

Essentialtheory

Some terms and definitions to consider before using Microsoft Project.

We need to understand few terms and definitions before we start using MSP. Instead of detailing these terms from a purely theoretic point of view, I have kept in mind how it affects your use of MSP.

Most of the definitions are based on how I understand it, while I use MSP. Again, if you are trying to get PMP certification or needs to gain solid theoretical knowledge of Project Management terms, this is not the place to get that information.

Project

A set of possibly dependent tasks using finite resources that produce results within a defined timeframe.

Let us not worry too much about this definition. To make things simpler, I consider anything that can be *planned* to produce a *defined outcome* as a project. Anyway, the key factors are below.

- dependent tasks
- finite resources
- produce results
- defined timeframe

Using this definition, we can't qualify on-going maintenance as a project; unless it has a definite end-date. One way to get around this is by assuming that a definite team is going to be working on maintenance tasks till a particular date. After that date, start a new project.

Tasks

Division of the work that needs to be completed to accomplish project goals. There are different kinds of tasks, like below.

Critical Task

A task that falls in the critical path. Meaning, the project duration will get affected if a critical task's duration is changed.

Milestone Task

Tasks you use to track or report progress. In MSP, all tasks with zero duration are considered milestone tasks. Think of milestones as interim goals.

Summary Task

Tasks that contain subtasks.

Subtask

Children tasks that are contained under Summary tasks.

Recurring Task

Tasks that occur periodically.

TaskTypes

MSP allows you to define three types of tasks.

1. Fixed Units
2. Fixed Work
3. Fixed Duration

Using the equation 'Work = Duration * Units' (see below), MSP calculates the variable parameters appropriately.

From the programming example above where adding more coders won't make it go any faster, it follows that such tasks ought to be really Fixed Work tasks.

Resources

People, equipment, materials or services that incur cost and/or usage and are needed to complete the tasks.

If you manage people in projects, I believe you should manage their schedules too. Please note that I am not advocating micro-management. Rather, defining the expectations and boundaries so that your resources don't need to constantly worry about when are they supposed to work on different things.

Scheduling work for people is difficult. Though MSP takes care of the calculations for you, there are many parameters like resource calendar, task priority, links between tasks etc. that affects scheduling.

One way to look at not scheduling work for people is by claiming you are benevolent enough to give people flexibility to do their job. Another way to look at it is that people are being benevolent enough by absorbing scheduling responsibility from you. Which way you want to look at it is up to you. Just keep in mind that people are a bit more sensitive than other resources like equipment or materials.

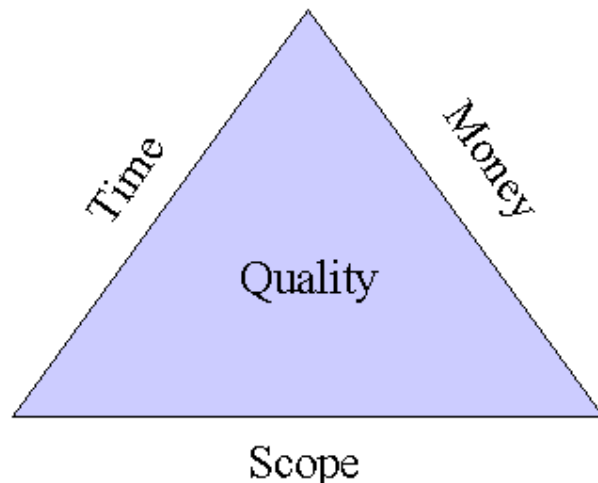
Calendars

There are different types of calendars. You can have a calendar for a project. Resources will most certainly have their own calendars. In MSP, tasks also can have their own calendars.

To simplify, a calendar is a collection of days and hours on which the project needs to be carried out; or resources are available; or tasks need to be done.

For our purpose, we will be concentrating mostly on resource calendars.

Project Triangle



Combination of time, money and scope that influence the outcome of the project.

These are usually depicted as three sides of a triangle, as shown above. If you don't have enough time, you will need to pump more money to attain the same scope. Well, that is the theory!

Quality is usually considered as the area of this triangle.

<http://www.bcentral.co.uk/technology/office/other/project/triangle.asp>

Charts

A project manager I really respect once said *"Next to Power Point, printed copies of different charts are probably the most ego-boosting artifacts for project managers; yet horribly boring for developers."* Charts are useful, but most programmers I know favour the outlined list of tasks instead.

Gantt Chart

Tasks are shown as bars across a time scale. Relationships are shown using arrows.

Network Diagram

Shows the flow of charts. It is useful to find the critical path. However, MSP automatically finds the critical path for you, so I don't find this very useful.

Duration&Work

This is perhaps the most confusing aspect for new project planners. Duration is the elapsed clock time in the calendar between the start time and the finish time of a task (or project). Work is the actual hours you worked on the task/project. If you don't work on weekends, the duration for a task might be 8 days, though the work is only 35 hours.

