**Project Planning & Control**

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**Lecture – 05**

**Lesson – 05**

**Project Stakeholders, Project Phases, Project Organization**

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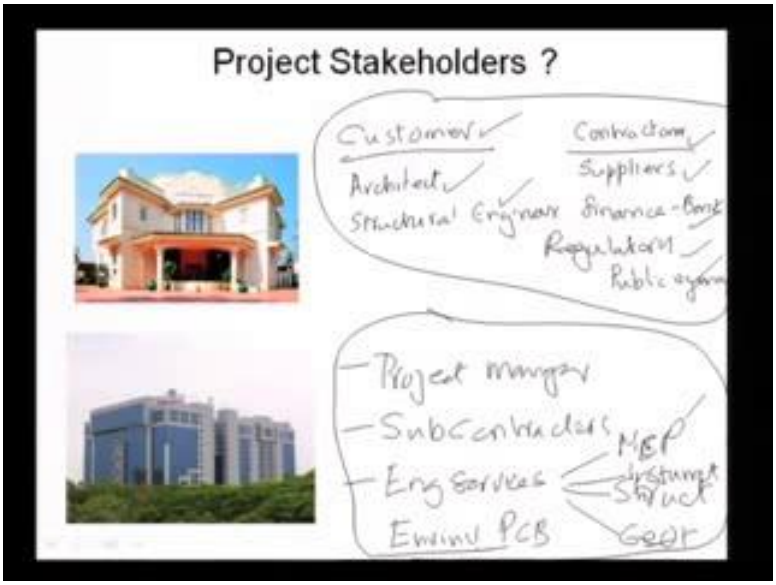


Now, I am moving on to the issue of projects stakeholders. So, when we take a project, who are all the people who are interested and participating in the project? So, let us take a few examples, I have given the example of a small of a single family home there, we have a large bungalow, you have a single person, who owns a bungalow. So, we know that, so you know it could be one of your future homes, you are the customer.

So, we know that there is a customer. One of the stakeholders, who are the others? So, let us take single family home as an example. Who are the others, who you would bring into this project?

**Student:** Architect.

Yes, there will be an architect.

**Student:** Structural Engineer.

Okay.

**Student:** Project manager.

Would you bring a project manager?

**Student:** No.

Who would do a project manager?

**Student:** Contractor.

The contractor would do it, or the architect would do a project management in this case. Who else?

**Student:** Vendors.

Vendors, suppliers.

**Student:** MEP

Is there MEP? What is the MEP or plumbing, but it is I would not put it as MEP. There is some plumbing involved, but it is not as sophisticated, it is something which your contractor can handle single-handedly. Anyone else? There are regulatory people, like the corporation, ((Refer Time: 01:50))these that, etcetera.

**Student:** Finance((Refer Time: 01:52)).

There can be finance, bank; there can be a regulatory and public agencies like municipal authority, water supply, electricity, sewage all of them you will need permissions from all of them, you know the Chennai CMDA, the Metropolitan Development Authority. So, basically what I, what do you wanted to say is, so for even a project like this you have a lot of people, who are involved.

Now, let us take a slightly more complex project, so this is let say a large IT building, you will, we will go back to our original list, we certainly have a customer. You will have an architect, you will have a structural engineer, you will have a contractor, you will have suppliers, you will have to finance all of these, who else will be involved. There will be a project manager here because it is a large project.

**Student:** You have so many contractors.

Yes.

**Student:** Sub-contractors.

Yes, so they are called subcontractors, in this case, because it is a single thing, single house

the contractor might have the mason, the carpenter, everybody might work with him. You do not need a subcontractor, whereas in the large project like this you will go with subcontractors. So, something we missed out here is, in addition to structural engineering, you need you have foundations, geo tech, all of that will be there, but we will assume that is the… You will really need engineering services here, not just structural; you will need, now you need MEP.

**Student:** ((Refer Time: 03:48)).

MEP is part of ((Refer Time: 03:51)), you will need structural, you will need geo tech, you will need instrumentation depending on the kind of you know, what are the kind of facilities you have in and you need instrumentation, I am kind of filling that here.

