Overview

Developing a Project Scope and Project Plan are key to the successful implementation of any project. In this learning package we will explore general project management principles and how to apply the skills to the project planning processes during the initiate phase and plan phase of the project life cycle.

Key terms

Cost Management
This is a document that describes how cost variances will be managed during the project.

Network Diagram
This is like a roadmap that shows all of the project's activities drawn as an interconnected network of tasks.

Project Milestone
A milestone is usually a where deliverable takes place in the project and where a sign-off is usually required. Milestones are not work, they are markers for summarising work that has been completed to that point.

Project Plan
The project plan is a detailed document that describes all of the activities, resources and schedules required to meet the project goal and objectives. It tells you where you are, where you are going, and how you are going to get there.

Project scope
The purpose of the project scope is to provide a clear and refined description of the project goal, what is to be achieved, how it is to be
achieved, who will achieve it, when it will be achieved, and with what resources.

**WBS (Work Breakdown Schedule)**

The WBS represents the goal, objectives, tasks, sub-tasks and work packages by using an hierarchical tree which shows all of the levels of breakdown. The top branch represents the goal of the project and the bottom branches represent the individual work activities to be performed.

**General management skills**

Project management is more than listing tasks and entering tasks into a software package. It is about managing people and resources to ensure the completion of the project. It is based on sound general management principles that are used to manage all of the work activities on a project to achieve a desired goal on time and within budget.

These general management principles include

- **Planning** the objectives, work estimates, work schedules, and budgets to reach the project goal
- **Organising** the people, initiating the activities, and assembling all of the necessary resources required to complete the work defined in the project planning
- **Controlling** the project, by tracking and monitoring the progress against the initial project plan.
- **Leading** the project team
- **Communicating** involves defining and creating a reporting structure to ensure that all stakeholders and other interested parties receive timely and proper information during the life of the project

Why do project managers need strong management skills? Because they have to lead, communicate, negotiate, organise, plan, problem solve, influence, analyse, set goals, listen, motivate, and achieve targets.

**Management activities during the project life cycle**

It is acknowledged by all project management experts that all projects have the same five general phases in their project life cycle.

- Initiate phase
- Plan phase
- Organise phase
• Control phase
• Close phase

During each phase we use our **principles of general management** in a set of controlled steps and procedures to do the activities required during that phase. The following table shows the major activities that are required in each of these five general phases of a project life cycle. They usually are grouped into:

- **planning processes** and
- **implementation processes**.

They are grouped this way because at the end of the plan phase when the project plan is approved, we **start the work related tasks** that produce the deliverables that meet the goal of the project.

**Major activities that occur during each project phase**

- **Planning phases**
- **Implementation phases**

Table 1: Major activities that occur during each project phase (5 cols)

<table>
<thead>
<tr>
<th>Initiate</th>
<th>Plan</th>
<th>Organise</th>
<th>Control</th>
<th>Close</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define the overall project goal</td>
<td>Develop detailed task list</td>
<td>Procure necessary resources</td>
<td>Team leadership and support</td>
<td>Complete final deliverable</td>
</tr>
<tr>
<td>Identify all stakeholders, their needs and expectations</td>
<td>Estimate all task times and all costs</td>
<td>Recruit necessary personnel</td>
<td>Establish control tools and methods</td>
<td>Obtain stakeholder acceptance and signoff</td>
</tr>
<tr>
<td>Identify the project objectives</td>
<td>Arrange best sequence of all tasks</td>
<td>Organise and lead the project team</td>
<td>Monitor the project plan and make any necessary corrective actions</td>
<td>Document project results and achievements of team</td>
</tr>
<tr>
<td>Identify initial work and</td>
<td>Develop workable schedule and</td>
<td>Assign all project tasks</td>
<td>Assess and implement change</td>
<td>Write and issue final report</td>
</tr>
<tr>
<td></td>
<td>identify</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The initiate phase

In the previous section we saw that in the initiate phase of the project life cycle there are five major activities that we have to complete. They are the planning processes below:

- Define the overall project goal
- Identify all stakeholders, their needs and expectations
- Identify the project objectives
- Identify initial work and resources and basic milestones
- Identify all constraints, assumptions and risks

These are the first tasks that you as a project manager must do and they are all part of scoping the project. Scope refers to all work needed to make the products of the project and all the resources and processes used to create the products.

