**Software Project Management**
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**Lecture - 02**
**Introduction – II**

Welcome to this lecture with a preliminary Introduction that we had in the last lecture. We will discuss a few more topics which are also introductory in nature, but we will build on what we discussed last time.

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In this lecture, we will discuss about what are exactly software projects, what are the types of software projects? We will identify two major types of software projects one is product development and the other is services projects. What are the major activities of the project manager and then we will discuss about the traditional versus modern projects.

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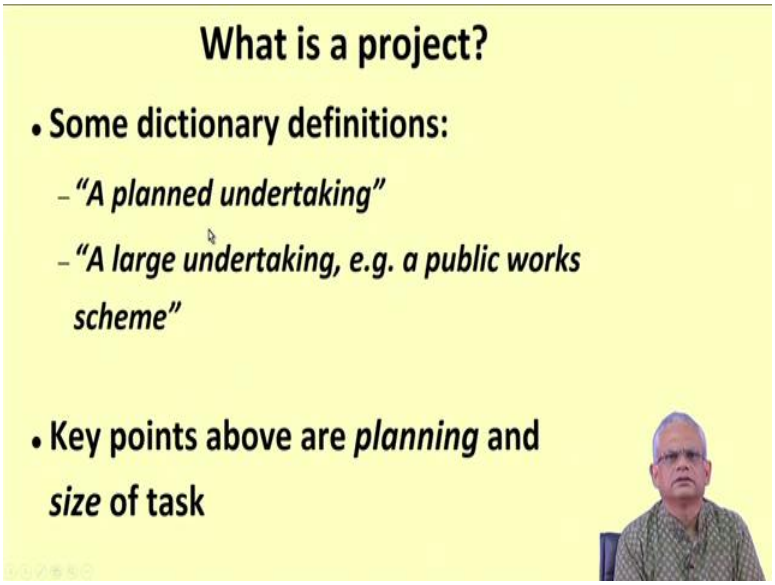


First let us look at what is a project? If we look up in the dictionary we will find there are many definitions in different dictionaries. For example, find a planned undertaking; a large undertaking for example, a public works scheme and so on. But if you look at these different types of dictionary definitions, the key point are that it is a planned work and also it is a large work. There are two key attributes of a project; the first thing is that it is a planned activity, the second is that it is non-trivial; it is a large work.

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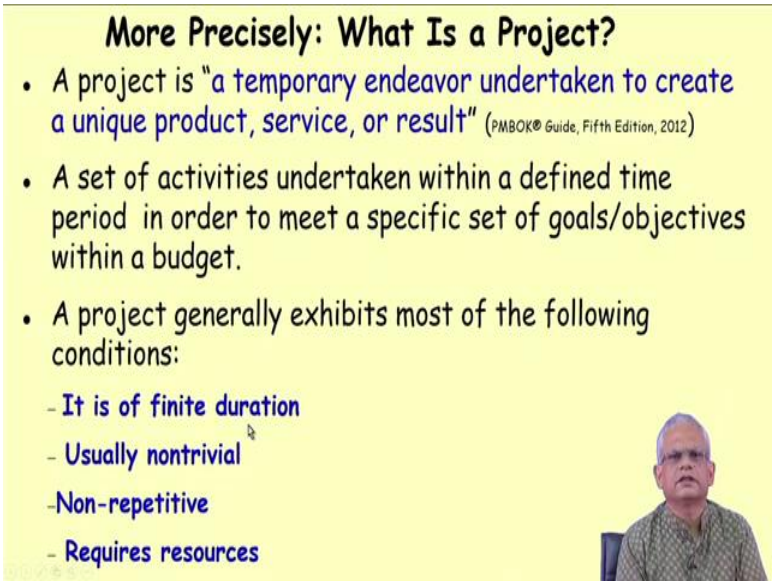

But then let us look what is a project more technically; the project as defined in the PMBOK; Project Managers Book Of Knowledge fifth edition. The project is defined as a temporary endeavour undertaken to create a unique product, service or result. It is endeavour undertaken to create a unique product, service or result, but then implicit in this is that it is a planned activity and it is a large activity.

