Project Management

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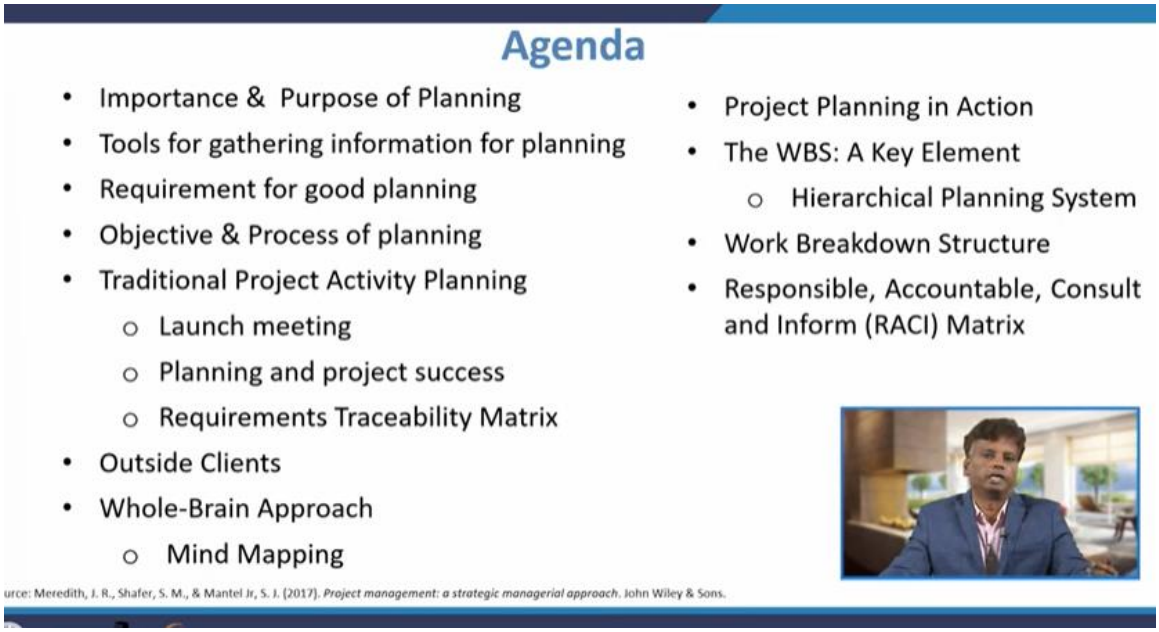
Week: 3

Lecture 13 : Traditional Project Activity Planning

Dear students, so far we have discussed the first phase of this course that is a project initiation. Today we are entering into the second phase of this course called project planning. In that phase the first lecture is traditional project activity planning. This slide shows the what are the lectures which are available under project planning phase. As I told you today we are going to discuss about the first topic that is traditional project activity planning. The agenda for this lecture is importance and purpose of planning.



Then we will discuss about tools for gathering information for purpose of project planning. Then we will study about requirement for good planning. Then what are the objective and process of planning. Then we will discuss about in detail traditional project activity planning.

In that we see the first process launch meeting, then the planning and project success how it is interrelated. Then we study about requirement traceability matrix. Then as an outside clients what is expecting from the project planning that we will study in detail. Then one of the traditional activity planning process is called whole brain approach. So in this approach that is a whole brain approach we will study about what is mind mapping.

Then project planning in action and one of the output of project planning is work breakdown structure. We study in detail about the key element of work breakdown structure. Then also discuss about hierarchical planning system. Finally we will discuss about responsible accountable consult and inform matrix in shortly we call it as RACI matrix. First we will discuss about importance of project planning.

Importance of Planning

- Peter Drucker has quoted on planning: "Plans are only good intentions unless they immediately degenerate into hard work."
- To make such a transformation possible is no easy task.
- Every minute given to planning saves 10 minutes in execution.
- Effective planning requires avoiding the opposite pitfall of killing the plan with over-analysis.
- This leads to the well-known "paralysis by analysis."

Source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Peter Drucker has quoted on planning, plans are only good intentions unless they immediately degenerate into hard work. To make such transformation possible is no easy task. Every minute given to planning saves 10 minutes in execution. So effective planning requires avoiding the opposite pitfall of killing the plan with over analysis. This leads to the well known process called "paralysis by analysis".

This term "paralysis by analysis" is over planning or over thinking. So what will happen that when you do over planning and over thinking that will affect your planning process. Next we will discuss about the purpose of planning. The primary purpose of planning is to establish a set of directions in sufficient detail to tell the project team. So what are the details we will provide in the planning? We will discuss about exactly what must be done, when it must be done, what resources will be required to produce the deliverables of the project successfully, when each resources will be needed.

Purpose of planning

- The primary purpose of planning is to establish a set of directions in sufficient detail to tell the project team
  - Exactly what must be done
  - When it must be done
  - What resources will be required to produce the deliverables of the project successfully
  - When each resource will be needed.

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So these are the information will be provided in the planning document. Next we will discuss about tools for gathering information for planning. So before planning we have to collect some data, some information. So what are the commonly used tools? The entire planning process is dependent on gathering the correct requirement from the client or project owner in the first place. If you are not able to get the exact requirement from the client or the project owner then the planning will not be good.

Tools for gathering information for planning

- The entire planning process is dependent on gathering the correct requirements from the client or project owner in the first place
- PMBOK lists several tools and techniques to help in doing this, including
  - Interviews
  - Focus groups
  - Facilitated workshops
  - Group creativity techniques questionnaires
  - Surveys

So the project management body of knowledge book list several tools and techniques to help in doing this that is collecting the requirement from the client like interviews. So you have to have a interview with your project owners what they expect from this project then focus group interviews, then facilitated workshop, then group creativity techniques questionnaire and surveys. So these are the tools through which we can collect information which are required for our project planning. Then what are the requirement for a good planning? The plan must be designed by the project manager, overseen by the

project owner and sponsor. The plan should meet the project outcome and the direct and ancillary objectives of the parent organization as reflected by the project portfolio, business case or other strategic selection process used to approve the project.

