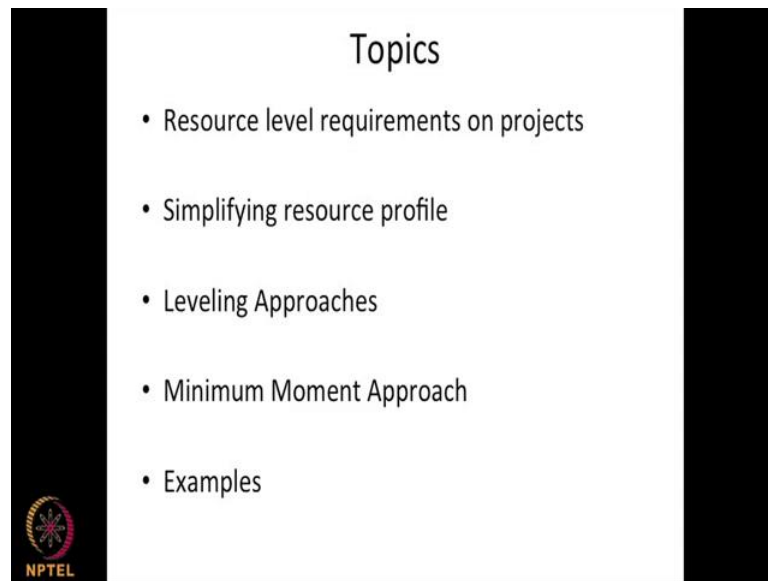**Project Planning & Control**

Prof. Koshy Varghese

Department of Civil Engineering

Indian Institute of Technology, Madras

Lecture - 36

Resource Profile Requirement

(Refer Slide Time: 00:24)

In this session, we are going to look at how we can level a profile resources, and this is a extremely important function which a scheduling engineer has to do on a project, and let us take a look at some of the basic requirements in what happens when we try to level resources. So, the topics for today are given in the slide, we will first look at basically, you know what are the requirements to level resources on a project. And then we will look at different kinds of resource profiles and simplification required go to a different leveling approaches, and we will spend some time with very simplistic approach called minimum moment algorithm, and then work a few examples to show how minimum moment algorithm can be applied.

(Refer Slide Time: 01:08)
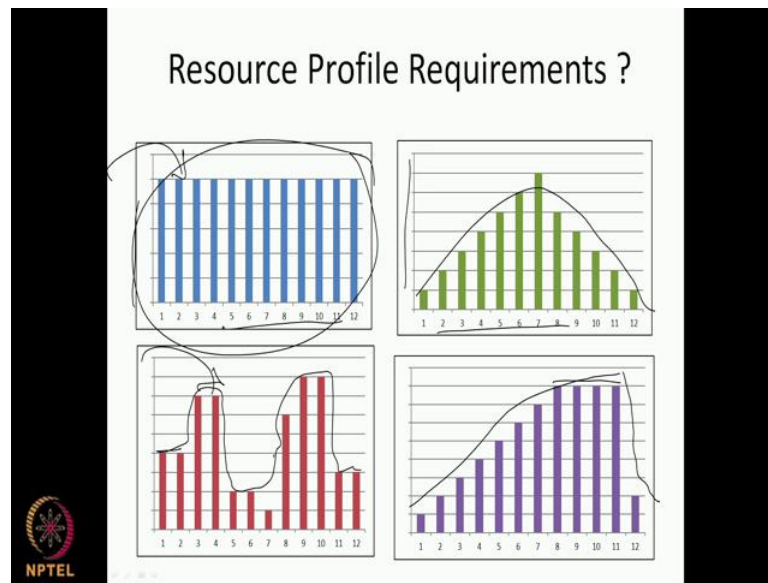
Now, when we take a look at resource profile, I think form the earlier lectures you all should be familiar with what we have doing the resource histogram. So, here we have 4 histograms of different shape, and what we have on the x axis here is the is of course the time, and this has been the level of resources there are going to be deployed. So, if we say let say want to 1 to 12 is 12 month of year for a given year, and we take these 4 histograms, now what is the requirement? So, what do we think a project would want. So, this is the key question, and if you take a look at the four you know you might come out with an answer of you know 1 2 3 or 4, but actually if you get on to a project, you might find that any of these are could be applicable to be a particular project.

So, if you take for example, the first one is a perfectly levelled resource this would what we call an ideal case, we might like to have this in project of course, it is ideal, but you know if you want something ideal this is what we could probably try to aim and in the rest of the lecture we will say that this is what we want to aim for in kind of a theoretical profile. So, if we take the second profile which is kind of going this way where in the beginning of the project, we do not have that much load of resources as the project progresses we signify increases, and as a project decreases we reduce the resource, resources on a project. So, in many projects, this is consider to be what is required, that is a steady increase and then a decrease, and this from mobilization point if you during the beginning you cannot easily mobilize things, but as you go on you might find that you know project pace picks up then as the projects get to closer, it is slowly shuts down and this is also an acceptable profile in many cases sometimes a practical profile of

what people of what a project manager would want to do.