We can also say that a project is a set of activities undertaken within a defined time period in order to meet specific goals within a budget. So, in addition to a planned activity and a large activity; we also have few other things that there is a time period; by which we need to complete the work and also there is a budget associated with it.

Now, we have a more precise definition of a project that it is a planned activity. It is a large activity; it needs to be done within a defined time period and also within a budget; all software projects ok. Why a software? All projects; they exhibit the following characteristics, the project needs to be completed in a finite duration.

For example, let us say in a shopping mall; sales is occurring over a number of years. There are sales people who are selling every day on the counter; will that be a project? No, because it is just ongoing; we cannot associate a duration by which that will complete. So, all projects are of finite duration, large projects, non-trivial, non-repetitive and these require resources.

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Each project is large consisting of multiple tasks; also there we can define a precedence relationship between tasks that until some task completes the other tasks cannot be done. There is a time period we can define for the completion of the tasks; we will see many software examples of projects as we proceed in this course.

But then let us look at some non software examples of projects. A wedding; it is a project, you need to plan, it is a large activity; there are many subtasks there is a budget associated with it, there is a duration by which it needs to complete. A B.Tech degree is a project, there is a duration by which you will complete the B.Tech degree, there is a budget associated with it, you need to plan how you will complete the degree.

A house construction is a project, a political election campaign; yes that is also a project because there is a duration by which the campaign will end, you need to plan the activities, there are many activities in the campaign and also this is the complex activity.

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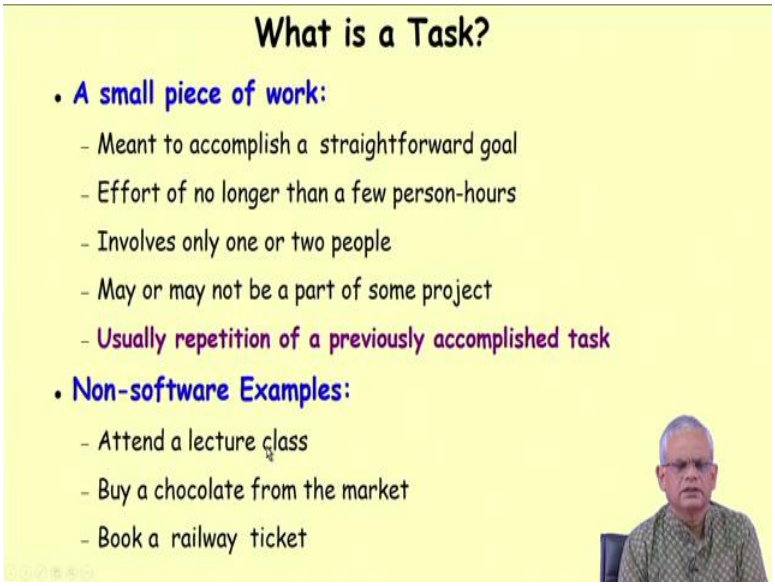


But then let us be clear about what is a task? So, far we have only said that a task is much simpler; often repetitive and no project management is necessary for a simple task. A task in contrast to a project is a small piece of work meant to accomplish a straightforward goal rather trivial. The effort required is only a few person hours, involves one or two people at most. A work may be part of some project, it may not be also and one thing is that a work is typically a repetition of some other work that you have already done.

Let us give some examples of a task; attending a lecture class, buying a chocolate from the market, book a railway ticket on an online booking; these are straightforward tasks. And you might have done this already many times, you have many times attended a lecture, many times have purchased a chocolate from the market; you want to repeat it again, you might have already booked railway ticket many times.

So, these are somewhat straightforward; can be done in less than few hours one or two persons can do it; does not need a large team for achieving this and typically a repetition of something had already done. On the other hand in contrast to this; in project it will be much more large and it is not a repetition of a previously accomplished task.

