Project Schedule Development

Organize your schedule methodically.

Can you imagine starting a long car trip to an unfamiliar destination without a map or navigation system? You're pretty sure you have to make some turns here and there, but you have no idea when or where, or how long it will take to get there. You may arrive eventually, but you run the risk of getting lost, and feeling frustrated, along the way.

Essentially, driving without any idea of how you're going to get there is the same as working on a project without a schedule. No matter the size or scope of your project, the schedule is a key part of project management. The schedule tells you when each activity should be done, what has already been completed, and the sequence in which things need to be finished.

Luckily, drivers have fairly accurate tools they can use. Scheduling, on the other hand, is not an exact process. It's part estimation, part prediction, and part "educated guessing."

Because of the uncertainty involved, the schedule is reviewed regularly, and it is often revised while the project is in progress. It continues to develop as the project moves forward, changes arise, risks come and go, and new risks are identified. The schedule essentially transforms the project from a vision to a time-based plan.

Schedules also help you do the following:

- They provide a basis for you to monitor and control project activities.
- They help you determine how best to allocate resources so you can achieve the project goal.
- They help you assess how time delays will impact the project.
- You can figure out where excess resources are available to allocate to other projects.
- They provide a basis to help you track project progress.

With that in mind, what's the best way of building an accurate and effective schedule for your next project?
Project managers have a variety of tools to develop a project schedule – from the relatively simple process of action planning for small projects, to use of Gantt Charts and Network Analysis for large projects. Here, we outline the key tools you will need for schedule development.

Schedule Inputs

You need several types of inputs to create a project schedule:

- **Personal and project calendars** – Understanding working days, shifts, and resource availability is critical to completing a project schedule.
- **Description of project scope** – From this, you can determine key start and end dates, major assumptions behind the plan, and key constraints and restrictions. You can also include stakeholder expectations, which will often determine project milestones.
- **Project risks** – You need to understand these to make sure there's enough extra time to deal with identified risks – and with unidentified risks (risks are identified with thorough Risk Analysis).
- **Lists of activities and resource requirements** – Again, it's important to determine if there are other constraints to consider when developing the schedule. Understanding the resource capabilities and experience you have available – as well as company holidays and staff vacations – will affect the schedule.

A project manager should be aware of deadlines and resource availability issues that may make the schedule less flexible.

Scheduling Tools

Here are some tools and techniques for combining these inputs to develop the schedule:

- **Schedule Network Analysis** – This is a graphic representation of the project's activities, the time it takes to complete them, and the sequence in which they must be done. Project management software is typically used to create these analyzes – Gantt charts and PERT Charts are common formats.
- **Critical Path Analysis** – This is the process of looking at all of the activities that must be completed, and calculating the "best line" – or critical path – to take so that you'll complete the project in the minimum amount of time. The method calculates the earliest and latest possible start and finish times for project activities, and it estimates the dependencies among them to create a schedule of critical activities and dates. Learn more about Critical Path Analysis.
- **Schedule Compression** – This tool helps shorten the total duration of a project by decreasing the time allotted for certain activities. It's done so that you can meet time constraints, and still keep the original scope of the project. You can use two methods here:

- **Crashing** – This is where you assign more resources to an activity, thus decreasing the time it takes to complete it. This is based on the assumption that the time you save will offset the added resource costs.
- **Fast-Tracking** – This involves rearranging activities to allow more parallel work. This means that things you would normally do one after another are now done at the same time. However, do bear in mind that this approach increases the risk that you'll miss things, or fail to address changes.

Use of Project Stages:

One of the biggest reasons that projects over-run is that the "final" polishing and error-correction takes very much longer than anticipated. In this way, projects can seem to be "80% complete" for 80% of the time! What's worse, these projects can seem to be on schedule until, all of a sudden, they over-run radically.
A good way of avoiding this is to schedule projects in distinct stages, where final quality, finished components are delivered at the end of each stage. This way, quality problems can be identified early on, and rectified before they seriously threaten the project schedule.

Project Review

Once you have outlined the basic schedule, you need to review it to make sure that the timing for each activity is aligned with the necessary resources. Here are tools commonly used to do this:

- **"What if" scenario analysis** – This method compares and measures the effects of different scenarios on a project. You use simulations to determine the effects of various adverse, or harmful, assumptions – such as resources not being available on time, or delays in other areas of the project. You can then measure and plan for the risks posed in these scenarios.
- **Resource leveling** – Here, you rearrange the sequence of activities to address the possibility of unavailable resources, and to make sure that excessive demand is not put on resources at any point in time. If resources are available only in limited quantities, then you change the timing of activities so that the most critical activities have enough resources.
- **Critical chain method** – This also addresses resource availability. You plan activities using their latest possible start and finish dates. This adds extra time between activities, which you can then use to manage work disruptions.
- **Risk multipliers** – Risk is inevitable, so you need to prepare for its impact. Adding extra time to high-risk activities is one strategy. Another is to add a time multiplier to certain tasks or certain resources to offset overly optimistic time estimation.

After the initial schedule has been reviewed, and adjustments made, it's a good idea to have other members of the team review it as well. Include people who will be doing the work – their insights and assumptions are likely to be particularly accurate and relevant.

Key Points

Scheduling aims to predict the future, and it has to consider many uncertainties and assumptions. As a result, many people believe it's more of an art than a science.
But whether you're planning a team retreat, or leading a multimillion-dollar IT project, the schedule is a critical part of your efforts. It identifies and organizes project tasks into a sequence of events that create the project management plan.
A variety of inputs and tools are used in the scheduling process, all of which are designed to help you understand your resources, your constraints, and

your risks. The end result is a plan that links events in the best way to complete the project efficiently.