Project Management

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Lecture 37 - Software for Project Management

Dear students, today the topic is softwares for project management. So, far we discussed about various theories, concepts and numerical problems. So, these previous lectures are only for understanding the concept, but when you go for as a software professional person, so what will happen you need to understand certain software packages. Other advantage of software packages that when you are handling a mass project, very huge projects, managing all the activities, scheduling, allocating resources is very challenging task. So, that is why you need to understand what are the commercially available software. So, now in this lecture I am going to discuss about some of the softwares which are available.

Agenda

- Software for project management
- Microsoft Project
- Salient features of Microsoft Project
- Oracle Primavera
- Salient features of Primavera
- MS Project – Resource Allocation

See agenda for this lecture is some overview of some software for project management. There are many softwares available, but for the purpose of academic classroom purpose I am going to use MS project. I am going to explain what are the salient features of Microsoft project. The another very popular project management for software is Oracle Primavera that also I am going to explain various features of that.

Software for project management

- There are various software tools available for project management, catering to different needs and preferences.
- Some of them are:
  - **Trello**
  - **Jira**
  - **Microsoft Project**
  - **Smartsheet**
  - **ClickUp**
  - **Zenkit**
  - **Primavera**
  - **Teamwork**
- It's essential to choose a project management software that aligns with your team's workflow and requirements.

Then I have explained some theories on how to allocate resources in MS project. The next class I will give you the demo on resource allocation. So softwares for project management, there are various software tools available for project management catering to different needs and preferences. Some of them are Trello, Jira, Microsoft project, Smartsheet, ClickUp, Zenkit, Primevera and Teamwork. It is essential to choose your project management software that align with your team's workflow and requirement.

Even though there are many softwares are available, before choosing the right software

you have to see that whether it is aligned with your team members or aligned with the comfort of your team members and your top management. First we will discuss about Microsoft project. Microsoft project is a powerful tool that allows you to plan, track, analyze and report on the progress of one or many related projects. In the process of doing so, however, an enormous amount of data is generated. To avoid overwhelming the user, Microsoft project uses a clever data management approach that simplifies the project manager's job.

Microsoft Project

- Microsoft Project is a powerful tool that allows you to plan, track, analyze, and report on the progress of one or many related projects.
- In the process of doing so, however, an enormous amount of data is generated.
- To avoid overwhelming the user, Microsoft Project uses a clever data management approach that simplifies the project manager's job.

Because in the Microsoft they have other related softwares like Excel, PowerPoint and so on. So, what they have done that they have used the advantage of Excel and they have used project management concept into that, then the new software called Microsoft project has come. The advantage here is it is easily connected with your MS Excel, Microsoft Excel. There are many features are available. I myself I am using this MS project for my classroom, but the best part of this software package is it is very easy to understand the concepts.

Salient features of Microsoft Project

Task Management:

- Microsoft Project allows users to create and manage tasks, set dependencies between tasks, and define task durations.
- It provides a Gantt chart view for visualizing task timelines.

Resource Management:

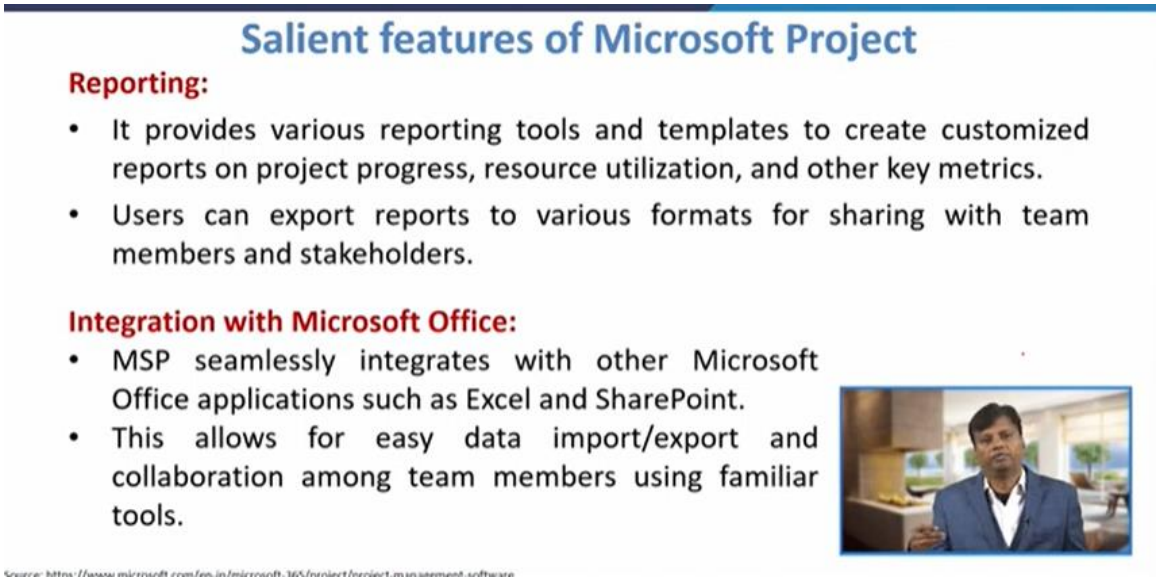
- Users can assign resources (both human and material) to tasks, track resource availability, and manage workloads.
- The software helps in optimizing resource allocation for efficient project execution.