Project scope management is one of the most important and first tasks that you must do as a project manager. The purpose of the project scope is to provide a clear and refined description of:

- **the project goal**
- **what** is to be achieved
- **how** is it to be achieved
- **who** will achieve it
- **when** it will be achieved, and
- **with what resources.**

The answer to these gives a clear picture of what the goal is and this is called a scope statement.
Skills required in scoping

In this first phase of the project, you use organisation, communication, and planning skills.

- You use **organisation skills** to arrange meetings with the sponsor and all stakeholders.

- At these meetings you use **communication skills** to determine all of the sponsor and stakeholders requirements for the project goal, objectives. With effective questioning techniques you determine expectations for timing and quality and any other constraints and assumptions that any party has.

- Finally you use **planning skills** to clearly define the goal and objectives for the project, based on the needs and expectations that you determined from the stakeholders. You define the initial list of work, people and materials that will be required and also estimate the preliminary budget for the project.

These all form part of **scope management** and the outcome of these initial phase activities is the **scope document**, which is used to guide the project forward.

The scope document and its components

An example of a project scope document is shown below.

Figure 1: An example of a project scope document.

![Scope Contents](image)

The scope document includes the following key sections:

Table 2: Key sections of a scope document (2 cols)

<table>
<thead>
<tr>
<th>Section</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A scope statement</td>
<td>This clearly identifies the project goal, objectives, and deliverables. If it is not specified in the scope statement then it is outside the scope of the project and is not relevant. Project tasks should only address</td>
</tr>
<tr>
<td>Section</td>
<td>Details</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Constraints</td>
<td>These are normally limiting factors that prevent the project from moving in a particular path. Several examples of project constraints are given below.</td>
</tr>
<tr>
<td></td>
<td>You are forced to implement an information system in Powerhouse 4GL because of a specific application requirement.</td>
</tr>
<tr>
<td></td>
<td>You must design the house you are building to face a certain direction to accommodate the best aspect, i.e., to take advantage of sunsets over the mountains.</td>
</tr>
<tr>
<td></td>
<td>You have dependent tasks that impact specific areas of the project. These are tasks that cannot begin unless another has started. For example, the design of a system cannot begin unless the specifications have been identified.</td>
</tr>
<tr>
<td></td>
<td>You have a deadline that cannot be changed.</td>
</tr>
<tr>
<td></td>
<td>The implementation work for the network upgrade can only be done on the weekend, when staff are not at work.</td>
</tr>
<tr>
<td>Assumptions</td>
<td>These are aspects that the project manager builds into the scope document to allow for any of the uncertainties that may occur. Here are some examples of assumptions:</td>
</tr>
<tr>
<td></td>
<td>• fifteen new personal computers need to be purchased for the project</td>
</tr>
<tr>
<td></td>
<td>• all staff need access to the Internet.</td>
</tr>
<tr>
<td></td>
<td>• all resources for the software development will be sourced from outside of the company.</td>
</tr>
<tr>
<td>Tasks and</td>
<td>A list of tasks and deliverables that have to be achieved during the project need to be specified. They are all the activities that need to take place to bring the project to a point of completion, and the deliverables include all the documentation, reports, contracts and products that need to be produced and signed-off by high authorities.</td>
</tr>
<tr>
<td>deliverables</td>
<td></td>
</tr>
<tr>
<td>Cost, time and</td>
<td>Initial estimates in relation to cost time and human resource requirements must be made. These identify the boundaries of the project to enable you, the project</td>
</tr>
<tr>
<td>human resources</td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td>Details</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>manager, to expand into the</td>
<td>more detailed estimates that are needed to develop the full project plan.</td>
</tr>
<tr>
<td>A contract statement</td>
<td>This will include the names of those authorised to initiate contract work, sign contracts and completion acceptances. It also includes contractual constraints and penalty statements for contract variations that can occur. These variations and penalty apply equally to the client as well as providers.</td>
</tr>
</tbody>
</table>

**The role of the scope document during the project life cycle**

The details from the **scope document** assist you, the project manager, in developing the **project plan**. The project plan is a detailed document that describes all of the activities, resources and schedules required to meet the project goal and objectives. You will also continually revisit the scope document during the project life cycle, to check if the project is meeting its objectives and to constantly verify that activities are within the scope of the project.

