Software Project Management
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Lecture - 03
Introduction – III

Welcome to this lecture, in the last two lectures we had some very brief Introduction to the Software Project Management and also motivation for software project management; how software project management is different from traditional project management and the scope of the project, stakeholders and so on.

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In this lecture, we will continue our discussion on software products and services because these are the two major types of projects that are undertaken. And the software project manager has to manage both these types of projects; the software product development projects and the services types of projects. We look at the major activities of the project manager and we look at the traditional versus modern projects.

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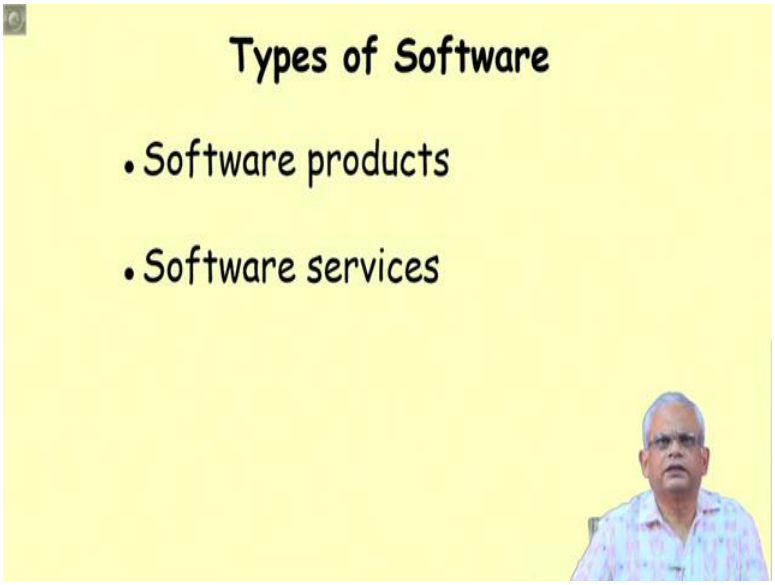

There are two main types of software that are being developed across the world; one is called as the software product development. Software products are the ones that we can buy just like any other product, you can go to the shop or order online. Let us say you need antivirus package; you can order it online or you want a case tool you can order it online, but the other type of project are the software services the services are customized software.

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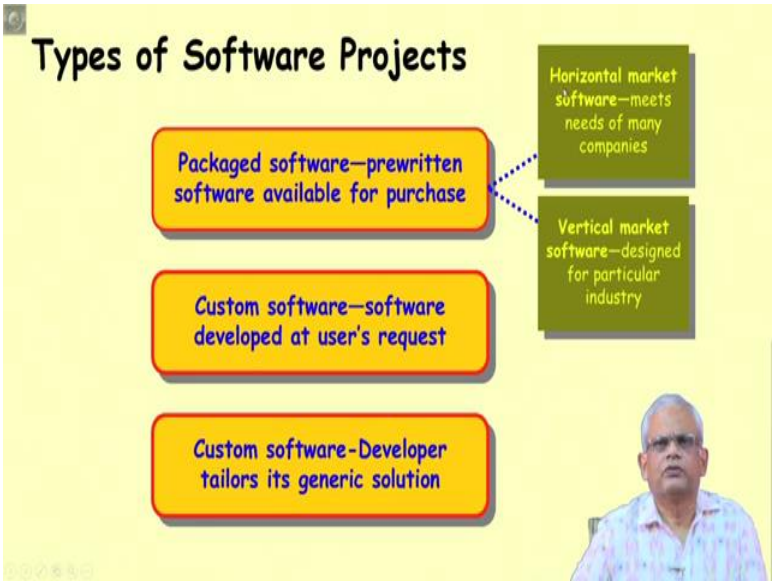

The packaged software which are generic in nature are called as the software products; these are available to buy of the self maybe from a online source; you can purchase this. These are prewritten software available for everybody; anybody can just order this and get it delivered.

