Software Project Management
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Lecture – 11
Project Evaluation and Programme Management

Good afternoon. Today, we will see some important concepts of Software Project Management. I am Dr. Durga Prasad Mohapatra, Professor of Computer Science Department, NIT Rourkela. So, today's topic is Project Evaluation and Program Management.

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So, the concepts are today we will cover business case for a project; project portfolio management and project evaluation.

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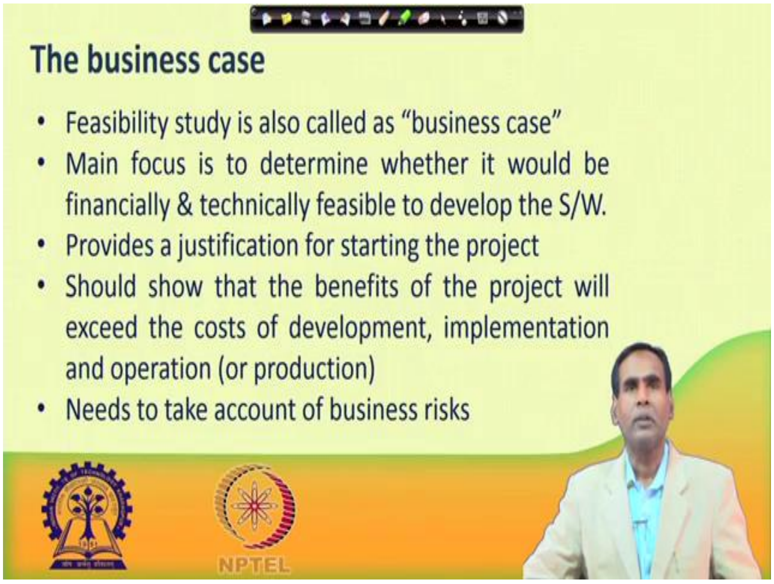

So, let us see first what a business case is. Business case normally it refers to feasibility study. So, the main focus of feasibility study is to determine whether it would be financially and technically feasible to develop a software. It will provide a justification for starting of the project. It will also show that the benefits of the project that will exceed, that will outweigh the cost of the development, cost of implementation and the operational cost. So, it needs to take account of the business risks; that means, we also should consider take into account, what are the various risks, business risks associated with and that will help us in deciding whether the project will be feasible or not.

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Now, let us see what are the different types of feasibility study. So, there are three kinds of feasibility study; one is technical feasibility, then financial feasibility and then, operational feasibility. In technical feasibility, we have to decide that whether the current technology that is available with us with that we can develop the software or not or if any special hardware or software is required, whether that is available in the market or not. So, if you require a special software or hardware to develop your project and that is not currently available or not likely to be available in the market in near future. Then, we say that project will be technically in feasible.

Then, after this technical feasibility study is over, we should cover, we should consider the financial feasibility. Financial feasibility means we should ensure that the profit or the benefit that will be obtained by implementing the proposed project, it must outweigh the cost, the benefits must be much much higher larger than the cost that will be spent in developing the project. Then only, we will say that the project is financial feasible, else we say that the project is not financial is not financial feasible and hence, we should not undertake that project.

Then, next feasibility is operational feasibility. So, if you say that the project is technical feasible as well as financial feasible, then we should go for the operational feasibility. Operational feasibility means that if a project will be developed, then how far it will be accepted by the customers, the end users. If the end users, they accept it, they are happy; in they will be happy to use it; then, we say that it is operational feasible, else we say that it is not operational feasible.

Because you see when a new project may be an automation system, we will develop and previously the project was running manually people were very happy and if they will make it automat, if you will make the their system automat, they may have fear that their job may go. So, they may resist it and in that case we say that the project will be operational feasible. So, we should take up a project for development, only if it is technical feasible, financial feasible and operational feasible. Otherwise if any of the feasibility it is not satisfied, then we should not take up that project.

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Now, let us see what are the contents of a business case or feasibility study. So, the following contents are there in a business case about first little bit of introduction or background of the proposed project should be written; then, about the details of the project proposed project that should be written. Then, what is the market? So, this project is aimed at which market little bit description of that. Then, the organizational and operational infrastructure that will be required to develop the project, that must be described.

Then, as I have already told you two important concepts are there in feasibility study; the benefits and costs. We must ensure that the benefits must outweigh the cost. So, the next content must be benefits. Then about outline of the implementation plan if you will develop the project what will the outline to implement it, for that we must prepare a plan. Then, what cost will be required to develop the project, details of the cost and then the financial case.

