



# SCHEDULE MODEL

## **SCHEDULE MODEL**

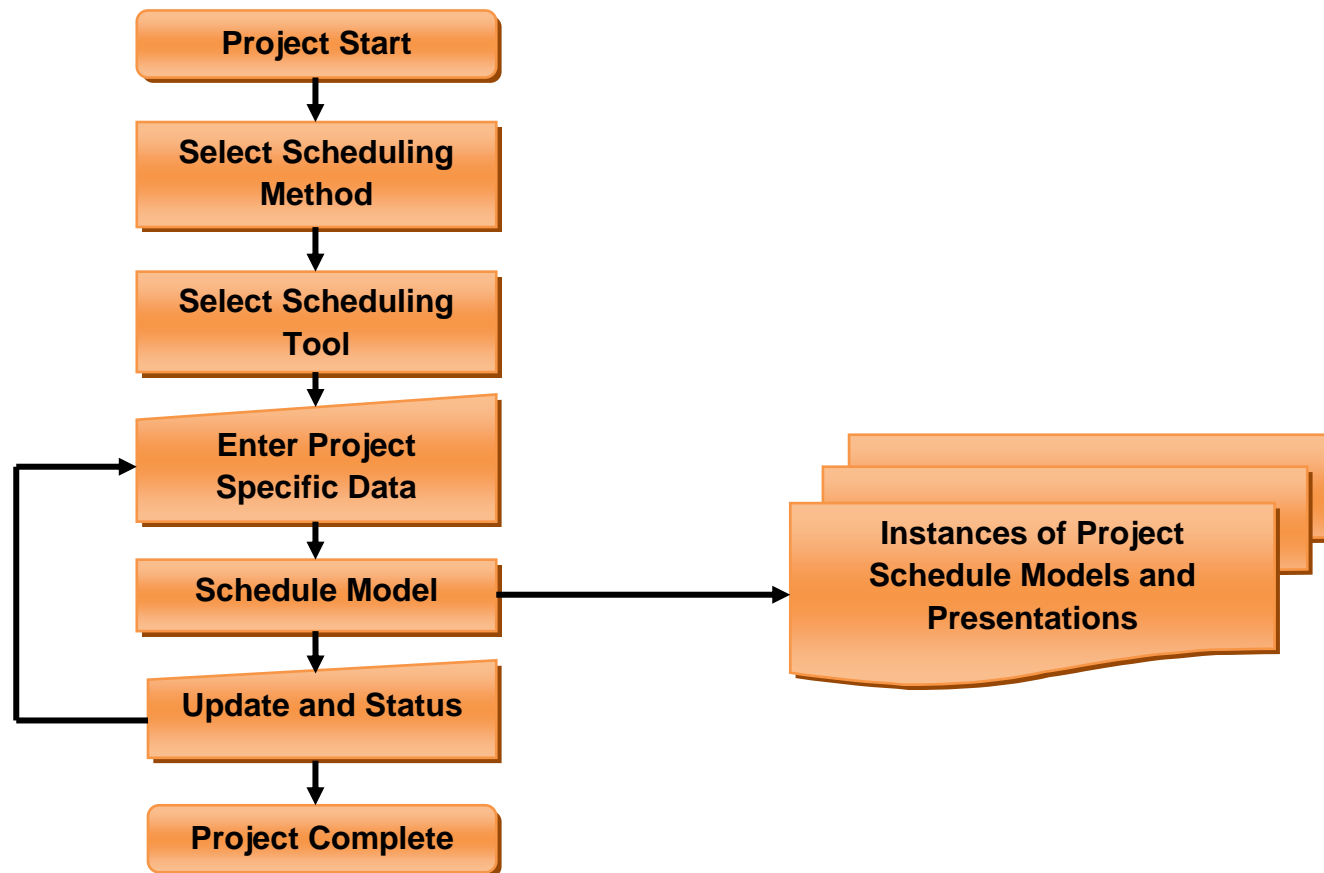
The introduction of project-specific data, such as the activities, durations, resources, relationships, and constraints into the scheduling tool creates a schedule model that is specific to a particular project.