But the other type of project is development of custom software; this software is developed based on specific user request. There may be one or maybe a few users who have their own typical requirement for the software. And the developing organization has only few users in mind; they initiate the few users, they initiate this project and then the developing organization develops for them and delivers to them; these are not generic software available for anybody for purchasing.

But then there is another custom software where the developer has a solution and each customer has small modifications that are required. For example, let us say an academic institute; it needs to automate it activities for example, student admission grading and so on. A company might have developed a software for this academic institute automation, but then every academic institute has its own grading system admission process and so on which may be different from other institutes.

Here the developing organization has a software which has been developed for some customer or maybe few customers in mind. But then another customer require small changes and here the developing organization initiates a project where it has its software already there; only small changes need to be done in this project.

So, the first one is a product development project where the developing organization has a generic customer requirement and develops the software. The other two are services projects these are custom software; one is specific user, the second one is it just tailors and existing solution. The product type of software can also be categorized into two types; one is for the horizontal market and the other is for the vertical market. The vertical market maybe for let us say banking or let; let us say telecom billing or maybe medical inventory management or maybe a hospital management and so on. So, this is for specific verticals like banking, telecom, hospital and so on.

Whereas the horizontal market is across all types of customers for example, a database management or a antivirus software and so on. These are sold to customers who are generic in nature and there is no specific type of customer in mind.

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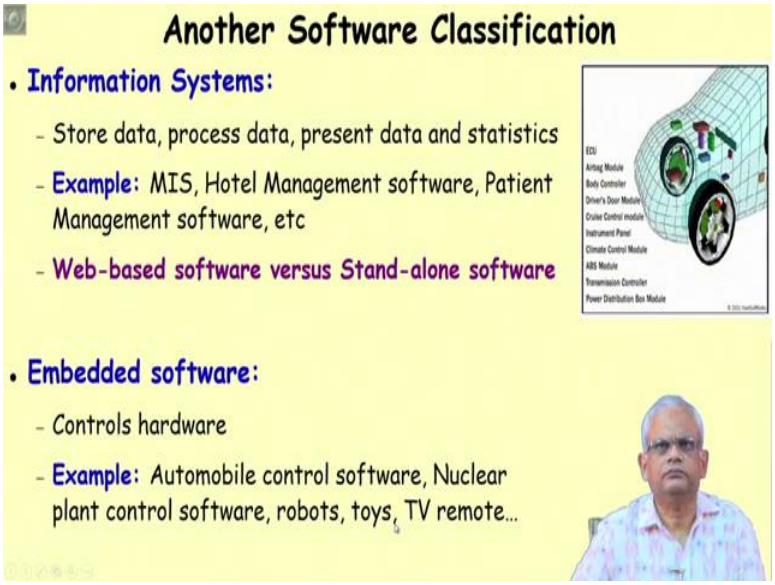

There is another classification that whether the project involves development of an information system or an embedded software. In a information system, the software collects data, stores data then processes this data to generate some statistics and maybe some other data output. There are many examples of the information system for example, the management information system, where let us say a trading house deals with the many commodities, it buys at bulk rate and then sells it to the individual customers,

Here the management information system will keep track of what is the customer requirement, then source these requirements in bulk. And then store this and distribute and also, manage the accounts and report about various types of statistics what is the inventory level, profit loss and so on.

Another information system maybe the hotel management software, where the guests to a hotel register the pay bill; the hotel room occupancy, the profit loss and so on, these are handled by the hotel management software. We might have a patient management software where in a hospital patients register, the doctors they visit the hospital certain times. And then the patients pay their bill and then the hospital needs to pay to the doctors and then finally, have the profit loss statement.

All these information system may either be web based or these may be standalone software. In a web based software, the software can be operated from anywhere using a web browser whereas, in a standalone software; it needs to be operated centrally. In

contrast to the information system in a embedded software; these are mostly used to control some hardware. Therefore, the software here works closely with the hardware it controls the hardware. For example, automobile control software, nuclear plant control software, robots, toys the software that control the toys, TV remote and so on.