Then, some the other next content is the risks. What type of risk will be there, if will go to develop the project then, we will try to see that how they can be handled and finally, there even overall plan regarding management of the proposed project. So, these contents should appear in a what business case content or in a feasibility study report.

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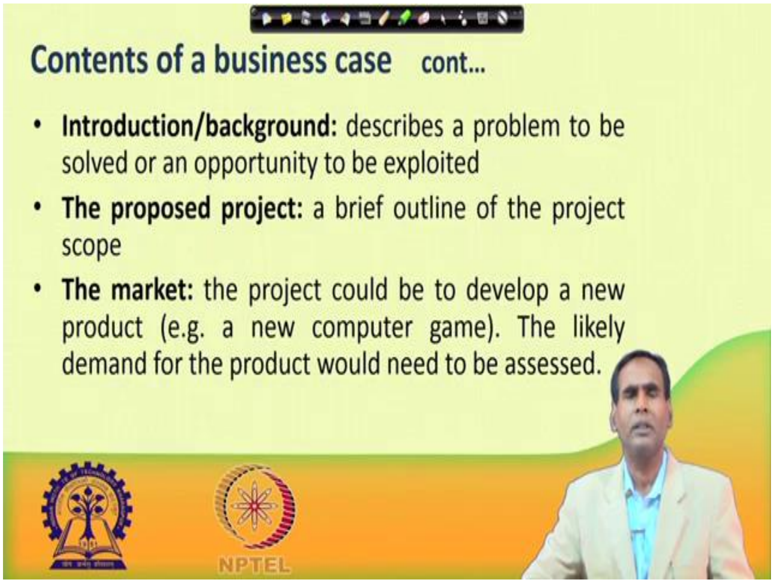

So, now let us little bit see about all these what contents in brief. So, as I have already told you first little bit introduction or background should be there for this business case. So, this introduction will describe a problem to be solved or an opportunity to be exploited. So, what kind of problem we are going to solve or what opportunity you are going to exploit? So, that has to be a little bit of background or introduction should be described first. Then, about the proposed project here every outline of the project scope.

The scope of the proposed project every outline about the project scope must be described, next then each market; so, here the project could be to develop a new product. Suppose, you are planning to develop a project for developing a new product. For example, a new computer game you want to suppose a develop a project for designing a new computer game. Then, the lightly demand for the product would need to be assessed if nobody will what purchase your software, then what is the point in making a developing the product the product projects. So, that is why you must target at what will the market; how far your product will be in demand in the market? So, that is why little bit about of the what ah demand of this product in the market, should be discussed.

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Then, about the next content is the organizational and operational infrastructure. Here how the organization would need to change, if you will develop this particular project what changes may occur in this organization; whether there will be a lot of change in the organizational structure, in the operational structure. If that will happen, then some problem might be arise. So, that is why what this should be important where a new information system application was being introduced. So, when you are; suppose this is a manual one, you are just going to automatic then there the organizational or the operational structure might not be affected a lot.

But if you are going to completely develop a complete new information system which was before, it was fully manual. Then, there might be some changes in the organizational infrastructure, in the organizational structure or the operational infrastructure. So, we have to note down that what kind of changes will occur if there will be a change, if the new project will be developed, what kind of changes will be there in the organizational and the operational infrastructure, so that we must discuss. Then, as I have already told you the two important components; the two important contents of business case are benefits and costs.

So, normally this should be expressed in financial terms, any benefit as far as possible, we should try to express in financial terms may be in monitoring terms. We know some of the benefits might not be expressed in what, in terms of the financial in terms of financial terminologies, we will see the different types of benefits and cost which can be expressed in monitoring terms or financial terms and which cannot be expressed, those we will see in the might be in the next class. So, in the end it is up to the client to assess this because first we have to see what financial, what benefits will get out of the proposed project.

So, at because at the end the client will assess this that after implementing this project how much they have spent; what cost they have given; how much amount they have given and how much benefit they are getting. If the benefit will not outweigh the cost, then definitely it will be loss to them and they will not go for developing this proposed project. So, that is why we must have to identify what are the benefits and we must try to express the benefits in terms of the financial terms, in monetary terms in the business case or in this feasible study report.

