Introduction to Lean Construction
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Module 1, Lecture 7
Lean Construction (LC) Timeline; Lean Project Delivery vs LC; Project Management vs LC

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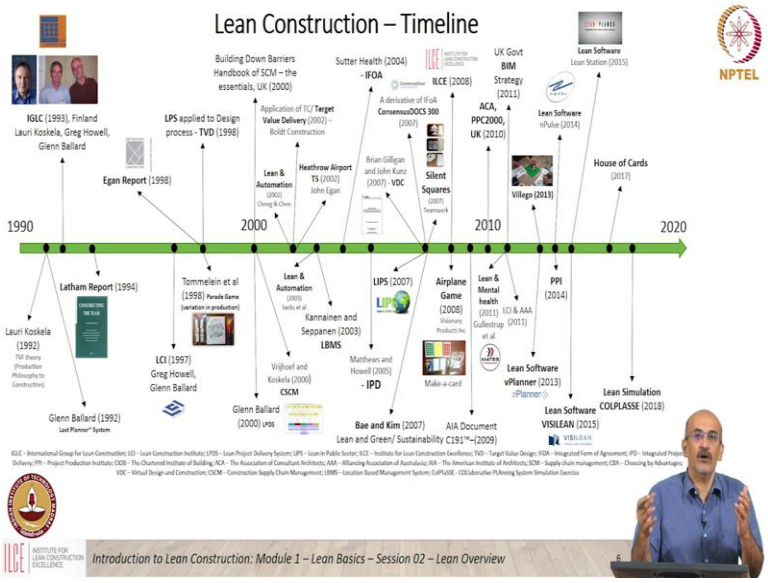

Now, when we go into lean construction, it has its own timeline. So, when we take a process, or a technique, or concepts that were developed for the manufacturing industry and think it can be applied to construction, the initial reaction is no construction is very different from manufacturing, how would we take a manufacturing concept and apply it to construction.

But we know that always there have been concepts that have been applied from industrial engineering to make construction more efficient, and lean followed the same approach. So, it was in the early 90s, that this concept of lean in construction was formally published. And many practitioners also started taking this up.

I think we look at IGLC as one of the core organizations that started propagating the initial ideas of lean, and they were in the initial phase where it takes about 1990 to 2000, it was more the concept forming, how does lean construction or lean project delivery work? What are the concepts? How do we apply manufacturing principles into construction? These were the kind of pioneers in lean construction, who kind of wrote and thought and experimented with these.

And then when we look from 2000, to about 2010, there were a lot of implementations whether it was the Heathrow Airport, or whether it was Sutter Health implementing in their hospital projects, there was a lot more implementation and learning from implementation. And then organizations like LIPS, which is Lean in the Public Sector, they said, people said why should lean just be something that is only driven in the private sector, the lean in the public because public sector is much more has many more mega projects lean in the public sector started, a lot more lean started becoming more formalized lot more application knowledge came during this decade.

And as we progress, we see lean construction as kind of mainstream, there are several organizations today dedicated to lean construction globally, we have had a lot of software tools that have been developed to address lean and lean in construction and the journey goes on. So, here we are now in 2021 kind of having all this learning with us to see how we go forward how we implement this effectively on our projects and our sites.

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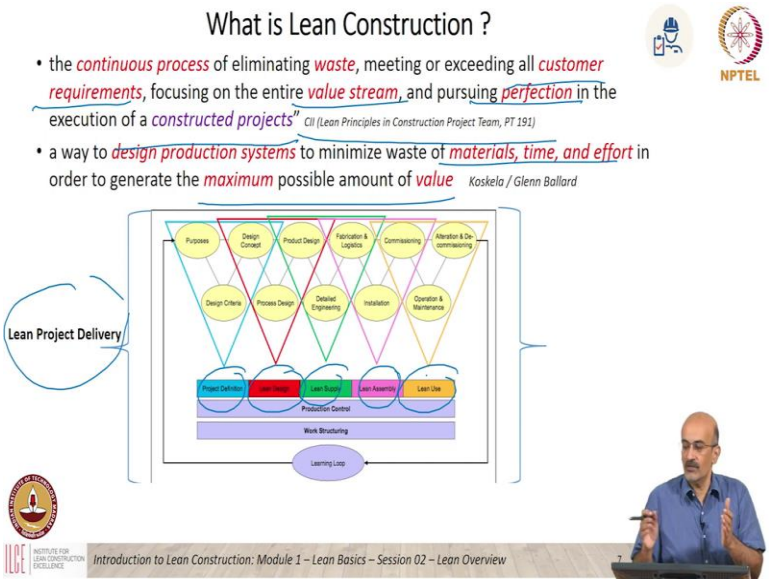