Requirement for a good planning

- The plan must be designed by the PM, overseen by the project owner and sponsor
- The plan should meet the Project outcome and the direct and ancillary objectives of the parent organisation, as reflected by the project portfolio, business case, or other strategic selection process used to approve the project.
- It is always carried out in an environment of uncertainty

Source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Project a good planning is always carried out in an environment of uncertainty because when you go for planning we may not go with a certainty because there are lot of uncertain things are going to happen. You have to take care some uncertain events at the time of project planning. The plan must include allowances for risk and features that allow it to be adaptive that is to be responsive to things that might or often do disrupt it while it is being carried out. So the point here is whenever we make the plan we should give the provision for the risk and also we have to say how to overcome this risk if there is any changes if there is any uncertainty at the time of implementing this plan. And a plan must also contain method to ensure its integrity which is to say it must include means of controlling the work it prescribes.

Requirement for a good planning

- The plan must include allowances for risk and features that allow it to be adaptive, that is, to be responsive to things that might, and often do, disrupt it while it is being carried out
- The plan must also contain methods to ensure its integrity, which is to say it must include means of controlling the work it prescribes

ce: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Requirement for a good planning

- The plan must include any constraints on activities and input materials proscribed by law and society, a group of critical stakeholders
- Among the many sources of outside constraints are the
  - Food and Drug Administration
  - Occupational Health and Safety Administration
  - Other Central and state laws and regulations
  - Various engineering societies
  - Labor unions and "Standard Practices" of many industries

ource: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

The plan must include any constraint on activities and input materials prescribed by law and society or group of critical stakeholders. So whenever we make a plan we have to write possible constraint among the many sources of outside constraints are like there may be constraint from the regulatory bodies like food and drug administration they may have certain norms that has to be followed that is the constraint for us. Then occupational health and safety administration, other central and state laws and regulations, various engineering societies, labor unions and standard practices of many industries these are the constraint that has to be mentioned in the project planning because this constraint cannot be violated. Then we will discuss about objective of planning. The objective of the planning is to facilitate later accomplishment.

Objective of planning

- To facilitate later accomplishment
- The world is a whole of plans that never become deeds
- It is a complicated process to manage a project, and plans act as a map of this process
- The map must have sufficient detail to determine what must be done next but be simple enough that workers are not lost

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The world is full of plans that never become deeds. It is a complicated process to manage a project and plans act as a map of this process because executing a plan into action is a very complicated process. The plan or the map must have sufficient detail to determine what must be done next but be simple enough that workers are not lost. So when you make a plan you have to say exactly what is to be done next and it should be written in a simple sentences so that the workers also can easily follow it. Now we will discuss about process of planning.

Process of planning

- The process may be described formally, but it does not occur formally.
- Bits and pieces of plans are developed by individuals, by informal group meetings, or by formalised planning teams, and then improved by other individuals, groups, or teams, and improved again and again.
- Both plans and the process of planning should start simply with the **project charter,** which is then elaborated on and eventually becomes the **project plan**

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again and again. Both plans and process of planning should start with simply with the project charter. The next lecture we will discuss about in detail about what is a project charter which is then elaborated on and eventually become the project plan. The project charter is a document that who is responsible for what activities.

So then this should be elaborated to make it to detailed project plan. Now we will discuss about traditional project activity planning. The first activity is a launch meeting. A senior manager call and be present at the project chartering workshop or launch meeting an initial coordinating meeting as a visible symbol of top management's commitment to the project. The sponsor and other key stakeholders should participate in this meeting for the purpose of establishing the project, agreeing on the top deliverables, discussing about resourcing, establishing schedule and budget tolerances and defining its risk.

So the first activity in the project planning is launch meeting. So launch meeting formally will be announced so that the project is started and that the sponsors, the top management people need to be present in that meeting so that we will get a support from the top management. Having these critical stakeholders involved early on creates buy-in that is a commitment and faster early communication on potential issues and risk. The individuals leading the launch meeting first defines the project's scope as detailed in the charter. The success of the project launch meeting is dependent on the existence of a well-defined set of objectives.

Traditional Project Activity Planning :Launch Meeting

- Having these critical stakeholders involved early on creates buy-in and fosters early communication on potential issues and risks.
- The individual leading the launch meeting first defines the project's scope as detailed in the charter.
- The success of the project launch meeting is dependent on the existence of a well-defined set of objectives.

Launch Meeting

- The project is discussed in sufficient detail that potential contributors develop a general understanding of what is needed
- If the project is one of many similar projects, the meeting will be short and routine, a sort of "touching base" with other interested units
- If the project is unique in most of its aspects, extensive discussion may be required

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So the objectives of the project is the first reason for the success of the project. So the project is in the launch meeting, the project is discussed in sufficient detail that the potential contributors develop a general understanding of what is needed. If the project is one of many similar projects, the meeting will be short and routine, a sort of "touching base" with other interested units. At the same time, if the project is unique in most of its aspect, extensive discussion may be required. Review the significant risk facing the project during the launch meeting.

Launch Meeting

- Review the significant risks facing the project during the launch meeting.
- The risk management plan for the project must be started at the launch meeting so that later risk identification can be extended to include the technology of the process/product, the project's schedule, resource base, and a myriad of other risks facing the project but not identifiable until the final project plan has begun to take form.

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The risk management plan for the project must be started at the launch meeting so that later risk identification can be extended to include the technology of the process or product, the project's schedule, resource base and a myriad of other risk facing the project but not identifiable until the final project plan has begun to take form. So much importance need to be discussed during the launch meeting about the risk, whether it can be identified or it cannot be identified and what are the possible solutions for that. To fix plan in more detail at this initial meeting tends to prevent team members from integrating the new project into their ongoing activities and from developing creative way of coordinating activities that involve two or more organizational units. So what will happen generally, the team members try to include the new project into their ongoing projects. So that has to be stopped during the launch meeting.

Launch Meeting

- To fix plans in more detail at this initial meeting tends to prevent team members from integrating the new project into their ongoing activities and from developing creative ways of coordinating activities that involve two or more organisational units
- Everyone who has ever worked on a project is aware of the extraordinary propensity of preliminary estimates to metamorphose instantaneously into firm budgets and schedules

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So everyone who has ever worked on a project is aware of the extraordinary propensity of preliminary estimates to metamorphose instantaneously into firm budget and

schedules. So what will happen those who are working on this project, the outcome of this project should be to help to form budget and schedule. So that need to be discussed because the outcome of this meeting should be, so it should be clearly what is going to be budget for this project and what are the schedules for various activities for this project. Now we will discuss about outcomes of the project planning processes. So the formulation of the project's risk management group and the initial risk management plan is one of the important outcome of the project planning.

