of change likely. On projects where the level of uncertainty is high, the project manager and their team will probably end up doing the same amount of planning, but spread out periodically throughout the life of the project. In other words, expect to spend a good deal of time re-planning, as you encounter change. Refer to the Topic on Approaches to Project Management in PMT 1015 for details.

#### **f. Project Management Software Selection**

Your choice of project management software (if you use it) will affect your planning time. Obviously, the more user-friendly the software, the less time you will have to invest in using it. However, be aware that project management software products differ significantly in cost, capability, and utility.

### **Suggestions for Effective Project Planning**

To improve project planning, the following should be taken into account:

#### **a) Plan to plan**

It is always difficult to get people together to develop a plan. Therefore, the planning session should be planned, or it may turn into a totally disorganized meeting of the type that plagues many organizations. This means that an agenda must be prepared, the meeting should be time

limited to the degree possible, and people should be kept on track. If someone goes off on a tangent, the meeting facilitator should get the person back on track as quickly as possible.

**b) The people who must implement a plan should participate in preparing it**

As mentioned before, creating an accurate, credible project plan requires a significant amount of effort and the input of many people. Otherwise, the project manager risk having contributors who feel no sense of commitment to the plan; their estimates may be erroneous, and major tasks may be forgotten.

**c) The first rule of planning is to be prepared to re-plan**

Unexpected obstacles will undoubtedly crop up and must be handled. This also means that you should not plan in too much detail if there is a likelihood that the plan will have to be changed, as this wastes time. Because unexpected obstacles will crop up, always conduct a risk analysis to anticipate the most likely ones.

**d) Develop Plan B just in case Plan A doesn't work**

Why not just use Plan B in the first place? Because Plan A is better but has a few weaknesses. Plan B has weaknesses also, but they must be different from those in Plan A, or there is no use in considering Plan B a backup.

**e) Identify project risks and develop contingencies to deal with them if they occur**

The simple way to do a risk analysis is to ask, "What could go wrong?" This should be done for the schedule, work performance, and other parts of the project plan. Sometimes, simply identifying risks can help avert them, but, if that cannot be done, at least you will have a backup plan available.

**f) Develop a problem statement**

All actions in an organization should be taken to achieve a result, which is another way of saying "solve a problem." Be careful here to identify what the end user really needs to solve the problem. There are projects in which the project team thought a given solution was right for the client/beneficiary, but that solution is never used, resulting in significant waste.

**g) Use the Work Breakdown Structure (discussed later in the course) to divide the work into smaller chunks for which you can develop accurate estimates for duration, cost, and resource requirements.**

## Estimating

Estimating is a big part of project planning. To prepare an accurate, thorough project plan, the project manager and their team will need to estimate many things: how long it will take to do the work, how much the work will cost, how much money the project will save or make, the magnitude of the risk and uncertainty involved, and other aspects of the project. With that in mind, it's worth taking some time to discuss the process of estimating as a subset of planning.

Webster defines estimating as “determining approximately the size, extent, value, cost, or nature of something.” As many experienced project managers will gladly tell you, the operative word in that definition is ***approximately***. The nature of project work is such that – even with significant prior experience – the uncertainty inherent in projects simply does not allow for absolute precision in estimates. Yet many people won't understand this point. And as you manage more and more projects, you will find this to be an issue with some people: they will expect more precision and certainty in your estimates than you're able to provide. Consider this an opportunity to help them learn, to help them understand that, despite your best efforts to provide good estimates, “It's just a guess, for Pete's sake!”

### Estimating Approaches

Here are five methods for obtaining estimates:

1. Ask the person responsible for doing the work to prepare the estimate.
2. Ask a subject matter expert – a person with knowledge or experience in that area.
3. Use historical data and make appropriate adjustments.
4. Use mock-ups, trial runs, tests, field studies, or other simulated experiences as a guide.
5. Use quotations
6. Prepare the estimate yourself.

Although all of these approaches are valid, some will work better than others. The best approach will depend upon factors such as the availability of historical data, the estimating skills of task performers or subject matter experts, and the amount of time available to prepare an estimate. You may want to try more than one approach, then use your judgment to come up with the best estimate. Remember: estimates should reflect what you believe to be the most likely outcome. Therefore, don't be afraid to apply your own judgment to the input you receive, as long as you have a rational reason to do so.

## **Estimating Pitfalls**

Estimating is difficult. There are many things that can undermine the accuracy or validity of your estimates. Among the most common pitfalls are the following:

- Poorly defined scope of work. This can occur when the work is not broken down far enough or individual elements of work are misinterpreted.
- Omissions. Simply put, you forget something.
- Rampant optimism. This is the rose-coloured glasses syndrome described previously, when the all-success scenario is used as the basis for the estimate.
- Padding. This is when the estimator (in this case almost always the task performer) includes a factor of safety without your knowledge, a cushion that ensures that he or she will meet or beat the estimate.
- Failure to assess risk and uncertainty. As mentioned earlier, neglecting or ignoring risk and uncertainty can result in estimates that are unrealistic.
- Time pressure.
- The task performer and the estimator are at two different skill levels. Since people work at different levels of efficiency, sometimes affecting time and cost for a task significantly, try to take into consideration who's going to do the work.
- External pressure. Many project managers are given specific targets of cost, schedule, quality, or performance (and often more than one!). If you're asked to meet unrealistic targets, you may not be able to fight it, but you should communicate what you believe is reasonably achievable.
- Failure to involve task performers. It's ironic: an estimate developed without involving the task performer could be quite accurate, but that person may not feel compelled to meet the estimate, since "it's your number, not mine," so the estimate may appear wrong.

## **Contingency: The Misunderstood Component**

There are a number of technical definitions for contingency— basically, any time, money, and/or effort added to the project plan to allow for uncertainty, risk, unknowns, and errors.

### **Case**

You're at the very beginning of a project. You cannot possibly know how everything will turn out. There's just too much uncertainty and risk ahead. However, you're required to

come up with an estimate that represents your best attempt at predicting the final outcome of the project, most notably in terms of cost and schedule. A powerful combination of your knowledge of the project, your sense of what you don't know, your experiences on previous projects, the documented experiences of countless other project managers, and some good old-fashioned project manager judgment of your own leads you to the conclusion that an estimating shortfall exists. In other words, there's a gap between the sum of your individual work element estimates and where you know you will end up at project completion. This gap is created by your inability to understand exactly how to synthesize all of the uncertainties. According to traditional project management practices, the gap is supposed to be plugged using—you guessed it—contingency.

In real project situations, there's relentless pressure to do things faster, cheaper, and better – sometimes unrealistically so. And there's a general lack of understanding of what contingency is supposed to represent. And finally, there's the perception by some that contingency is really a slush fund for mistakes, as it's typically modelled as something tacked onto the project bottom line.