**Student:** Environmental clearance((Refer Time: 04:15)).

Yes, all of that you will have, so here you might not need environmental clearance for the house, now you will have a public agency, which will you have you might need environmental clearances. You know it is something like the pollution control board might come in to say that you have to be cleared, we have more public agencies coming in. What else?

**Student:** ((Refer Time: 04:40)) suppliers for elevators and.

All of that will be part of the MEP; you will have now, for example, a part of the MEP and like you said an elevator, you have air-conditioning system, you will have fire water, I mean fire production systems. So, same similar, but the whole thing is got more complex and more people. So, all the and all of these stakeholders are important, unless as a project manager you manage all of them in some way or the other, you are not going to be able to complete successfully. Do all these…

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So, let us take another, you know just let us continue with this thinking, now here is a public project, something like Delhi metro. Stakeholders almost all of the above, earlier stakeholders are there, but now you have public at large and public comes with very different requirements, diverse requirements. And then, we are, here we are now looking for very long term public service, it is not, I mean we are not looking at today's requirement, you are really looking at very much more long time. Here is a project, can anyone recognize what this is? No, the one below. What is it look like to?

**Student:** ((Refer Time: 06:01)) Refinery.

It is a refinery; it is a refinery and again, you now, you have what is the kind of engineering that goes into the refinery, what are the types of engineers. So, most of the above earlier ones are the same.

**Student:** ((Refer Time: 06:20))mechanical.

Yes, you have a mechanical for piping, chemical for the process, you have instrumentation, you have civil, and you have metallurgy. So, now, this is, the engineering here is become far more complicated, project management, regulatory, subcontractors, different kinds of subcontractors. When you take the earlier project, this we primarily in the scope of a civil engineering, here scope of a civil little bit of MEP and electrical is also certainly there. But, now you go to our project like this, slightly different because it is public, but still more engineering input today.

We go to something like a refinery, it is a hub of engineering inputs are required in addition

to all of the others ((Refer Time: 07:22)). Now, you go into things like a nuclear power plant, so it can get really complex. We can go on discussing this, but the basic issue I want to bring about is there are multiple stakeholders and unless you understand, who the stakeholders are clearly, you will not be able to manage a project. So, a lot of project management is understanding stakeholders and managing them properly on a project.

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So, here is kind of a very comprehensive look at some of the stakeholders in a project, which is a popular representation and if you go around, you will find it covers many of them on a typical general project, not necessarily a construction project. So, stakeholders again, I am just emphasizing stakeholder management is really a key issue. Now, coming back to stakeholder management in one more aspect, ((Refer Time: 08:19)) when you take most of these, all of them, what is your object, why is stakeholder management important. What are the stakeholders trying to do for themselves?

**Student:** ((Refer Time: 08:29)) profits.

Yes, stakeholders are trying the maximize their own and all businesses, they are trying to maximize their objectives, and unless their objectives are aligned with the project management objectives, it is going to be very, very difficult to manage the project. So, getting stakeholders on board, getting correct stakeholders on board and managing everyone's objectives and balancing is really the key, is one of the keys.

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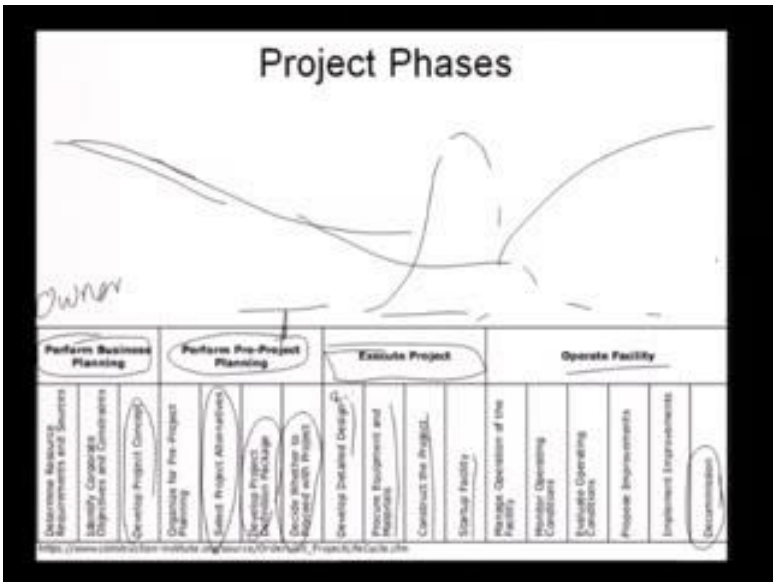


The next idea we want to discuss is on the phases of a project, this is again very, very important to understand, how does the project begin and how does the project end. So, if you look at, and it also is important to look at it from the, from who are the players in various phases? So, here we have a project life cycle of phase, starting from the original idea of a project going all the way to the decommissioning. So, here we have performing business planning, so we can take any of this, let say take that IT building as an example.