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The software services as we are discussing is a different type of project, it has different characteristics than the software product projects. The software product project the development is done to develop a generic product; whereas, in software services it may involve customization of an existing software or developing certain items on customer request. This has of late becoming a dominant type of projects many of the software development projects are software services projects.

But the term software service is the umbrella term; it includes many things. For example, customizing an existing software on specific customer request; software maintenance the software exists, but then the customer want some changes maybe enhancements; maybe performance improvement and so on. A project to maintain the software is also a type of services project.

Software testing; a software has been developed, but then before deployment needs to be tested and maybe an organization just does software testing and they are providing software services. But what about an organization which supplies contract programmers to another organization; who wants to automate certain activities and they just get these

contract programmers who do coding or other assignment assigned activities like testing and so on; this is also a type of software service.

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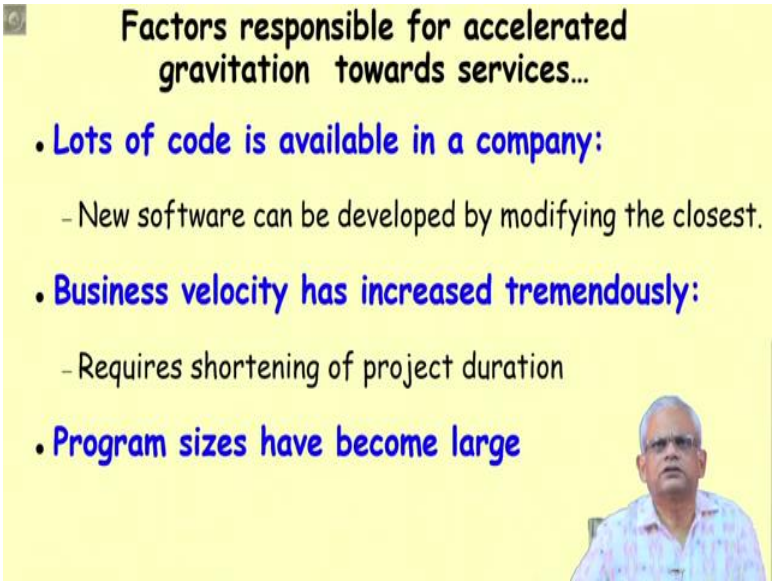

But what is the reason that more and more type of more and more projects are becoming the services type of projects? About 50 years back; the only type of software projects that are existing were software product development type of projects. But now more and more projects are becoming services type of projects and let us investigate that what is causing this migration from pure product development to services type of projects.

One is that over the years lot of code have been written by the company and whenever there is a new request; the company can most cost effectively develop the software by modifying some of the existing code. It can find out which is the code which is closest to the customer requirement, it may be one project or it may be across several projects which were completed. And then it can just make small modifications to this and then deliver the software to the customer very quickly and at less cost.

This is also a services project. And here the main reason why the companies are doing this is that; they have lot of code they have completed many projects in the past and they have a lot of code and they can reuse these to develop the next software that has been requested.

Another reason is that the business velocity has increased tremendously; by this we mean that there is so much of competition. There is so much of competition among different industries, different companies that they want to do things fast for software development they become impatient.

Multiyear projects are gone; nobody wants them and it is expected that a software development work completes in 2 weeks, a month and so on. And the way this development request can be met is by having a services type of project, where there is a customization of existing software.

The third reason is that the program sizes have become large and therefore, it is imperative that most of the code is reused and only small development is done, small customization to complete the work.

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But still worldwide, nearly half of the projects are product type of projects and another half is and services. Of course, the services type of projects are increasing very rapidly, but if we look at the Indian companies; here we find that most of the projects are in the services segment; why is that the case that we have very few product development projects?