So we should identify in the project planning stage itself, what is project risk management group and what are the risk management plan. It is essential not to allow plans scheduled and budgets to go beyond the most aggregated level especially with the project deliverables are simple and do not require much interdepartmental coordination. Now we will discuss about the planning and project success. So four top ranking factors critical to project success were as follows. One is a realistic schedule that you have to take care during your project planning.

Planning and project success

- Four top-ranking factors critical to project success were as follows:
  - a realistic schedule
  - adequate resources
  - clear scope
  - support from senior management
  - all products of careful planning with a solid charter

Then having adequate resources and clear scope and support from senior management, all products of careful planning with a solid project charter. So these are the factors for success of a good project planning process. So we should have a realistic schedule, there should be enough resources to achieve the target, scope has to be clear and we need to get a support from top management. Whatever the process, the outcome must be that the technical scope is established.

Planning and project success

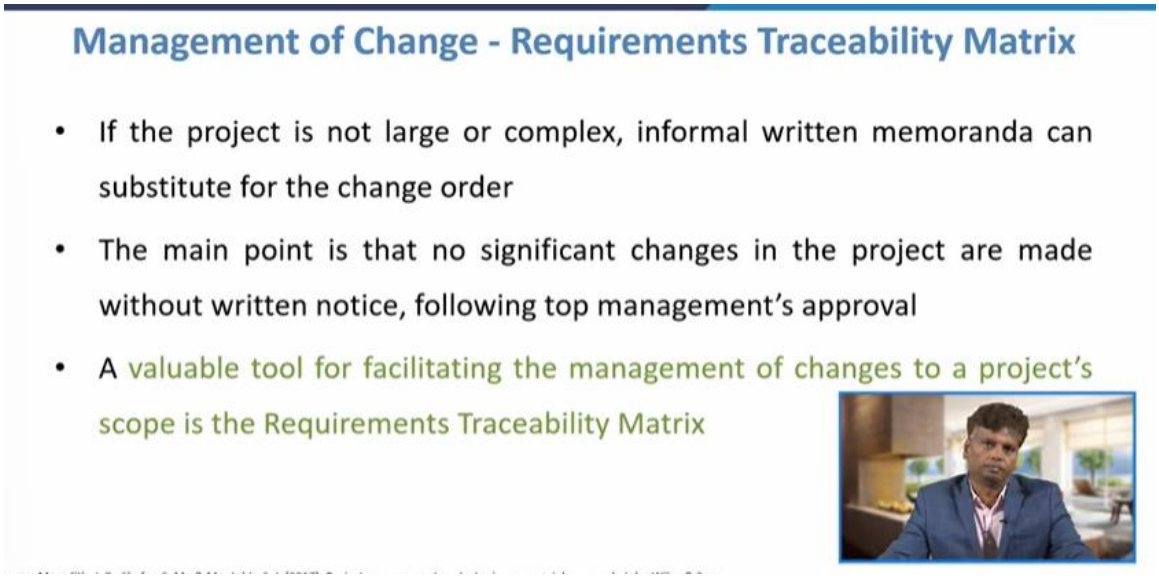
Whatever the process, the outcome must be that

1. Technical scope is established
2. The participants accept essential areas of performance responsibility
3. Any tentative delivery dates or budgets and their tolerances set by the parent organisation are noted and
4. A risk management group is created.

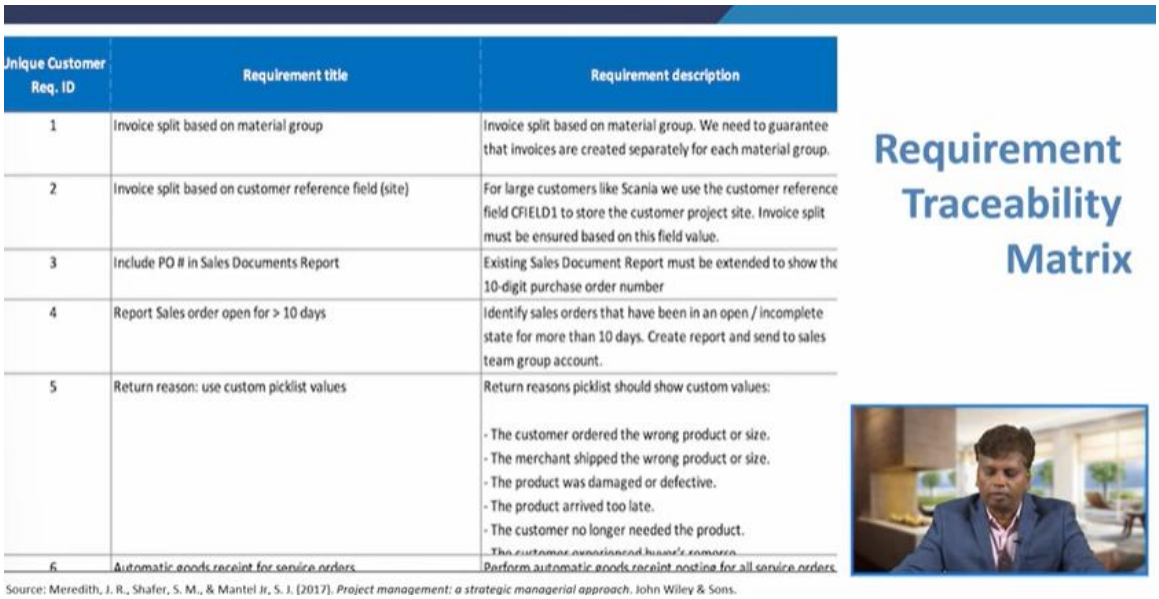
ource: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

So we discuss about the planning. So when some of the important outcome of the project planning is the technical scope is established, the participants accept essential areas of performance responsibility and any tentative delivery dates or budget and their tolerances set by the parent organizations are noted and a risk management group is created. So these are the outcomes of the project planning process. Now we will discuss

about what is requirement traceability matrix that is management of change. Suppose every project is going to bring a change, so the first task is we have to identify the requirement from the client. So we will study about this requirement traceability matrix.