**The plan phase**

You should now have a good idea of the **initiate phase**. Next is the **planning phase**.

To effectively **plan** and **execute** a complex project it is helpful to remember that the project has an overall **goal** and several **objectives**. Each of these objectives will have a number of discrete definable **tasks** that must be done in order to complete the objective. They must be defined so that that they can easily be achieved, measured and the completion verified.

Just as you identified the major activities in the initiate phase, the five major activities in the **plan** phase of the project life cycle are:

1. Develop a detailed task list
2. Estimate all task times and all costs
3. Arrange the best sequence of all tasks
4. Develop a workable schedule and identify critical milestones
5. Write a detailed project plan and obtain approval from stakeholders

During the **plan phase** you use the scope document as a basis to expand into a detailed activity list of the project deliverables. This is the start of the **scope definition**.
Skills required in this phase

- During this phase of the project life cycle you use your **planning skills** to define the task list, estimate task times and task costs, define task sequence and task schedules.

- You will use **communication skills** to help determine task durations from many sources during the estimation process. These same skills will also help you write the project plan and get approval from the stakeholders.

Developing the work breakdown structure

Of the many methods available to define the activity and tasks that make up a project, the one that is most used and is easiest to understand is the **work breakdown structure** usually referred to as a **WBS**.

Using this method we represent the goal, objectives, tasks, sub-tasks and work packages using an hierarchical tree which shows all of the levels of breakdown. The top branch represents the goal of the project and the bottom branches represent the individual work activities to be performed.

It could be an hierarchical listing like a table of contents in the front of a book or a graphical diagram for displaying the **WBS** like the **WBS chart** shown below. You will notice that it looks a little like an organisational chart for a company.
Work breakdown codes

Referring to the figure above, you will notice that each activity and task, not only has a name, but also a code. Codes are used to identify each unique activity, along with the tasks and phases to which they belong.

A simple example of a code convention is contained in the following table:

Sample WBS Codes

- WBS Number: 02-03-01-04
- 02 = Project number 2
- 03 = Phase number 3
- 01 = Task number 1
- 04 = Activity number 4

Tasks and types of breakdown methods

How do you know if you have identified all of the necessary tasks that are required to successfully achieve the project objectives? Well, there are five basic characteristics that a well-defined task has, and they are:
• its status and completion are easily measured
• it has a definite beginning and end
• it is familiar (may have been done before) and therefore its completion time, associated resource requirements and costs can be easily estimated from previous experiences with this or similar tasks
• it is made up of work packages that are manageable, measurable, integrable and independent of work packages in other tasks
• it should normally be one continuous stream of work from start to finish.

If you examine a task that you have identified and it does not have one or more of these characteristics, then you will have to break it down further into subtasks.

The top down method

The most common method used when breaking down projects into tasks and then work packages is the top down approach. The following are five simple steps to this method.

1. Divide the project into its major objectives.
2. Divide each objective into the tasks that must be done in order to accomplish the objective.
3. For each task that must be done, check if it has all of the required characteristics listed above. If it has one or more missing characteristics then divide the task into subtasks.
4. Repeat step 3 until all subtasks have the required characteristics.
5. The lowest level of subtasks in the WBS hierarchy will be the basis for the work packages that must be done to complete the project.

The other type of breakdown method is the **bottom-up** approach. This is where all the basic tasks are determined and then they are grouped into linked tasks and then into phases. This is best suited to smaller projects.