The product development project has the advantage that once the software is complete and it is successful in the market; the company has a steady revenue the one that

company that developed the product. For example, oracle software once it was developed it gives us steady revenue to the company. Whereas, a service type of project in that way the benefit to the company is less because it is developed and sold on one time revenue.

But then why is that the Indian companies have not focused on the product type of projects but largely to the services segment? If we look into the reason; the answer is that the product type of projects have their inherent risk; a product development involves investing lot of money in developing something which may be required, may be successful or may not be successful.

Whereas a services project; once it is complete there is one type revenue which is assured and possibly this reason to avoid the risk invest millions of dollars or rupees to develop something which may be a failure. I think that is the reason that the Indian companies have largely focused on the services segment.

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Now, let us look at the activities of the project manager; what does the project manager do? The project manager; large part of the activities planning; estimate the duration, estimate the cost, estimate the effort, allocate resources and schedule.

Staffing; recruit personnel, motivate them and once the project is started; direct the personnel and ensure that the team works as a whole to complete the work; so that is

every day. Check that the work is progressing as per the plan, but then there will be a plan deviations and monitor if there are deviations and then take corrective actions so that any changes to the plan is contained.

And also it may be necessary to change the plan continuously because when we plan initially we cannot foresee many things and therefore, the plan needs to be changed as the project progresses. You can summarize the project management activity as planning the work; that is to start with you must plan the cost, the effort, schedule and then the projects and then do the staffing and then the project starts and largely it is directing and monitoring and controlling and that we call is working the plan. So, the project management activities essentially consists of planning the work and working the plan.

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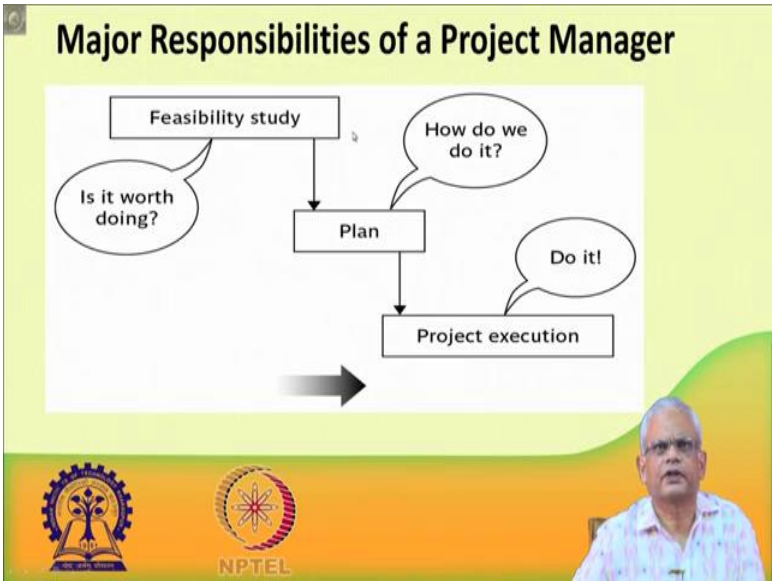

The major responsibilities of a project manager is summarized in this picture; that to start with it is the project managers responsibility to carry out the feasibility study. The feasibility study the project manager determines is it worth doing the project?

The project manager understands the problem, proposes alternate solutions and then estimates the cost. And the technical feasibility; the project manager may decide at this point of feasibility study that the project in feasible on account of cost considerations, that the cost involved in developing the software far exceeds the income from the software and then the project will be abandoned.

The project manager may also find out that technically the project cannot be done by the organization; do not have the competency to undertake the project and then the project there is no further progress project is abandoned.

But if it meets the cost requirements and also the technical feasibility then the project starts off. And the first activity is planning the initial plan is made that how do you do it; here it involves estimating the duration, estimating the effort and then resource allocation and scheduling; that we call as plan. And once the plan is over the project starts off and then we have the project execution where the project manager cons concentrates on how the project progresses as per the plan. And here the work of the project manager is largely directing and monitoring and control.