So, one of the IT companies want to desire whether they want to set up a building, so yes. So, here it is performing business planning, does not make business sense to invest in the building. So, you can look at the various sub-tasks, determine resource requirements, identify corporate objectives, develop project concept. Once the concept is approved, you go to pre-project planning; in most of these is not it is all business decisions still, it is all you know for business point of view they making.

You know organize pre-project planning, select project alternatives, develop project definition, decide whether to proceed with the project, in most of this is a financial decision you know whether there is investing the project, brings the returns it should or not if I am a private entity. With the government entity, whether the investment will begin social returns or development returns, and only then we come to this execute the project.

So, in the execute project phase you have developed detail design, procure equipment and materials, construct the project, start up the facility. After that it all goes to the operation, where you managing, operating you know looking at improvements, improving in this thing

and finally, decommissioning the projects, so this is operation part.

Now, I just want to put does in the perspective of the engineering curriculum we are learning today. You are being, I mean most of you will be in the civil engineering program 4 or 5 years, where to do you, what is the focus of the program, which, where are we in the program. We are only learning execution, ((Refer Time: 11:31)) design and most of your curriculum are towards detail design. It is not even preliminary design detailed design.

So, if you look at of the curriculum here, I think 80 percent of your course work was at least here and might be those of you, who are taking construction management you will have more course work in the construction project aspect. So, I just wanted to put the perspective of this is what a project goes through as project managers for the owner. So, for someone like we talked about project participant last time, stakeholders, where does the owner interact with this project, where does the owner come in, where does the owner go or how does the owner's responsibility change, where is the owner.

Obviously, the owner is involved here, how does his responsibility change throughout. Here he has a very high responsibility, I mean responsibility is always responsible, it is owner's responsibility, but day to day here it is probably very high, here it is probably is less and then, of course, it is very high again. What about someone like a contractor?

**Student:** ((Refer Time: 12:50)).

So, there is almost no responsibility in today's contracting model; there is no responsibility in and you know conventional model, but when you come here you have a lot of responsibility and then, delivery and then, you… Someone like, so you can have a project manager from two sides, you can have the owners project manager, you can have the contractor's project manager or you know, the project scope for each is different. The owners project manager will be looking at from at least from here to at least this delivery of the project.

The contractor of the project manager might be looking early from somewhere, and this phase still tells delivery of the project. So, what I want to emphasize is the different stakeholders play different roles and each other phases and ask for me finally, who is most gain for a successful project, which stakeholder the owner. Because finally, he is the one who is going to own it and he is going to the operate it and in the owner has to be really involved although involvement decreases a little bit they have to be a fully involved with this throughout the phases.

But, most of the other actors come in and leave the stage in different parts of it and how you

manage that whole you know, who comes in when, when are they brought in how much information do they have, what are the skills how do they leave is also very, very important part of this whole project management process.

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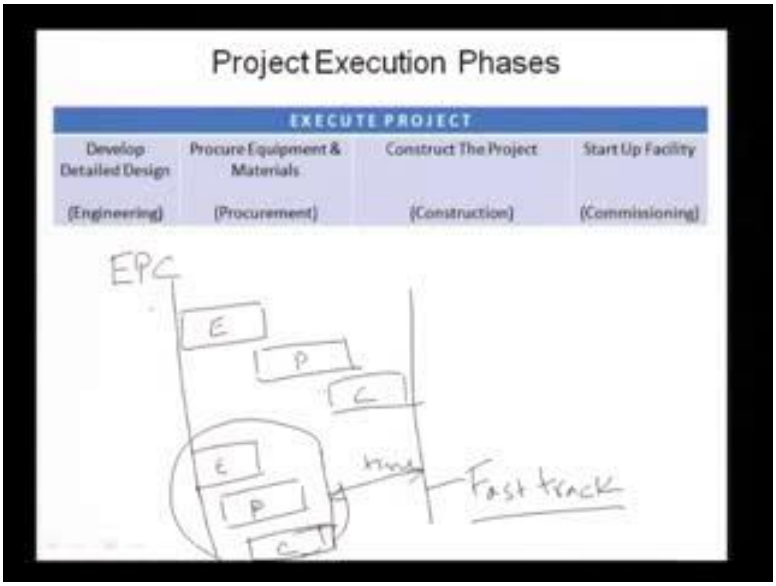