We come to this important question now. Now, where do we go with this where what is lean construction? So, we go to a few definitions which are from published material, the key words here as that is a continuous process, we need to eliminate waste, we need to meet or exceed customer requirements, we need to focus on value stream, we need to pursuing perfection in the execution of a construction project. So, you can see that several of these terms are borrowed

from the principles which was put by the lean organization by Womack and Johns. And this is where most of the thinking in lean is around.

So, this definition is fairly holistic. And this is put forward by the construction industry institute, which is a premier institute for construction research in the US. More general definition by some of the lean pioneers are, it is designed a production system to minimize waste of materials time, effort, and generate maximum possible value.

So, this is also a relevant definition. But we can see the core concepts of lean are embedded in here. Now, when we look at lean construction, we look at it from mostly a construction perspective. But the general perspective is to look at it from a lean project delivery, I am not just interested in the construction phase, I am interested in the full project.

So, lean project delivery looks at a project looks at the all the phases of a project, whether it is a definition, design, supply, assembly and the usage. So, lean project delivery is a much broader term, looking at all phases of a project and how lean should be applied, or lean could be applied from concept to use.

Now, as we know, it is very important for us to understand the difference between lean project delivery and lean construction, because ideally, we would like to do lean project delivery. If it is permitted. If things were in the right kind of ecosystem, we would like to do lean product delivery, but lean project delivery is definitely more challenging. So, sometimes we have to start with lean construction.

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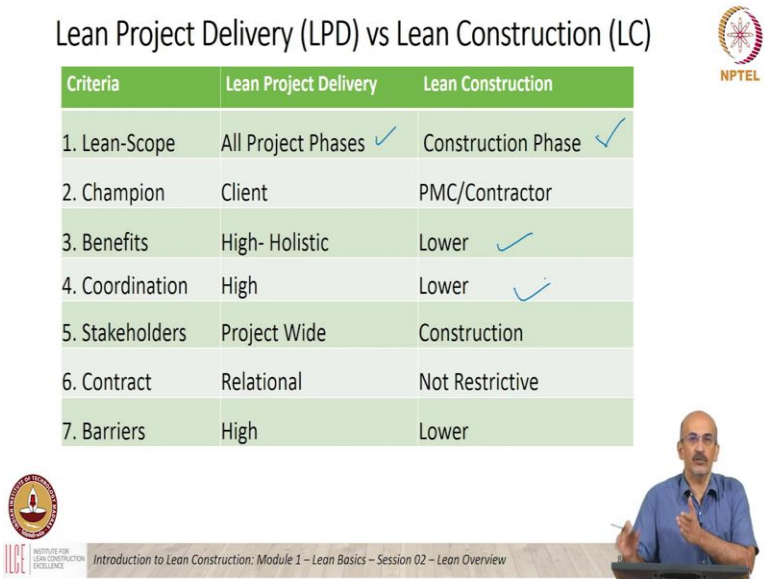

But if the opportunity is there for lean project delivery, we should definitely try to adopt it at the project level. So, when we look at the comparison between lean project delivery and lean construction, just as we discussed lean project delivery is for all phases of a project, whereas lean construction is mostly focusing on the construction phase.

If we look at the person who propagates or demands lean requirements initially is a client in terms of lean project delivery, it is a PMC or contractor in terms of lean construction, if we look at benefits is generally obviously for lean project delivery, the benefits are going to be much higher and more holistic, because it is covering all phases of project.

