Project Planning

Like any body of work, a software project is a set of detailed tasks performed in a particular sequence in order to complete and objective or deliver a final system. When re-planning a project you have the distinct advantage of being able to see what went wrong with the previous plan. You should use this hindsight to your advantage. Avoid overstating the obvious. Don't continually remind your client that "I would never have done it that way", when in essence you may have done it the wrong way.

Everybody kicks off a project with the best of intentions. They aim to succeed. Nobody starts a project with the intention of failing. Decisions are made based on the knowledge, detail and experience available at the time the decision was made.

If you are rolling out a system that is part of a larger programme, chances are that the first couple of projects in that programme will be breaking new ground and will run into some difficulty. The subsequent projects are delivered with the benefit of the previous experience and are therefore more successful. This is not a hard and fast rule of thumb but it is something that is being experienced in industry more and more.

A software project generally consists of a number of stages:

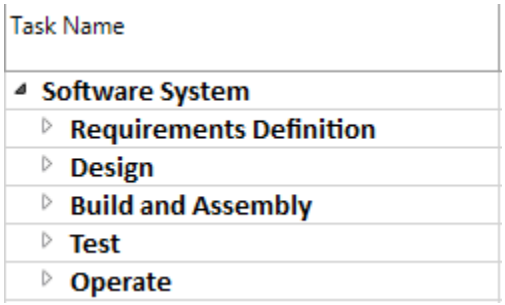
1. Requirements Definition

2. Design

3. Build and Assembly

4. Test

5. Operation



Depending on the organization into which the project is being delivered, terminology can differ but this is essentially your first stage of putting a plan together - i.e. list the high level phases of the project.

Under each of these headings there are a number of tasks that need to be completed in a specific order for the particular stage to be deemed complete.

This is what is often referred to as the work breakdown structure or WBS - common terms used in industry. This is the next stage, i.e. to list each major milestone in each stage or phase.

You are now assembling the WBS. You should really spend most of the time planning here. Down to the lowest level of detail needed to produce a detailed plan. Before we commence to building a detailed schedule we need to have the correct level of detail.

Let's look at a specific example. Too often when I am asked to review a project and project plan, there may be a deliverable entitled - "Design Document" and it is given a single line item on a plan with a fixed time. Although this is the deliverable, I would expect to see what actually happens in order to produce an approved design document.

These steps are:

1. Draft the Document

2. Issue the document for review

3. Document review duration

4. Update the document post review

5. Issue the document for approval

6. Document Approval duration

7. Document approved

Add into the mix the complexity of some document management systems, multiple reviewers and approvers and simple tasks to a plan can take on a whole new meaning once the detail is understood. It is very important to provide a visual representation and ensure that the main stakeholders understand the complexity of the project without overloading them with the detail.

Task Name
Software System
Requirements Definition
Design
Design Documentation
Design Specification
Draft Document
Issue for Review
Review Wait Time
Update Document Post Review
Issue for Approval
Approval Wait Time
Document Approved
Document Released
Environmental Design Specification
Development System Configuration
Design Review
Build and Assembly
Test
Operate

If there are multiple design documents in a project it is easy to see how a software project that seems simple on the surface can be presented as quite complex when all of the tasks within the work breakdown structure have been defined. Each document will have a number of steps that need to be considered when planning.

Task Name
Software System
Requirements Definition
Design
Design Documentation
Design Specification
Draft Document
Issue for Review
Review Wait Time
Update Document Post Review
Issue for Approval
Approval Wait Time
Document Approved
Document Released
Environmental Design Specification
Draft Document
Issue for Review
Review Wait Time
Update Document Post Review
Issue for Approval
Approval Wait Time
Document Approved
Document Released

Very quickly you can be up to hundreds and even thousands of individual tasks in any reasonable sized project.

There are no shortcuts here and it takes time and effort to produce the correct level of detail. The prime invested at this stage to produce an internal or breakdown structure win-win benefits during project delivery of often not enough time is given to this process during the development of a project plan.

Once the main contributors to the project and the subject matter experts are relatively content that we have capture d all of the tasks required, the work breakdown structure should be distributed to allow everybody to review it in isolation. Often when reviewing such detail in the presence of one's peers some detail can be missed. It is important that a fixed time is given to afford everybody the opportunity of a review.

Building the Schedule and Plan

Next Step - Add in the durations, resources, inter-dependencies and sequencing for each task in the work breakdown structure.

Now that the work breakdown structure and task activity definition is complete it is time to focus on the duration of tasks who will be doing the tasks in terms of resources and the sequencing of those tasks. This will allow us to build or schedule from the schedule from the schedule week and then produce an estimate of course of the project.

Task Duration and Resources

Once the work breakdown structure has been reviewed by of the subject matter experts we can now add in the duration for each task. Standing at the very beginning walk from each task within the war for construction to define the duration and task if. If possible they should be drawn based on information that is required of previous projects as if to say how long did the previous or task take. Again it is very important here to use accurate information.