So like that there are many features are available. So some of the salient features I will discuss now. One is a task management. Microsoft project allows users to create and manage a task, set dependencies between task and define task duration. In the previous lecture also I have given a small demo how to draw a Gantt chart, there are many features how to enter the task and so on.

So it provides a Gantt chart view for visualizing task timelines. The next feature is resource management. Users can assign resources, both human material to task. We can track the resource availability and we can manage the workloads. For example, one resources, if you allocate the same resources for two, three tasks, that resource workload may become very high.

So you can level that workload that is possible very easily possible with the help of this MS project software. The software helps in optimizing the resource allocation for efficient project execution. The next very popular feature of MS project is Gantt chart. Gantt charts provide a visual representation of project schedules showing task duration, dependencies and milestones. So with the help of Gantt chart, we can say what are the tasks, what are the duration is there, how these tasks are dependent.

We can see the dependencies, that is we can see the predecessors or we can see the successors of activities and so on. And other thing is we can include some milestones also. So milestone here is nothing but a task which will not consume any resources, but it is only for our purpose of understanding. So users can easily adjust to the schedule and dependencies by dragging and dropping element in the Gantt chart view. Next timeline view.



The timeline view offers a high level overview of the project schedule, allowing users to see key milestones and faces at a glance. It is useful tool for communicating project

timelines to stakeholders. The next feature is reporting. There are so many way of reporting the project performance or the project details in MS project software. So reporting provides various reporting tools and templates to create customized report on project progress, resource utilization and other key metrics.

Salient features of Microsoft Project

Collaboration Features:

- The software supports collaboration through features like shared project files, collaborative editing, and communication tools.
- Users can share project information with team members and stakeholders.

Customization:

- Microsoft Project offers a high degree of customization, allowing users to tailor project plans and views according to their specific needs.
- Custom fields, views, and tables can be created to capture and display project information.

Users can export reports to various formats for sharing with team members and stakeholders. In my next lecture, I will be taking on how to see, how to read various reports. And very other interesting things about this MS project is integration with Microsoft Office. As I already explained, so Microsoft project seamlessly integrates with other Microsoft Office applications such as Excel and SharePoint. This allows for easy data import, export and collaboration among team members using familiar tools.

The next feature is collaboration features. The software support collaboration through features like shared project files, collaborative editing and communication tools. The benefit of this collaboration feature is the people who are involved in the project team, they can collaborate on the same project using this MS project software. Users can share project information with the team members and stakeholders. For the purpose of collaboration, you know that Microsoft project also have teams.

So there even your project can be the project progress, project discussion can be done with the help of Microsoft team. Then customization, Microsoft project offers a high degree of customization, allowing users to tailor project plans and views according to their specific needs. Because even the columns has to be, the column can be customized if you want you can add new columns or if you want to see the views, that views can be customized. So custom fields, views and tables can be created to capture and display project information. The next feature is task and project dependencies.

Salient features of Microsoft Project

Task and Project Dependencies:

- Users can define dependencies between tasks, such as finish-to-start, start-to-start, finish-to-finish, and start-to-finish.
- This ensures that tasks are scheduled in the correct order.