If the project is not large or complex, informal return memoranda can substitute for the change order. The main point is that no significant changes in the project are made without return notice following top management's approval. So valuable tool for facilitating the management of change to a project's scope is the requirement traceability matrix. Now we will discuss about this requirement traceability matrix. So I have brought for the purpose of illustration, I brought a sample requirement traceability matrix.



Unique Customer Req. ID	Requirement title	Requirement description
1	Invoice split based on material group	Invoice split based on material group. We need to guarantee that invoices are created separately for each material group.
2	Invoice split based on customer reference field (site)	For large customers like Scania we use the customer reference field CFIELD1 to store the customer project site. Invoice split must be ensured based on this field value.
3	Include PO # in Sales Documents Report	Existing Sales Document Report must be extended to show the 10-digit purchase order number
4	Report Sales order open for > 10 days	Identify sales orders that have been in an open / incomplete state for more than 10 days. Create report and send to sales team group account.
5	Return reason: use custom picklist values	Return reasons picklist should show custom values: - The customer ordered the wrong product or size. - The merchant shipped the wrong product or size. - The product was damaged or defective. - The product arrived too late. - The customer no longer needed the product.
6	Automatic goods receipt for service orders	Perform automatic goods receipt posting for all service orders

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What is need to be noted here is that you have to see what are the, see there is a serial number is there, unique customer ID and the requirement of each customer. For example, invoice split based on material group. So the second column is requirement

title. The third column is the description about the requirement. So this has to be properly documented from our customers, from our clients.

Requirements Traceability Matrix

- With this matrix, a table is created that links the source of each project requirement to the project objectives, WBS deliverables, etc., intended to satisfy it.
- A variety of fields (columns) can be incorporated in the Requirements Traceability Matrix depending on the intended use of the matrix.

Unique Customer Req. ID	Requirement title	Requirement description
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So this matrix is called requirement traceability matrix because after the project is over, the customer say that our requirement is not fulfilled by this project. Then you have to show this document that you have accepted for this requirement. So to avoid future problems, future conflicts, this requirement traceability matrix need to be properly documented. So with this matrix, a table is created that links the source of each project requirement to the project objectives, work breakdown structure deliverables and what it is intent to satisfy it. A variety of columns can be incorporated in the requirement traceability matrix depending on the intended use of the matrix.

Outside Clients

- When the project is to deliver a product/service to an outside client, the fundamental planning process described above is unchanged except for the fact that the project's scope cannot be altered without the client's permission
- A common "planning" problem is that marketing has promised deliverables that engineering may not know how to produce on a schedule that manufacturing may be unable to meet

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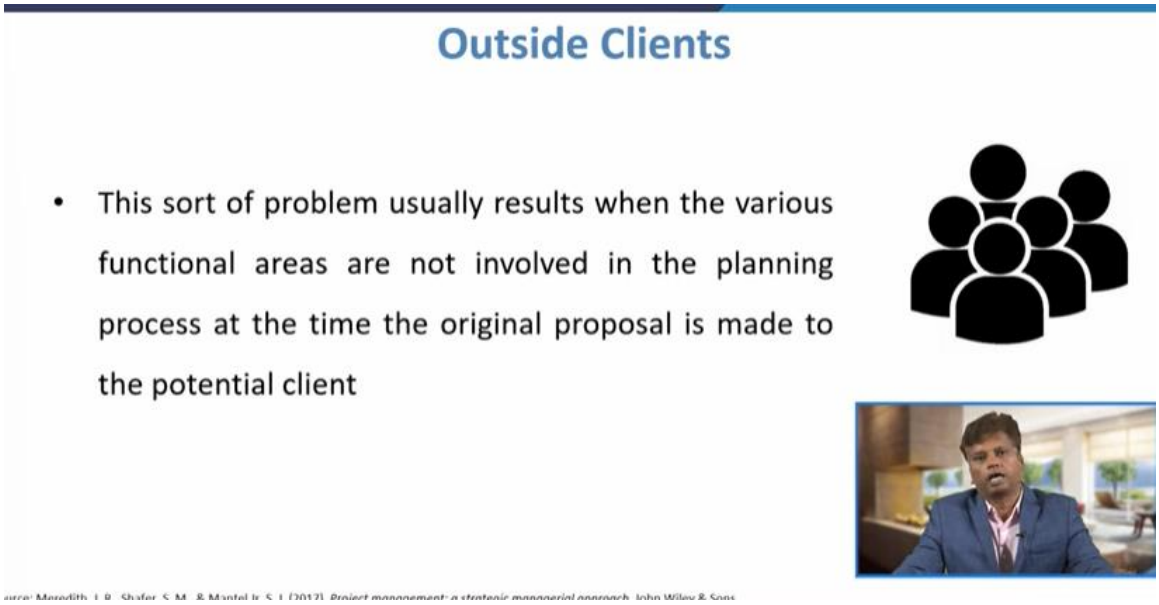
Suppose if you are making a project planning for outside the client, so what is the expectation from that? Expectation from this project planning document. When the project is to deliver a product or service to an outside client, the fundamental planning

process described above is unchanged except for the fact that the project's scope cannot be altered without the client's permission. So whatever we discussed for internal customers, this everything is applicable for outside clients also, but only thing is if there is any change in scope that has to be informed to the client. So a common planning problem is that marketing has promised deliverables that the engineering may not know how to produce on a schedule that manufacturing may be unable to meet. So we need to have the coordination between marketing people, manufacturing engineering people and the manufacturing people because marketing people may commit some promises to the customers, but you have to make sure that that commitment can be fulfilled by your manufacturing people or not.



So we need to have a one to one understanding. This sort of problem usually result when the various functional areas are not involved in the planning process at the time of the original proposal is made to the potential client. So what is expected is all functional teams has to sit together like marketing, engineering, manufacturing then they have to prepare the project proposal. So that we can exactly know what was committed by the marketing people and what is the resources available in the manufacturing unit so that the promises can be delivered. Two objectives is to such early participation by engineering and manufacturing are likely to be raised by the marketing.

Outside Clients

- Two objections to such early participation by engineering and manufacturing are likely to be raised by marketing.
- First, the sales arm of the organisation is trained to sell and is expected to be fully conversant with all technical aspects of the firm's products/services.
- Further, salespeople are expected to be knowledgeable about design and manufacturing lead times and schedules.