Work=Duration*Units

Remember this equation. If it takes one person (Unit) one day (Duration) to dig a well, the actual work performed is for one day. If you have two people (two Units), and you keep the dimensions of the well same, by this equation, you should be able to cut the Duration by half.

Given the choice between Duration, Work and Units, MSP will choose to change Duration. If the Duration is fixed --eg: meetings--, it will change Work, before it changes Units.

$$W = D * U$$

Teasers

Let us assume that it takes ProgrammerA four hours to code OverEngineeredEJB.java. S/he comes in at 10:00 am every day and takes a

lunch break from 12:00 noon to 1:00pm. While programming, s/he is 100% committed to the task at hand.

Q: Assuming s/he is asked to start this task right in the morning, what is the work, duration and units here?

Work is four hours. Unit is one (one programmer, committing 100% of the time). Duration is from 10:00 am plus four hours of work, with one hour break in between. So, s/he should finish this by 3pm, thereby making the duration, five hours.

Q: If the manager asks ProgrammerB, who is equally skilled and has same schedule to work on this task, will it be done faster?

According to theory, it will get done in half the time, because, now there are two units. So, the duration becomes two $4(\text{work})/2(\text{units})$. Which means, they should get the program coded by 12:00 noon.

Q: But programming is not like digging a well! Isn't something wrong here?

Absolutely! Usually, for a programming task like writing one program, if you put more people into one task, it will not get done any faster. However, MSP follows this equation and will decide --if you don't change the defaults-- that the task is going to get done faster.

Q: So, what is the solution?

The easy solution to this is to make sure you assign less than 100% for each of the multiple programmers. In this example, you assign ProgrammerA and ProgrammerB to work on this task only for 50%.

Q: But, if this is an eXtreme Programming session, I don't want programmers to be half indulged in the task. This solution does not look like a *proper* one.

From the programming example above, where adding more coders won't make it go any faster, it follows that such tasks should rather be Fixed Work tasks. By default MSP sets tasks as Fixed Unit tasks. We will come to these details later.

Personally, I find the easy solution to be easier to manage.

Notes on Microsoft Project 2000

Planning to write a tutorial on this much misunderstood and unfairly hated tool.

I'm toying with the idea of writing a tutorial --more like a usage notes-- on using MS Project (MSP). Since I don't have time to write a "proper" tutorial, I am thinking of posting it as a series of blog entries. That gives people a forum where they can post comments and ask questions too. I thought about using a Wiki for this, but decided against it, for now.

Your feedback on the idea is greatly appreciated.

Why?

Short answer -- I believe MSP is unfairly considered to be scary and useless. Either because it is a Microsoft product, or because many project managers who hand out schedules don't "really get it", most techies I've seen hate it! I've had my frustrations with it too. But, if you get your bearings around it, MSP is a really useful. It works as an outliner, a [pickle jar](#), resource allocator, project health monitor etc. It is not free, but in my opinion, it does add tremendous flexibility in planning one's work.

Goals

To use MSP to find answers to real-world questions like:

- How do I plan multiple projects when I am the only resource? (freelance consultants)
- How do I plan multiple projects with multiple resources at my disposal? (managing project pools)
- How do I know when people become available so that I can do feasibility analysis on this cool project my customer wants me to do?
- How can I tell my people what their schedule is? (todo list)
- How is my project progressing? (customer, project manager, resources)
- How can I track and plan admin tasks like meetings not related to projects?
- If I have to do an unplanned task, how much is my schedule going to change? (overmanaged programmer)
- [contributed question] How to schedule tasks where some of the resources (i.e. computers, software, etc.) are being bought from outside and you want to enter the expected date of arrival and automatically schedule the rest of the project around that?

Shoot your questions using feedback form below. If possible, please mention the role --like the ones above-- you play at work. I'll try to answer those in this series.

Intended Audience

- Freelance consultants.
- IT support personnel.
- Programmers managing themselves and/or other programmers.
- People planning a wedding or vacation. *My wife and I had a well planned [vacation in Florida](#), thanks to MSP 😊*
- People managing teams of upto 20 people in software projects. *MSP can be used for larger teams, but for the purpose of this series, 20 will do. If you've bigger project teams, you should consider breaking them into sub-teams and sub-modules with their own project plans. I am not planning to cover Project Central.*

How?

- Short intro on MSP interface. It is assumed that you know Excel and is competent enough to run MSP installer.
- Very short theory time, to cover terminology.
- Writing a project plan by adding tasks, dependencies and constraints.
- Setting up resources (people and material required to get the tasks done).
- Assigning tasks to resources.
- Tuning the plan to be practical, by not overworking resources, by calculating realistic deadlines etc.
- Updating the plan to track progress.
- Useful reports to understand progress.
- Aggregating projects.
- Creating a simple custom view.
- A sample template.
- Answers to typical questions.
- *Tentative: financial terms and reports.*

Promises on what won't be there

- No useless terms will be used. (*example: synergy, leverage etc.*)
- No theory or equations unless it is absolutely relevant to understanding MSP. MSP takes care of calculations for you.
- No prose (or poetry) on *principles of project management*. If you are looking to get PMP certification, this won't help you. If you are looking to get work done, this might.

