

Introduction to Lean Construction
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CPS/LPS implementation in Construction Projects through a Panel of Experts
Part 1

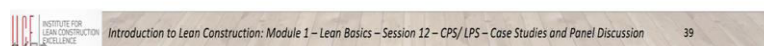
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- Learning objective(s)
 - To Understand the Barriers and Enablers of CPS/LPS implementation in Construction Projects through a Panel of Academic and Industry Experts



Panel of Academic and Industry Experts	
Name of the Expert	Designation
Prof. N Raghavan (Session Moderator)	Professor of Practice, IIT Madras ; Member-Board of Directors (ILCE)
Prof. Koshy Varghese	Professor, IIT Madras ; Member-Board of Directors (ILCE)
Mr. Kalyan Vaidyanathan	Co-Founder & CEO – Nadhi Information Technologies (P) Ltd (*recently acquired by Bentley Systems)
Mr. Mohan Babu Subramanian	Regional Head at URC Construction (P) Ltd



N Raghavan: A very good day to all of you. Welcome to this panel discussion on collaborative planning system of Lean construction management. We have a great panel today, I am Professor N Raghavan, Professor of Practice from the Department of Civil Engineering IIT Madras.

We have Dr. Koshy Varghese, Professor in the Department of Civil Engineering, Building Technology and Construction Management Division, IIT Madras, one of the earliest teachers of Lean construction, also a lean coach in project sites.

And we have Mr. Kalyan Vaidyanathan, erstwhile CEO and Founder, Nadhi Information Technologies, IIT Madras incubated company, their flagship product npulse has been very useful in project sites for Project controls, the company will be recently acquired by Bentley systems. Then online we have Mr. Mohan Babu, a Senior Project Manager from URC Construction, a long-term practitioner of Lean construction in project sites.

Koshy Varghese: Thank you for the introduction, Professor Raghavan. And from our side, we are privileged that Professor Raghavan who is a professor of practice at IIT Madras is moderating this panel discussion. As a professor of practice, Professor Raghavan actually bridges both academic and industry practices.

So, he has several years of experience with L&T and other construction companies, has been from design construction to business development. And today probably the best person who can moderate this session. Over to you Professor Raghavan.

N Raghavan: Thank you, Dr Koshy Varghese. So, you have been listening to the various earlier sessions, where we talked about the various practices and lean construction management. The collaborative planning system is a very, very key tool in this table of lean. It is actually a take-off from the last planner system, developed by the Lean Construction Institute of US by Dr. Glenn Ballard, and Mr. Greg Howell.

For Indian conditions, we have adapted the same thing to become collaborative planning system, which has been invoked for the last decade or so, to start with Dr. Koshy Varghese, you have been teaching Lean Construction Management for quite some time and also, Collaborative Planning System. How do you find the connection between teaching and actual practice at the site? Because you have also been a coach at the site.

Koshy Varghese: So, there are two, I will take your question in two parts. One is when we teach lean as a part of the curriculum. For us, it is a part of a postgraduate course. So, most of our students come in with a little bit of construction experience. And when we teach something like a collaborative planning system, first and foremost, it is good, the whole system has some kind of a structure. So, for teaching purposes, it is enough, there is an alignment to how you can teach it in a classroom.

Now, one of the challenges of teaching CPS is that it also has to go hand in hand with practice, because otherwise, it is just theory on the board and that does not make, it does not have too much of engagement with the students, because calculating PPC or looking at a look ahead plan on paper is different from in your own site. So, we also do use simulations in class, to be able to get some kind of site kind of feel to the whole process.

Now, when you actually translate this to site and you take it to site and you try to apply the same theories, there are a lot of variations. And I think a team that is taking this theory into site implementation has to be ready to be able to adapt it, to be able to learn from the uniqueness of the site, be able to apply the principles and not just lose hope the first time something does not work out for them. So, this is I think, I will stop that for now. There are several elements I think, which we will take up during the discussion.

N Raghavan: Thank you. Mr. Kalyan Vaidyanathan, you have been a coach for Lean at various project sites. How do you find the coaching given by you and the actual practice at the site?

Kalyan Vaidyanathan: So, I guess we have done lean consulting engagements at a variety of sites, whether it is a power plant, commercial real estate, fitout projects, infrastructure projects. And typically, the way we started is by giving them an introduction to lean. And our favourite thing is we have to show them, like what Prof Koshy said, sort of hand simulation way of playing this game, what we call the parade of trade game.

But our own experience, then after that half a day session, to actually practicing it on the ground, is that it takes a few months for people to realize. I have had one field engineer who came up to me at a commercial real estate site, where we did LPS, coming back to me almost 6 months later, 7 months later and saying, now I understand the true value of last planner, and the parade of trade and sometimes that my ability to either not mobilize people or cause not keep up my commitments, actually has an impact on somebody else.

