Six Sigma
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Lecture No. # 15
Project Life Cycle

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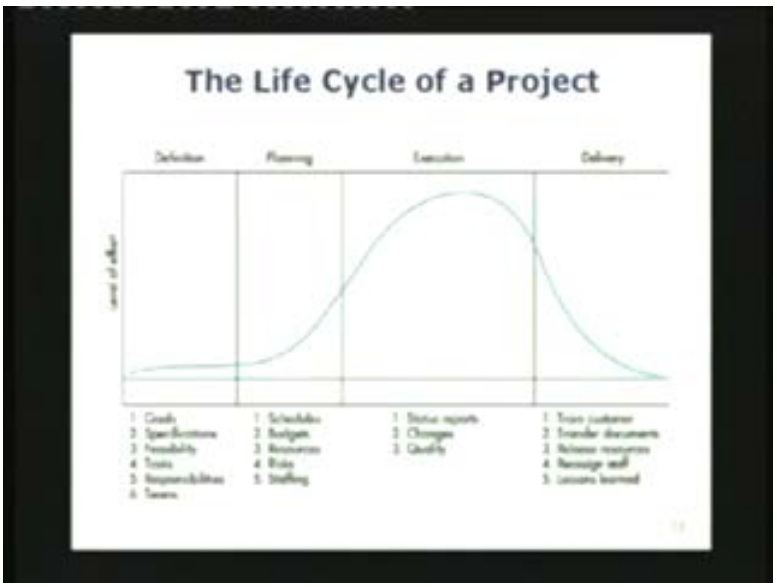

We looked at the life cycle of a project. This is something very important first to realize we do not do everything all at once, we have certain stages. And one way to remember this c d e f; c is conceptualizing d is basically, detail the planning execute and then finalize the project. That is like the four stages through which we go through. And as we discussed, there are steps involved in each of those and they better be complete right there.

Something that is very important for us to realize is before you move on to the next stage a gate has to be crossed. This is basically the quality control gate for example, as you move from defining to planning the scope should be very clear without that your planning will be all off sided. Before you leave planning and go into execution all the details must be laid out. Your cpm must be complete critical path method and so on so forth. You identified all the task defining them; find them.

You define the work packages only after that you can assign the contract. You can go ahead and avoid the sub contracts and so on. That is got to be done right there before you

deliver; obviously, when your execution is complete, you have to make sure that the project is actually certified. The product is certified on the services certified to be by the site inspector. And of course, handing over is when you shake hands with the customer, you collect your cheque and make sure that everything is in order the weight was suppose to be the product life cycle begins after this.

So, when the project life cycle ends that is when product life cycle begins, products and service life cycle that is when you start getting your ROI that is you start getting your benefits in the project. So, this is something we got to remember very clearly that there is no talk about the product. When I am doing the project, it only comes out at the end. When I am right I have completed the project, I am handing over the results that is, when you got the finish product at the molecule or the ship has been built or the aeroplane has been built or something like that and you completed the project.

The people there are obviously lot of task involved with this the people who are practitioners. And they are the people who for example, have this they wrote this pmbok guide, they have looked at all the different task and what they have found is there are certain activities that can be grouped together.

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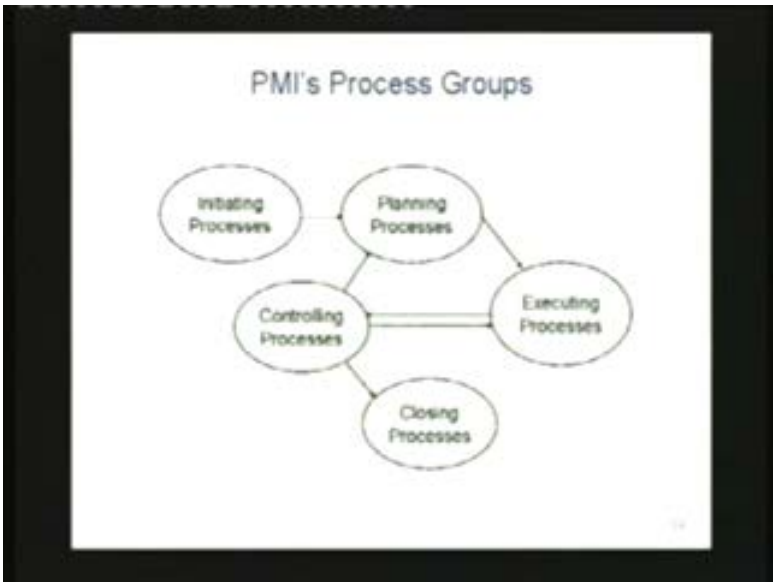

For example, they say that there is the initiation phase certain things you do before you launch some project. These are the initiating stages from that you move on when you cross one quality check, you move on to the planning phase. That is like a distinct phase

certain consisting of certain activities which you do right under planning. You are not doing anything that is going to be beyond this. You are not doing anything that is that has come before this and this planning. Therefore, would consist of those activities that are required to have the planning part completed. I will give you some details there.

Then obviously, once planning is complete, you move into execution and then you move toward closing the project which is like finalizing the project. So, these are groups of activities that have been clarified by people who are the practitioner. The theory would not tell you much about this, but practitioners tell if you have this clarity, your project is going to run very well.

And of course, while all this is going on, we are having many different quality checks. For that, I need these controlling processes. The controlling processes look at what was expected and what was completed, what was delivered and those checks have to be driving right at the planning stage. So, can someone tell me in order for the planning stage to be thought to be complete what all things must be clear? Before I begin to execute the project, what all things must be clear?

(( )) milestones. Milestones yes, deliverables good.

(( )).

Yes.

(( )).

Schedule also; he mentioned schedule also the sequence yes.

(( )).

Exactly; what would these individuals be doing the different domain experts? What specific things would they be doing? Tell me something between the initiation of the project and the planning what is there in between these two groups; that is the first part. What is the first part? I have got the charter there and the scope there.

Sir it is the price for the (( )) and (( )).

That will come in planning, but initiation is basically, clarifying the scope and also working out the work breakdown structure. Those things have to be done before you actually begin your planning that is required as planning. What about between execution and closing what is that what is that step?

Slack (( )).

It

(( )).

Yes.

(( )) user and (( )).

Yes.

(( )).

Yes exactly user accepting (( )).

Exactly; so, you can see the transition is controlled by my quality check. I am calling it in a very generic way. I am doing this now. What are the things I will be controlling? If I am trying to control a project, what all things I should be concerned about when I am talking about controlling a project?

Costs (( )).

Cost yes (( )) time (( )), Schedule time, Quality.

Quality has to go with the requirement and these are some of the crucial things that I must really keep in mind, when I have assigned the tasks of controlling the process. So, this person, he must be well versed in evaluating quality. He may have more than one person doing this and therefore, it is got to be made sure that in order for the user to be happy. In fact, this control may also involve the user many times.

For example, in software development, now you got development or you got intense involvement of the customer or the client. That way, you make sure that he owns also

part of the project. He gives you the requirement and he passes certain things. Those things have to be done as you are doing your controls.

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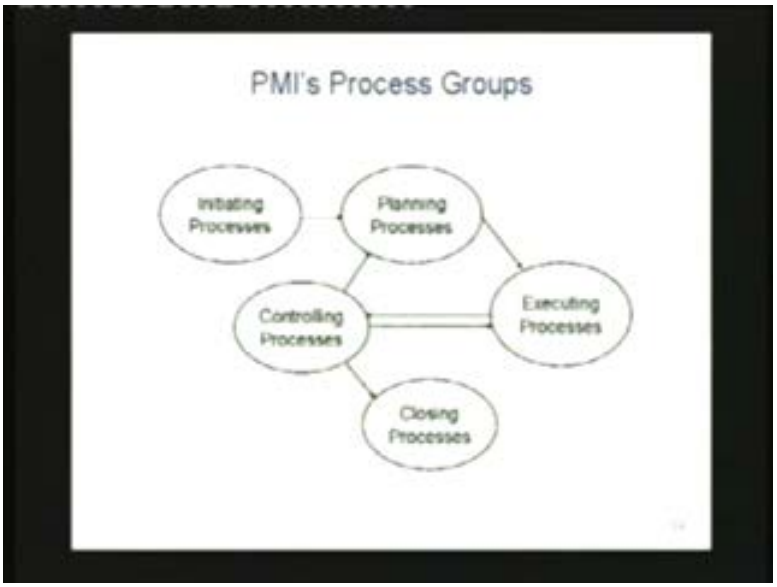

Sir in the (( )) I would like to add one thing there.

