

Value stream mapping as a basic tool of Lean manufacturing

The experience of lean manufacturing implementation in Russia cannot be called unconditionally successful. Most often it is connected with putting lean manufacturing tools into practical use in pilot production areas being only a part of produce manufacturing chain. At the same time the losses eliminated on one manufacturing site turn to be negligible as compared to those existing on other work sites. According to the algorithm proposed by James Womack and often used in the course of lean manufacturing implementation, one of the determining factors of its prosperous accomplishment is to follow the slogan: to begin transformations wherever possible being not involved with strategic issues (Womack, 2003). [1] Using this system top management expect instant effect, but they miss the necessity for continuous and systematic improvement of the process.

Value stream mapping (VSM) is a lean-management method of analyzing the current state and designing a future state for the series of events that take a product or service from its beginning through to the customer. The VSM is probably the main analysis tool and the most used method in the lean toolbox. Easy to understand and handle, the VSM is the starting point of improvement workshops and kaizen events. It helps focusing on wastes and improvement potentials in any process.

The VSM displays physical and information flows on the same map. Therefore an alternate name is “Material and Information Flow mapping” or MIFA for “Material and Information Flow Analysis”.

The map displays the current state and is only description. It needs to be analyzed in order to understand what hinders the smooth, continuous and swift flowing of value towards the customer.

Value stream mapping comprises next steps:

1. Planning and preparation. Identify the target product family or service. Create a charter, define the problem, set the goals and objectives, and select the mapping team;
2. Draw while on the shop floor a current state value stream map, which shows the current steps, delays, and information flows required to deliver the target product or service. This may be a production flow (raw materials to consumer) or a design flow (concept to launch);
3. Assess the current state value stream map in terms of creating flow by eliminating waste;
4. Draw a future state value stream map (fig. 1);
5. Work toward the future state condition.

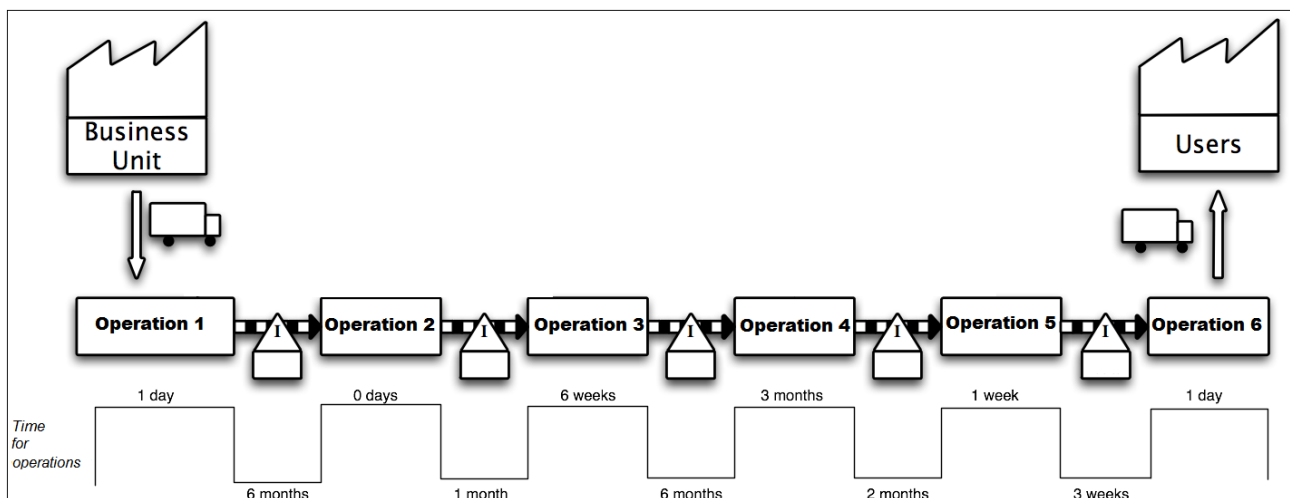


Fig. 1 The example of a Value stream map

Also VSM help to cutting costs of manufacturing processes of product or service. The quantity of losses that can be eliminated in the process of Lean-projects execution and estimated based on the value stream mapping appears to be the best method of expressing its goals. In this case they bear the achievable and measurable character what is very important at managing of any object or process. The possibility to determine clearly defined success criteria of Lean-projects which can allow judging of their execution quality is also extremely important. In the quality of Lean-projects success criteria it is possible to use performance targets of value stream mapping for instance, the stream efficiency representing the ratio of value addition time to order execution time expressed in percentage. The time of value addition is the time when the value is added to a product within its processing. The time of the order execution is the full time of the value passing through the stream, from input to output. Depending on the features and quality of the production process the stream efficiency after Lean- project accomplishment can grow in tens of times.

Lean is about more than just cutting costs in the factory. One crucial insight is that most costs are assigned when a product is designed.

Value stream mapping, for instance, is perhaps the most widely used tool in lean programs today. The prevailing assumption in virtually every plant is that a value stream map must be drawn for each product family, a value stream manager anointed, and that it will somehow magically reveal all of the plant's problems. This practice has become a sort of litmus test for Lean.

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