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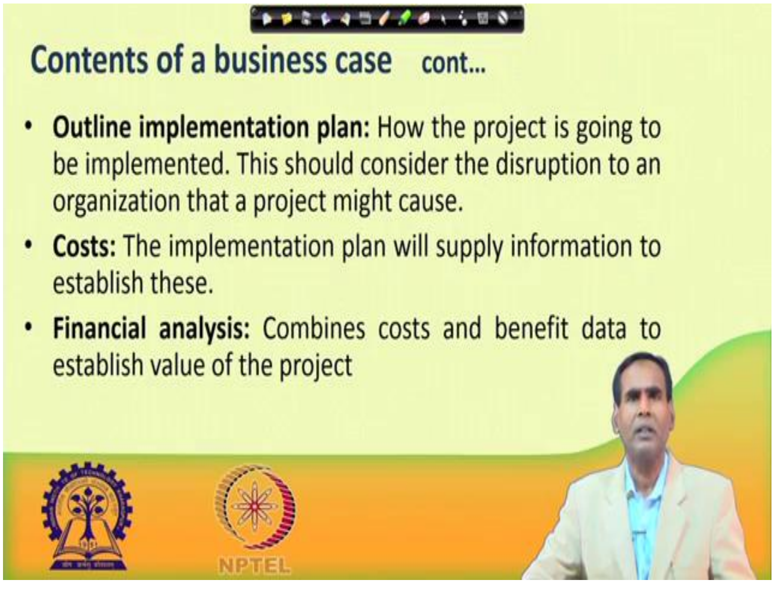

Next one is about the outline implementation plan. Here, how the project is going to be implemented, in which way you will implement the project that has to be discussed. So, this should consider the disruption to an organization that a project might cause. So, if you will implement the new project, then what if there will be any disruption to the organization to the normal operation of the organization if any disruption will be there. So, that also should be written in this outline implementation plan and the other important content that we must describe the cost. Here the implementation plan will supply information to establish this.

So, what are the different types of cost? So, we will discuss in the next class, what could be the different types of a costs. So, how much cost the end user the client will be pay for developing this project? So, the implementation plan must supply the information to establish this cost and the next component is financial analysis. So, this financial analysis, it combines both the cost as well as benefit data to establish the value of the project. If the project will be developed what will the value of the project?

So, here in this content financial analysis, this will combine; this section will combine the various cost and benefit data to establish what will the real value of the project; whether the project can be accepted by the end user not; whether the project can be accepted by the developer not by comparing the cost and benefits. So, this analysis will be met.

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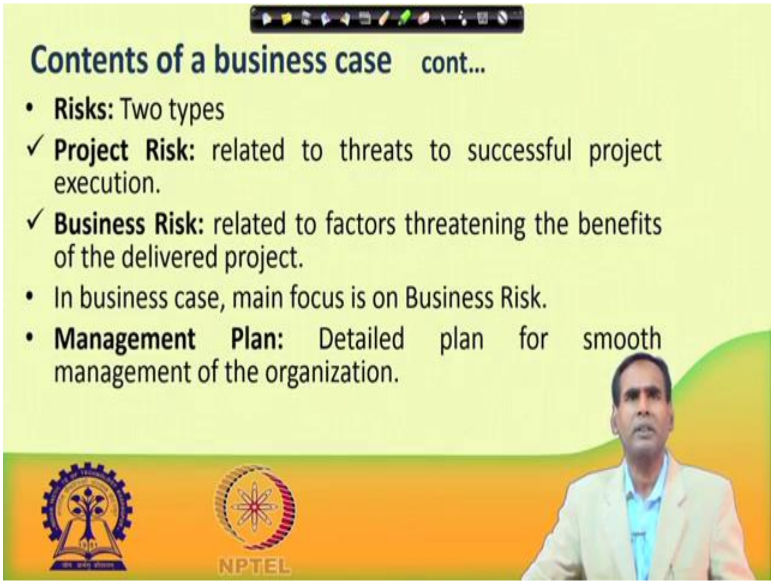

Next important component of a business case is risks. So, risk as you know that it is something undesirable; something undesirable so, there are two types of risks will find out in two major types of risks in a project. So, this two types of risks must ah what contain; this two types of risk must be contained in this feasible study report or a business case.