Now, let us just focus on this phase, which comes out here, so if I take to execute the project, and I am taken at into, what we typically call us engineering procurement construction and commission, so you might have heard the word EPC other acronym EPC yes or no, yes. So, EPC stands for engineering procurement and construction and many of our construction companies today are looking at EPC as a business there, so when the owner wants you to be built a project in the older model I can I mean in one of the models I can get someone to do design procure the equipment and a contractor to construct.

But, there is a delay in some of that it is happening, because the design has to be fully complete before construction starts. In the EPC model you try to get the same company, so let say EPC I try to get the same company to do engineering, procurement, and construction. What are the advantages, what are disadvantages?

**Student:** Lesser number of player certainly better.

A lesser number of player certainly.

**Student:** better accountability.

Better accountability, because one company is fully responsible.

**Student:** work and start early.

Yes, if they manage it properly work and start early.

**Student:** Quality.

Might be yes if work enough given at the same account company yes quality might also be better.

**Student:** Efficiency of a person((Refer Time: 16:08)).

Yes, efficiency, so all of these are the advantages. What are the disadvantages? They do not get the company who is really big enough to do EPC properly they will not be able to deliver the project. So, EPC is lot of responsibility I want to put this a little bit on a timeline, so if you look at conventional project delivery it could be E-procurement starts somewhere here, and construction will start somewhere here for this, or you know, or even you can start immediately after engineering I am just showing an overlap basically there is a lag between engineering and construction.

So, this is not acceptable today with the time frame we have, so if choose to keep engineering you know very engineering same lot of companies are trying to do this today. So, I am trying to save my due time and how am I saying it by overlapping engineering, procurement, and construction, so this model is called fast track construction. Obviously, management of this is far more challenging than the management of a conventional method.

**Student:** ((Refer Time: 18:02)).

Yeah, yeah, so in this case also it can be done, but does not make sense for the wants to same company to do this, and this is when a single company can do it more efficiently. Typically here engineering is done by someone else and construction is done by someone else procurement might be done by the owner themselves or you know some kind of consultant.

But, obviously, when I when I am can do this fast tracking it makes sense to give it to a single company because then my communication between engineering construction I assume is very good is much better because it is a single firm. So, and in like we discuss, which case is management challenge is more? Fast track yes, because you have to manage constantly you are drawings coming from engineering to construction, you know the owner then changes his mindset is not exactly like this I will have to go back to engineering so that interface has to be very, very well managed.

And today you will find a lot of projects and the fast track mode, but engineering is where there is the engineering construction interface is the challenge and the missing the weak link

is there, because traditionally we have doing this and organization was a setup for doing construction after engineering was complete, but this schedule does not permit this today.

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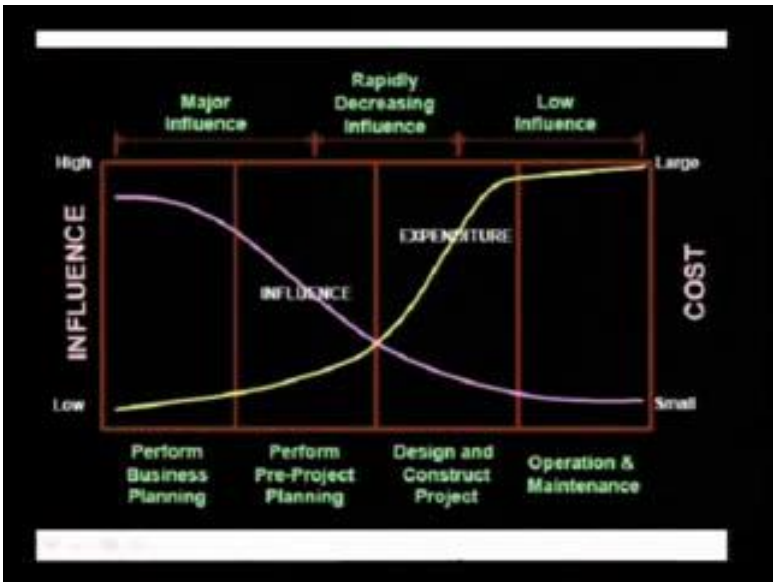