Now we come to another case here where we are now having profile which is kind of varying, and we might say oh is this something which we want to do. Now if you kind of take weather into a account, and you know when I can actually do construction and when I cannot do construction might be such a profile will suite my climatic conditions. So, here we would say that probably in January February, I you know in this region I might not able to that much work where as coming into march and April I am mobilizing more people to do more work coming into summer, I might do less monsoon even less and then you know in august September, October I might try to do maximum, and then taper down again towards the end of the year.

So, the point of bringing this up is to say, all these weather condition is different in the southern hemisphere they might follow the different pattern, you know if it is far north it might be different pattern. So, in many ways the resource profile, you know a can really be based on what a project requires. So, while this is an ideal profile, something like this is also something which might be is optimal for a project. So, we have to kind of understand what a project requirements and dependent and then chose a profile.

Now you might find that the fourth profile with a which has shown where the resources rise, you know then it a kind of peeks towards the end and then the project completes, might be this is what happens in many of our project, where things, scope changes, all these issues take place, and then its only towards the end that you know most of the work gets done this is the not an ideal profile, it causes a lot of problems you know, but might be this is how things are going to work out for a particular project where you know design is changing and things are, you know are all going to fluid till the end.

So the point of the slide is used to say that, if you look at a practical project, there can be various profile which are optimal for the project. And while we will probably narrow in on this as our kind of theoretical profile with what we want to work with any of these other profiles are possible, and it is quite challenging to actually fit you are resource plan to a profile which would be suitable for the project.

(Refer Slide Time: 05:41)

And one thing we want to say when we are going towards ideal profile, which is rectangular, if you don't try to profile your resources you might the land up with the what we are saying hear as the random profile. And if you if my resources are going to do this you know and this is going to be extremely difficult to manage, and you certainly do not want this and in the comparison with something like this, this is something which we would want to try to achieve. So, in the context of what we are kind of going cover we are going to move try to move our either early start or it a our profile between early start and late start to get as close to what we are calling the ideal profile here as possible.

(Refer Slide Time: 06:29)
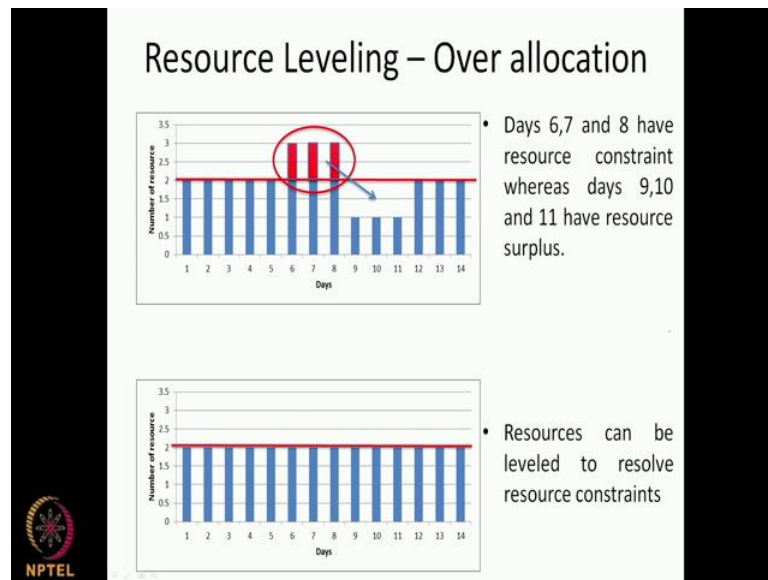
So, you may recall with this couple of lectures back when we looked at one of the reasons, for leveling or was to look at over allocation. So, here we had over allocated resources here, and we then wanted to move this over allocated resources to this area where a there was there was still room to take in more resources and you know as a result of that a we got a perfectly leveled theoretical but perfectly leveled profile which resolved the over allocation problem also. So, when we talk about resource leveling, we are talking about leveling profiles like this not necessarily with respect over allocation, but just the fact that I have variation going on in each place and I cannot handle variations, I would like to it to be. In fact, this is not as desirable as this is even though this variation is a smooth variation, having random variations like this is not what we would, we would want on a project. So, we were trying to take it from this profile here which is random to ideal. And beyond that we have to see whether if this resolves over allocation issues, that is also beneficial to us.