So, one is business risks, another is the project risks. So, let us see in the project risk, what is happening? Project risks are the risks which are related to threats to successful project execution. In order to complete the successful project or while completing the project successfully so what threats might arise ok, so these things are known as project risks. So, these are related to the what as a threats to successful completion of the or execution of the project. Whereas, business risks these are related to the factors threatening the benefits of the delivered project. So, if the new project will be delivered, so what benefits you will get and which factors will threaten to get these benefits of the delivered project. So, these factors will be termed as a business risks.

In this business case or the feasibility study our focus will be on the different business risk. So, we will discuss the business risk somewhat towards the end of the session. So, then, last content or last component in the management plan here a detailed plan for smooth management of the organization should be planned; what should be the different activities that you should consider; what are the different milestones etcetera. So, the detailed plan for this smooth management of this organization while developing the project that should be written in this section.

So, these are the various contents of a business case. So, if this business case or a feasible study report should contain this what sections these contents.

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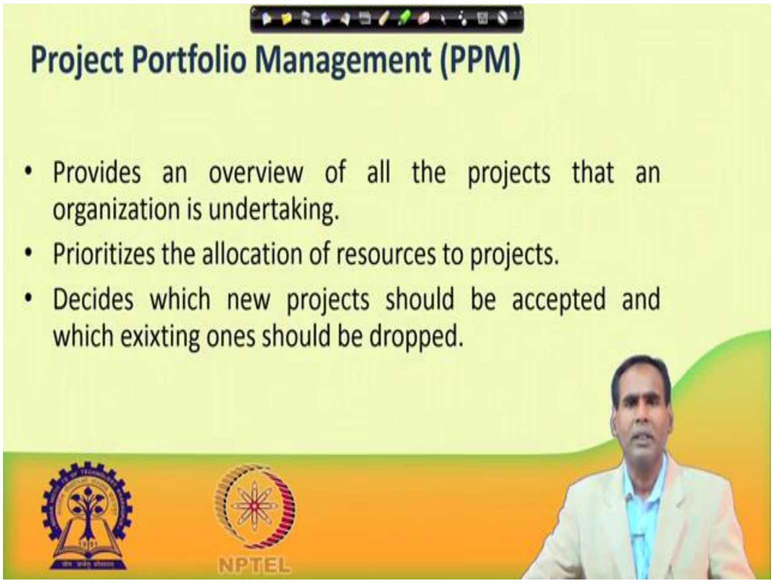

Now, we will see another important aspect of software project management that is your ah project portfolio management. So, let us first see what this project portfolio management provides. So, this project portfolio management, it provides an overview of all the projects that an organization is undertaking. An organization is just developing only one project, it may take up, it may develop multiple number of a projects. So, this project portfolio management will provide an overview of all the projects that the organization developing.

So, some of the projects might be academic related projects, some of the projects might be so healthcare related projects, some of the here projects might be business oriented projects or some of the projects might be what industry oriented projects. So, this project portfolio management, it will provide an overview of all the projects that the organization is undertaking. So, it will prior this project portfolio management, it will prioritize the allocation of resources to projects.

So, since the organization or this what project developing organization is developing so many projects, what the resources are limited. So, how to allocate the resources? So, which one which activity or which project is more important, say more number of resources should be given to those projects at first. So, how to prioritize that which project should get should be allocated which resources and when? So, this prioritization is one of the objective of this project portfolio management. It will prioritize the allocation of the resources to the different projects.

This will also decide which new projects should be accepted and which existing one’s should be dropped. See if where after the feasible study we have found of that if this new project will undertake that will give us much more profit. Then certainly, we must accept it to develop it. While we have seen that some of the projects which are running, they are not giving so much benefit to the organization rather there incurring losses. Then, this is the time we must take action to drop the projects whatever loss we have suffered that will accept and we should not allow it to bring in more loss to the developed to the organization.

So, those existing ones which are giving loss those are running in loss. So, they must be dropped. So, how to decide that which new projects should be accepted and which existing ones should be dropped; for this, we should again use project portfolio management. This will decide which project to accept and which existing project to drop.

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Let us see what are the important concerns of project portfolio management? So, these are the important concerns of project portfolio management; first one is evaluating proposals for projects.

So, project proposals may come from different sources. So, how to evaluate the project proposals? What all the parameters based on which you will evaluate the proposals? So, this is the first important concern that we have to evaluate the proposals for the projects. Then, we have to assess the risk involved with the projects. I have already told you that there are two kinds of important projects; business risks and what are the project risks. We have to assess what will the impact of this risk will happen; so, how much how the project will be affected. So, assessing how the system will be affected. So, assessing the risks involved with the projects.