Risk Management:

- Microsoft Project includes features for identifying and managing project risks.
- Users can assess the impact of risks on the project schedule and make informed decisions to mitigate potential issues.

Users can define dependencies between task such as finish to start, start to start, finish to finish and start to finish. So how to do this one? In the next lecture I will be explaining. For example, what is the finish to start? An activity for example A and B is there. B can be started after finishing of A, that is the meaning of finish to start. Start to start activity A and B is there.

If the A has started, then the B also has to be started. Then finish to finish, so when you are finishing activity A, then we have to specify that B also has to be finished. Then start to finish, project A started, then the project has to finish. Like that various dependencies easily can be incorporated in the Microsoft project software. So this ensures that task are scheduled in the correct order.

The next feature is risk management. The project includes features for identifying and managing project risk. Users can assess the impact of risk on the project schedule and make informed decisions to mitigate potential issues. For example, we can say the baseline, then we can update that baseline. Suppose there is a delay that will show how much days we are behind it, that is the way we can measure the risk or we can say how much money we have spent more.

Salient features of Microsoft Project

Baseline Tracking:

- Baseline tracking enables users to compare the original project plan (baseline) with the current project status.
- This helps in identifying deviations from the initial plan and taking corrective actions.

Cost Tracking:

- Microsoft Project supports tracking project costs, including labor, material, and other expenses.
- Budgets can be established, and actual costs can be compared to planned costs for better financial control.

So the cost should not exceed, so that risk everything can be monitored with the help of this risk management features. Then baseline tracking, so baseline tracking just now I have informed you that enables users to compare the original project plan with the current project status. Suppose I have a project, I have planned this activity has to be completed say 5 days. On the third day, I can compare how much work has been completed. Then we can see the variance also.

So likewise for each and every activities to know the progress, to control that activity, this baseline tracking is very useful options. So this helps in identifying deviations, deviation means variance from the initial plan and taking corrective actions. Then cost tracking, Microsoft project support tracking project cost including labor, material and other expenses. Budgets can be established and actual cost can be compared to planned cost for better financial control. We have discussed about earned value analysis, there we can see what is the budgeted cost, what is the actual cost, we can compare it, how much variation is there, so that is easily possible with the help of cost tracking features.

Oracle Primavera

- Primavera, now known as Oracle Primavera, is a suite of project management tools designed for large and complex projects.
- It is widely used in industries such as construction, engineering, and manufacturing.
- The software provides a comprehensive set of features for project planning, scheduling, and execution.

ORACLE PRIMAVERA

Source: https://www.oracle.com/in/construction-engineering/primavera-p6/

The next popular software is Oracle Primavera. So Primavera now known as Oracle Primavera is a suite of project management tools designed for large and complex projects. It is widely used in industries such as construction, engineering and manufacturing. The software provides a comprehensive set of features that the project planning, scheduling and execution. When I was discussing MS project, so MS project for understanding concepts for the volume of the project become very high, then it is better to use this Primavera software.

Salient features of Primavera

Project Planning and Scheduling:

- Create detailed project plans and schedules using the Critical Path Method (CPM).
- Establish task dependencies to reflect the sequence of project activities.
- Utilize resource loading and leveling for optimal resource allocation.

Multiple Project Management:

- Manage and control multiple projects simultaneously.
- Portfolio management features for overseeing and optimizing the performance of a portfolio of projects.

Now we will discuss some of the features of Primavera. So project planning and scheduling, it creates a detailed project and schedules using the critical path method, establish task dependencies to reflect sequence of project activities. It utilizes the resources loading and leveling of optimal resource allocation. Then multiple project management, manage and control multiple projects simultaneously. Then portfolio management features for overseeing and optimizing the performance of your project portfolio also possible with

the help of this Primavera software.

Salient features of Primavera

Resource Management:

- Efficiently allocate and manage resources, including personnel, equipment, and materials.
- Resource leveling to balance workloads and prevent overallocation.

Cost Management:

- Track project costs, expenses, and budgets.
- Integration with financial systems for comprehensive cost analysis.

