MICROSOFT PROJECT - SOFTWARE FOR THE PROJECT SCHEDULING

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1. Project Planning Philosophy

Practically daily most of us face the necessity of making a project, however we make this activity intuitively, without the knowledge of project making rules. For examples every experienced cook preparing Sunday dinner knows which activities have to be done, how long they will take, what the proceeding is and what she needs to be prepared to make dinner in the quickest time possible. So she has to make the exactly defined chronology of actions with the clear begin and end.

Before starting the project it is necessary to define the objective and tasks necessary for accomplishing the project. Then it is necessary to set who will provide single activities, when single tasks will start and how long they will take. The project price has to be found out as well. After launching the project it is necessary to observe progress of single activities, to make modifications confirming with unforeseen circumstances. After modifications all involved persons are to be informed.

It is clear that project administrator needs to use many various administrative and coordinating activities and observing all project aspects and keeping the forward goal direction is very difficult.

2. Microsoft Project

The Microsoft Project product does not belong to the best known and mostly spread Microsoft Corporation products it cannot compete with Word or Excel. It is even possible to say that project is the “most kept in secret Microsoft Corporation programme”. At the present time this product is available in the version 98 which functions on the Windows 9x and Windows NT. To operate MS Project successfully 4 MB of RAM memory is needed as a minimum. Information on Project innovations, as well as on other Microsoft Corporation products can be obtained on the http://www.microsoft.com/page.
The Microsoft Project is an efficient and flexible programme designed to administrate projects and it enables the user to plan effectively, to administrate and to publish the timetable of the project and the information. By organising the list of tasks and by setting the time frame the Project helps quick planning of projects. If resources are assigned to the tasks, the Project keeps the exact record about them and administrates their assigning, controls costs on the resources. Thanks to the programme Project the user can keep the information on project always up-dated on one place, so possible decisions can come out from correct bases. The project can also be used for creating the scenario of the “what if?” type.

2.1. Setting activities, their continuity and length of duration

On setting Project an empty project file is opened in the view Gantt Chart (see the picture 1). The view Gantt Chart is one of 26 pre-defined views. Each of these views can be started by the means of the menu View or View Bar which is found on the left window part of the programme Project. By choosing the appropriate view the required part of the whole project is shown, e.g. the calendar, assigning of resources to single tasks, information on resources, ... The view Gantt Chart is used for setting tasks. On first opening of the file the up-to-date date is considered to be the starting date of the project, see the big time scale in the Gantt graph. In the Project-Project Information menu this date can be changed. For every project either starting or finishing date must be set. The Project itself will count the missing date of the two from the information on tasks and resources.

We put the single tasks to the table in the left part of the Gantt Chart view to the column Task Name. The corresponding ID number is assigning to each task. On editing the list of tasks ID numbers are arranged automatically to be listed as for the size.
With every task we also set the expected time of its duration which can be set in minutes, hours, days or weeks. We set the time of the activity duration to the column Duration in which the time 1 day is set implicitly. The tasks with zero time duration, so called milestones representing the finished phase of the project, are shown as rhombus with the date when the milestone is to be reached.

Except common tasks so called repeated tasks, e.g. everyweek meetings, regular inspections, ... are included in the project. By using the menu Insert-Reccuring Task we set the name of such kind of the project, its time duration and periodicity.

The project list can contain either only 20 or also several hundreds of tasks. Then the project is divided into several phases. The required structure can be recorded by the means of the lay-out in the Project. The summarizing task can contain several levels of summarizing tasks under it, see the picture 1. We make the lay-out by using icons Indent and Outdent.

After making the list of activities all activities start in the day of starting the project. In fact it is not like that, single activities are connected on one another in different ways and so the term of their start is postponed. Therefore it is necessary to record the mutual links-up of activities. There are four types of dependency, see the chart.

Tasks links up is done in the following way:

1. We mark the activity, which we want to link.
2. We will link selected tasks by the means of Link Tasks icon.
3. The connection FS is made implicitly.
4. By clicking the line between tasks we will make active change the link for a need tape.

There can be situations when some task is to start e.g. 3 days before finishing another task. That means the advance occurs in the opposite case the delay occurs. In the dependency of tasks the advance creates over-lapping which shortens the project time duration. The delay creates a gap in the dependency between the tasks, which can prolong the project time duration. Times both for delay and for advance are set in the Task Dependency window.

<table>
<thead>
<tr>
<th>Type of dependence</th>
<th>Dependence depicting</th>
<th>Dependence description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finish-to-start (FS)</td>
<td>![Diagram] A ↓ B</td>
<td>The end of one task means the start of another task.</td>
</tr>
<tr>
<td>Start-to-start (SS)</td>
<td>![Diagram] A → B</td>
<td>Two tasks start at the same time.</td>
</tr>
<tr>
<td>Finish-to-finish (FF)</td>
<td>![Diagram] A ← B</td>
<td>Two tasks finish at the same time.</td>
</tr>
<tr>
<td>Start-to-finish (SF)</td>
<td>![Diagram] A ← B</td>
<td>The start of one task means the end of another task.</td>
</tr>
</tbody>
</table>
2.2. Finding the critical path

The critical path determines critical tasks, which are essential for the project time duration. The critical tasks cannot have the prolonged duration time or the delayed start without any impact on the finishing date of the project, it means it is the task with the zero total time reserve.