Estimating task time

Now that the **work breakdown structure** is complete we have all of the tasks required to complete the project. We must now use the work breakdown structure to estimate the work effort or time for each task, and the cost for each task. We'll start with time.
Estimating task work effort

When estimating task work effort there are five options that you can use to gather information that will help you make the estimates as accurate as possible, and they are:

- ask the people who will actually do the work because they have the experience
- get an expert's opinion in the task field. (for example, someone who isn't working on the project)
- using an identical or similar task in a completed project as a guideline
- if you have time and the task is possible now, perform a test task
- if all else fails make your best guess.

Task variation

In most cases the work effort, or time, to complete a task will vary if it is repeated over and over again. This is true for even simple routine activities. For some tasks the variation may be small or considerably large. There are several reasons for this and include:

- the skill levels of the people doing the task
- machine and product variations
- material availability
- unexpected events (sickness, accidents, employee turnover, strikes, natural disasters, etc).

A useful calculation

We know that these things will happen but we cannot predict when they will affect a project, with any accuracy. However there is a statistical relationship called a **weighted average formula** that takes variations of time estimations into consideration quite well and it is very easy to use. It is outside of the scope of this topic to show the derivation and proof of this formula but it is an excellent tool for the project manager to use when estimating the average completion time for a given task that may not have a time that is fairly well known.

The weighted average formula

To apply this formula we need to have **three estimates** of the task completion time and they are:
• the best completion time **B**, is the time that the task will take if everything goes perfectly.

• the worst completion time **W**, is the time that the task will take if everything that can go wrong does go wrong but we can still complete the activity.

• the most likely completion time **L**, is the time that the task takes under normal circumstances. This may also be the estimate from experiences from a previous project. We then calculate the average task completion time as:

  \[ \text{Average completion time } E = \frac{B+4L+W}{6} \]

Remember if the task that you are estimating has a proven, fairly well known completion time, then you will not need to use this weighted average. Having a single estimate based on the well-known time should be sufficient.

**Estimating actual duration from elapsed time for tasks**

One of the major reasons why poor estimating occurs is that there is usually a difference between the work effort hours, that have been calculated, and the elapsed or calendar duration required to complete a task.

For example, a task that we be estimated at four hours work effort might have to be scheduled in 2-hour slots over two days. Therefore, the elapsed duration for the task is two days. Since we usually schedule projects in elapsed or calendar days, we must take into account the distinction between work effort and elapsed duration when we develop our schedules.

**Factors affecting elapsed time**

Some typical reasons for the difference between actual work effort and elapsed duration include:

• weekends and public holidays
• coaching other team members
• non-project administration and meetings
• interruptions including phone calls
• switch time, eg the time required to switch between tasks.

It is not unusual for these factors to account for 30-50% of an elapsed day. Therefore, it is acceptable to find a work effort of one day taking an elapsed duration of two or three days, depending on the particular project and administrative environment.

Finally the number of people available to complete the work also affects the overall time. This may be a simple relationship for example, if the effort
estimate to test the code of an Information System is 40 days, 5 people may do it in 40/5 = 8 days. But some tasks cannot be done faster by using more staff, for example if it takes 4 hours to install a piece of software on a computer, 4 people will not do it faster because the time is limited by the computer and software not the person.

Think

How many other reasons can you think of that may cause the duration of a task to be longer than the actual work effort?

Cost management

Cost management is one of the more critical areas of project management in this profit focussed business world of the 21st century. Companies are always conscious of budget overruns and cost restrictions in the competitive markets of today.

So what is project cost management and what does it include? Project cost management includes all of the processes required to make sure the project is completed within the approved budget. It is crucial for you as the project manager to make sure that the scope document that has been developed is as accurate as possible, so that the budget that was approved was based on estimates that were as realistic as possible. An accurate scope document also helps to make sure that the only work that is done on the project is work that was defined in the scope. Remember it is your job as the project manager to constantly satisfy the needs of the stakeholders while continuously trying to keep costs down and under control.

The project cost management processes are outlined below.