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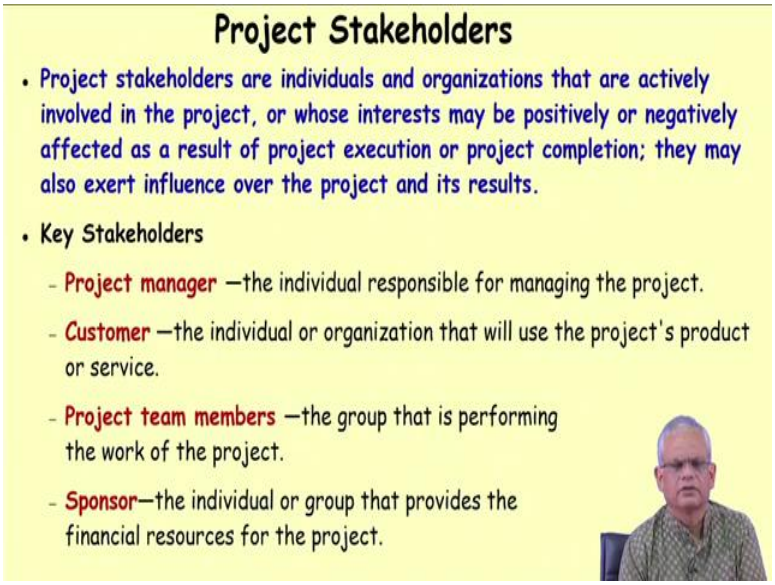


Now, I hope that we are clear about what is the difference between a task, a project and an exploration. And the project management is especially important for projects; for tasks are too trivial, straightforward, to need any project management. And also the exploration is too challenging and there the project management techniques are not really suitable.

Now, let us look at a important concept again which is about project stakeholders. The project stakeholders are individuals and organizations that are actively involved in the project and whose interests may be positively or negatively affected as a result of the project execution or project completion; they may also exert influence over the project and its results.

The main thing that we are saying here is that the stakeholders are the ones who are either they are the project manager; who are managing, the customers who will use the project the software that will be developed. The team members who are working every day to develop the project, the sponsor who is financing the project; these are the key stakeholders.

There may be other stakeholders, for example let us say a vendor. The vendor maybe develop some outsourced software; that part of the project; he will be a stakeholder. Because he is concerned, he is interested, he has interests on the project; he will be affected by the result of the project success or failure.

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But then we can roughly categorize the stakeholders into two categories. One are the internal project stakeholders, these are internal to the organization developing the software. And here the internal stakeholders are the project manager, the project team and the top management.

The external project stakeholders are the customers; if the customers are external. Sometimes the customer may be in the development team for example, a different department or maybe the customer may be the same department; which is developing a software for its own use. But typically the customers are external and the vendors etcetera, so these are the external project stakeholders.

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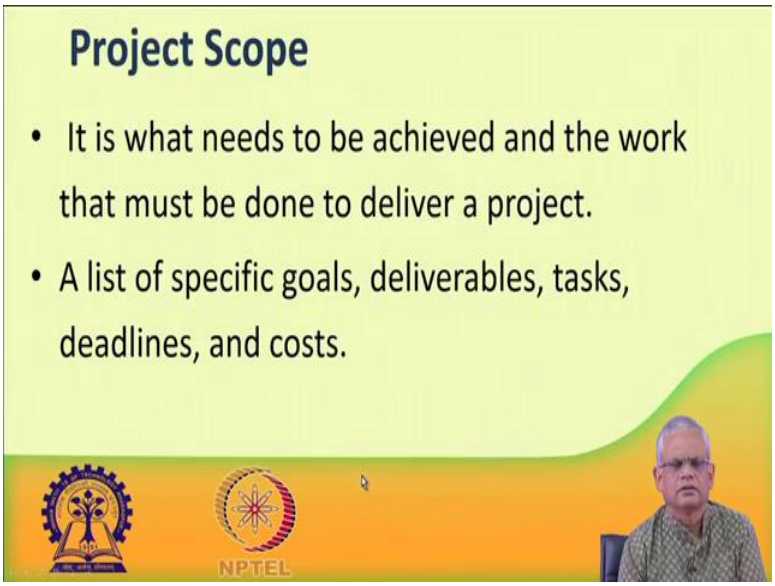


The other important concept that we will discuss in this lecture is the project scope. The project scope essentially means that what will be achieved in the project, what must be done to achieve the project; to complete the project and to deliver the results. So, what we want to do in the project; how it will be done and what will be the deliverable? So these are the project scope.