Source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

There are two reasons that all cross functional teams has to attend that meeting. First one is the sales arm of the organization is trained to sell and is expected to fully conversant with all technical aspect of the firm's product and services. One benefit of all cross functional team sitting together and making the proposal is that the sales person is fully aware about all the technical aspect of the product. Further sales people are expected to be knowledgeable about the design and manufacturing lead times and schedule because sales people may promise to the customers that they can deliver the product say this money say two months but they should know what is actual manufacturing lead time. So that they can understand only if they attend the initial meeting cross functional team meeting.

On the other hand, it is widely assumed by marketing and marketing that the manufacturing and design engineers do not understand sales techniques will be argumentative and pessimistic about the client needs in the presence of the client and are generally not housebroken when customers are nearby. The second objective is it is expensive to involve so much technical talent so early in the sales process typically prior to issuing a bid proposal. These are the two reasons that we have to have the all groups at the time of making the proposal. Now one of the approach for project planning is called whole brain approach. So the project manager typically use left side of the brain that is logical and analytical but he should also use the right side of the brain that is he need to be creative.

A Whole-Brain Approach to Project Planning

- Project managers typically use left side of brain- logical and analytical
- Should also use right side – creative
- A whole-brained approach is **mind mapping**

So while making the project plan so he has to use both side of the brain that is both logic and analytical at the same time should be creative. So a whole brain approach is called mind mapping. So what is a mind mapping? One whole brain approach that is particularly applicable to project management in general and the project planning in particular is mind mapping. Mind mapping is a visual approach that closely mirrors how the human brain record and stores information. So the whole problem is represented in the form of pictures.

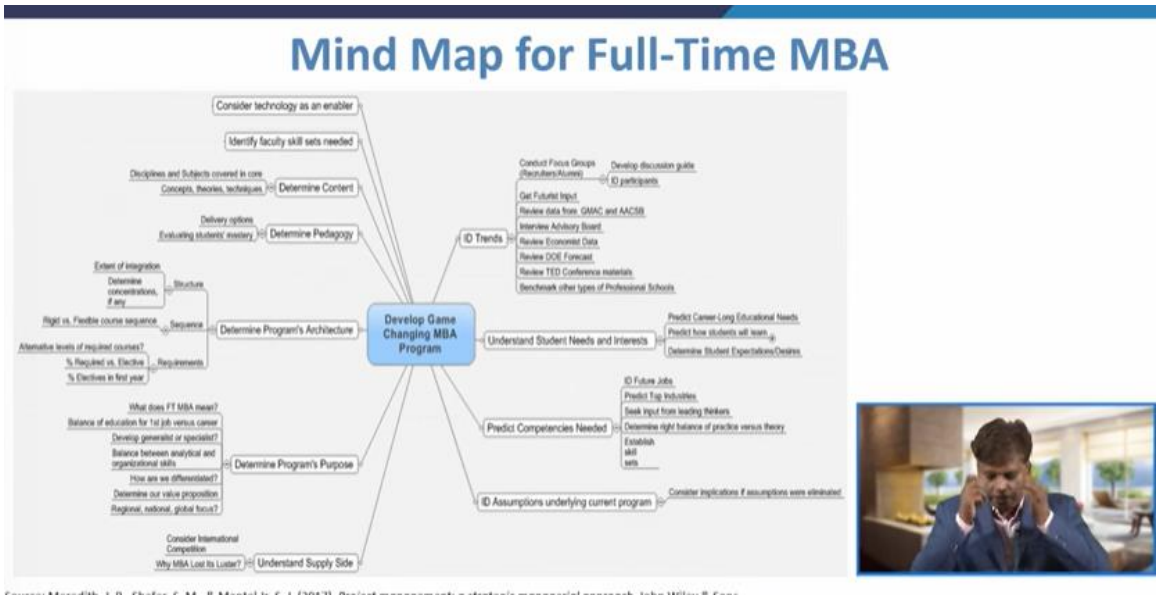
Mind Mapping

- One whole-brain approach that is particularly applicable to project management in general, and project planning in particular, is “mind mapping.”
- Mind mapping is a visual approach that closely mirrors how the human brain records and stores information.

Mind Mapping

- Mind mapping helps to tap the creative potential of the entire project team, which, in turn, helps increase both the quantity and quality of ideas generated.
- Because project team members tend to find mind mapping enjoyable
- Mind Mapping generates enthusiasm, helps obtain buy-in from team members, and often gets quieter team members more involved in the planning process.

So mind mapping helps to tap the creative potential of the entire project team which in turn helps increase both the quantity and quality of ideas generated. Because project team members tend to find mind mapping is enjoyable so mind mapping generates enthusiasm and helps to obtain support, commitment, buy-in from team members and often gets quieter team members more involved in the planning process. I will show you the example of mind mapping. So this is an example of mind map for say full time MBA.

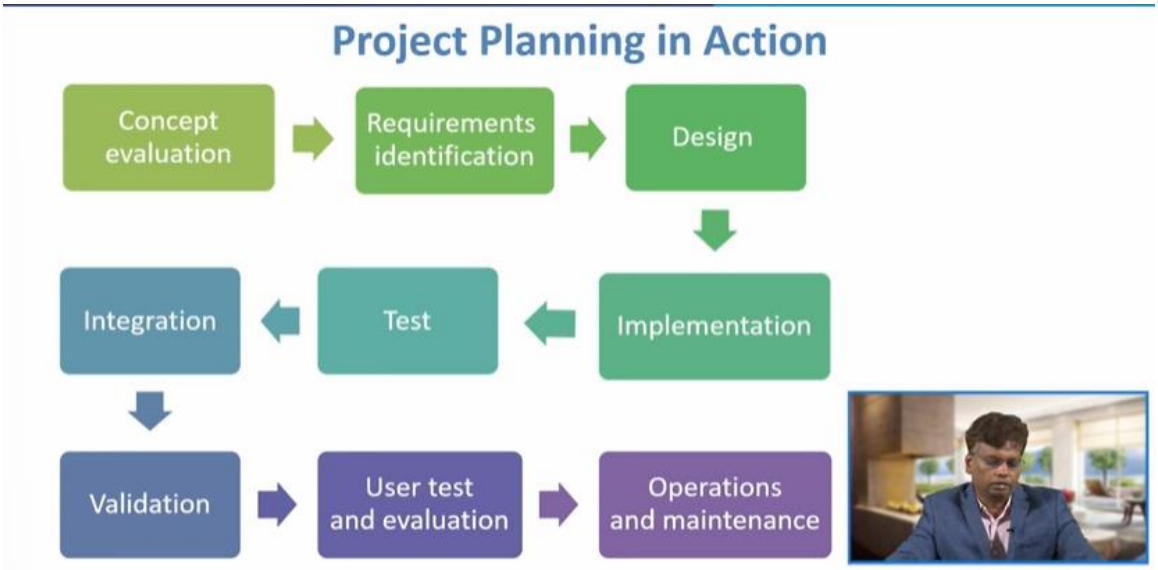


Assume that an organization start a new MBA course. So what are the activities? How that activities are linked? So this pictorially representing the whole project is called mind map. So what is the goal? Develop a game changing MBA program. So what are the things has to be considered? Consider technology as an enabler.