For finding the critical path we use Gantt ChartWizard which comprises the choice for Gantt graph formatting. If the Gantt graph is set on depicting the critical path, the Gantt stripes of critical activities are depicted in red and the stripes of noncritical activities remain blue. When making changes in the project the critical path is active.

2.3. Project Resources Administrator

The project can be designed with or without assigning resources to tasks. If we do not assign resources to tasks, we have a smaller possibility to check finishing the task and smaller flexibility of planning. By assigning resources we will get a better view of the work on the task, the price of work and the progress of work.

Every task of project has to have all the resources necessary for its finishing assigned. Not only a person can be a resource, but any place or object as well. We assign resources to projects by the means of Assign Resources icon or by the Resource Sheet view. If the resource is added to the project, one unit or 100% is added to the Max Units column implicitly. It means that in the project one this resource, e.g. one architect, is at a disposal. The maximum amount of units can be decreased or increased.

![Assign Resources window]

A greater amount of resources than it is at a disposal on the whole project should not be assigned to one task. We assign resources to the task in the way that we select the task in the Gantt Chart view, we set the Assign Resources dialogue, choose the resource and click Assign. The resources name is shown next to the Gantt stripe for the set task. From the resource it is possible to assign one unit, a part of the unit or several units to the task. More resources can be assigned to single tasks, it is also possible to assign one resource to more tasks.

Dialog Resource Information serves to insert details about the resource, it enables to insert resource e-mail and dates when the resource is at a disposal.
2.4. Work with costs on resources

In the programme Project there are two types of costs: costs on resources and fixed costs. By inserting the information on costs we can make project accounts and analyse costs, as well as identify their possible overdraft.

As for the time costs on resources can be distinguished by several ways. In case of salaries it is possible to change an hourly rate, costs at the beginning the task can be different than at the end or the resource can have different rates for different work.

On the contrary from costs on the resource fixed costs are not dependent on the task time duration. The task can be assigned to bath types of costs. For example the task can have fixed coast on material and costs on resources, which in this case is the work with the material. Then both types of costs make total costs.

Fixed costs are inserted by the View-Table-Cost menu. The left side of Gantt Chart window changes on the Costs chart. By Fixed Cost Accural it is possible to set time distinguishing of costs which determines when costs start and when the real costs are included in the project.

![Resource Sheet view and Resource Information window](image)

It is possible to use the Resource Sheet view to insert basic costs on the resource. We use the Costs chart from the Resource Information dialogue for inserting additional information on costs on resources.

Various rates of costs are entered in the cost rate chart. Every resource can have up to five various rates, every chart can use up to 25 various changes of rates. Cost rate charts are made in the Resource Information dialogue in the chart Cost. Assigned cost rate charts can be changed in the Assignment Information dialogue, which is available by the Task Usage view.

The project can also work with costs for usage. These costs appear at resource or the task independently on the task time duration or the number resource units assigned to the task. For example when we hire some equipment, we pay the charge for its installation and then we will pay its daily hire. We can insert the charge for the installation as the Per-Use-Cost.
2.5. Work with calendars

In the Microsoft Project programme calendars set working and nonworking time of the project (the basic calendar) and every resource (the resource calendar) which is assigned to it. After setting the change into the calendar the Project will make an automatic change. It is easy to change the whole day or only several hours from working time to nonworking. New calendars can be made for partially or irregularly working resources.

Implicitly the basic calendar has the working week set from Monday to Friday and the working time from 8.00 AM to 5.00 PM and do not include festivals. We make the changes of the basic calendar by the Tools-Change Working Time option. Calendar for resources are used for following resources availability. The calendar is made as the basic calendar copy to which the exceptions of the resource are inserted. The resource calendars are made by using Change Working Time or Resource Information - Working Time.

2.6. Following the project progress

Sooner before the first task in the project is realised the project timetable should be finished completely and the base line should be set. The base line is the record taken from the project in the certain time, which serves for comparing the original timetable with its later versions. After making the base line dates, times and further critical information are saved and are not changed. The base line is saved by the means of Tools -Tracking-Save Baseline.

Following the project progress begins by starting the project work. It is possible to select a certain frequency of its control in the dependence on the project need. After setting real task progress the project is recalculated automatically and tasks, which have not advanced yet are re-planned on up-dated dates.

Three types of dates are stared for every task in the Project: planned, real, base line. There are only planned dates in the project planning phase. After finishing the project all planned and real dates are same.

Project progress is depicted in the Gantt graph as well, and it is by the progress indicators. Tasks which are completely finished are deleted from the critical path, they cannot influence the final project date.

Real information on the task is insert by the means of Tools - Tracking-Update Tasks menu. Several tools, e.g. Tracking Gantt, Variance, Work and Cost charts and some filters are used in Project for analyse and comparing the base line, real and planned dates.

Summary

This paper presents Microsoft Project programme, one of the tools for solving the problem of net analysis. Microsoft Project appears like a professional tool, which can pick up all aspect the planning. Wherefore it should be used not only practically but and in the instruction much more.

Literature