If we write it in the form of a list; it is the list of specific goals that is what needs to be done. What will be the deliverables, what tasks need to be undertaken to complete the project, what are the deadlines and what are the cost? So, this is the project scope. Before starting a project; the project manager has to be clear about the project scope; the goal of the project, the deliverables, the tasks that need to be done to complete the project, the deadlines and the costs.

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Unless the project scope is properly defined and the project manager is clear about the project scope; the project typically ends up in a failure. There are many factors which may contribute to a project failure just listed some of them here. Two major reasons why the project fails is that the development team does not understand the customer's requirements, the requirement specification has not been done properly.

The second reason is the project scope is poorly defined that is, what needs to be done, what are the tasks, what is the budget, what is the deadline and so on. Changes are poorly managed; any small changes because changes occur frequently as the development takes place; the changes are poorly managed. The chosen technology changes; you might have developed it on a wired communication assuming; a wired communication, but then suddenly the technology has changed and you will have to use a wireless; it may involve lot of changes to the software.

The business needs change; that is the customer who wanted to have the software for certain business needs, suddenly finds that the business needs has changed. Earlier for example, wanted a software to let us say manage the customers, who visit the store. But suddenly it became part of an online store, where customers do not visit the company; the business anymore, in that case do not need the software. So, halfway the customer might say that see the one that we had asked you to develop; our business needs have changed we do not need that software.

Unrealistic deadlines; when the deadline is very aggressively set, the developers try to compromise on the design, requirements, testing and so on and the project ends up as a failure. In experienced development team, poor project management etcetera these are some of the reasons for failure.

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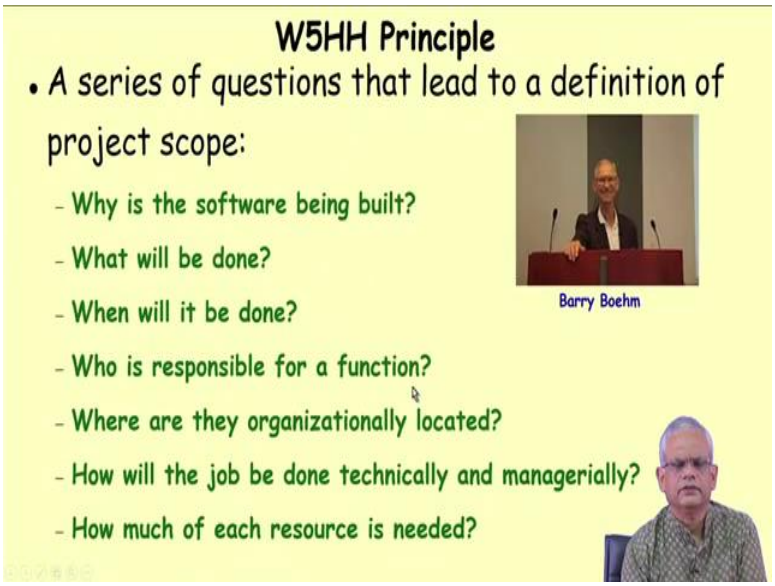


But then how is the project scope defined, what does the project manager do to define the project scope? Barry Boehm; he gave his W5HH principle, which is 5 Ws and 2 H. The 5 Ws are the project manager need to be clear about why is the software being built? What will be its use? What will be done? That is what are the activities, that needs to be undertaken; to be able to develop the software. What are the deadlines by when it needs to be done? Who is responsible for a function?

So, the activities that, need to be done who will do what; which parts will be developed internally, which parts by a vendor and so on. Where are they organizationally located? That is who are; who the developers, where will they are located in different offices; across the world, where will be the vendor located? Are they properly identified?

How will the job be done technically and managerially? How much each of each resource is needed? So, that will define the cost; resource can be manpower cost, it may be computation, hardware cost and so on. The W5HH principle is very important for the project manager to be able to properly define the scope of the project.