Identify faculty skill set needed. Determine content. Determine pedagogy. Determine programs architecture. Determine programs purpose. Understand the supply side that is the student side.

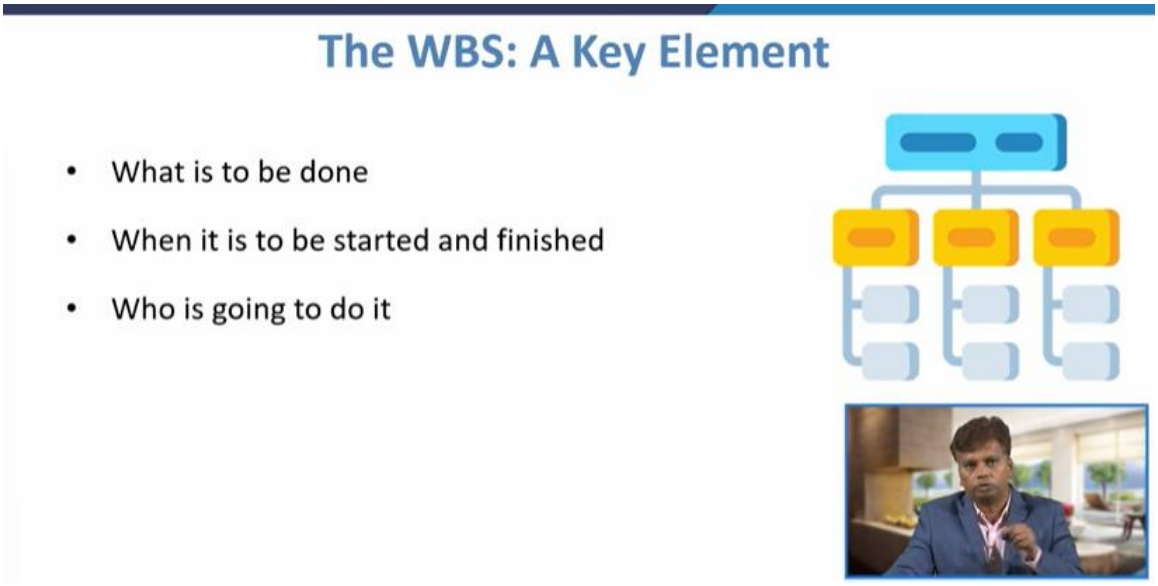
Understand trends. Then understand the student needs and interest. Predict competencies needed. Assumptions underlying current program. These are the factors which affect the starting a new full time MBA program. Each factors further can be elaborated in detail as shown in the picture.

So this is an example of mind map. Now we will discuss about how the project planning is implemented. That is a project planning in action. How to implement this project planning? First we will start with concept evaluation. Then we will go for requirement identification.



Then you go to the design. Then implementation. Then test, integration, validation, user test and evaluation and operations and maintenance. So these are the different stages how your project planning is put into action. But one important outcome of this project planning is work breakdown structure. So this work breakdown structure look at the picture on the right hand side.

The whole work is splitted into smaller activities. So here this work breakdown structure says what is to be done? When it is to be started and finished? And who is going to do it? Some activities must be done sequentially. Some activities may be done simultaneously. Many things must happen when and how they are supposed to happen. Each detail is uncertain and subjected to risk.



The WBS: A Key Element

- Some activities must be done sequentially
- Some activities may be done simultaneously
- Many things must happen when and how they are supposed to happen
- Each detail is uncertain and subjected to risk

So these are the elements of a work breakdown structure. Now we will discuss method of constructing the work breakdown structure. That is a hierarchical planning system. To accomplish any specific project, a number of activities must be undertaken and completed. So let us take a list of these activities in the general order in which they would occur.

Hierarchical Planning System - Method of constructing a WBS

- To accomplish any specific project, a number of major activities must be undertaken and completed
- Make a list of these activities in the general order in which they would occur. This is Level 1
- A reasonable number of activities at this level might be anywhere between 2 and 20.
- Two is the minimum possible breakdown, and 20 is about the largest number of interrelated items that can be comfortably sorted and scheduled at a given level of aggregation.

rce: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

So this will be the level 1. A reasonable number of activities at this level might be anywhere between 2 and 10. So 2 is minimum possible breakdown and 20 is about the largest number of interrelated items that can be comfortably sorted and scheduled at a given level of aggregation. It is important to be sure that all the items in the list are at roughly the same level of test generality. So when you split an item, when you split an activity that should be at the same level of task generality. Some task should not be very larger task, some task should not be very smaller one.

Hierarchical Planning System - Method of constructing a WBS

- It is important to be sure that all items in the list are at roughly the same level of task generality.
- It is difficult to overstate the significance of this simple dictum.
- It is central to the preparation of most of the planning documents

The level should be same. It is difficult to overstate the significance of this simple dictum. It is central to the preparation of most of the planning documents. Now we will discuss about hierarchical planning. So in this planning process, the major task are listed like the way the artist drawing the larger picture.