Source: https://www.oracle.com/in/construction-engineering/primavera-p6/

Then resource management, efficiently allocate and manage resources including personal equipment materials, resource leveling to balance workloads and prevent over allocation that also can be done. Then cost management, we can track project cost, expenses and budgets. We can integrate with the financial system for comprehensive cost analysis. Then risk management, we can identify, assess and manage project risk, implement risk mitigation strategies and track risk related task. Then document management is another feature of Primavera project management software.

Salient features of Primavera

Risk Management:

- Identify, assess, and manage project risks.
- Implement risk mitigation strategies and track risk-related tasks.

Document Management:

- Centralized document repository for storing and managing project-related documents.
- Version control and document sharing capabilities.

So centralized document repository for storing and managing project related documents, version control and document sharing capabilities that are all very useful features of Primavera software. Next one is reporting and analytics. Generate variety of reports and project tracking and analysis. We can utilize dashboard and analytical tools for real time project insight. The next feature is integration with other system.

Salient features of Primavera

Reporting and Analytics:

- Generate a variety of reports for project tracking and analysis.
- Utilize dashboards and analytics tools for real-time project insights.

Integration with Other Systems:

- Integration with Oracle databases and other enterprise systems.
- Exchange data with other project management and business software.

Integration with Oracle database and other enterprise ecosystem is possible. Exchange data with other project management and business software. So this also compatible with other softwares. The next very beautiful and very important feature of this Primavera project is earned value management. Implement earned value management techniques for measuring project performance against baselines.

Salient features of Primavera

Earned Value Management (EVM):

- Implement Earned Value Management techniques for measuring project performance against baselines.

Globalization and Multi-language Support:

- Support for projects with international teams and stakeholders.
- Multi-language capabilities for global deployment.

So for measuring the performance of project to measure the performance of each and every task that is possible with the help of this earned value management. Globalization and multi-language support. So support for projects with international teams and stakeholders. Multi-language capabilities for global deployment. Another feature is user access and security.

Salient features of Primavera

User Access and Security:

- Role-based access control to restrict access to sensitive project information.
- Secure user authentication and authorization mechanisms.

Mobile Access:

- Mobile applications or web interfaces to access project information on the go.

Source: https://www.oracle.com/in/construction-engineering/primavera-p6/

Role based access control to restrict access to sensitive project information. For example, the project manager, he may have full access to all project activities. Suppose the lower level manager may not have full access, so that access control is possible with the help of this Primavera software. Because the lower level managers may not know how his other people, those who are in the other levels of the management, how they are doing their project, so that information not required for this fellow. But for the project manager, he can see the overall project progress.

So we can restrict the access based on their designation. Then mobile access. Mobile applications are web interfaces to access project information on the go is possible. Then Primavera cloud services. Cloud based services for enhanced collaboration and accessibility is possible.

Salient features of Primavera

Primavera Cloud Services:

- Cloud-based services for enhanced collaboration and accessibility.
- Facilitates remote project management and team collaboration.

Scalability:

- Suitable for managing large and complex projects, including mega-projects and programs.

It facilitates remote project management and team collaboration. Then scalability. It is

suitable for managing large and complex projects including mega projects and programs. In the beginning of the lecture also I have informed that, that the Primavera is most suitable for a large and complex projects. Now I will explain how to do a resource allocation with the help of MS project.

MS Project – Resource Allocation

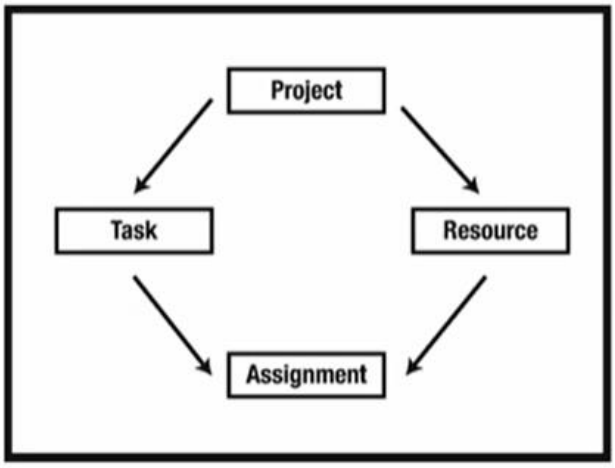
- A project consists of activities that have a distinct beginning and end (known as tasks) and the people, equipment, and supplies used to complete those activities (known as resources).
- Once you have entered the tasks and resources into a project, you will want to specify which resources will be made available to work on each task.
- A connection between a resource and a task is known as an assignment.
- Each time a resource is scheduled to work on a task, a new resource assignment is created in your project.