Then, deciding how to share resources between projects since there are multiple number of projects are running in an organization, but the resources are limited how to decide when, which resource will be allocated to which project that is an important factor. So, project portfolio management aims at are deciding which resource will be given when and to which project. So, now, taking account of dependencies between projects, there are some projects, there are dependent. That means, suppose project a depends project b;

project a depends on project b; that means, if project b is not completed maybe project a, we may not start.

So, that is why in order to handle this, we must take into account the dependency between the projects; which project is dependent on what other project. Accordingly, we can assign the resources so that the project on which another project it independent that should be finished as early as possible so that the other project which dependent on it can be started. Then, removing duplication between projects; so, if you are having similar projects, if a running similar projects and some components are redundant they are duplicated. So, it is unnecessarily use of effort and resources etcetera also a necessary what wastage of time.

So, we have to identify the duplication between the projects and we have to remove them this is also one of the important concern of project portfolio management; then, ensuring that necessary developments have not been inadvertently missed. So, another important concern of project portfolio management is that we have to ensure that necessary developments have not been inadvertently missed.

So, if there is what some good thing, some necessary development. So, somehow that has been missed. So, this thing should be ensured that yes no necessary developments, no important things; they have been missed inadvertently. This can be also aimed at this can be also ensured by using this project portfolio management.

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Now, let us see what are the different elements to project portfolio management? There are three important elements one is this project portfolio definition.

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Another is a project portfolio management and then, project portfolio optimization. Let us see about first the project portfolio definition. So, what is the objective? So, the objective here is to create a central record of all projects within an organization. So, with an organization mean there are many records. So, how to create a central record of all the related projects within an organization; so, that is why is one of the objective of project portfolio definition.

So, this is this first how to define the project portfolio or project portfolio definition. So, we must also decide whether to have all the projects in the repository or only a special category of projects like as ICT projects. So, we have to decide that whether all the projects will be placed in the repository or some special kind of projects or some special category projects like ICT projects will be kept.

Then, we have to note the difference between the new product development projects and the renewal projects that whether because see there is sufficient difference between developing a project newly and just on projected there renewing that updating that. So, we must have to difference because the resources require by both the projects new product development and the renewal they will be different.

The time required, the effort required will be different for developing a new product development as well as renewal of projects. So, we have to note down the difference between the new product development and the renewal of project. So, project portfolio definition aims at it its objective is this things. Then, we will see project portfolio management. Here we must have to see that the actual costing and performance of projects can be recorded and assist. So, what is the actual cost that the project takes and what is the performance; what kind of performance project is skipping.

So, they can be recorded and assessed by using portfolio management. The main objective is to record and assess the actual costing, the actual performance of the projects, they will be developed and in project portfolio optimization as its name suggest will see what is happening here that here the information gathered above. So, we are gathering the information, you will see that in this project portfolio definition we are creating the record, we are gathering the information.

So, here in project portfolio optimization the information that happened gathered earlier, they can be used to achieve better balance of a projects. How the different projects they can be balanced like see some of the projects are very risky, but they are potentially very valuable. They will be valuable balance by because they may give more profit you know that the business or the projects which are more risky, they are likely to give more benefits. On the other hand, there are some less risky projects; it is very less risky projects, but their properties also very less. They are very less valuable projects. So, we have to balance these different kinds of projects to achieve better performance.

So, the information, how we can do; how we can balance them? By obtaining, by gathering the information, by using the information those two which have gathered in the above steps. So, the information gathered above can be used to achieve better balance of the projects. So, the example as we have already seen that some projects might be very risky, but their even if their very risky, but the return; the profit will be also very high. But some projects which are less risky, but the return is very less, they will give very less profit.

So, we have to do a balance between these different kinds of a projects. So, this can be done; that means, we have to what go for some optimization. How we can make more profit even if the projects are risky; how we can spend less time less cost, but objective is to maximize the profit? So, these things can be achieved by this project portfolio optimization.

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Now, let us quickly see about this pros and cons of the project portfolio management. The pros is that it allow some small ad hoc task to be done outside the portfolio. These are the a project portfolio management; it allows you to carry out some ad hoc tasks outside the portfolio. For example, you may want to quick, you may want to what do the quick fixes to the systems that can be done easily. Whereas, the disadvantages that the you may have taken some full time staffs, you might have allotted some fulltime staffs.