Hierarchical Planning

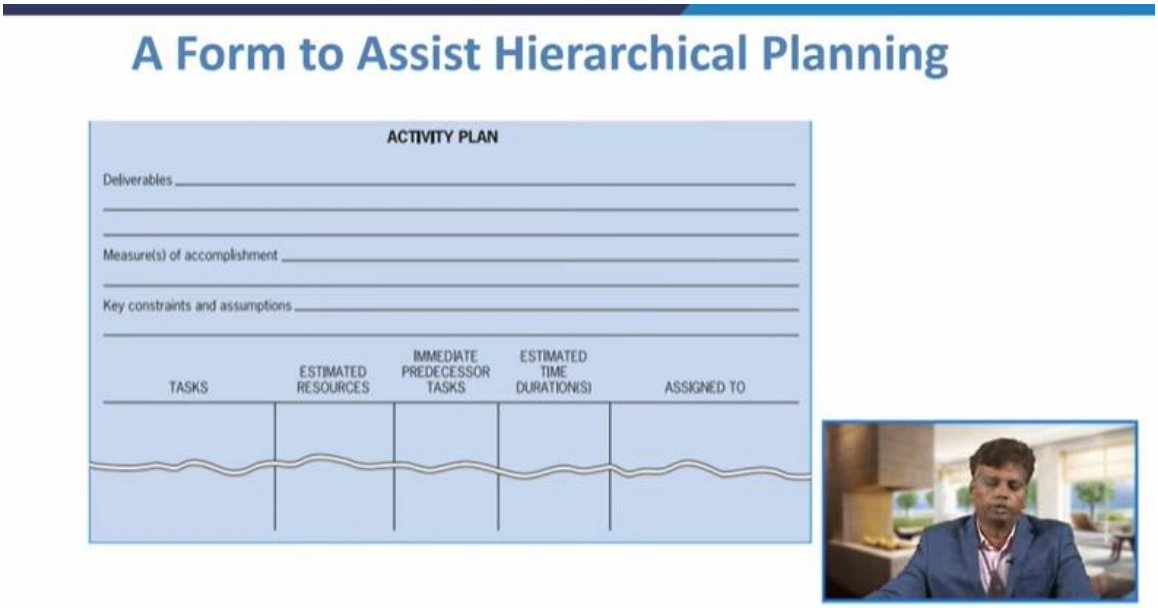
- Major tasks are listed
- Each major task is broken down into detail
- This continues until all the activities to be completed are listed
- Need to know which activities "depend on" other activities

Source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Then each major task is broken down into detail. See the picture 2 that the first the outline is drawn, then the detailed of each drawing is drawn after that. So this first major task, then the major task is broken down into detail. So this continues until all the activities to be completed are listed. So one need to know which activities depend on other activities that the dependencies among these activities is important.

Now a form to assist a hierarchical planning. You see suppose one activity is there. So

we have to write it what is the deliverable of that activity. Then manually say that that activity is accomplished that is measure of accomplishment and what are the key constraint and assumptions. Then you have to provide about each task out of this activity. Then estimated resources for each task, then immediate predecessor for this task, then estimated time durations and to whom this task is assigned to.



So this is a form that is very useful for hierarchical planning. Now you see a work breakdown structure for celebration of a career day. Suppose you are celebrating career day in your office that you see what are the steps is there. First contact organization in that there are many activities there. So we written who are responsibility, what is the time and which activity should be preceded and what are the resources required. The second one banquet and refreshment, third one is publicity and promotion and the fourth one is facilities.

WBS-Career Day

WBS

Career Day				
Steps	**Responsibility**	**Time (weeks)**	**Prec.**	**Resources**
1. Contact Organizations				
a. Print forms	Secretary	6	–	Print shop
b. Contact organizations	Program manager	15	1.a	Word processing
c. Collect display information	Office manager	4	1.b	
d. Gather college particulars	Secretary	4	1.b	
e. Print programs	Secretary	6	1.d	Print shop
f. Print participants' certificates	Graduate assistant	8	–	Print Shop
2. Banquet and Refreshments				
a. Select guest speaker	Program manager	14	–	
b. Organize food	Program manager	3	1.b	Caterer
c. Organize liquor	Director	10	1.b	Dept. of Liquor Control
d. Organize refreshments	Graduate assistant	7	1.b	Purchasing
3. Publicity and Promotion				
a. Send invitations	Graduate assistant	2	–	Word processing
b. Organize gift certificates	Graduate assistant	5.5	–	
c. Arrange banner	Graduate assistant	5	1.d	Print shop
d. Contact faculty	Program manager	1.5	1.d	Word processing
e. Advertise in college paper	Secretary	5	1.d	Newspaper
f. Class announcements	Graduate assistant	1	3.d	Registrar's office
g. Organize posters	Secretary	4.5	1.d	Print shop
4. Facilities				
a. Arrange facility for event	Program manager	2.5	1.c	
b. Transport materials	Office manager	.5	4.a	Movers

Partial WBS for college "Career Day."

Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

So this is an example of work breakdown structure for celebrating a career day. So the work breakdown structure is a hierarchical planning process. It breaks task down into successfully finer level of detail, continue until all meaningful task or work packages have been identified. This makes tracking the work easier.

The Work Breakdown Structure (WBS)

- A hierarchical planning process
- Breaks tasks down into successively finer levels of detail
- Continues until all meaningful tasks or work packages have been identified
- These make tracking the work easier
- Need separate budget/schedule for each task