Please yes, I think that design changes.

Yes, and that (( )) and that solution also need to change (( )) like the clients might have different options.

Yes, we need to change that. We need to keep that (( )) with change will cost you this much. So, do not do this or we can give some solution also. Excellent one, give me your name. Robin sir.

What Robin is saying, this actually comes under what we call change management. You cannot have a project going and arbitrarily make changes in it. You just cannot do that; this is like I remember when I was a plant production planner for example, production scheduler; many times, the sales people they use to call the pillar, the machine shop directly, and they would say where is my job?

You know tell me exactly when my job is going to be done and they will be talking to the machinists directly. And this would be such a big disruption because management would not be aware of it. There are changes being made right on the shop floor without

any kind of change control put in place. So, Robin is saying this is very critical the crucial thing is yes obviously, we want the customer to be happy.

And if he has thought through his needs and if he has got those things changed, let him come through the formal channel, because it might change the activities, it may end up costing more time, it may end up costing more money. Those things have to be approved again by the sponsor or someone that he authorizes. So, this is something we also have to keep in mind; change control is yeah.

Sir, most of the times when you looked at the client's stage (( )) that is when will you focus about it? Later between past time and (( )).

Yes, most of the times the (( )) off at this stage (( )). Absolutely, but after carrying (( )), Very good point.

(( )).

Very good point.

(( )).

Very good point.

(( )).

Very good point.

So, you go back to the planning stage again or you get in the change management (( )).

What you do is you just off the when you starting the project. You set up these protocols, you see there is going to be changes made, because of the external environment. For example, you already have a risk management plan in place and that spells out what all action to be done. In case, planning does not work or something does not to work, you will have it all spelled out at.

But if it reaches stage, when there is a like a large change to be made, they got to bring in a new crane or something or you need a different platform or new software or something or he needs people with different kind of skills. There will be any impact of that get it d by the sponsor do not take the decision unless it is something you know for which you

been impart always get back to the sponsor. Tell him this is the impact and give him a complete picture.

Make sure he understands what he is going to get. Because of the change what he is going to get, how they are deliverables are going to change and what will be the impact on schedule, what will be the impact on cost? Those things have to be very clear then they can decide. In fact, believe me the analytical skills are going to be paramount.

So, someone in the planning group should have very good analytical skills. He should understand costing, he should understand time measurement, he should understand estimation quantity measurement all those things he should know. So, if you cannot do it yourself, just again hire an expert for it, sub contract that part of it. There are people who specialize just doing project planning, there are people who specialize only in execution, there are people who write documents and stuff like that. So, you engage those people and these are the kind of things that we should keep way keep track of. When we do the closing of the project, these are lessons for us. This is how I built my database.

Now, all these activities are going on. I have got the scope/ I have got time, cause, quality, and all this things. Someone has to have an overview of all this and that is called integration management. How do I bring all these issues together and when something may impact something else, how do I work out the compromise work out the trade offs and so on? This integration also is a very big issue.

Many times, this is sort of done this is you know lost from the scene. The reason is this, people are specialized in silos unless someone is kind of you know he is able to take a big picture of few of things. People get something to these things and they stay focused on silo alone and then there is a lot of difficulty in integrating various things. This is something we got to keep in mind.

So, alongside the different knowledge, areas for you require different types of skills. Pmbok system also precises the integration management. They say you please make sure integration is also something that you keep in mind. Do not just worry about the silos, the specialized areas also. Make sure you do these things.

Now, just to go through the list scope you understand. What it means? Scope means, what things I will be doing, what things I will not be doing, time of course, the time.

That means, I can commit to you do the thing. Cost will lead to my budget. Quality is to requirements human resource. The different types of skills are required and when I require them, that plan has to be their communications. All the reporting things and everything else solve the little meetings.

You will be holding those things would be there risk. I just cannot tell you how important this risk business is because there is almost no project that goes along just exactly the way you plan. There are things that fall up here and there. And procurement what things you will make in house and what things you will be basically buying from outside? That is something the decisions they have to be made. These are in the pmbok guideline the practitioner's guideline. They call this nine project areas, nine project knowledge areas.

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Execution of course, is you know you see in SDLC, I am just going to give you a little glimpse of that the software development life cycle. It also follows pretty well this thing, but of course, this is also in a state of flux. It is not that everyone is doing SDLC many people are doing x p, many people are doing something else. So, therefore, this is not something as the needs come up as we run into snag and problems. People are evolving these two processes also.

So, therefore, if you look up a project management book on IT project management for example, which is not like the pmbok, but a similar book; it will have a state of flux, it

will actually show you these are the possibilities. You please pick it out what is best for you? These are the benefits, these are the advantages of doing it this way and these are the other things that actually go away that way also. That is there it requires different amount for engagement of the user and you know sometimes the testing is done right on the spot.

For example, if it is x p style programming, then you got the coder and the tester sitting next to each other and they are basically doing the development alone. Otherwise, the coder does his you his buildings, then the unit testing guy he does his testing. And sometimes of course, the whole module is built someone then tries to debug the thing and people have learned lessons from this. And there are certain things, which are good certain things are not so good.

So, it is another state of flux, but again the effort is to try to make sure if I can systemize these procedures. Systemize these procedures then of course, life is going to be much easier the PMI people.

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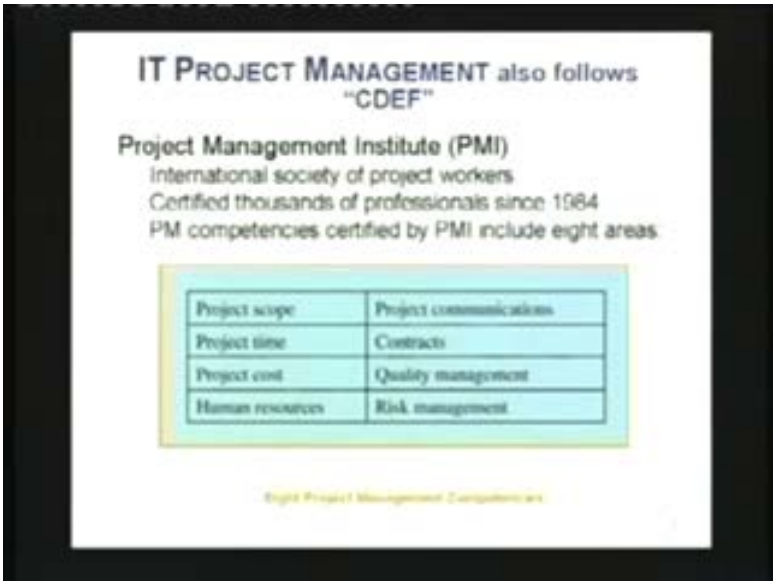

They actually say project management institute people this is based in Connecticut. What they say is, these are some of the things that are followed in IT project management and there are lot like the old CDEF; the life cycle that you saw. Notice here again, they talk about scope, they talk about time, they talk about cost, they talk about resources,

communication contract exactly the same thing. If any of these breaks out off, the wall is going to collapse or the wall is going to be crooked.

I am trying to build the wall with some component. These are the components I got to have them together and can you tell me if I have all these things, what else I need beyond this integration? I need to have integration, also someone who is able to see that big picture view and you ask for certain types of reports and so on. And he is generally a man who walks around. He does by walking around, does the management by walking around.

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Now, if we look at the pmbok, it is a guide book that is for practitioners. They have a certain way of presenting information to you. This is like one picture that you see many times. For you go through the project management, this pmbok book you will see a lot of stuff is put like this.

This frame work is for a particular task. The task here is going to be project plan development and the way they have done, it is, identify the inputs, they identify the outputs and they identify the process and they identify the tools and techniques required to take care of this task. For every major task they, got a frame work like this and from that of course, you get details. For example, input could be other planning inputs, other planning outputs, other projects. They have run and they may be outputs from there that is required in order for me to develop the plan historical information, very important

policies. Certain policies may be there, may be people count over work, over time. You know some policies may be there that is going to have an impact there.