As much as it had an impact, the fact that it is actually a parade of trades, and the fact that you are all sort of interconnecting each other, and that learning that sort of bulb goes off, only when you practice on the ground sometime later. And again, as Professor Koshy rightly said, you have to have a few failures, you cannot expect success on the first run, but you just should not give up hope. I will stop there.

N Raghavan: Thank you. Mr. Mohan Babu, you have been having some coaching you know, from all of us from time to time, how do you find the teaching and the coaching and the actual practice at the site?

Mohan Babu: Thanks to join this meeting, I know I have coached by IIT Madras 2014. And I am practicing the lean at site level, still 2021 in 7 years. So, in the 7 years I have implemented these LPS is the best tool to the site, so more than 18 sites, now in our organization, more than 18 sites, and I am the lean mentor to take this for site level.

So, the first thing would be you have to be in the lean champion, we have to identify the lean champion. And the lean champion of each site is the mentor to go further to the penetrate to the all the engineers and project managers. So now, what in these 7 years, What I think that it is more useful in the terms of productivity then coordination between the teams, and the collaboration between the teams and the management said also.

So, and site level, the stress is reduced for the project manager is keep on going firefighting between these three areas. And a lot of project managers came back to me and told me that, yes, Mohan, this is very useful, my stress is totally reduced. Now, I am focusing about the particular activity like constraint log. Now the peoples are talking about the Lean language right now. That is a very one of my outcomes.

See peoples are talking about the PPC, LPS, constraint log, these end up the root cause. If anything, have been in previous, peoples are saying that this is the reason, this is the reason. Now, the peoples are using the way, what is the root cause, that terminology now the 7 years my construction industry teams has totally changed. So, this is what I experienced. It is very useful. In way forward we will be there, let us discuss this panel. Thanks for this.

N Raghavan: How long has the transition been from the time people are coached till the time you are able to get some good benefits?

Mohan Babu: Transition between the crew is minimum 2 years. Because when I am giving my 18 sites, I am saying that when I am starting the crew size will be more than 240 engineers along with the stores and accounts. I am giving the training not only for the engineers, the procurements and stores admins, and machinery operators, foreman levels, all the grades we have given the 245 members we have identified and we have given the training program. Like in the COVID, we have given through online system only.

After that they realised just okay what is the LPS and they know the what is LPS an all, this much only they know, they are not practicing. Then slowly they started the 10 sites as a mock up site. And we identify the project manager and we started practicing. Then slowly the machinery operators and everybody is a daily coming.

They have a big room meeting also. So, they came and they collaborated actually, they give their call, they give some everything. So, the understanding first 6 months was the very the continuity, aligning the people in between all the grades, aligning the people it is getting quite difficult. After aligning only, the report generations. Then next challenge is with report generations, that report generation and the unique report generations.

And we have made the unit report generation all the sites. So, everybody are talking about these same reports, and everybody is talking about the same language. Then after one year only, we came to know the percentage of PPC, like 30 percent or 20 percent. Sometimes it is coming 110-20 percent also, there is some mismatch between the teams, then we aligned the teams, then we find out where is the problems, the peoples are getting 120 and the 20-25.

Then we corrected and every month we have the review meeting, every week, we have the report generations, PPC outcome, then this is what we have implemented after only a year all the project managers talking about the lean language. And it is now, it is getting a, now the civil part 65 percentage, I am getting the PPC overall in the 18 sites. This is my overall 7 years experience. Yes, it is required all the, as you said, all the company has to follow, I think this is the way 7 years I have face this implementation at site levels.

N Raghavan: Okay, thank you. Dr. Koshy Varghese.

Koshy Varghese: Yes.

N Raghavan: You know people are talking about so many benefits and obviously have gone over the period of years. But I think this kind of feedback is not somewhat mixed from site to site. What do we do experience about the actual benefits, which people are able to get with CPS?

Koshy Varghese: So, I mean, I take the question in a slightly different way. I think what Mr. Mohan Babu says is kind of where the CPS or the LPS processes has reached a certain level of maturity and you can start getting the benefits of it. Now, a lot of times what we find in the initiation phase is that there is a little bit of a paradigm difference between what we call our

traditional project management systems like the critical path method-based system or the earned value and what last planner requires you to do.

So, there is a bit of a conflict which you see between because these traditional project management systems are required by your contract and by other requirements. And now, last planner system comes as a add on. So, now, there is a conflict which the planning and the execution team have in following the last planner system which is a little more democratic collaborative distributed or the project planning system which is more centralized and controlled. Now, this conflict is something which any team has to first overcome. Now, this in a way is a cultural challenge, is an organizational challenge.