In terms of estimating the duration for each task some people can hold back a little and we've always tried to overestimate the time that the task would take. On the other hand in order to impress the management from the client other people will underestimate the duration required to complete the tasks. If he's off to the project manager to define the best medium point for each task. We will discuss risk later in this section on planning and how we can manage risk. Depending on the number of tasks and time allocated to this plan, as the duration of each task is been assigned the required resources for this task can be assigned.

When assigning the resource for each tasks it is important to note the percentage of that resource's time that is required for the duration of the task. i.e. the engineer may need 5 days to complete a task but this may not be a full time activity.

There are no hard and fast rules here and within conventional project management practice and procedure is the are a number of ways to manage this. The numerous project planning tools and applications available today offer many useful features in terms of having durations and specifically sources to specific tasks in order to develop each project plan.

Design	**24 days?**	**136 hrs**	**Mon 21/08/17 08:00**	**Thu 21/09/17 17:00**
Design Documentation	**24 days?**	**136 hrs**	**Mon 21/08/17 08:00**	**Thu 21/09/17 17:00**
Design Specification	**23 days?**	**96 hrs**	**Tue 22/08/17 08:00**	**Thu 21/09/17 17:00**
Draft Document	10 days	80 hrs	Tue 22/08/17 08:00	Mon 04/09/17 17:00
Issue for Review	0 days	0 hrs	Mon 04/09/17 17:00	Mon 04/09/17 17:00
Review Wait Time	5 days	0 hrs	Tue 05/09/17 08:00	Mon 11/09/17 17:00
Update Document Post Review	1 day?	8 hrs	Tue 12/09/17 08:00	Tue 12/09/17 17:00
Issue for Approval	0 days	0 hrs	Tue 12/09/17 17:00	Tue 12/09/17 17:00
Approval Wait Time	5 days	0 hrs	Wed 13/09/17 08:00	Tue 19/09/17 17:00
Document Approved	1 day?	0 hrs	Wed 20/09/17 08:00	Wed 20/09/17 17:00
Document Released	1 day?	8 hrs	Thu 21/09/17 08:00	Thu 21/09/17 17:00
Environmental Design Specification	**10 days?**	**40 hrs**	**Tue 22/08/17 08:00**	**Mon 04/09/17 17:00**
Draft Document	3 days	24 hrs	Tue 22/08/17 08:00	Thu 24/08/17 17:00
Issue for Review	0 days	0 hrs	Thu 24/08/17 17:00	Thu 24/08/17 17:00
Review Wait Time	3 days	0 hrs	Fri 25/08/17 08:00	Tue 29/08/17 17:00
Update Document Post Review	1 day	8 hrs	Wed 30/08/17 08:00	Wed 30/08/17 17:00
Issue for Approval	0 days	0 hrs	Wed 30/08/17 17:00	Wed 30/08/17 17:00
Approval Wait Time	1 day?	0 hrs	Thu 31/08/17 08:00	Thu 31/08/17 17:00
Document Approved	1 day?	0 hrs	Fri 01/09/17 08:00	Fri 01/09/17 17:00
Document Released	1 day?	8 hrs	Mon 04/09/17 08:00	Mon 04/09/17 17:00

Assigning durations to each task and resources to each task together with the hourly/daily cost rates of resources produces an initial cost estimation for the project. It must be noted however that there may be risks associated with some interdependencies and these risks may increase the time and cost. These should be factored in at this point. Avoid the temptation to provide the client with a final cost at this point. Other factors should be taken into account such as the risk, sequencing, resource availability and interdependency of tasks the cost estimation can be quite different.

Sequencing and Inter-dependencies

When the work breakdown structure is assembled it is obvious to see some tasks that were naturally needed to be completed in advance of commencing the next task.

Once the resources and the inter-dependencies and sequencing of each task are laid on top of each other the plan will begin to take a very different shape. Availability of resources and availability of site systems and site operations may also have introduced some constraints to the plan and introduced some risks that will need to be managed.

As mentioned earlier conventional project management software tools and applications have all the very efficient enabling one to visualise the impact of constraints and inter-dependencies and availability of resources on the overall shape of the schedule.

This process can be very time consuming and can require multiple sessions with the right people in order to achieve the best results.

One very important point to note here is that there is no such thing as a perfect project schedule. We use the information available to us at the point of developing the plan and schedule based on what we know at that time.

Cost Estimation

Once the number of hours for each resource and the cost for each hour has been defined it is now possible to produce a cost estimate for resource hours.

Along with each task delivery and support each wireless: the project, there may be hardware and software costs to be considered.

Once of the relevant costs have been assembled a cost estimation can be produced for the project.

Task	Resource	Duration (Hours)	Cost / Hour	Total Cost
Draft Design Specification	Engineer 01	80	$ 70.00	$ 5,600.00
Release Design Specification	Document Specialist 01	8	$ 35.00	$ 280.00