So, you got to know that before you start your planning process, constraints unions may put certain requirements. If certain trades may be there and so on, so forth, that also would be there and then you will have your own assumptions. Things that you cannot really, you know get an answer to from outside, you list those are this thing the output is; obviously, going to be the project plan.

And there will be certain tools used Project planning methodology, which will come from your theory and stake holder skills and so on so forth. That would be there project management influential system. That are those are also tools because that is what our historical data has been kept and then I have got something called EVM; earned value management. I cover that separately in a lecture that is also going to there. The process is taking it all taking the input and crunching it to produce the output using these tools that is going to be the procedure for planned development.

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Similarly, to define the scope now, please remind me again. I keep forgetting things. What is the scope of a project? What do I mean?

(( )) under (( )) what I will be doing, what I will not be doing?

Yes, you very clearly you lay out because your estimates your cause and everything they are contingent on what you agree to buy agree to bill. You know, this is something that you commit to therefore, it is very important for us to understand these things would be include; these things would not be included. So, that defines the scope for me to do that. I need the WBS; w is your work breakdown structure, will see that in a few minutes.

Scope statement a very clear statement of the scope; this you clarified with the sponsor and the user groups that would be interacting with you start your information constraints and so on. And of course, you have expert judgement. There are people who have who are season in that kind of project. So, someone whose worked on 5, 6 projects overseas, he has got a pretty decent idea what things fly, what things do not fly? You do not need like 8 wheels for an aeroplane to land.

You know, you need like 2 wheels may be or 2 or 3 wheels that is about it. So, those are things that are known to people who have already gone through the process and the technique for defining the scope is you because the charter and you sort of ask the same question what things would be included, what things will not be included and that would be there from this point on.

The output is going to be from the scope. You will come up with activity list how am I going to be delivering the different task, the different the objects? The different results that will be coming out that will be there supporting details would be there work breakdown structure would be there. These are like updates details more details of the thing.

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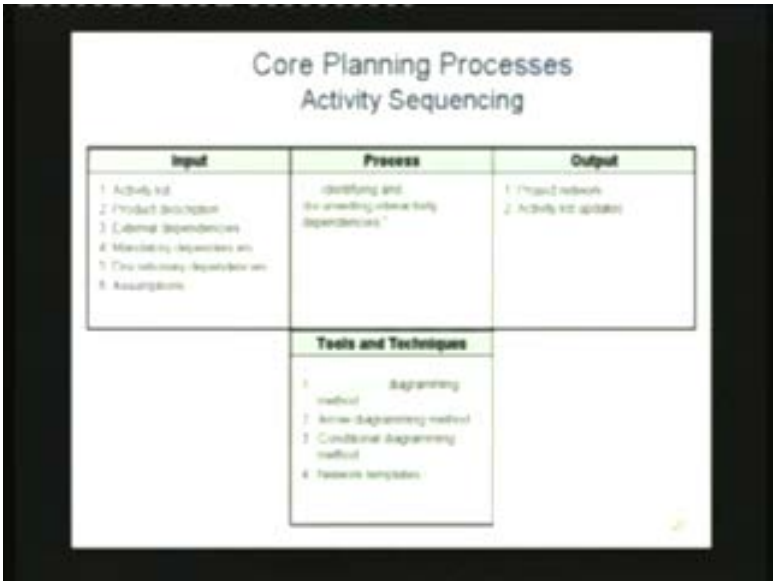

Similarly, you got activity sequencing. Not all things would be started all at once. Certain things would be done first, certain things would be done later and I have got to make sure I have got this sequence and that is determined pretty well by technology; the technology for building the process this is something there all.

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The time then got this huge issue of risk was delays risk rise. The cost of things risk may actually hold you back from meeting that is something there and risk May even defunct the project. It is very possible, because of high risk or something on a risky event took

place and therefore, the project is terminated. These happen once in a while these happen. Many projects actually run into this sort of snag and it does not mean, I just lay back and I watch the rains, watch the clouds. It does not mean that you got to plan ahead and this is where experience comes in, this is where history comes in, this is where you know people who are experienced in that area they come in.

You bring in the domain experts and so on. It is a pre identify. Some of things that could go wrong, here I use a diagram. I have about, I have worked may be between 20 and 30 projects from technology transfer to project development to software work to hardware design, to a lot of RND projects to some places, where we had to train people, who are massive amounts of number of training had to be done and so on, so forth. And some real planned direction type of projects that also I have worked on.

So, I have got a pretty decent idea. Many times, we do not spend much time in doing our risk analysis and we run into snag. This is really bad news. If you have to stall something because something happened and somebody got hurt, a key person got hurt and he is staying at home and because of the project he is stalled. And we did not plan for it we did not plan for this sort of thing. So, that is something we got to keep in mind. We cannot really do this. How do we manage risk very quickly? This is like we will be retaining this later on.

You identify potential risk and one great way to do this is involve people who are in that area, who are in that domain and he construct, what we call a cause and effect diagram. Are you aware of the fishbone diagram? This is something you will be using. So, you will put the risky event at the end. You see how in what different ways could this happen. Just do a plain dumping of your thoughts and do brain storming and try to capture as many of those snags as possible. These are the potential causes. They may or may not go wrong, but at least you have identified them all and then you go the effect. There the effect is going to be some problem in the end that you do not want to have you do once you have done this then.

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You move on to analyzing those risks and there are two dimensions in which analyze every risk. A risk is an event that is undesirable one; is the impact dimension how severe is going to be the impact. If something goes wrong, what will be the impact the other dimension is probability the impact and probability? If it is a high probability event with high impact, it is a highly risky situation that something I cannot really sort of. You know live with for example, let us say you plan to spend your winter break in Sundarbans. You must have a guide, you must have a map, and you must know people who are with that area. If you do not do that and you think he or you are kind of having the canoe ride in Kerala and you take a canoe and you go out.

My god. There is a tiger alongside and the tiger is tracking you, the tiger is watching. Can he jump in the water and grab? You know are you close enough for him to do that these things happen? So, for that, what we got to do is, we got to make sure we understand the risk and we look at its impact. Look at his probability then we take action. I am going to be giving you this one exercises. When we do this, there is going to be one team that will be looking into that. I am hoping very much that you will be able to identify the risk involved in your particular project.

So, in your group there may be some of you, whose has got some experience in working on a specific project. Take that one and try to identify the risk. Try to do this cause and effect diagram and then I will show you how to exactly work out and you always you can

always come and see me if there is any difficulty with any concept before you make the presentation. I will make sure I am happy with it then you try to work to minimize the occurrence of the risk. Occurrence actually is the probability side then you got contingency plans. Contingent's plans are like your plan b.

If something does fall up what do I do? These things have to be done ahead of time and many times. Of course, you find some contingency actions are not required like in a car, in a vehicle I carry a spare tire, a spare wheel and I check the pressure of it also not just my 4 tyres, but also I make sure there is enough air in that thing. Because that thing they have no air, because I have not used it for 1 or 2 years. So, there may be no air in my car. That is something I have got to worry about.

Especially, if I am going to Calcutta, if I am driving alone, but you guys when you came from the hostel, were you carrying a spare tube and a spare tyre or your bicycle. You will not be doing that, you have done that already. So, you are already an expert risk manager. It is just that some you probably not thought through it. You probably not articulated these things, but you already are a top most project manager. You already have you got your mission clear, you got your scope clear and everything else.

May be for small things you do not bother doing the estimation and so on, but for times you got pretty decent estimates as we will run into in a few minutes. We will just see that there are projects and then there are certain things called programs. When you got similar projects in a portfolio, it becomes a program like the Tata motors. For example, they have a vehicles program, the telecom people they are in the heavy earth moving equipment type of thing. They are the guys who are preparing various types of movers; you know small ones, big ones and hand holding ones and so on so forth. They have got all kinds of equipment that belong to a particular class.

So, their program would have probably three or four different development ideas checking along, but they are not like cars. The guys, who are doing this earth equipment, they are really not worried about passenger cars, I mean passenger cars people. They do not worry about trucks.