From lean construction, it is definitely lower but by no means insignificant, it is lower than a for a project delivery but still relevant and required. The coordination requirement for lean project delivery is much higher. Lean construction obviously is less. Stakeholders are project wide for lean project delivery for lean construction, it is mostly fixed to the construction project stakeholders in the construction phase, but that also as we know is a large number of stakeholders. So, you can see the challenge of going to lean project delivery is really much more. When you look at it from a contract perspective. Lean project delivery requires relational contracting requires more relational type.

Whereas in lean construction, it is not necessarily restrictive you can have a kind of contract which comes into the construction phase, the PMC as a contractor tries to implement lean gets

what we said less benefits, but with less effort and coordination and whatever benefits that are obtained is still relevant and valuable.

Now, we look at the barriers. Now, lean project delivery definitely has more barriers, because there are more stakeholders there is more to cover, lean construction has less. So, like I said a little bit earlier, if the opportunity to do lean project delivery is there, it should be taken up, but it is more than to start with lean construction, because of the lower barriers and the ability to be able to start learning lean, where it is possible.

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Now, going a little bit into lean construction, when we look at the project management we have what we call classically the critical path method. When we have process management we have several tools, how we model processes, but we can even say something like a flow diagram is a process tool but how do we look at a CPM approach and how do we kind of combine it with processes is the challenge of being able to implement and integrate lean thinking along with a project-based approach.

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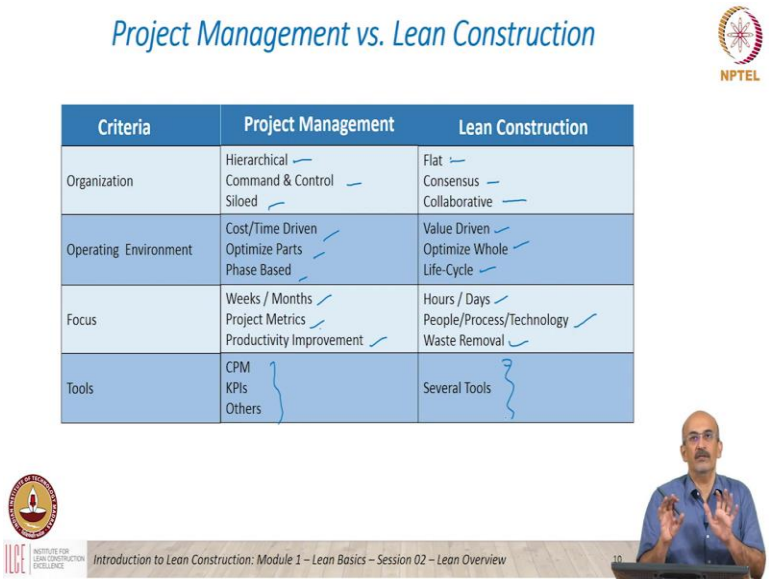

So, if we look at a pure project management-based approach, and compare it with lean based approach, if you look at an organizational level, project management tends to be hierarchical, it tends to be command and control, the planning team decides or, the team at the high level decides, and the execution team executes.

Whereas in Lean, the hierarchy is generally flat. And it is by consensus. It is not by command and control and project management, it tends to be siloed. In lean, it tends to be more collaborative, the expectation is to be more collaborative. Now, when we go to an operating environment, in project management, it is cost driven, we try to optimize the parts, it is based on phases. Whereas in lean it, we look at it from a value perspective, we try to optimize the whole not the parts. And we look at the whole lifecycle we do not look at just optimizing or looking at the phase you are trying to look at from a life cycle perspective.

When we look from a focus point of view, a lot of times project management can be looked at in weeks, months, we look at different project metrics. We look at productivity improvement. When we look at lean from a process point of view, we look at it hours and days we are looking at the micro level of the process. We look at people, process, technology, how to integrate all of these, we look at waste removal as a key metric.

And when we look at tools, project management has several tools definitely we are aware of that. So, does lean construction of process management. In both cases, there are several tools, but

generally the focus of the tools are on what is based on the organization or the operating environment kind of driven requirements. I hope this has clarified what is project management approach and what is a basically lean construction approach to a construction project.

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