Introduction to Lean Construction
Professor Koshy Varghese
Department of Civil Engineering
Indian Institute of Technology, Madras
Module 1
Lecture 36
Value, Value Steam, VSM/PM,
Language, Basic VSM – current state and future state

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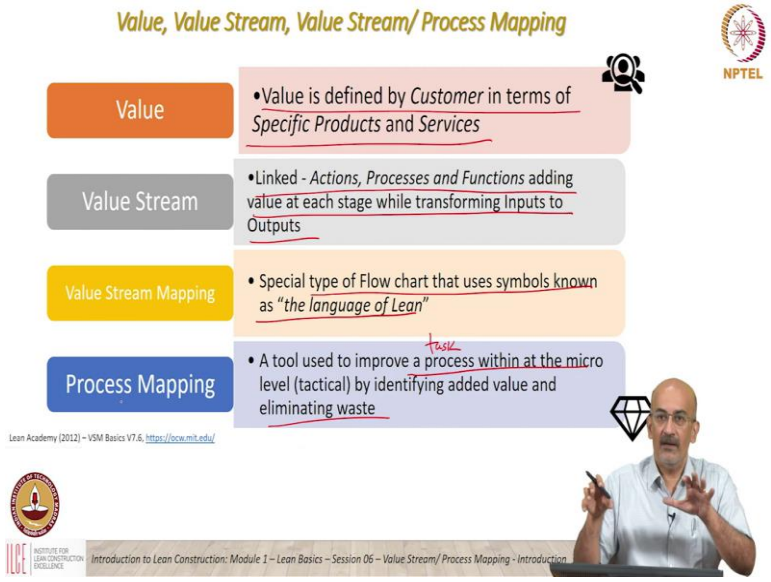

Now, coming to some more specific definitions if you look at value, value is defined by customer in terms of specific products and services. And it is what is added? We kind of discussed it in terms of, many examples and I think sometimes understanding what is value to the customer can be quite challenging. So, you need I mean, we know sometimes its price, sometimes its quality.

Student: It is competitive.

Professor: Yeah, sometimes it is safety so if I am buying a car or if I am buying a motorcycle, what is the value to the customer this just depends on the customer. And so, there are a lot of what do you call studies done on which segment has what value if I take a cell phone itself. There is different sets of customers have different values out of sample there is no universal one single type of value everyone.

Although there are basic values, so I should be not be under repair all the time it should work when I want to which is it should that but beyond that, there are varying values. Then we

looked at what value stream as we saw the linked actions processes functions adding value at each stage while transforming inputs to outputs. With value stream mapping is a special type of flowchart that uses symbols known as language of Lean.

This is where we are getting it and process mapping is more detailed, a tool used to improve a process, or a task by use the work within a micro level by identifying added value and eliminating waste at the micro level. So, when we say process mapping, it is more of a micro level, when you say value stream mapping, can be more at a macro.

But these are not what you say, absolute truths, people use value stream mapping at the micro level also, and it works because the symbology, etcetera, still applicable. But you do not need such a complicated language at the micro levels.

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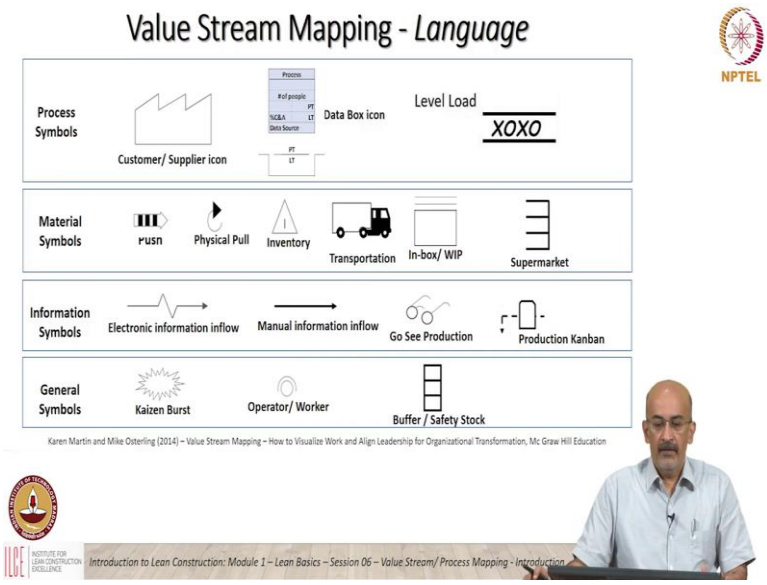

So, now getting into the language. So, this is all the symbols, a few of the symbols, I will not say all the symbols, this is a few of the symbols that are commonly used in value stream mapping. I am not going to go through each one and describe what it is. These are well documented, it is easily accessible on the web.