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So, you got programs within programs. You will several projects that is like the distinction between a project and a program. The program is usually a mix of project; some would be highly turned, some may be a little risky and so on so forth. Just like you select, you know stocks for a portfolio; same sort of things is run by company. If we did all the time only those things those were safe, we would never be rich. So, once in while we got to take that risk and do it and then make sure.

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You think positive here is your here is you know, some sort of guide line as to how you prioritize different project. There are many projects you could do. It is like many different things you could do. Many different criteria are there. When you are looking at a product for example, you are looking at many different criteria by which you judge this.

Now, let me clarify this for you. There are certain requirements in every product that are critical requirements; a critical requirement. What is the critical requirement for a pen? Now, let me first tell you, this critical requirement is something. If a critical fault is there, it will be damage to a life or damage to property. That is the determination it will either do some damage to property or damage to life. What could be a critical defect in a pen?

Leakage of it (( ))

Leakage and I hold it. We had a guest. We had a Nobel laureate in IIT Kanpur and he was kind enough to give us some time and the students arranged this completely. And poor kids they did not realize that the pen there whatever pen the professor never used it. Because it leaked and this gentleman he picked up that pen, he started writing with it. And lower hand beholds his two fingers they were all blue and we were very embarrassed.

We were obviously, we were red in our face. Now, that is a critical defect then there is something called a major functional requirement for a product. What is the major function requirement for a pen? Why do I buy the pen? To write clearly and so on, so forth. What would be a minor function requirement for a pen?

(( ))

Should be easy to

(( ))

Excellent

(( ))

And then what are the cosmetic requirements for a pen? May be the match between colours and so on the shape and those things. Those are like you know; this may be a little more attractive than this one as an example. So, projects are also that way certain projects are critical project. These are absolute must you cannot escape. Those safety projects, health related projects you know, these are projects they are like absolute solution.

You cannot really skip; you cannot really legal project, legal obligation and so on security regulatory things. These projects must be done; there is no escape from it. So, they obviously, they require priority one. So, at greater also, a certain priorities these things are absolute must. I mean there will be no compromise, we will be doing that.

Then you got the highly desirable or the major function requirements. Those types of projects, these lead to profits, these lead to the major reason why I complete this? These are the ones that bring money to the company. These are the reasons how share prices go up, share values go up and beyond that, you got these others which are like minor function. These are like cosmetics, low risk projects and they give you some money, they generate some money for you.

So, those are there you will probably have some of them and notice here we are talking about ROI. My major ROI is going to be from my highly desirable projects. Then there will be minor ROI; my feeders those are going to be my this less desirable projects, but they are also there and then I have got something like nice to have what sort of nice to have projects. Do you think we have in IIT as you walked in to this building what did you notice?

(( )).

Exactly, my god is it is a if like we had a chat before we came to the class, you know, the ambience it creates, it is like nice to have you know they have no impact on the class room this thing, but probably we will all be a little more present let more attentive and so on and it gives a general good feelings sort of it. So, those are the kind of things. This is how you prioritize different project? If you look at projects, they got to be prioritized this way.

Just like critical requirement, major function requirement, minor function requirement and then cosmetic requirements. Sometimes of course, the cosmetic requirements itself may be the critical one. Give me an example when the cosmetic requirement itself is the critical one? Perfume style fashion that is really the function know the function yeah beauty production these things. They are like that is it and by chance they are called cosmetics, but they are critical.

To initiate a project that is like to start a project, I got to have my charter. The charter spells out the mission of the project. From that, I work out the statement of the project and then I do my feasibility analysis. Someone was point at feasibility; I have got the economic feasibility. Is the r y going to be there? Is it going to be for a good life of the project or is it going to be just for two years operational aspects, is it something?

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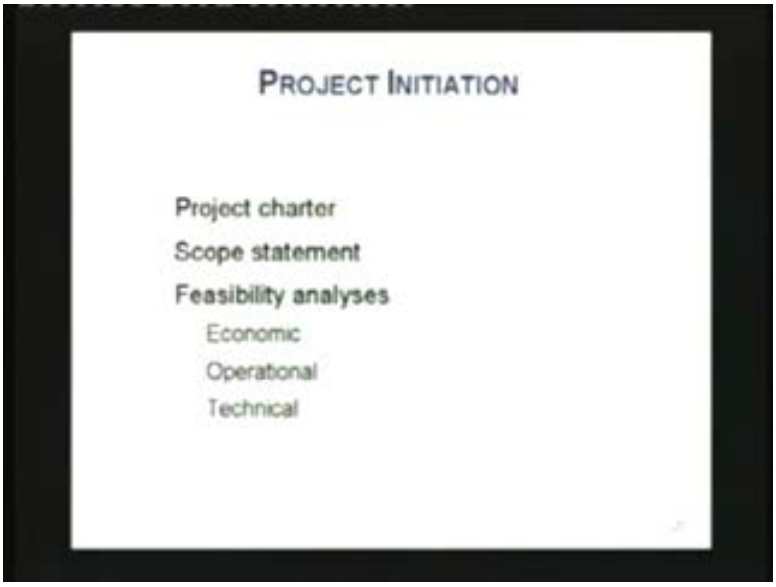

That will be easy for me to adapt to technical aspect. He is technically feasible. These things are looked at when people are doing major initiatives. They got to look at these things sometimes. Of course, the benefits are not economic, you got social impact and those things have to be clarified very well.

There was a project that was launched north of Bombay and this was to launch micro financing projects, small projects, and micro financing initiatives in the villages. See I should tell you this little story. Most of the people live on the coast line north of Bombay. In fact, all around India they are either they fish themselves; they go out on the

trollers. They bring some fish or there are people who help these people harvest that fish. So, they may go out on the boat with you or they are waiting right at the shore.

When the boat comes, they have to load the things to take the fish out. Then they sort them between good and bad and so on, so forth. That is what their job is this tribe is called kolis anyone from Maharashtra here. So, you will you would probably you know this koli. If you go, they their employment is highly seasonal and for a good period of the day they are idling and what to men do these days when their idling? What do they do?

So, because of this, you know, they are really not earning anything and they are dependent on that 20 rupees, 30 rupees, 40 rupees they got when the boat was unloaded that was it. After that they are again idling. Unfortunately, when I have got cash in my pocket and I know this is like something, I got to have before I go to bed, I spend 10 rupees on that 15 rupees on that. Not really mind full of what I am doing? As a result, ladies back home have no money, they get 5, 10, 20 rupees at the end of the day and it is not enough for them to bring food for the family for the next day. This is something like a real problem.

So, some people thought about it and some NGOS they got together and I was actually helping them with project management. I said my God; you know there is a way you could spell out the charter. You could do some planning and all and you probably could do some project management here. I could teach some of these ladies how to do this of course, I do not speak Marathi. That is like one of my handicaps, major handicap, but there was a lady, there this organization was very well organized.

They had lady their and she was also from the same village, but she had gone up to great flug. So, she spoke very good Hindi and she also spoke some English and she obviously, spoke Marathi. She said, I am now going to be your means, I will help you and I will be interfacing between you and the ladies there. And sir what is it that you would like to do? We showed them and I got this material from you know a few places banks and so on, so forth. That loans are available loans are available as long as there is collateral possible somebody guarantees that loan.

Loans are available from SBI, from other banks also loans are possible to get and then there is got to be a plan of action which is like identify a service or a product that these ladies 3, 4, 5 of them together they could develop and then they would go into a little

business, small little business. So, they started with a small loan of as low as 5000 rupees and as high as 1 lakh rupee. What we then did was I also belong to the rotary. So, we talked to our friends in the rotary club. We said you do not have to give money.

You know, rotary people generally, they will give you money just like that. If you ask them somebody need some money they will give you 5000, 10000 rupees without any trouble at all they will do that, we said. I told them you do not we do not need money, but just guarantee the loan. In case, the business goes defunct, you will probably end up paying 3, 4000 rupees to the bank, 5000 rupees to the bank.

So, this is something you will have to do, that is all we require from you. So, they became the guarantor. These loans were made to the ladies. In one year, they had found crazy things to do business with for example, many of them they bought and they started getting water bottles and they got some other convenience and so on. And some of them even brought other things that people would like to see at, available at the beach like. Some people even started something as simple as coconuts and so on.