Resource planning

To estimate, budget and control the costs of a project, the project manager must determine what resources are required and what quantities of each resource are needed to complete all of the project activities. This includes people, machinery, facilities, and materials. The output of this process is a detailed list of resource requirements. To make sure that this is as accurate as possible it is important that resource estimates are made by people with experience and expertise in similar projects and the usage of the resources being estimated.
Estimating Cost

Costing a project is not an easy task. All projects are different and therefore you may not have a previous example to assist in costing the current project. You can refer to audit reports and budgets from previous projects but these may only provide ideas, rather than real costs. One of the key inputs to the costing process is the detailed work breakdown structure that you developed at the start of the planning phase of the project life cycle. At the end of the costing process for all tasks you will have developed your budget requirements for the project.

With very large projects this estimating process is usually done on 3 stages.

- **Early rough estimate** is usually done well before the start of a project or even before a project is initiated. This estimate is usually made with a -25% to +75% accuracy. For many information technology projects, this estimate is often doubled to form initial budgets.

- **Budgetary estimate** is used to allocate funds into a company budget for forecasted expenditure in the upcoming 1 - 2 years. The accuracy of this estimate is usually tighter and about -10% to + 25%.

- **Definitive estimates** are made after the project has started and usually provide the accurate estimate for project costs. These estimates are usually based on the performance of the project to date. The accuracy of this estimate is usually approximately -5% + 10%.

Along with these estimates, supporting details are also included.

Another output of this process is a cost management plan, which is a document that describes how cost variances will be managed during the project. For example a definitive cost estimate for a particular resource may also include a process for evaluating supplier at each stage of a project, constantly looking for cheaper supply. The cost management plan forms part of the overall project plan and the project performance is constantly measured against this.

There are typically four major cost areas that are involved in any task. They are

- labour costs
- materials costs
- other direct costs (transport, travel, telephone, contracted services etc)
- indirect costs (for example company overheads, depreciation etc).

As you did when you developed the work breakdown structure, you can do either a top down or a bottom up approach to costing.
Using the top down method

The top down method is a difficult approach as it relies on senior management estimating a budget for the project from their experience and then allocating funds to the project team for execution. This only works if the senior management have allocated carefully and they have significant project experience. This method puts a constraint on the project, which can severely affect the outcome.

Using the bottom up method (preferred)

The preferred approach by most project managers is the bottom up method. This is the most accurate as this involves input from the staff and providers of materials and services. This method ensures that no task or subtask is missed in the rollup of the costing for the project.

By having a correctly defined list of tasks and subtasks and good estimates for task times, you can then develop a reasonably accurate cost for each task. You will have reasonable estimates of the people resource, materials and time required to complete each task so you can do simple mathematics and calculate a cost per task. If the task is repeated many times in throughout the project then you can use this as a standard work cost unit.

When all task costs have been rolled up and you have a final cost figure for the project, don't forget to add in your contingency allowance. In project management terms this is 'padding' to allow for errors in estimating or unexpected cost occurrences.

Estimated costs and budget

When you have added up all of the costs for all tasks and activities and you have a final cost estimate for the project, this is usually presented to the project sponsor and stakeholders that will be providing the funds. After assessment and negotiation, the project sponsor will usually accept the costing for the project and then approve funds. When the funds are allocated this becomes the project budget, which you will use to control and track the project expenditure against.

Arrange task sequence

Now we must once again apply our principles of general management. We must use our planning skills to convert all of the task and duration estimates, people and other details in the project plan onto schedule. This time plan will show calendar dates, task durations and resource capacity for each task. An accurate schedule is the most important tool for controlling the implementation of a project and coordinating the resources.
If you are too short with your timeframe and expect the impossible or are too long on the time frame, then project will go over time and over budget. You must be realistic about the time required to complete a project.

Sequencing the project tasks

At the moment our project is a list of tasks/activities and that must be done in order to complete the project, and deliverables and milestones to measure the progress. We must now determine the sequence in which the tasks can be done to achieve these milestones and deliverables.

