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Week 4: Software Project management - Project Management Overview

Professor Prajish Prasad: So, in the previous weeks, we looked at how we can gather requirements from users and design usable and effective interfaces. So, now that we have some idea of how to do this, in the upcoming weeks, we will look at how we can now start developing these systems. That is the design and the development phase. But one thing we have not touched upon till now is how will all this work get done.

So, let us say there are different user stories, different UI screens, etc. We need a team to work on this development. And in most cases, the success of software development often depends on how this team is managed. And we need a person to manage such teams. And usually the person who does this is a project manager. A project manager is like the boss of the project, and manages all aspects of the project. But what does managing involve? What does, what all goes into managing a software project?

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So, let us reflect on this question. What do you think are the responsibilities of a project manager? So, what all is involved in managing a project, a software project? You can pause this video and think about some answers before proceeding.

Professor Sridhar Iyer: This project manager acts as the product owner, serves as the point of interface between the customers or the stakeholders and the development team. The project manager ensures that the customer's requirements and needs are addressed. Looking from the development team's perspective, the project manager is responsible for creating the team and finding the right people, putting them to do the right tasks. But does her job end there? She is also responsible for managing the team, ensuring that people are staying on track and that the project moves forward towards the timely completion. So, what are some things involved now in managing a team?

Let us consider a scenario. For example, the project is progressing well. But at one point, there is a technology decision to be taken. There are multiple options available, and one of them has to be chosen. How does the project manager do this? The project manager can consult the team members because they are familiar with what they are doing, as well as the project manager consults experts outside the team in order to decide which technology feature to implement. This way the project manager is responsible for taking the project forward to timely completion.

Professor Prajish Prasad: So, when the team works effectively the project moves forward. But how do we know that it is moving forward? So, the project manager creates a plan or a schedule of how the development will continue and how the project will get completed. So how do they do this? So, based on the requirements, they divide these requirements into major activities, which are required to complete the project.

They then break down each activity into tasks. They check for dependencies between tasks, and then create a plan. We will learn about how we can schedule projects later this week. Now, let us say I have broken each of these activities into tasks, but how do I know how much time is required for a particular task or a set of tasks. So, this is also another important activity that project managers handle, that is, estimating how much time is required for each task and activity in the project. We will look at some of these estimation techniques this week as well. So, along with estimating the time required, we also need to estimate other aspects like how big is the project the project size, how much effort how many people are required to complete the project as well as the cost. So, cost estimation is also very important, because the client needs to know how much they will be charged for developing the software project.

Professor Sridhar Iyer: Another aspect is to identify, assess and mitigate risks in the project. What could these risks be? There could be various types of risks, for example, some people

from the team may leave, so you need to have backup plans. So, project manager actually needs to anticipate such risks in a project as early as possible.

And as soon as a risk is identified, there has to be an effective risk management and risk mitigation plan in place saying okay, if that eventuality actually happens, what are we going to do, what is our plan A, what is our plan B, what is the plan C. So that the impact of the risk on the deliverables is minimized. The project manager also has to account for how the final system will be configured.

That is, which tools, documentations, etc are required to combine all the modules, so that the customer can use the system. This is called configuration management. In addition to this, project managers also have to account for changes that can occur in the software system. For example, a developer may work on the system to create a new version of the code. Different versions of the system may also have to be managed. While all this may sound abstract, we will be going into detail of each of these ideas.

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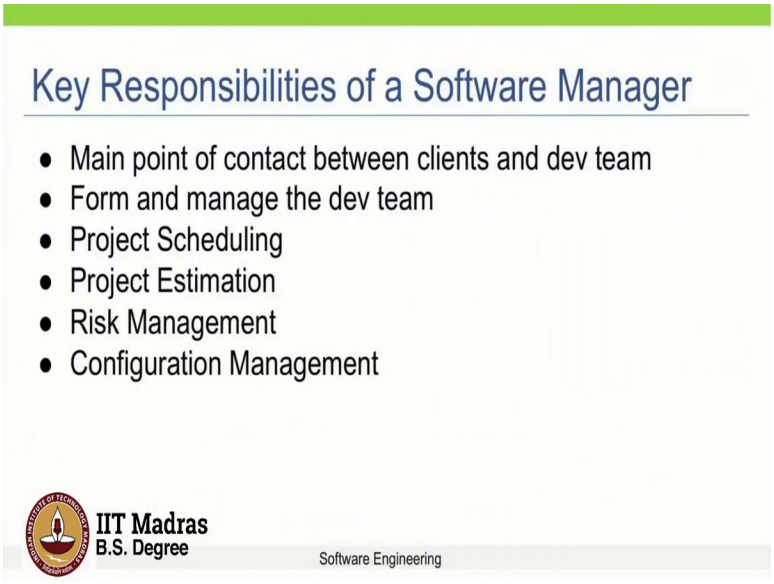

To summarize, in software project management, the key responsibilities of a software project manager are the manager is the main point of contact between clients and the development team. The manager is responsible to form and manage the development team, take care of scheduling, estimation, risk management, configuration management, and ensure that the product is delivered in a timely and within cost manner.

Professor Prajish Prasad: So, all these responsibilities that we mentioned, they are common practices and tasks in the Plan and Document perspective. The goal has been to make software engineering predictable in budget and schedule. Now, let us look at the Agile perspective. So, Agile does not try to predict cost and schedule at the start of the project. Instead, it relies on working with customers on frequent iterations and agreeing on a range of time for the best effort to achieve the customers' goal.

So, for example, in the Agile perspective, we take user stories and rate them in terms of their difficulty and we assign specific points to them. We then record points completed per iteration. So, this gives us a more realistic estimate of the time and effort required. So, we will also look at Agile software management techniques as well this week.