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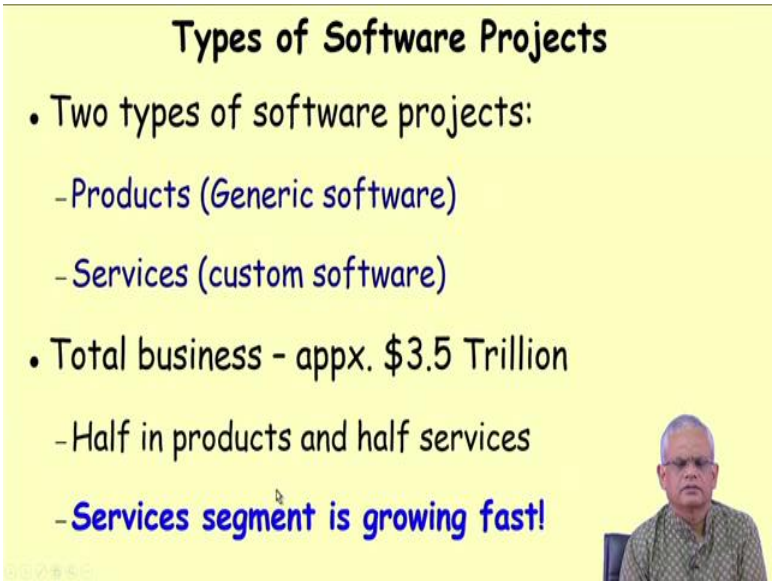


Now, let us look at another very preliminary concept is the type of software projects that are being done. We have so far looked at what are the projects, how is the software projects differ different from other projects, why software project management difficult compared to other project management?

Now, let us look at what are the types of software projects? There are basically two types of software projects; one are called as a products, which are also known as generic software and the second is services or the custom software. The products are the one which you can buy of the self, you can go to the market get it or you may order online and get it; these are generic.

For example a word processing software, an antivirus software or maybe a database management system and so on. These are products which have already been developed they are used for many many applications, many users who you can just go and buy them. On the other hand, the services are custom software which needs to be developed; once you identify, this you cannot just go to the market and directly get it.

For example, a business house wants to have a software to manage the inventory. For this, you cannot just get software online and install and have it done; need to have identify what are the items that are to be managed, where the storehouse and so on. So, these needs to be developed specifically for that customer and these are the services or custom software.

We have seen that the total business is approximately 4 trillion dollars and right now the total software business is half in products and half in services. But then the services segment is growing fast; the services type of projects are becoming much more frequent, the product development is becoming less.

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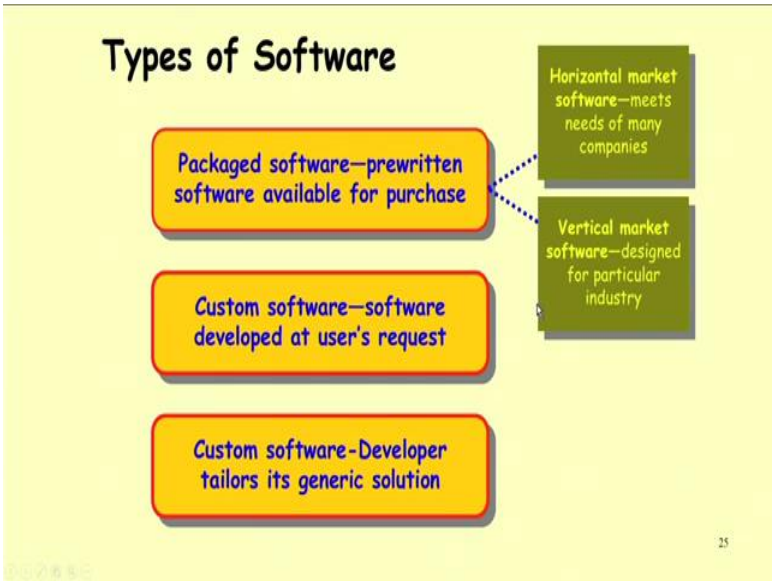


What is the reason that the services projects are growing very fast and the product type of projects are becoming less? Let us identify the reason for that, but before that the generic software or the products call them as packaged software; these are prewritten available for purchase you can buy them online or get it from store just walk in there and get a database management package and so on.

Whereas service is a custom software; it is a software developed at users request. But then the service can also be that; it is a custom software which the developer tailors from another software. So, you wanted inventory management software and the developer had inventory management software for a different business; and had to make small changes and then give it to you; so, this is another type of project.