We will use all these symbols in the examples and then probably you will get an idea of how the symbology works. But more than today, or in this session, looking at the symbols, we are more looking at how a Value Stream Map is put together. And why putting together a Value Stream Map and what basic metrics we get out of it helps with the overall process.

So, while the symbology is important in communicating and getting people to understand the map, the focus today will be on the form of the map. Not the specific symbols and again, I am repeating please look up on the references you will find very detailed definitions and uses of the symbols.

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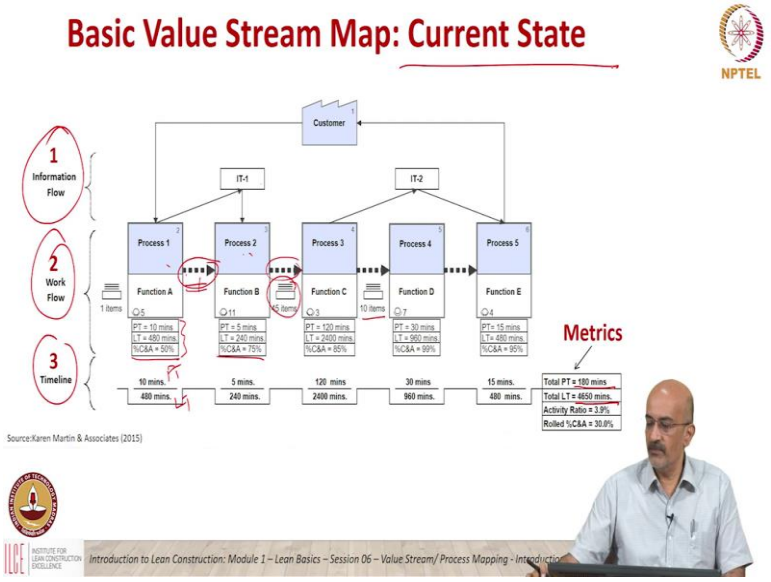

So, here is a Value Stream Map, I am going to explain what are the components of this map are. So, we look at these, so we are first we look at the map it contains 3 levels I would start with. So, we have the information flow level, the workflow level and a timeline. So, this is one, so Value Stream Map also captures information.

Incidentally, this map is just put as an example. It is not I mean there can be issues which are, there is the customer can communicate to IT all those we are not taking up yet, just put as a generic example. Now, if we take process all the tasks that constitute the map, you can see they are represented here.

So, this map, this is capturing 5 processes, 1, 2, 3, 4, 5. And for each process, there is a metric that measure, measures the PT is a process time. LT is the lead time. And the percentage C&A you see here is the number of times something that goes out has to be repeated in the process.

It is how much of rework happens 50 percent they were very high 75 percent. It is, this is what happens of how it of what goes out in. Now, you would have some symbology here. So, you have here which is the push icon, showing the push is all a push from process one, process two, plus three, the process four.

You have some work in progress here as shown as a work in progress icon and you have items that are waiting typically is also shown. And you have basic communication information from the customer where it is going, what happens and how it comes back is also shown.

Now, when you go to the timeline here, what this shows you is the processing time and the lead time. So, in this very basic value stream map, you now look at the full process together, the total you see the process time is 180 minutes and the lead time is 4650 minutes. So, there is a lot you can see that is coming out of these basic numbers.

So, while the processing time is relatively small, the lead time in all of the sub processes are very large. This is not uncommon. So, if you look at, I mean, if we look at a building construction, it will be even more. The amount of time I do on the workplace versus the time that work is sitting idle, so this is so what do we call this waste? It is almost like inventory that work in progress is waiting, its buffers, it is waiting and waiting and waiting, there is too many items of work in progress that I am not working on, it is just waiting for me to work.