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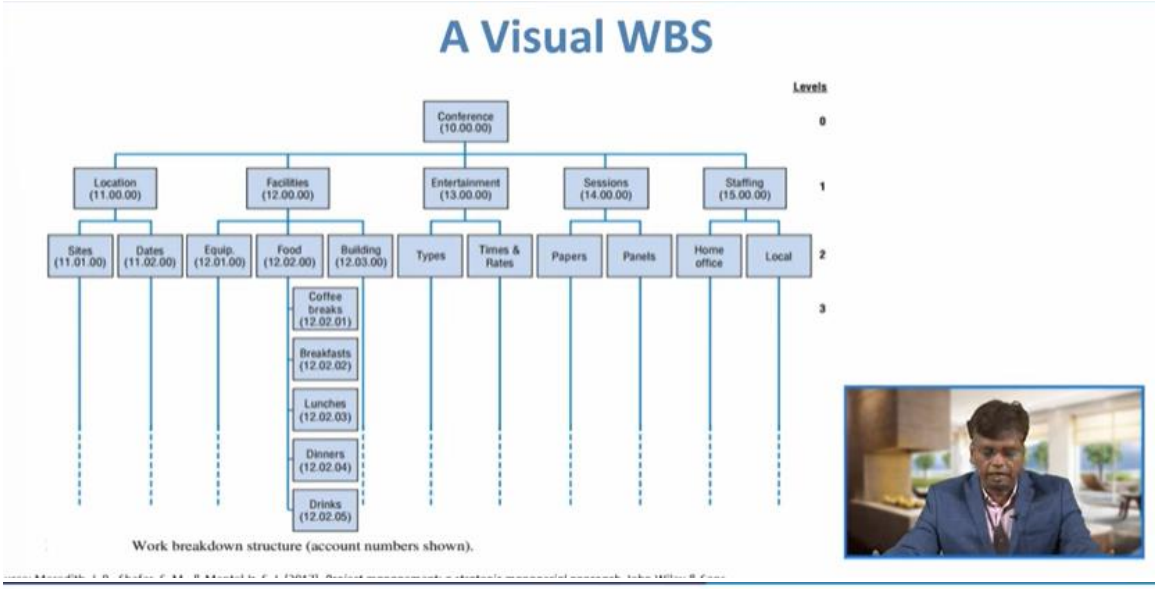
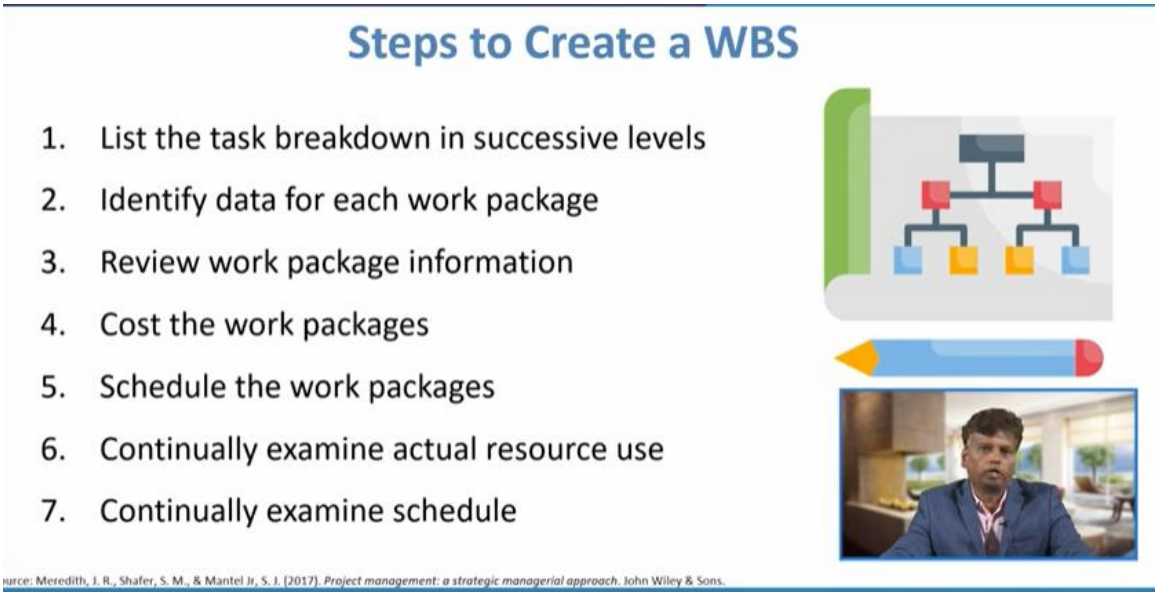
We need separate budget and schedule for each task. Now I have shown you a visual work breakdown structure. See there is a conference is there, then what is the location, facilities, entertainment, sessions, staffing. In locations what are the sites and dates, facilities, equipment, food, building, entertainment types, time rate, then sessions, papers

and panels, then staffing, home office, local office. So this is an example of a work breakdown structure.





Now we will discuss about the steps to create work breakdown structure. First list the task breakdown into successive levels, identify data for each work package, review work package information, then cast the work package, then schedule the work package, continually examine actual resource use, then continually examine the schedule. These are the steps for creating work breakdown structure. Now we will discuss about another important document in planning, project planning process is called RACI matrix that is responsible, accountable, consult, inform matrix. This also known as the responsibility matrix, a linear responsibility chart, an assignment matrix or a responsibility assignment matrix. It shows the critical interfaces, it keeps track of who must approve and who should be notified.

The RACI Matrix

- Another approach is the **Responsible, Accountable, Consult, Inform (RACI) matrix**
  - Also known as a responsibility matrix, a linear responsibility chart, an assignment matrix, a responsibility assignment matrix
- Shows critical interfaces
- Keeps track of who must approve and be notified

Sample RACI Matrix

		Responsibility					
		Project Office				Field Oper.	
Activity	Task	Project Manager	Contract Admin.	Project Eng.	Industrial Eng.	Field Manager	
Determine need	A1	A		C	R		
	A2	I	A	R	C		
Solicit quotations	B1	A	I	R		C	
Write approp. request.	C1	I	R	A	C		
	C2		C	A	R		
	C3	C	I	R		I	
"	"						
"	"						
"	"						

Legend:
R Responsible
C Consult
I Inform
A Accountable

Source: Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach*. John Wiley & Sons.

Now I brought a sample RACI matrix, there are different activities, determine the need, solicit quotations, write appropriate request. Suppose you want to select the supplier or you want to make a bidding document, so what are the activities there for making a bidding document, determine the need, solicit quotations, then write approval request. There are task, see A represents accountable, for example task A1 the project manager is accountable, then I represents inform, for example the last activity written appropriate request, who is responsible field officer, C represents consult, for example first activity determine the need, the project engineer need to be consulted, then R responsible, so determine need the industrial engineer is responsible. So this RACI matrix link the activities and who are the responsible for that activities, whether he is the responsible person or he has to be consulted or he should be informed or he is accountable. So in

this lecture I have discussed about importance and purpose of planning, then we have studied about tools for gathering information for planning, then we discussed in detail about requirement for good planning, then objective and process of planning and we discussed about traditional activity planning like launch meeting, then planning and project success, then we studied about the requirement traceability matrix, then if you are making a project plan for outside clients what is expected, then one planning approach we discussed about whole brain approach, there we discussed about the mind mapping, then we discussed about work breakdown structures, what are the steps and key elements of the work breakdown structure, then finally we studied about responsible, accountable, consult and inform matrix, so shortly RACI matrix. Thank you.