For a project about them effectively, they will be just considered as part time. There will be there will be effectively part time basis because there still have some routine work to do. We cannot give the full time for the assigned projects. So, that is one of the limitation; then, the official project portfolio may not accurately reflect the organizational activity, if some projects are excluded.

So, if some of the projects that excluded then what project portfolio report you have prepare the official project portfolio it may not accurately reflect the organizational activities if some of the projects are excluded. So, these are some of the pros and cons of the project portfolio management.

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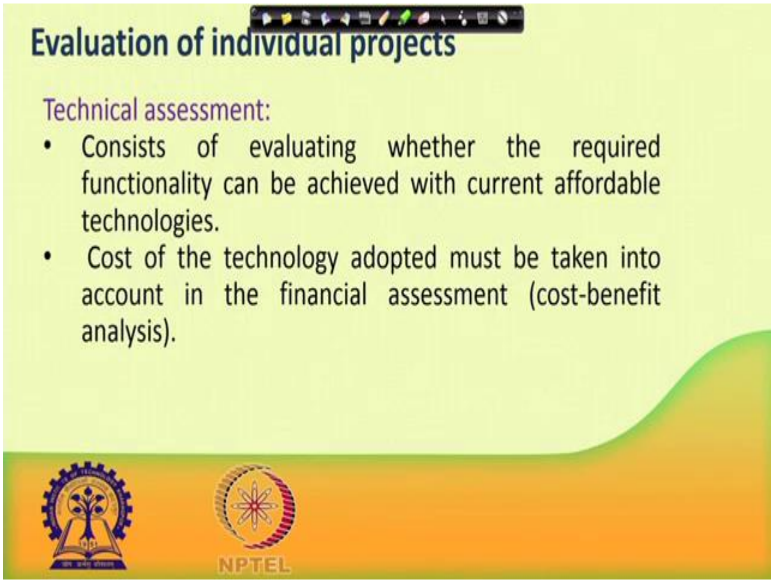

Now, let us see how to evaluate the individual projects. I have already told you that three kinds of feasibility studies are required to evaluate individual projects. So, one is this technical feasibility, then financial feasibility and operational feasibility. Let us see about this technical assessment first. So, the technical assessment consists of evaluating whether the required functionality can be achieved with current affordable technologies. What technologies currently existing in the market, with that can you develop the project.

Then, we say that it is technically feasible and the technical assessment has been perfectly met. So, similarly then, the cost of technology, if you will use a new technology, new hardware, new software; so, the cost of technology adopted that must be taken into account on in the financial assessment. While people you will prepare the cost benefit analysis, you have to consider the cost of new hardware, new software or new technology you have to take into account this cost.

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Then, is this financial assessment; in financial assessment, we have to what analyze the cost and benefits. So, that is why this is known as cost benefit analysis. We have to analyze the various cost that will spent, we have to analyze the various benefits that will get. Then, we have to compare that whether the benefits, there outgoing the cost or not if the benefit will sufficiently outweigh the cost. Then, we will take up the project for development authorize. We must we must not take up that project for development. So, this ah financial assessment or which is popularly known as cost benefit analysis, this relates to an individual project.

For individual projects, you have to perform cost benefit analysis. For cost benefit analysis, you need to do the following first. You have to identify all the cost; what are the different kinds of cost, you have to identify. For example, some of the cost would be development cost; some of the cost maybe setup cost. For example, for what developing your project, the hardware cost for the recruitment and the staff training cost for setting of this what experimental. So, what cost will be required regarding and the setting of the hardware or what recruiting the different personal required providing training to them. So, this cost as setup cost.

Similarly, another cost we have maybe they are like operational cost. So, after the cost for operating system, after installation; after the installation, we have both we may have to provide some cost through run it to operate it. So, these are operational cost. So, in this way for performing cost benefit analysis, we have to identify the different types of cost. Then, we have to similarly identify the different types of benefits. So, there are the different types of benefits are there which will discuss in the next class. I mean the classification of the cost and the classification of benefits, we will discuss in the next class.

Then, check that benefits are greater than cost. As I have already told you where performance cost benefit analysis, we must check that we must ensure that the benefits those who will be obtained out of the project must be greater than the cost that will incur. Then, only we can check up, we can take up the project for development; otherwise we should not take up the project for development. So, that is the one of the important objective of cost benefit analysis. So, we have to check that the benefits are larger than this the costs ok.

So, thank you very much.