So, I mean, if you look at file movement, if I want to make a purchase order, the actual time it takes to create the purchase order might be only like?

Student: Minutes.

Professor: Yeah, a few minutes or maximum an hour. The file waits for me for 4 days. And then once I finished processing, I send it out it waits after week for the next person also have 4 days. So, what is a for you like a 1 hour work gets sandwiched between a lot of time before. So, that is the way one can look. That is a waste, which we need to identify and try to eliminate.

So, here you can see the basic value stream map, what you have shown is the current state. This is now we will go on to how to how this map is plotted.

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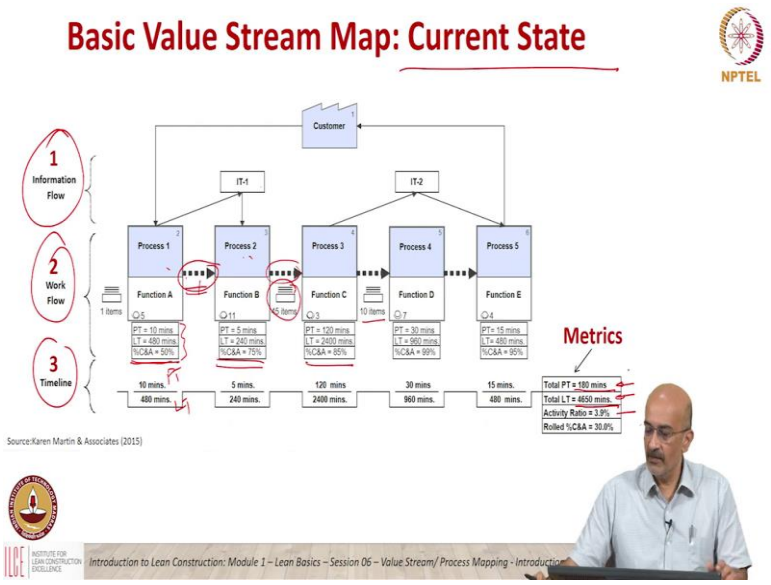

Student: Sir one thing there. When we talked about a complete and accurate percentage of C&A. That is the percentage of accuracy of that activity?

Professor: Right. So, here, that is correct. So, this is the percentage that is 50 percent is complete and accurate, 50 percent is not. Here 70 percent is complete and accurate, 25 percent. Here 85 percent is complete and accurate. And 15 is not accurate. So, I am glad you pointed that out, because so we talked about these 2 metrics. We did not, so the next metric here is 3.9 percent is the ratio that is 180 divided by 4650.

We will come back to this and this percentage complete and accurate is basically, is the product of all the individual percentages here. We come back. So, the reason I can give the example and then give the definition is I think we get a chance to discuss it further.

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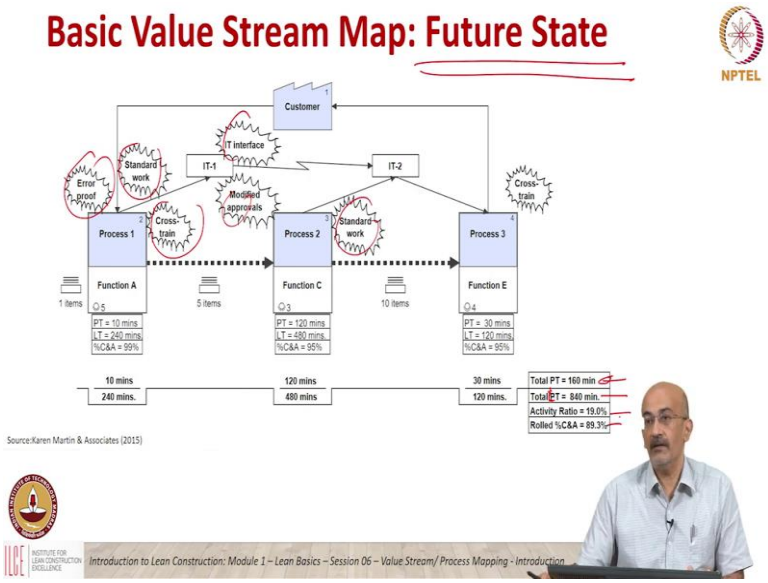