Now I will give you the only the overview of the resource allocation. But in the next lecture, with the help of MS project, I will tell you how actually the resource has to be allocated. A project consists of activities that have distinct beginning and end and the people, equipment and supplies used to complete those activities known as resources. So far in our lectures, we have considered only the time and cost as a two important resources. For example, in the critical path, we find out what is the total project completion time.

When we come the resource allocation, we consider only few resources and resource leveling also. But that we have done with the help of heuristic method. Remember there was a resource allocation problem. So we have considered only two resources, one is manpower, another one is equipment. But when the more number of resources are need to be allocated, so we need to completely depend on softwares.

Once you have entered the task and resources into your project, you will want to specify which resources will be made available to work on each task. So first we have to specify the resources. Once the resources are specified, that has to be allocated with each task. A connection between a resource and a task is known as assignment. Each time resources is scheduled to work on task, a new resource assignment is created in your project.

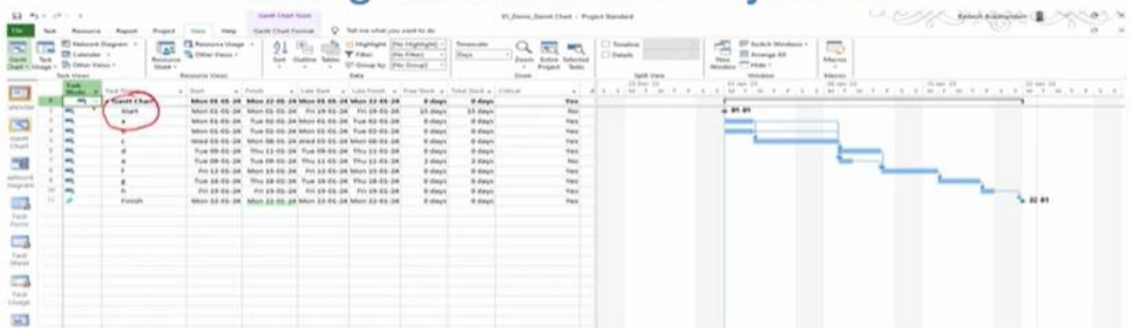
Microsoft Project's data categories



So we will discuss there are three types of resources there. One is work, second one is material, third one is a cost. So in the MS project what it has done, a project is there. So we have defined task, then we have resources. So when you allocate these resources to the task, it is becoming the assignment.

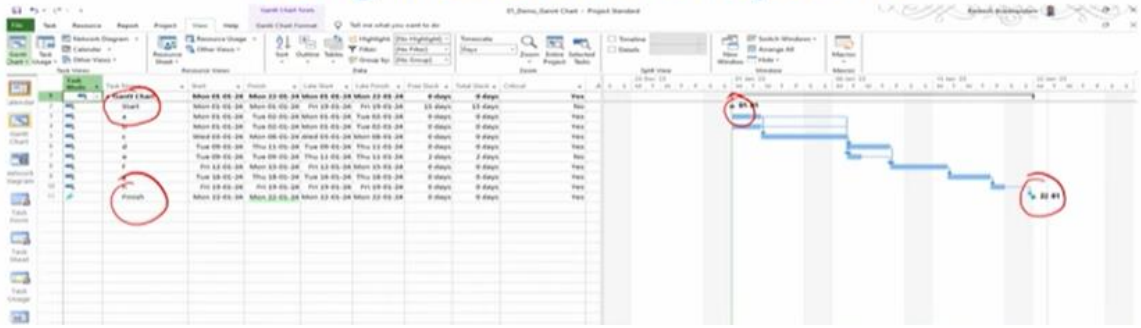
So allocating task, allocating resource, the task is becoming assignment. So this gives the very practical intuition of how to execute a project with limited resources. But in our theoretical perspective, so far we did not consider, we considered only few resources, time or cost. But apart from that, in practice when you go to in the field of project management, you have to handle lot of resources and allocation of that resources for optimal use of that resources is more important.