Obviously we could just put them in a logical order like a 'to do' list and then do them one after the other. This is fine for small simple projects of say less than 30 tasks, but for a complex project with many, many tasks this would be the longest way to completion. It is easy to recognise that many activities in a project may be done simultaneously and others will be done sequentially because they have dependencies on preceding tasks.

For example if we are implementing a corporate network in our new office building we can't install network hardware before the cabling system and the office furniture fit-out is complete. Similarly, we can't install the cabling system before walls are in place.

Network diagrams

The proven and most accepted way to organise and sequence the tasks of a project is by using a network diagram. This is like a roadmap that shows all of the project's activities drawn as an interconnected network of tasks. A low-level version for 50 tasks can be easily drawn with pencil and paper. When managing more complex projects it is advised and necessary to use computer based project management software to generate complex network diagrams. We will introduce and use the simple, low-level, manual version of a network diagram for the purposes of this topic.

To build this network diagram you will have to determine for each task if there are any other activities that must be done before this task can begin. If there are any then they are called predecessors. Tasks that the work is dependent have defined sequences and are drawn by placing the tasks in horizontal order from left to right. Tasks that the work can happen in parallel are called concurrent and are shown in columns.

The following figure shows some basic network diagram conventions.

Figure 3: An example of a Network Diagram
### Table 3: Five steps in creating a network diagram (2 cols)

<table>
<thead>
<tr>
<th>Step</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Identify the <strong>relationships</strong> between the activities. What tasks must follow this task? What tasks must precede this task? You must establish which tasks can take place concurrently, which tasks have predecessors.</td>
</tr>
<tr>
<td>Step 2</td>
<td>Identify the <strong>milestones</strong> in your project. A milestone is usually a where deliverable takes place in the project and where a sign-off is usually required. Milestones are not work, they are markers for summarising work that has been completed to that point.</td>
</tr>
<tr>
<td>Step 3</td>
<td><strong>Graphically</strong> represent the activities and milestones on a <strong>network diagram</strong>. Network diagrams usually start with a box called 'Start project' and end with a box called 'End project'.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Review the <strong>logical flow</strong> of the network. Take a look at which activities you have first and then sequence the activities. Do they make sense? Are they in a logical order?</td>
</tr>
<tr>
<td>Step 5</td>
<td>The figure below shows an example of a network diagram for a simple LAN project. It shows the basic steps required for installing a LAN</td>
</tr>
</tbody>
</table>
After you have drawn your diagram check for the following.

- The tasks **start** from the left side and sequence left to right. That is, all **predecessors** must be to the left of their **successor** tasks.
- There are **no loops** or backward flow sequences
- All nodes except 'start project' and 'end project' **have at least one predecessor** and one successor node and therefore there are no orphan nodes.

A **path is a sequence of tasks from the start to the finish**. Each network may have several paths from start to finish.

The **critical path is the sequence of tasks that forms the longest duration of the project**, based on the task work estimates. A delay in any of the tasks and all tasks that are on this path affect the final completion date.

Think

Can you remember the five basic steps to create a network diagram?

**Develop a project schedule**

Once we have correctly sequenced all of our tasks, we now have our WBS and our network diagram and we can now **schedule** all of the activities from the project. There are **seven common steps** to follow to create the schedule. These are shown below.

Figure 5: The seven common steps to create a schedule.
The seven steps

Table 4: Steps and activities to take when developing a project schedule (2 cols)

<table>
<thead>
<tr>
<th>Step</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specify all assumptions, for example: the team will work standard 8-hour day the team will work weekends the team members are currently trained in the specific areas required.</td>
</tr>
</tbody>
</table>