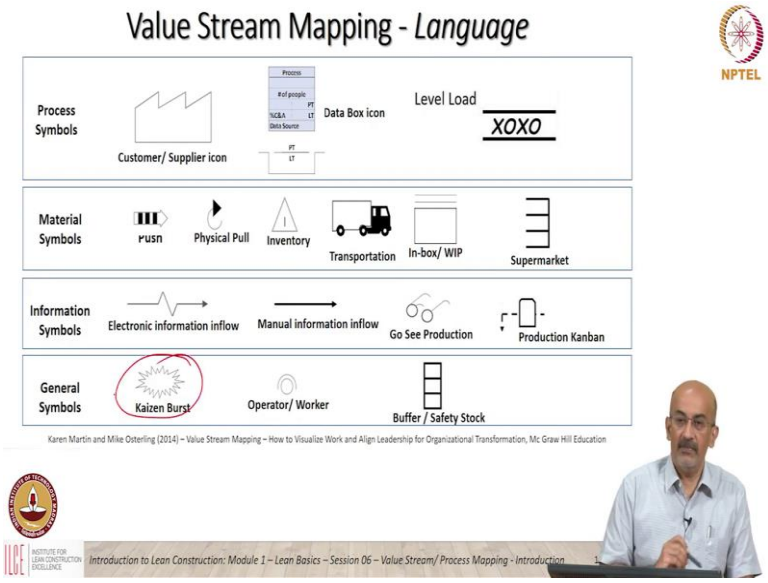

Now, we go to what we called a future state? A future state map is where, so, you can see this, these kind of sparkles here. So, you can see this is supposed to be a Kaizen burst. So, they say there are ideas that are brought in to be able to improve the processes. And different types of ideas of work. And through that you can see one is instead of 5 processes, they brought it down to 3 processes.

Similar to our online ordering, where we said we do not need a telephone operator, we eliminate. Similarly somehow they brought us down to 3 processes. And in each process, so, for example, here it was 10, 480. They brought it down to 10 to 240. Some of these have been clubbed together so we can do benchmark, side by side comparison, but ultimately this if you

look at the processing time it is come down to 160, the lead time there should be lead time is 480, activity is 19 and the percentage complete and accurate is 89.3 per cent.

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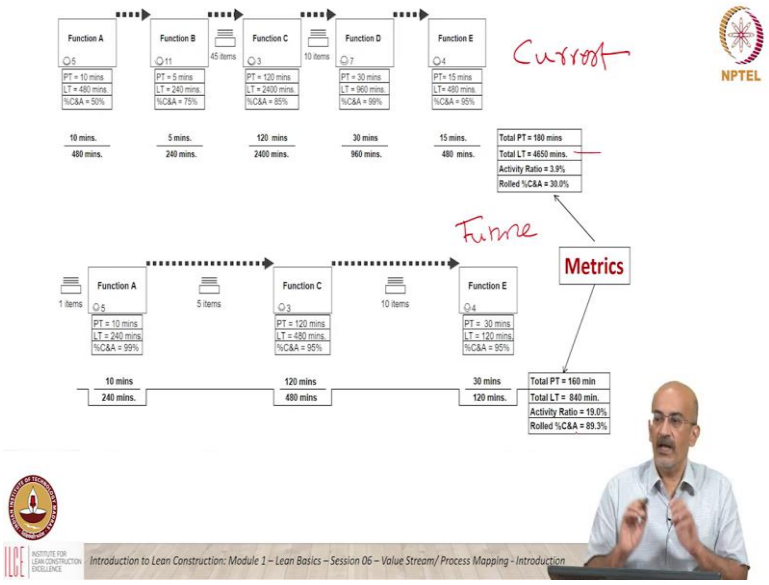

Let me see if I, so if you take a look at the comparison, this is where this is the comparison of the 2 processes this was the current state, this is the future. So, you can see the actual processing time is reduced only by about 20 minutes. But the lead time has reduced significantly.

The activity ratio has improved tremendously and the percentage complete and accurate also being improved tremendously. So, this we have looked at a generic example. We have not said this is what this is, but these are the metrics and this is the kind of thought process I would like you to keep in mind.

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