Value Stream Mapping

by Bob Whipple, MBA, CPLP

The technique of Value Stream Mapping is a part of the "Lean Thinking" tool kit. Lean Thinking is a methodology that grew out of the Toyota Production System, where we make sure the customer is serviced perfectly and then work to reduce costs by driving out all forms of organizational waste.

Value Stream Mapping (VSM) is a highly refined way to depict what is exactly going on in a process so we can visualize the sources of waste. My favorite book on the topic is "Learning to See" by Womack and Jones. It is a short, well-illustrated book on the science of drawing Value Stream Maps.

The book title is a really good one, because what VSM provides is a much different perspective of any operation than managers are used to seeing. The maps are like cartoon strips of the various parts of the operation and how they interrelate. The charts also show the dwell times between operations and the inventory levels.

As you physically walk through an operation, whether it is manufacturing, a law office, a clinic, a winery, or a garbage collection company, you see little parts of the system in operation, but most of what matters is hidden from view. In fact, there are vital parts of the process that take place in what I call the "white spaces" in between the operations that we can see. VSM brings these aspects to visibility as if you were holding a heat lamp next to a document written in invisible ink.

I was describing this uncanny ability to one of my MBA classes recently and came up with an even better analogy. It is as if we knew there was a ship full of treasure at the bottom of a lake, but we had no idea where the ship sank. The VSM technique would be like draining the lake so we can easily identify the location of the treasure. Once we can see the treasure, it becomes a much easier task to go and get it.

In any kind of operation, there is ample treasure to be gained by eliminating the waste. In lean language, waste is called "muda," which is the Japanese word for waste. We think of waste as rejects from production, but it is much more than that. There are

actually seven different categories of waste that are present in most operations. They are as follows:

1. **Rejects** - When we think of waste, we normally are thinking about the scrap that we throw out that cannot be sold to customers. Defective quality, also called rejects, is clearly one form of organizational waste, but there are six more types that we deal with in lean thinking.

2. **Waiting for work** – This is probably the most pervasive type of waste, yet it is often hidden from direct view. Whenever a person is waiting to perform his or her function, for whatever reason, that is a cause of waste that must be eliminated.

3. **Over Production** - If we are selling 10 widgets today, then anything more than 10 units manufactured is wasted effort. We tied up resources making product that the customer did not want to buy.

4. **Transportation** - Any time the product or any subassemblies are being moved from one location to another in order to cue up for the next part of the process, that is wasted time and effort. If you are a customer buying a wrench, you do not want to pay extra for the steel wrench to be moved to the plating department to have the chrome layer applied.

5. **Motion** - when the product is being raised up or lowered to get it to a position where the next hole can be drilled, that is waste. Reduce or eliminate the need for any motion in and between processes.

6. **Inventory** - Customers do not want to pay for things not yet built to be sitting on shelves waiting to become a finished product. All inventory is considered waste. All in-process and finished goods inventory is useless. The only inventory that is not waste is the one unit that the customer wants to buy right now.

7. **Over processing** - This is where we take three steps to sand down a part for painting rather than doing the entire job in one step. Whenever there are multiple steps, there is waste going on. The idea is to combine steps to reduce the waste.

Lean Thinking along with Value Stream Mapping aim to totally satisfy customer needs at every point in time while working to reduce all seven kinds of waste to the minimum. These tools are extremely powerful, but they should only be used by people who are fully trained in how to use them properly. The reason is that significant problems can arise if untrained people try to use the tools.

If you are interested in using Value Stream Mapping and do not have a fully trained resource internally, check with your local Chamber of Commerce or Business Development Group to identify local resources who can help you get the proper mileage out of these important tools. Alternatively, you can locate experts on the Lean Enterprise Institute, www.lean.org.

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