Adding milestones to a Project File



So that is nothing but the assignment. Now what will happen, we can add milestones to your project file also. For example here, you see I have entered start, then I have entered finish. So when you open your MS project, so start will not show any resources and time duration, but you have to show the dependencies. For example start, so for activity A, it has to proceed the start activity.

Adding milestones to a Project File



So you have to link that start and end. So what will happen when you link it, you see that, so there will be a here dependencies not mentioned that is why it is not connected. You see that here the end of the project. So this is nothing but milestone. So milestone is to see the progress of the project or to know whether we have reached a particular milestone of your project or not.

Grouping Tasks in Logical Order

- Outlining helps organize your tasks into more manageable chunks.
- You can indent related tasks under a more general task, creating a hierarchy.
- The general tasks are called summary tasks; the indented tasks below the summary task are subtasks.
- A summary task's start and finish dates are determined by the start and finish dates of its earliest and latest subtasks.

Next what we can do, grouping a task into a logical order. So we have studied programs, projects, work packages and task. So in the MS project, we can write for example project, in that project we can see different work packages. In that work packages, what are the individual tasks are available? So that can be grouped. So when you select that work packages, when you see, when you click on indent, so that will become the subset of your work package. So there are different work packages, when you click on the indent, so it will become work packages will be subset of your project.

So that is the purpose is to easily we can observe how this task is related with work package, how that work package is related with our overall project. So outlining helps organize your task into more manageable chunks. You can indent related task under more general task creating a hierarchy. So the hierarchy is easily possible when you indent your

sub task, you can indent your work packages.

The general task are called summary task. The indent task below the summary task is called sub task. So a summary task start and finish dates are determined by the start and finish date of its earliest and latest sub task. Now we will discuss about assigning resources to task. You can use resource sheet in Microsoft project to list the people, equipment, material resources to make up your team and carrying out project task. Your resource list will consist of work resources or material resources.

Assigning Resources to Tasks

- You can use the Resource Sheet in Microsoft Project to list the people, equipment, and material resources that make up your team and carry out the project tasks.
- Your resource list will consist of work resources or material resources.
- Work resources are people or equipment; material resources are consumable materials or supplies, such as concrete, wood, or nails.

Assigning Resources to Tasks: Types of resources

- Work resources
  - People and equipment to complete the tasks.
- Cost resources
  - Financial cost associated with a task.
  - Travel expenses, food expenses, etc.
- Material resources
  - Consumables used as project proceeds.
  - For example, paint being used while painting a wall.

Work resources are people or equipment, material resources are consumable materials or supplies such as concrete, wood or nails. The further explanation what is the work resources, for example people, how much percentage of that person for example project manager. We can see the project manager whether the 100 percentage of his full time is going to be used this project or only 50 percentage of this project manager is going to be

used here. So when that 50 percentage will come sometime your project manager may work for two projects.

So he can devote only 50 percentage of time. So there you can specify percentage of commitment. So that comes under work resources. Here we can say people, equipment to complete the task. Then cost resources.

We can consider the financial cost associated with a task. For example travel expenses, food expenses that comes under cost expenses. And for example in the work resources we can say how much we are going to pay per hour that is possible in work resources. But in the cost resources only the total amount can be specified. The next one material resources consumables used as a project proceeds.

So that is a material, consumables materials. For example paint being used while painting a wall, for example cement, iron, concrete, these and all example of material resources. There you can write what is the unit price. Then at the time of allocation say unit say 400 rupees. So suppose we are allocating 5 units, so 5 X 400 that much cost will be spent for when you allocate material resources. Dear students, in this lecture I have discussed about importance of softwares for managing large projects.

There I have given you an overview of different projects. I have given you a very detailed explanation about salient features of Microsoft project and Oracle Primevera. Then I have given you some of the important activities that can be done with the help of MS project. For example how to group the resources, for example how to allocate the resources, for example how to show the milestones and so on. So in the next class I will take a sample problem. With the help of that sample problem I will explain various ways we can enter the data, we can assign the resources, we can see the views, we can see the baseline like that we can see with the help of a sample problem, we can see how to use MS project to understand or to execute our project. Thank you. Thank you.