So three main types of projects here broadly; there are two projects one is the product development projects and the services projects. And in the services project we have custom software development is develop entirely for a customer or it is a custom software, but then you tailor an existing software. The product development can also be further divided into two types; one is a horizontal market. This is a product for horizontal

market where the software is used across many types of customers. For example, a word processing software; it is a horizontal, it is for horizontal market, but a vertical market is one where it is intended for a specific industry.

For example: a banking software is only the banking; the banks will be the customer and that is a vertical market. Or let us say you want to develop a software which will be used by let us say billing mobile customers. So, that is for the mobile phone vendors and that is also vertical market.

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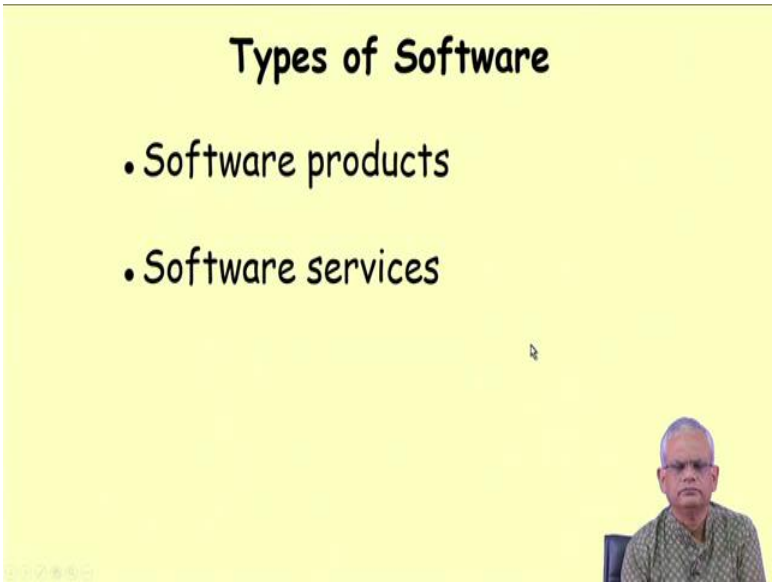


We have seen that there are two types of software the products and the services.

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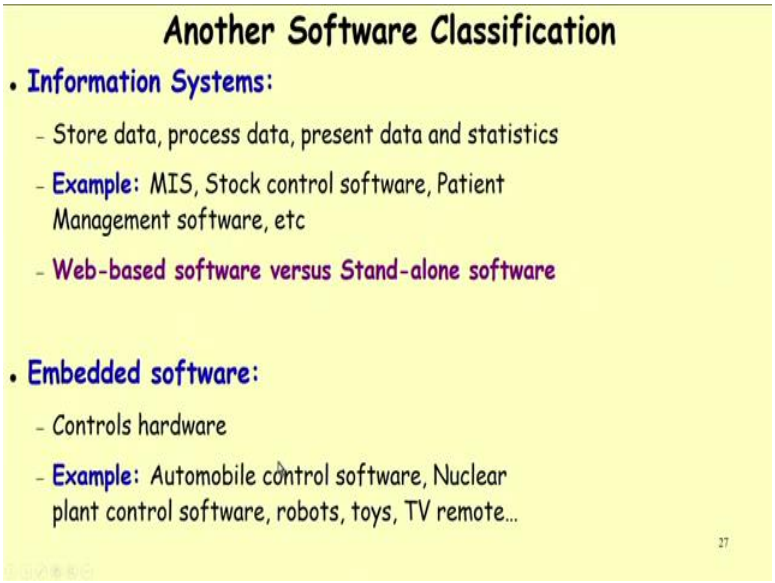


But then you can also classify the software into either information systems; which store data, process the stored data present the data and statistics. This is the typically management information system, stock control inventory management, patient management etcetera; this can be web based or standalone software.

And there can be embedded software, where they control the hardware; for example an automobile control software, a nuclear power plant control software, robots, toys, TV remote etcetera. So, this is another classification one we just saw is that between the product development and services type.

But another way of classifying them may be information system projects or embedded software development projects. With these basic concepts, we will; we have come to the end of this lecture. In the next hour will also be few more basic concepts based on what we have already discussed. We will stop at this point and continue in the next lecture.

Thank you.