- No definitions and recommendations on *success, process, project lifecycle, communication management, teamwork, risks and meeting management*.
- No lengthy details about what each menu item and button in MSP mean. MSP comes with good context sensitive help. The goal here is to learn to benefit from MSP, not to learn the user interface.

Disclaimer

This tutorial does not teach you how to manage your project(s). It simply explains how you can use Microsoft Project 2000 to plan and track information related to projects.

This is written by a software architect who is very picky about tracking and allocating time! So, the examples are geared towards software development projects.

I will use MS Project version 2000, though 2003 is available now. I don't think there are many changes to the core functionality. 2000 works for me very well, so I'm happy with it.

This series

1. [Notes on Microsoft Project 2000](#)
2. [Essential theory](#)
3. [MSP2000 - User Interface](#)

Posted: December 15, 2003 06:05 PM | [TrackBack project_management](#)

Comments

1. Looking forward to this. I have Project on my machine and just use it to view projects defined by my manager.

Posted by: JK on December 15, 2003 07:40 PM

2. A tutorial would be great.

Perhaps you can address the one question that I haven't quite figured out in MSP: how to schedule tasks where some of the resources (i.e. computers, software, etc.) are being bought from outside and you want to enter the expected date of arrival and automatically schedule the rest of the project around that.

Posted by: [Sanjay](#) on December 15, 2003 08:17 PM

3. Jumping the gun here - Sanjay (#2): First, create the material resource (computer). In the Resource View, select this resource, use Change Working Time menu and create a calendar for it. In that new calendar, you can specify the availability. Then you can add the task from the Gantt View, assign it to the material resource and it will schedule other tasks around the resource's calendar.

If you don't want to go to the trouble of creating such material resources (especially if you don't need to track their usage and costs), you can simply double click on the task and create a "Start No Earlier Than" constraint with a date when you expect to receive the materials.

Correction: Oops, I wrote this from memory, while I was on Linux. As it turns out, MSP considers material resources as consumables that affect only cost and not schedule; and hence doesn't allow you to set time of availability (ie., can't create a calendar for material resources). You have to create equipments as "Work" resource.

Posted by: [Babu](#) on December 15, 2003 08:31 PM

4. I would love to see this. I have the feeling that even the one guy in my office who can find his way around project, isn't using it to its fullest.

Posted by: [Kearns](#) on December 15, 2003 09:17 PM

5. Good idea. My personal bugbear is auto levelling. Every time I use it my whole plan goes a little mad. Of course it could be a PBKAC, but it could be a problem with the tool.

Oh, and I could never get it to schedule one person on two tasks simultaneously - or two people on one task.

Finally, a comparison to Joel Spolsky's painless software schedules (<http://www.joelonsoftware.com/articles/fog0000000245.html>) would be nice.

Posted by: [Andy Todd](#) on December 16, 2003 03:36 AM

6. Andy, auto levelling is my bugbear too :-(You can't schedule one person on two tasks simultaneously - I think Dilbert had a funny one on managers wanting to do that;-) Two people on one task simultaneously is possible (just add person1, person2 in the resources for that task).

Posted by: [Babu](#) on December 16, 2003 07:09 AM

7. Columbia University has a page with a good collection of links at <http://www.columbia.edu/~jm2217/>

Posted by: [Babu](#) on January 7, 2004 11:26 AM

8. Is there a way to show summary tasks in the calendar view in Project? In other words, you can see the subtasks, but cannot see which tasks they are subsets of.

Posted by: J. Freel on February 25, 2004 07:16 PM

9. How can I word wrap in a column? I have to use really long language for a task, and I can't figure out how to word wrap like I can in Excel. Also how do I include a legend - I am using different colors to indicate the source of tasks. How do I modify the spacing for timescales? I have tasks that have go for four years, but have to show quarters. Right now (because my tasks go out 4 years) I have to use 11x 17 paper to print out what is really a pretty simple plan. Any help would be greatly appreciated. Thank you.

Posted by: JudyS on March 20, 2004 04:39 AM

10. we are teaching MSP now and having a h of a time finding any worbooks to use in a hands on session. Any help?

Posted by: [anne pierce](#) on April 15, 2004 08:18 AM

11. we are teaching MSP now and having a h of a time finding any worbooks to use in a hands on session. Any help?

Posted by: [anne pierce](#) on April 15, 2004 08:18 AM

12. we are teaching MSP now and having a h of a time finding any worbooks to use in a hands on session. Any help?

Posted by: [anne pierce](#) on April 15, 2004 08:18 AM

13. MSP 2002 is a perfect hitech tool for managing projects small and large. The extent of wbs and the resource leveling capabilities are simply amazing. it is wonderful to work with this tool as it imparts complete control and focus on projects and we can direct the course of the projects. Great for calculating EVM and other analysis, more importantly wide spread resources geographically with analysis capabilities which answers to what if scenarios in decision making.