These were not available to a typical person, who came to the beach and he just wanted to walk around for couple of hours. They started providing these services and one lady she even open this shop and she started getting other stuff and so on and she employed her husband in that shop. So, the husband instead of sorting out fish, she was actually he was actually doing this and he said, my God; you people are Gods. You know, we never saw light, but now you have shown us a way and I am also going to be helping this and I have thrown away the bottle and all I am going to be doing this.

Now, this is something that was also conceived as a project initially. The benefits turned out to be only basically social benefits, but they turn out to be economic benefits also. So, it is something that you got to think through a little bit. You have to become involved and very fortunately, I saw a lot of passion there that also attracts you to get into it.

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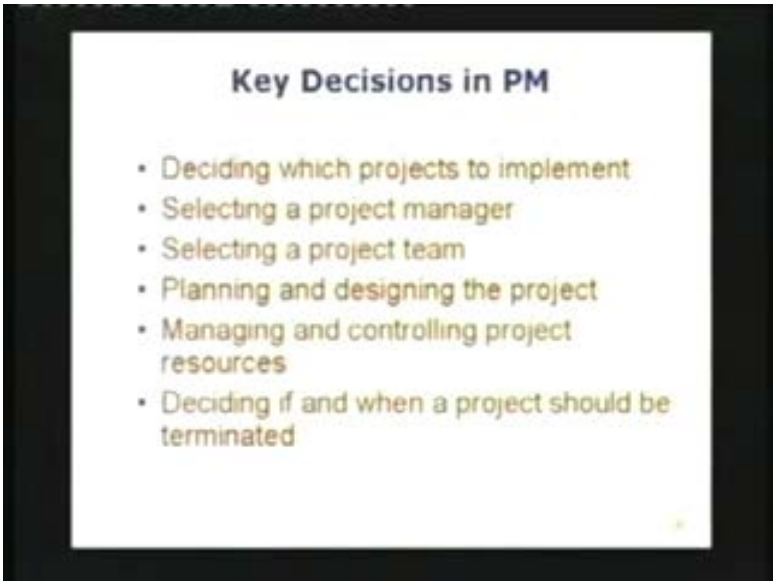

So, you got to have that passion. Once you have, it is going to be no real issue and all lot of decisions to be made. You can read through these things, we got to decide about which project to implement selecting the project managers, selecting your team member that is something to be done. Then, obviously, you require decisions at the planning stage and designing the project itself, controlling, what all things you will be controlling, EVM and so on so forth. And deciding when the project is going to be declared to be complete, that is something that you would be doing.

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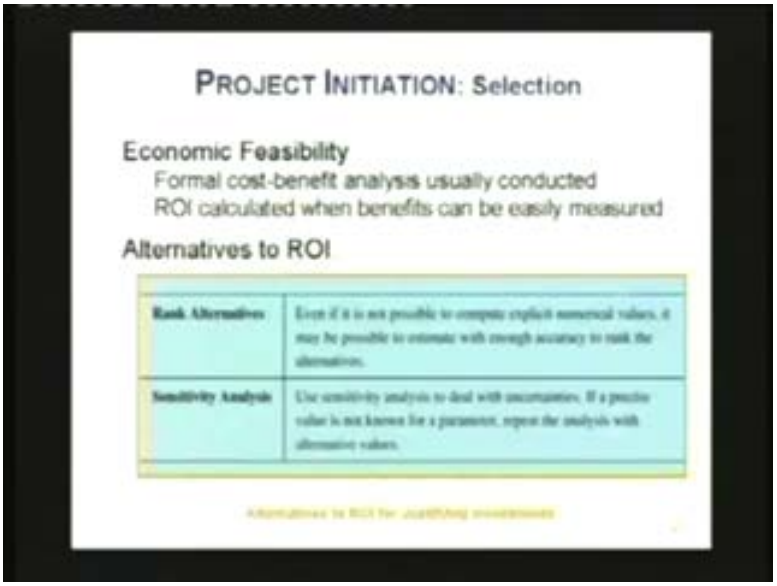

Rank the alternatives and this is where your ROI comes in your discounted cash flow and so on and this standard procedure would apply here. And again we will take a look at some of the exercises and there are some of the books also that talk about how to actually do this notice? Here I have got ranking alternatives and I have got something as called sensitivity analysis. Now, you people are management people. Tell me, why is this important?

Area of my (( )) very good.

Critical parameters faced (( )).

Very good.

Of all the activities (( )).

Very good and critical parameters are coming from they are coming from assumptions or they are coming from history or they are coming from the client. You know the cost at which I will be selling this pen, I want to go into this business, but can I have Novae of the market? And I assumed it to be saleable in 5 rupees and suppose, there is now a pen available at 3 rupees people would not buy this. Will I be able to survive or should I go on to something else? May be I will change my design to this.

Those are the kind of issues I have to identify when I am doing my sensitivity analysis. This is why analytical skills are required. This is why MBAS are required. Many times MBAS would be doing this. When I was doing in the when I working in the as a corporate planner, I was doing this sort of work and many times I identified something that is called pert CPM and with that, I was able to identify the factor that was most critical, that is most critical in terms of doing the project, initiate the project.

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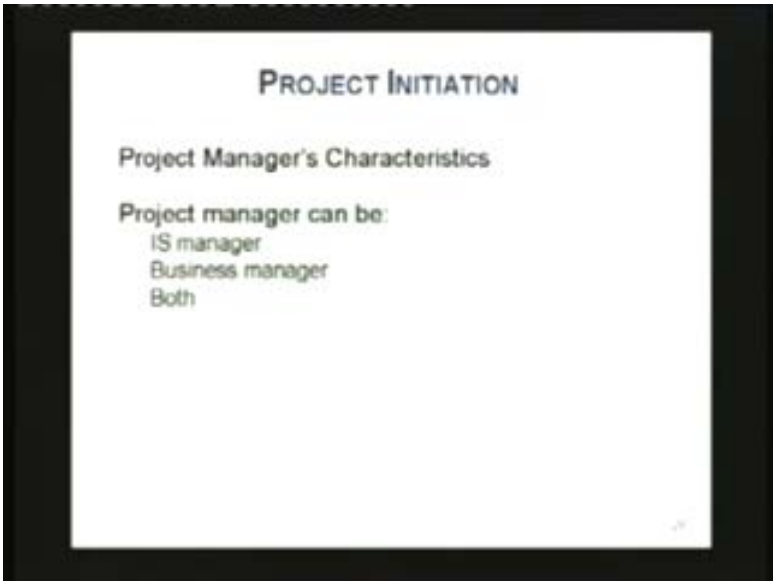

And the initial obviously, can be done by the project manager. Once you get the guess green light from the sponsor, you get the money in the bank.

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He will be doing this. The project manager is the key person. I just cannot tell you, I am pretty sure the project manager that you encountered some of them you would give your right arm for and some of them you would like to stay away from obviously, there are certain technical things you know initiating, planning, blab. These things have to be done, but by far the quality that is most critical is the human is the human part.

If I have worked for probably 10 managers in my career of 20 odd years in industry and after that I have got 20 years in academic, but the 20 years in industry there were about three four people I could stay up all night. If they wanted me to that sort of person they were the others, love it or leave it I want to go.

So, it is something that is very critical. If you want people to follow you, it is not very difficult, it can be done, but it requires literally, you know, there are many techniques probably our o b people cover this. There are many methods that you can apply and this is not something that you have to be bond with. You can if you have that high sensitivity, if you have a good enough sensitivity you should be able to do it.

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And that is actually listed out also. Fortunately, books I have studied, people have studied these things and they sort of say these are the kind of things that I will be looking at and I am pretty sure the reason you guys have chosen to be M BAS is you have some of these quality sharpen up on your people skills. And I believe, you will be a winner that I can write down. Today you can fold it up and look it up after 5 years or 10 years. What skills you are using the most it will be not really your technical skills. It will be really human skills. It will be how you are dealing with people.

