

## Go Lean to Deliver Projects Faster

Applying Lean Thinking to Construction Projects

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Lean Management is characterized by Lean thinking. Stripped to essentials, lean thinking means being obsessed with creating value and delivering value to your customer / client by finding and removing “waste” from your processes. Reduction / removal of waste accelerate delivery of project value.

For various reasons, most of our businesses processes largely consist <sup>2</sup> of wastes or “non-value adds (NVA)” activities. While most *rational* persons would strive to eliminate waste, they do not, as waste remains invisible to many in the organization. In financial terms, waste could be of the order of 20% of the project value or even higher.<sup>3</sup> So for a project of Rs 1000 Cr, there is *huge scope* to cut waste in terms of materials and time, and be competitive!

Why can we not see the waste? In one word: conditioning. Most of us are accustomed to think that current practices are necessary, sometimes even essential, and can not be changed; we look at the work involved in projects through wrong lenses and miss out the levers which, when pressed, allow us reduce / remove waste accelerating the project.

### Change your lens and put on Muda Glasses

So? Well, there is a remedy: Change your lens, or what the Japanese taught the world- “Put on the Muda Glasses”! Lean thinking makes waste visible and invokes our natural response to eliminate/reduce waste.

What exactly we have to do? A few simple things.

- Understand Waste, Spread Awareness
- Measure Waste
- Use visuals to show waste in every process and reasons for it, on a day to day to basis



(Figure 1)

<sup>1</sup> For any further information, please visit: [www.patconsultingindia.com](http://www.patconsultingindia.com)

<sup>2</sup> Research indicates that typically, time spent on NVAs may be as high as 60-80 % total process time.

<sup>3</sup> Ref: “Lean Production in Construction”, by Lauri Koskela, (1993) Finland

- Install systems to encourage every one to “catch” waste and reduce /eliminate it and set targets; value and recognize every effort made to eliminate waste irrespective of its monetary value. Standardize the process.
- Review your waste elimination performance every month / or week

How will removal of waste help us complete projects faster? It will be obvious when we understand seven wastes <sup>4</sup> identified by Taiichi Ohno (see table below)

What a Waste!		
Sl no	Waste Category	Illustration
1	Overproduction	Excess pouring of concret
2	Waiting	Waiting for the dumper
3	Transporting	Material movement due to space shortage
4	Inappropriate Processing	Excess cement in the concrete
5	Unnecessay Inventory	overstocking of steel
6	Unnecessary Motion	Disregard for physical effort of contract workmen
7	Defects	Surface defects requiring repairs

Let us take the case of Inventory.

## Faster work done by a bar bending operator may even slow down your project!

End-to-end process of project management is typically, highly fragmented into several sub-processes often managed independently. Each interface between two sub-processes contains work-in-process (WIP) inventory, a waste. Each sub-process owner tries to optimize his sub-process, many times at the cost of end-to-end process. This means tasks get priorities over project. For example, the person responsible for bar bending operation may strive to do his job better, faster, and in the process may pile up currently unwanted inventory, whereas the concreting work station may face shortages of reinforcement steel leading to obvious project delays!

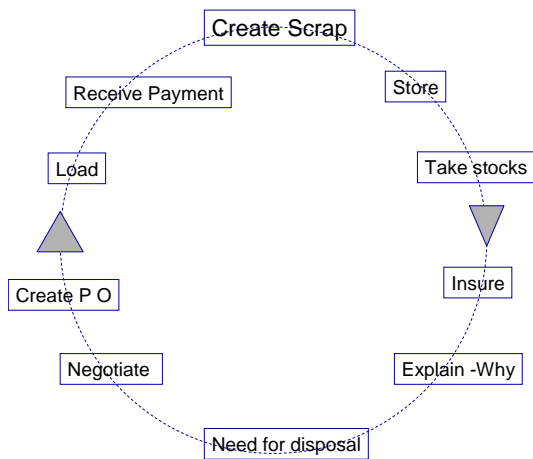
Most think that the only problem with higher inventory is only increased cost of working capital. There is a lot more to be gained through inventory reduction. Progressive reduction of inventory allows us execute processes very rapidly, reduces the time gap between emergence of a problem and application of an appropriate countermeasure, and

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<sup>4</sup> There has been discussion of the 8<sup>th</sup> waste-being underutilizing human capabilities; Canon has identified nine wastes.

uncovers problems *before* they emerge. Cost reduction achieved as a result of addressing systemic (*Read: Chronic!*) problems is far greater than just saving achieved due to lower interest costs! Applying lean thinking here means continuously increasing inventory turns without sacrificing progress of the project! As WIP is reduced, processes get tightly linked and *accelerate*, making projects go faster. Lean thinking views Inventory reduction as a *strategic tool to gain competitive advantage*.

This is just one example. Experience has shown that generally what is visible as waste is



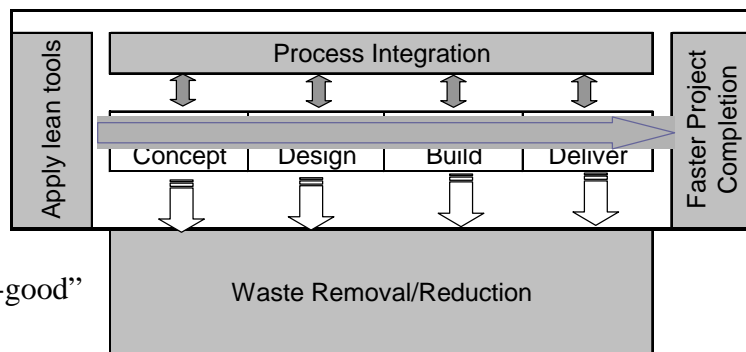
(Figure 2)

only the tip of the iceberg!(see Fig. 2) Going closer to waste shows us that *hidden waste* is enormously greater than we estimated (see fig 2) and thus our “cost-benefit” analysis approach has given us a very suboptimal solution. So, just keep making your processes waste-free and they will accelerate; if they do not, they will expose underlying cause which was delaying the

process. In either case, projects are benefited.

Using Lean tool kit, we can obtain time and cost benefits. As processes simplify, progress and problems become visible leading to prompt and precise communication in the project team.

Top Management must support trust based relationships and transparency, not just for “feel-good”



(Figure 3)

factor but because they realizes that it is an *economic necessity*.

In one of the bridge construction projects where the author was consulting with, concrete girder prefabrication cycle time was reduced by a little over *19%* with *practically no investment*, just by applying the Lean Management tools and systems were created to sustain the benefits. Site workmen were so happy that during the discussions for further

reduction, they volunteered to even further reduce it. *This enabled the project management team to compress project completion time by a whopping 3 months!*

With massive investments planned in the current 5 year plan by our Government<sup>5</sup>, it is perhaps easier to get new business in construction sector but far more difficult to execute projects on time, every time and make profits. The key to profitable growth is to Think & Act Lean.

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<sup>5</sup> The current 5-year plan envisages investments of Rs 14 50 000 Cr on the infrastructure ( Ref: *Report of Working group for Construction for 11<sup>th</sup> Five year Plan-2007-2012, Planning Commission, New Delhi*)