Schedule model analysis compares changes in the schedule model with the project team's expectations of the consequences of variation based on updates of progress, cost, and scope.

The schedule model produces project schedule presentations for reporting on items, such as critical paths, resource utilization profiles, activity lists, activity assignment lists, records of accomplishment, earned value management system data, time-phased budget, and time-phased costs. The schedule model provides time-based forecasts, reacting to inputs and adjustments made throughout the project's life cycle.

## SCHEDULE MODEL

The scheduling lifecycle is depicted below.



## SCHEDULE MODEL

The project schedule model consists of 2 phases namely:

1. Schedule model creation and
2. Schedule model maintenance

In the schedule model creation phase, the following steps are generally done for all projects:

1. Create the project WBS (Work breakdown structure)
2. Define the milestones
3. Define the activities
4. Sequence the activities
5. Estimate the resources required for the project
6. Estimate the duration required
7. Develop a schedule for the project and
8. Obtain approval for the schedule from the project stakeholders

## **SCHEDULE MODEL**

In the schedule model maintenance phase, a baseline of the approved project schedule is created and the schedule is maintained through monitoring and controlling throughout the execution of the project.

To create a proper schedule for your project, you need to understand project scope management, the schedule model, understand operation research techniques, the schedule components and be able to leverage scheduling tools.

## **PURPOSE OF THE SCHEDULE MODEL**

The purpose of the schedule model is to provide useful road map that can be used by the project manager and the project team to assist them in completing the project successfully. The schedule becomes a tool developed by the project team that reflects its vision of how the project will be performed.

Further, once the project completes, the project schedule model forms the basis for lessons learned activities and once updated becomes the foundations for similar projects in future.

The schedule model describes the work to be done (what), the resources required to do it (who), and the optimum sequence (activity starts, finishes, and relationships) in which the work should be undertaken (when).

## DESIGNING THE SCHEDULE MODEL

The schedule model requires planning and design in the same way every project deliverable is planned and designed.

The project team needs to consider a number of factors and seek to optimize the outcome. Some of the key questions to consider are:

- **What is an appropriate level of details of use of the activities?** A simple qualitative guideline that can be used to determine if the level of details is adequate is when an assigned person knows exactly what needs to be performed without having to rely on other source of guidance.
- **What is an appropriate cycle for gathering project status and updating the schedule model?** The period between updates needs to be long enough for the information from the last update to have been issued to the project team and for the team to have a chance to act on the new information prior to the next status.

## DESIGNING THE SCHEDULE MODEL

- **Which ‘time scale’ should be used: minutes, hours, days, weeks or months?** The optimum answer depends on the frequency of the control processes and the level of detail needed in the activities. However, time scales should remain consistent throughout the project schedule.
- **What reporting requirements will the schedule need to fulfil?** Understanding the types of reports needed from the schedule model to create an ‘instance’ of the project schedule provides guidance on the optimum coding structures that need to be built into the schedule model.

The development of a ‘good schedule’ is achieved through the consistent application of sound general practices. Experience gained over time still assist the scheduler in selecting optimum answers to the design questions.



## ELEMENTS OF DEVELOPING A GOOD SCHEDULE MODEL

**Determining how the Schedule Model will be developed:** At the outset, the project manager, in conjunction with the project team, should determine a development plan for the schedule model.

**Understand the Full scope of the project:** The team needs to review and understand the project's scope documents with particular emphasis given to the WBS. These documents provide the background, information, and understanding needed to develop the schedule model.

**Identify the project and schedule:** Every schedule model need to have a unique name and identification number to identify the project. Each version of the schedule model needs to have a unique version number of ID. This is essential to allow the proper archiving of project documents and audit process.

## **ELEMENTS OF DEVELOPING A GOOD SCHEDULE MODEL**

**Use apt schedule components required for the project:** The scheduler will determine, in agreement with the project team, the work periods which will be selected for the project.