Last night, I had to arrange a speaker for couple of weeks. For now, I have to arrange a speaker and I approached a person x and he started getting me all kinds of reasons why he should not be the speaker and in the end he was ready to throw me out because I was

very persistent I said and he was very sort of. In the end he got so frustrated, wanted to I said look what you offer nobody can that way, you are my most valuable resource and people love you.

Do not know that is that right? I said this is true sir. The expertise that you have nobody has this and people love you for this and people want to hear it from you not somebody else. So, you got to have these people skills that he was by the way very weak on people skills. This is like something I just noticed. So, this is something you got to figure out; listening, persuading. I am pretty sure you run to examples like this all the time.

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So, kindly make sure that these are non technical skills and you got to have them in order for you to kind of move forward the sponsor and the champion there are two peoples sponsor is the money is by a man of course, who makes a business case for a then.

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There is this guy who is the champion. The champion actually is a business manager and he says like we had a champion to set up this sort of system. Most of the faculty, they did their teaching you know like me you know talk and chalk type of thing. That is what we were doing, but then he said well this could be done, it could benefit many people and so on, so forth. Other people they will benefit from this and so on and you could you know go on internet, you could download this things or you could view it anytime.

An asynchronous reading could be there self learning could be there and so on, so forth and still those are all resistance from us. It turned out; he turned out to be a champion. He said, some of you will have to volunteer and I would play it back to you and I will let your students give you the feedback. They will use this media and they will see you and I am pretty sure they are going to discard you. After a while, they said, that is the way I am going to be learning things and so on.

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So, he became a champion. So, the champion he has got. To have above anything, he has got to have passion also that is something that is going to be their ethical issues are there. And you can actually see how they are sometimes there are temptations to understate costs. These are to try to get project in there withholding information some nasty thing may be there, but I am hiding it misleading status reports. These things really fall up things falsifying records and these are like deadly things.

If you ever you run into this sort of thing, make it known to people, make it visible to people as much as you can. You would not really risk your this thing and turns out more people are ethical because people understand the seriousness of these things compromising safety. That is something if you ever get into, just walk away from there. If you think management is lost not listing, try to articulate it as best as you can, but if you think because in the end your neck is also going to be on the line. So, you just make sure that is there and approving substandard work this you will see a lot these are all unethical practices.

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Then now we get into project planning. This is going to be a little long drawn out, but I am trying to I will try to make sure we get it done in some decent time. We would not go very far with this. I will do the exercise tomorrow.

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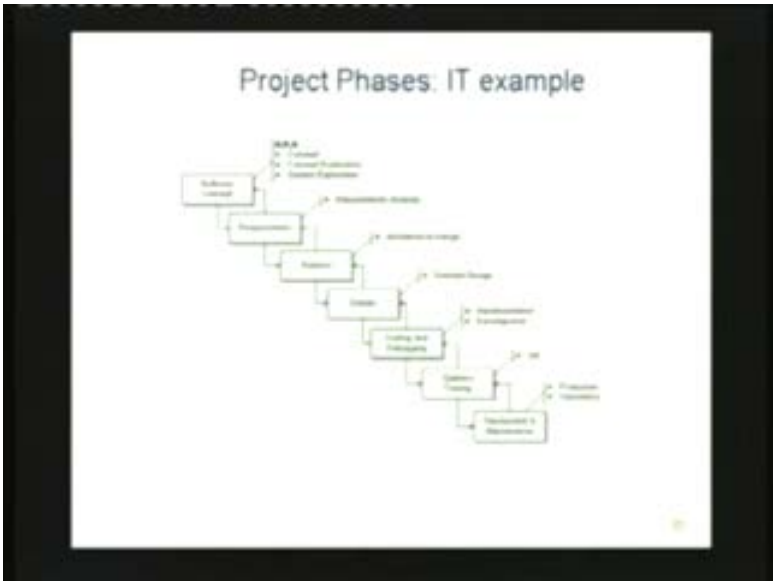

We are after the first thing, thereafter is the schedule, then we will go into budget, then we will go into staffing. Those things will be there if you look at the IT example this is like that waterfalls model. You got the major steps there and you got those things when

you start asking the question what is there in box one, what is there in box two and so on so forth.

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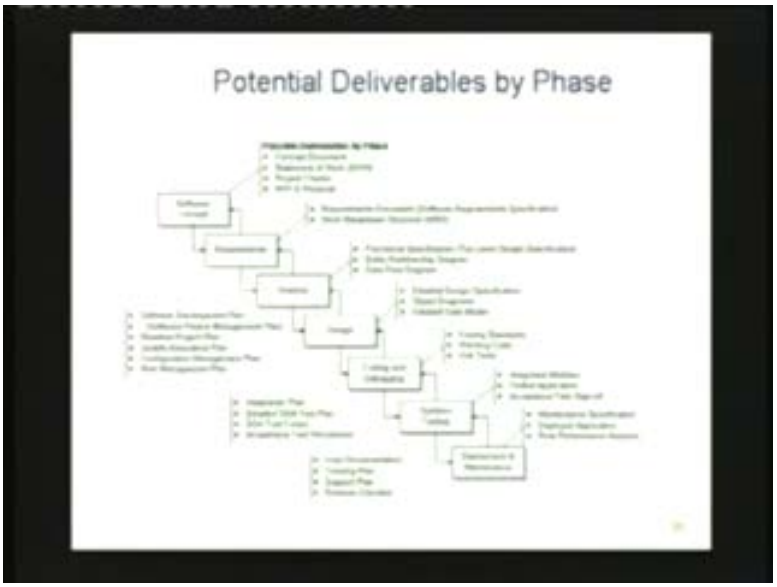

You will find details and these are you are well trained in this area. You will say my God; yes these are something I am familiar with. This is something that we normally do. This also spells out the technological sequence of thing the reason to get you know the reason for you to get these details is not just bureaucracy. It also gets you the sequence in which things should be done because the later things are dependent on the things that came before this.

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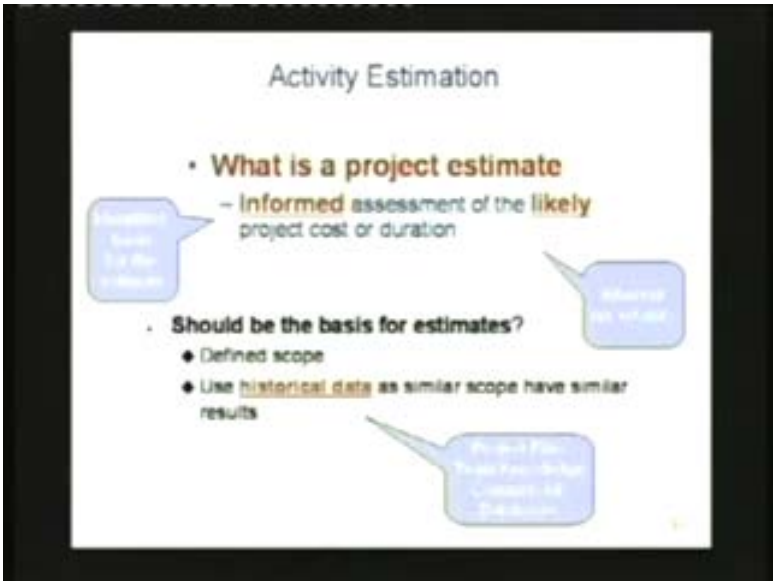

If I move this forward you end up with a network because I have to get to this estimation. I have got to get the time estimated, I have got to get the cost estimated and in order in order for me to do these things, I must have the basis and then that basis will come from the scope historical data.