These assumptions need to be approved by all members of the project including stakeholders, suppliers, team members and
<table>
<thead>
<tr>
<th>Step</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Begin the schedule, noting real dates. On large projects, you need to identify the critical path prior to starting the schedule.</td>
</tr>
<tr>
<td>Step 3</td>
<td>The critical path identifies the amount of time required for completion of a multi-path project and this is crucial in developing an accurate schedule. When the task durations, critical path and calendar dates have been calculated, then you begin to create the ideal schedule, using a calendar.</td>
</tr>
<tr>
<td>Step 4</td>
<td>The numbering begins with zero. Therefore your start day is day '0'. Allocate start dates and duration for each task. The difference between the time available for a task and the time required to complete a task, is the slack time. This is calculated when you develop the critical path. Use the Schedule to assign resources to the tasks. You may need to make adjustments to the schedule due to changes in staffing, changes to the budget and forced deadlines.</td>
</tr>
<tr>
<td>Step 5</td>
<td>The final schedule is usually represented in the form of a time line or a time plan. There are several different types of time lines, such as Gantt charts, PERT chart, CPM or PDM charts.</td>
</tr>
<tr>
<td>Step 6</td>
<td>It should contain all of the activities, milestones, phases, approvals and review points in a project. At this time you should be aware of the names of these chart types and it is recommended that you follow up this topic with reading on the different types. After all of the details have been entered into the schedule, the final time plan must be approved by the stakeholders.</td>
</tr>
<tr>
<td>Step 7</td>
<td>It is then distributed it to team members. This original schedule becomes the baseline for the project. The baseline and is used</td>
</tr>
</tbody>
</table>
Step | Activity
--- | ---
to continually compare against the performance of the project.

Try it

Here is a list of activities and dependencies for planning a simple LAN installation project. Follow the seven steps and draw up a basic network diagram to show the sequence of the tasks.

Table 5: Activities and dependencies for planning a LAN installation project (4 cols)

<table>
<thead>
<tr>
<th>Activity No</th>
<th>Activity</th>
<th>Immediate predecessor</th>
<th>Duration in days</th>
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<tbody>
<tr>
<td>1</td>
<td>Start LAN project</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Establish requirements</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Document requirements</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Start sourcing H/W</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Purchase H/W</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Begin LAN design</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>Install cabling</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>Test LAN</td>
<td>7</td>
<td>5</td>
</tr>
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<td>9</td>
<td>Review installation documents</td>
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<td>Install PCs</td>
<td>5, 9</td>
<td>5</td>
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<td>Install network S/W</td>
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</tr>
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<td>12</td>
<td>Test S/W</td>
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<td>13</td>
<td>End project</td>
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Feedback
Writing the detailed project plan

The **project plan** is definitely the **key document** in the project. It is a positive thing that represents the move from planning to execution. It is simultaneously a tool for guiding management decisions, control, and reporting. It tells you:

- where you are
- where you are going, and
- how you are going to get there.

Project plans vary from a very simple single page document with some objectives, a task list, resources and budget, to a complex report accompanied by books of estimates, task lists, Gantt charts, critical path analyses etc.

The size, complexity and importance of a project will dictate the project plan format. The following is a suggested format for a large project with a detailed project plan. The plan would have several sections as shown here.

- Executive summary or overview including the project goal
- Project objectives and deliverables
- Project milestones
- Project assumptions and risks
- Project work breakdown structure
- Network diagram
- Resource details
  - Human resources
  - Equipment
  - Materials and supplies
There is no fixed guideline for the level of detail that should go into the project plan. However, think about this. If the project is to install a new server and will take only one week to complete there is no point taking two weeks to develop the project plan. If your project is the implementation of a global information network that will cost $2.5 million, take 6 months to do and involve over 100 people across 7 countries, then one month of planning will be small cost to pay for successful completion of the project.

Remember: the most heavily used general management skills you will use are **planning** and **communication**. You have to meet with many people to help determine the information that you need to correctly estimate work durations, costs and resources.

**Project plan development**

Project plan development is the part of the planning process that produces the project plan, which is the document that is used to **guide and measure performance though the project life cycle**. This document is developed through a repetitive process and in the end it contains all of the vital information in relation to schedules, team members, activities, resources, procurement requirements etc. It is used to co-ordinate all of the input plans and control documents from the other areas of expertise such as cost management, risk management and time management. This is illustrated belo
Figure 7: Project plan development

Adapted from TAFE Connect (2003) *Apply Skills in Project Integration*

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