**Establish the Optimum Project Update Cycle:** The project management team, using the expertise of the schedule, should determine the appropriate frequency for performing updates and status against the schedule. This includes determining at what point in the cycle the update will occur and how often the status will be reported.

**Designing an effective activity coding structure:** A reasonable and useful code structure should be developed so that selecting, sorting, and grouping of the schedule data to facilitate the development and maintenance of the schedule model, as well as meeting the project reporting requirements, is easily accomplished.

## ELEMENTS OF DEVELOPING A GOOD SCHEDULE MODEL

**Determining resource planning requirements:** If the schedule is to take resource availability into account, the resource pool available to the project needs to be determined together with any special resource calendars, skill sets and availabilities.

## **ANALYSING VARIOUS SCHEDULE MODELS**

Once a base model is constructed, it provides the framework from which detailed planning can be initiated and costs can be controlled and tracked.

There are two network planning techniques based almost upon resources: resource levelling and resource allocation.

- Resource Levelling is an attempt to eliminate the manpower peaks and valleys by smoothing out the period-to-period resource requirements.
- Resource allocation is an attempt to find the shortest possible critical path based upon the available or fixed resources.

## ANALYSING VARIOUS SCHEDULE MODELS

Several other methods are available to develop alternate schedule models for the project, they are:

- Substitution of less time – consuming components or activities.
- Parallelization of activities.
- Shortening critical path activities.
- Increasing the number of work hours per day.

Because of the complexities of large projects, network planning and re-planning becomes an almost impossible task when analysed on the total project schedule model. In these situations, it is better to have each department or division develop its own schedule networks based on the work breakdown structure. The individual schedule network charts can be iterated to create different schedule models and the appropriate one can be considered for creating the project baseline schedule model.

## **SELECTING THE FINAL SCHEDULE MODEL**

The fundamental objective of the project planning and scheduling phase is the creation of a feasible and workable final schedule model that establishes the planned start and finish times of the individual activities.

The schedule model should satisfy the specified precedence and resource constraints and meet as much as possible the objectives set forward by the management.

### **The baseline schedule**

A schedule baseline is a specific version of the project schedule model developed from the schedule network analysis which is accepted and approved by the project management team as the schedule baseline.

## ANALYSING VARIOUS SCHEDULE MODELS

The schedule development process should generate a project schedule that meets the following criteria:

**Complete:** The schedule must represent all the work to be done. The quality and completeness of the WBS is very important for the schedule to represent all the work.

**Realistic:** The schedule must be realistic with regard to time expectations and the availability of the resources to participate.

**Accepted:** The schedule must have a “buy-in” from the team members and the stakeholders.

The schedule baseline includes all the project activities depicted across the timeline, in the order in which they are to be executed.

## **ANALYSING VARIOUS SCHEDULE MODELS**

Once a baseline schedule model is created, approved and released, the project manager is responsible for monitoring the progress of the project throughout the project life cycle and revising the schedule if needed.

It is essential for the project manager to keep all participants informed as to current schedule status. Meeting the schedule baseline is one of the measures of project success.



## **MAINTAINING THE SCHEDULE MODEL**

The selected schedule model should be periodically analyzed to see if additional or fewer schedule components are required to track the schedule of the project effectively. This is achieved through periodic audits to check if the schedule model is still relevant to the project.

Auditing the schedule model, the selected schedule components and the process will help identify areas for improvement. The frequency of such audits should also be outlined by the scheduling professional.

## SUMMARY

In a nutshell, schedule management involves the following processes:

1. Understand the project scope
2. Understand the processes related to Project Time Management
3. Selecting the apt schedule components for the particular project
4. Incorporating the schedule components in a schedule model
5. Utilize Earned value management for effective tracking and reporting
6. Use scheduling tools to create, manage and track the project schedule
7. Monitor, control and report the project schedule
8. Identify areas for improving the schedule model through periodic audits and maintain the model