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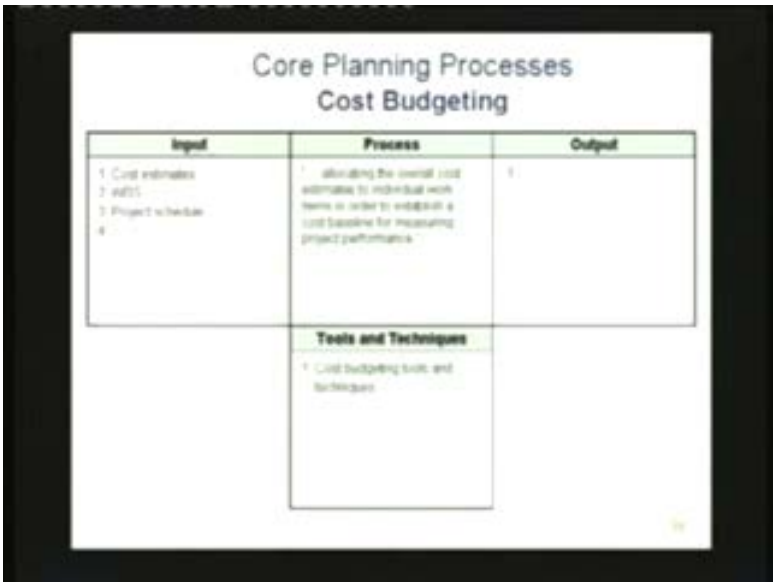

The details of it and then of course, there is the cost side of it, which is like how much it is going to cost based on the resource requirement.

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That will have to be done again. I go back to these three slides, these three objects and you see right away there is going to be our money part. This is going to be schedule part and this is going to be the specification part.

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These would be there cost estimation some steps are there by far. The most important one is look at historical data; look at trends look at people's experiences and so on. If you have those things you will end up with a decent estimate; obviously, you will be off here and there to control that we have this procedure called e v m earned value

management, which actually says the money, that I am paying the customer, paying the contractor is that for the work it that he has done is the quality there. Has he met the deadline and also has he delivered basically things within costs? So, this costs quality and requirement these things cost and quality and requirements are the same.

Cost quality and time these three are the fronts on which, I will be managing this to try to do this. I do my schedule development. I would be doing this detailing tomorrow. I just want to give you a little glimpse of what we are going to be starting with the work breakdown structure. Any project you look at it, could be constructing a bridge. It will have the project texts right on top; project texts will be there on top. They will have the major deliverables.

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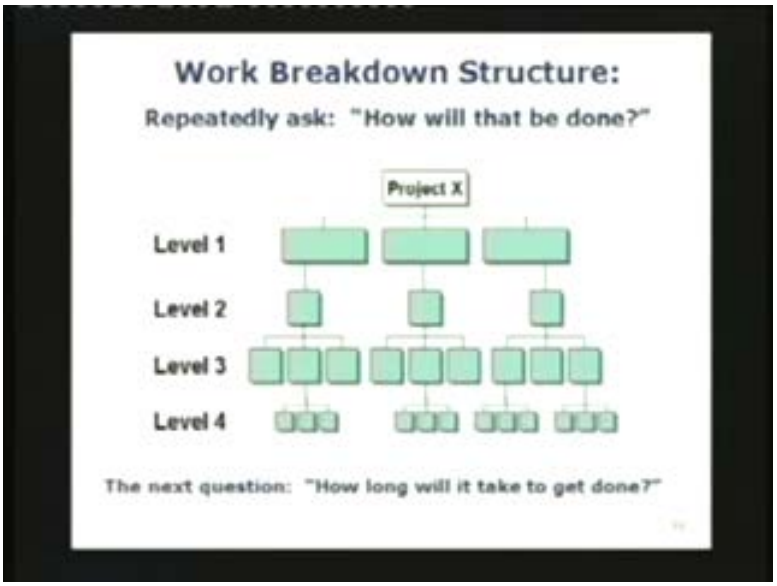

So, to build the bridge I have got to have the pillars, I have got to have the spans, I have got to have the road approaching and road going out and for each pillar I have got certain other things to do. So, you basically ask the question how am I going to be doing the project. I need a b c. How am I going to be a? I got to have this other thing d in place. How am I going to be d? I have to have d 1, d 2, d 3 and these things come from experience.

I am pretty sure if I sat with you, if you are discussing a r p software with me, if I ask the questions, you would be able to identify the modules right at the end. You would be able to identify these are the modules sir, you got to build them together. And this is the

beginning of sequencing the thing because not all these thing can be done all at once, but they are all independent. Their dependencies is only vertical and wherever they interface, that is when the units are coming together to make a sub system or probably a whole system.

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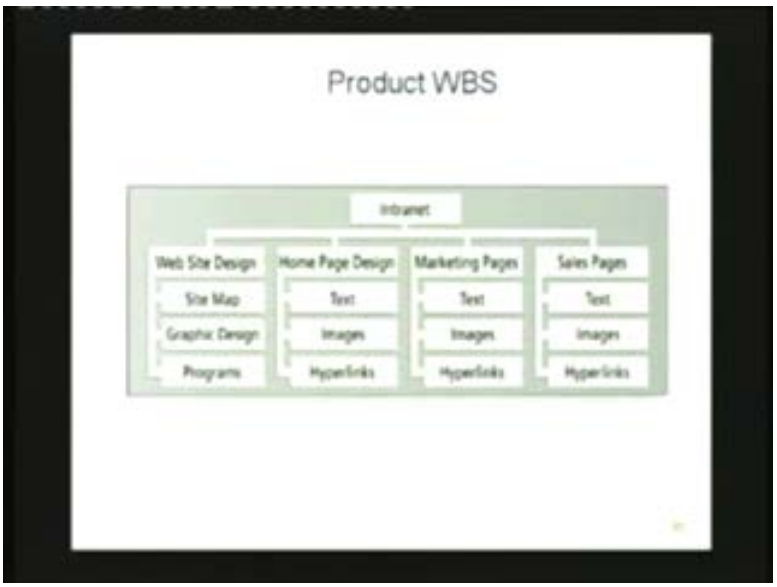

You look at any project and I have couple of examples from IT from the IT world. Someone is trying to set up an intranet. You got the work breakdown structure.

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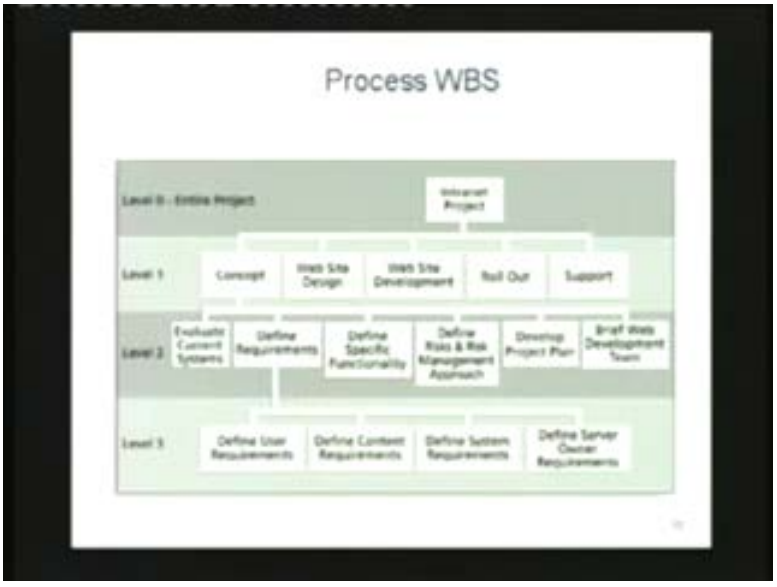

There somebody is going to again detail some of that. Again you got some details there and I am pretty sure you are familiar with these sort of things. This is how when I get down to the lowest level. I have got certain specific tasks that people have to take care of.

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I go from there to time boxing. Time boxing is basically, you ask people experienced people how much time it is going to take and he is going to give you a deadline. Or you probably tell him that you are going to get 6 months saying that, time this has to be done and there are issues with that I would not try to take a look at that. Later if you want to go into details then you break it down into work breakdown structure and if you look at these, you look at these details. Do you see? These are the tasks that have to be done and only then I can come with a decent estimate for you.