Another point I want to discuss is the is this graph is here which goes back to our earlier phases performing business planning to operation and maintenance, and you have two curves the yellow curve is showing, how cost egress as a project progresses. So, you will find in the initial phase the cost there is not much money spent, but when you are come into the design and construction phase that when most of the money gets spent and then, operation and maintenance, there is again some amount spent.

Now, the purple curve on that is the influence, what is says is how much can I influence the outcome of the project. Obviously, in the earlier stages of my construction, I have a lot of influence on the project or with little influence I can with the world with my influence I can easily make a change. So, let say I take reinforce building I can say I am going to go with steel or concrete where can I make the decision in the early phases after I do my design I cannot make the decision.

So, my influences actually decrease and any influence any change I make here, what is do it has a much bigger impact on the cost of the project. So, early in the phase, I have high influence whether low cost implication later in the phase I have low influence with high cost implication. So, this is the way this is something which is to be kept in mind because it is really important to understand that you need to make a decision, you want to make critical decisions early in the project so that changes are minimized later.

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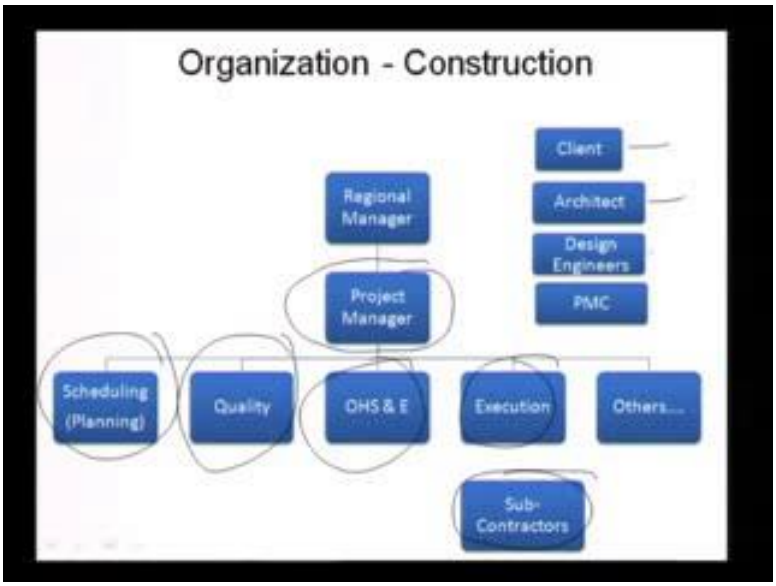


Now, you come to how is actually a construction project organized, so there are many, many, many variations here. So, I am not saying this is just a typical structure, and I would say that they can be asked many variations as there are companies and projects. So, this just gives you an idea as to, where the scheduling function comes in.

So, if you take from the construction side I am looking from the contractor side you might have a regional manager for a large contractor you will have a project manager function might be for a specific project under the project manager you will have a variety of groups you have the scheduling and planning, which is the function of this course and will come back a what this person does you will have the quality control, you will have occupation health safety environment, you will have the execution team, whose actually doing the work you can have others, you will report project manager you will have subcontractors, who will be doing work you know for the project.

So, this is kind of all the people on the project you certainly, then on the client the architect the design engineers the project management consultant and I am not put them into a particular organizational as shown relationships because depending on the contractual conditions they can all vary. But, these are . Finally, the players could come in these are there are different organizational responsibilities, but our focus is on the scheduling person, and he typically reports a project manager and he is the really critical person in the construction projects.