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In the feasibility study, the project manager is concerned about two main types of feasibility; is it technically feasible and is it worthwhile from a business point of view, that is it financially feasible. And only when it is found feasible the planning is undertaken and after the planning; the project starts off and then the work of the project manager is directing the team and then execution monitoring and control.

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The project planning starts off immediately after the feasibility study; if the project is found to be feasible and worth doing it then the planning is done. In the planning, the important activity is estimating.

As we proceed in this course we look at various estimating techniques and that is a major component of this course. And once the estimation is done; the scheduling who will do what at what time and when is likely to complete? So, that is project scheduling. The staffing, risk management and there are many other plans that we have called here miscellaneous plan; as you proceed in this course we look at the other plans.

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Monitoring and control is the major activity once the project starts off; that is the feasibility study and the planning is complete and the project starts off; the project managers main activity is monitoring and control.

Monitoring and control lasts for the entire project duration, from the time the project starts to the project completion. And here the project manager everyday needs to check the progress and if there is a deviation from the plan time and the progress that has been achieved; the project manager may take some corrective actions. And also the project manager may find that it is necessary to revise the plan.

So, the projects manager sits down, revises the plan; he controls if there is a problem in the project which is hampering the progress; the project manager takes controlling action. For example that the design is taking long time then might change the roles, might get additional designers and so on. Whenever there are problems emerge for example, there is a delay in delivery of the hardware the project manager may decide to lease hardware to overcome the problem.

So, coming up with solutions, innovations to projects that to problems that emerge as the project progresses and not only that the project manager is the main person who liaises with the clients with the top management, with the users also the developers and other stakeholders.

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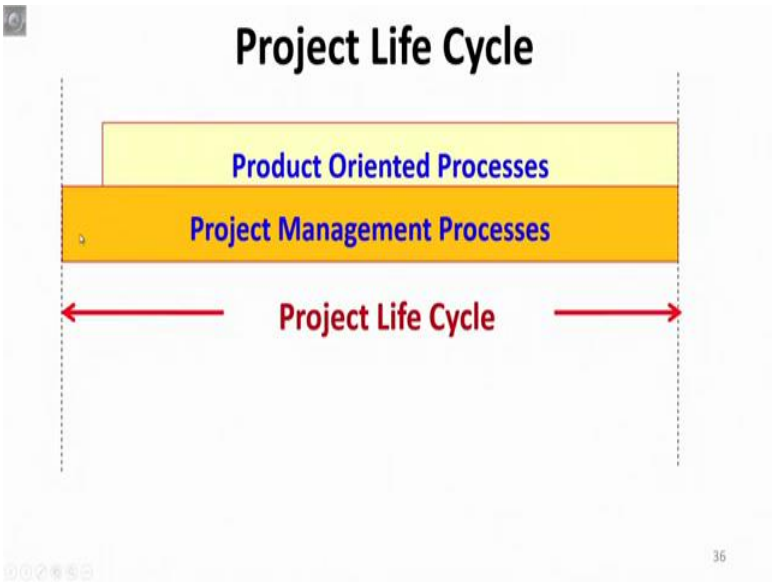

If we summarize our discussion here in this diagram, it is that the project management activities they start much before the actual product development starts and that is the project planning, the feasibility study, the project initiation and so on.

The project manager does many types of processes for example, initiating the project planning, recruiting, monitoring and so on; so those we call as project management processes. But as the development work starts; the development team carries out their own processes, those we call as product oriented processes. For example they might carry out requirements specification, they might carry out design they might carry out coding, testing and so on, those we call as product oriented processes.

And at the same time the project manager carries out the project management processes and the project management processes are carried out over the project lifecycle. Whereas, the product oriented processes are carried out during the development lifecycle and the project lifecycle is longer than the development lifecycle as shown in this diagram. With this, we will just take a break and we will continue in the next lecture.

Thank you.