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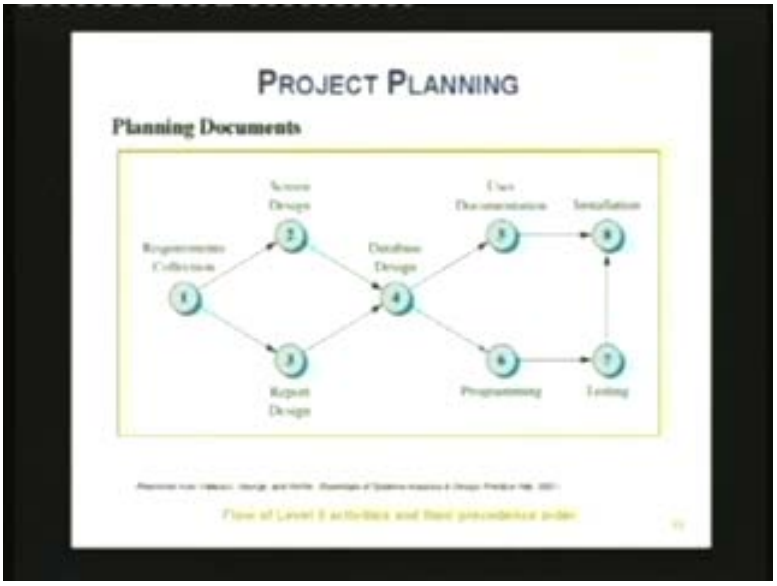

Say, I have done that. I come to this technological sequencing. Technological sequence is very important. I mean unless you do this right and this very requires some domain knowledge. What is to be done first? What is to be done next? Let me pause here, let me answer some question.

Sir we talked about programming (( )) there has to be a basket of problems.

Yes.

So, (( )) involved in this program are (( )) they primarily to diversify (( )) from the project or is it be risk management at the project levels. Because in most of the real time situation the projects are not of your choice you have you just have to do it so.

Yes.

How does this concept of diversification of projects (( )) risk management of the program as in.

Someone who is in charge of the program, he really tries to manage the portfolio and someone who is in charge of the project, he tries to manage risks as best as he can for that project itself. Now, the program manager he make sure he has got the right people there and they will do at the top job possible. Obviously, the things will fall up and for that I have got risk management plan.

This is why risk management comes along risk analysis and risk management in order for you to react the best way possible. You know, if something does go wrong you will be able to react to it, but the program manager he make sure you got the right people there, the good people there. So, they are able to manage the project sub cells as best as they can.

So, risk management would be done at the project level and the overall portfolio management would be done at the project level and there the program level and the program manager. The only thing he makes sure is, he assigns the projects in the right priorities like the critical one, major functional ones, minor functional ones and the cosmetic ones. Like for example, one of his programs could also be landscape, the area around the thing or look after the home life of the workers.

For example, there are some deadly situations deadly work situations for example, people who work in the mines or the work in the jute mills in west Bengal and their working advantage is just deadly, but there are some people they are really perceptive of these thing. They are taking steps to make sure the worker will come back to me, instead of going to my competitor. You know, there could be another plant next door, but I do something for him that is extra for example, may be there is a doctor, may be his family can come and see the doctor, outdoor patient when the factory is running.

The man is working there and his family is getting treated there. May be for cold or something fever he is getting a free treatment there. This is the kind of thing that way you know; I make it attractive for people to come other question please.

(( )) may be for risk management we talked about change management.

Yes.

So, when we do change management would not that again reflect on risk management? Yes, anytime you make a change. You got to walk all the way back. You got to make sure you are even I get the risk what things could go wrong again? You will look at you would drop the old cause and effect diagram. You see what all things could be impacted by this and again come up with your plans. And I will give you the risk reaction plan. How you will react?

Basically, the plan is either, you try to reduce the probability of it or you try to reduce the impact of, it is like if I am walking around here in rainy season, if you are walking around this campus, will you walk around in a rubber? You will not you will; obviously, do some risk management. You will put on good nice tight shoes because of our little friends, the wiggly friends who are all over the place and every week you probably run into some guy, who is kind of you know just sunning himself or may be enjoying the showers and he is out there. So, that is something we got to do. Anytime I will make a change, I got to relook at the risk plan. That is something there more questions yeah.

(( )) sir do you think that the scheduling.

Yeah.

We will make (( )) it becomes a static thing and itself becomes a risks for the (( )).

Ah even it could become a constraint is that what you are saying? Obviously, the very function of my drawing up a schedule is to use this as a contract kind of a contract between myself and his. It is a control tool. If something does fall up, I got to bring that feedback you know, quick enough to management to make sure that we react to it. For example, let us say some supplier he has raw material problem or production problem something and he is not able to supply on time. I have got to react to it otherwise; the schedule is going to be out of the window.

So, what I have seen the, but the (( )) of the house is actually (( ))

Yes.

It is very difficult even if we are very experienced.

Yes.

What is use suppose I am experienced?

Yes.

I will take some things very granted and that is why I make mistakes here.

Yes.

Not (( )) that is what the (( )) is.

See there is the ideal world, just the ideal world of the text book. I am a realist. There is the ideal world of the text book and there is the down to earth totally practical book. The reality is somewhere in between. So, you got to do like the t v show, who got to do the reality checks. We got to make sure, we take practices that makes sense to me and I do not lose sight of something like risk management. For example, I do go through the steps of scheduling, I do go through the steps of setting up a budget; I do go through the steps of quality assurance and so on as described by this. Unless I do that I am going to be exposing myself to higher risk that is the whole issue.

Am I exposing myself to over run on budget over run on time? Or having a customer that is not happy with the product? That is something I have got to look after more question.

Yeah. Risk management do we need to plan for every risk or the less probable risk? I have left as the (( )).

Very good question. I wish I could draw this here. What you do is, you just imagine I am going to be doing that. At some other time, I have one axis which is the probability axis. So, I have got low probability medium probability high probability, I have got on the impacts side, I have got low impact medium, impact high impact. Now, risk item that is high probability and also high impact that is the one I need to worry about the most right now. For example, that could be like coming from your hostel to this place. It could be running into a snake for example, or having a road accident.

Those are like you know, probabilities is also pretty high it depends how you are going to reduce it. You would not go on a high highly travelled road; you probably take the back road. You want to be safe after all that is something that is like a priority in your mind you. So, what you do is, you will locate every risk on this matrix. The probability one and the impact one and you try to see where do they belong? Anything that falls to the you join a diagonal anything that is on the high side of the diagonal which is like high to medium probability worry about them first. And for the others you set up some contingency plan. This is something you really should be doing.

If you do this in your project and even then I must tell you this it is like the theory has the limit of you know, of our eyes and ears and all that is how far I can see with my

theory, but there is a lot of things not seen by my senses and there (( )) I cannot really foresee a lot of things. So, for that what I do is, I got to really work with experience people. So, what things still could go wrong and see if I could put up some contingency plans there.

So, really the total answer will not come from any one of these sources. There is got to be a lot of experience also like for example, I am pretty sure in life also. You probably solve so many things you studied in books or you got from you know older (( )) so, and so forth, but there are certain things which are unique. They are unique experience. The way you deal with the auto you know, you got some special tricks there.

You know, if you are depending on the city you are in you know, Delhi or someplace you will probably say or something whatever you sound like a guy who is from Haryana. Then he will treat you differently. You sound like a Bengali especially if you land at Bangalore airport, more questions? Any other questions? What would you like me to do what is your plan now?

We covered the full span of project management. We started with starting is the charter scope then you get into detailing. You gradually get into the planning side, execution side. An execution got controls then you got the delivery. All these have to be done. If they are done systematically, you would not really have this Hoch pooch results. I should just tell you 2 out of 3 projects are abandoned and in software if you see software history, 90 percent projects never really see the light of the day and probably only 5 percent projects really end up getting packaged in the software.

They just you know, they are just thrown out because of various reasons. All kind of things go wrong and the government change it goes over budget and so on and so forth. And a lot of work is pretty difficult. For example, someone wrote an old program in Cobol and the program is running somewhere in Switzerland and you are outsourced. There you are probably put out there offshore onsite and you cannot you have no documentation or nothing at all and you are trying to develop a patch these are tough jobs, these are very tough jobs.

So, we found all kinds of ways to managing these things. Again talk with someone who has done this sort of thing, it will reduce your risk, it will reduce your exposure, it will reduce the risk. So, gang it was fun being here it is day one, but we will take it further. I

will be studying, I will be basically discussing critical path tomorrow. So, take a look at that.

We have no presentations tomorrow. So, I will be covering critical path tomorrow completely and then when we come back. By that time you will have probably one of these chapters with you. So, the first group will end up doing the other thing. Thank you very much.