Value Stream Mapping Training - UK Consultant

Value Stream Mapping

A truly 'Lean' operation is one without waste – the term was coined by John Krafcik, a researcher in the late-1980s MIT study into automobile manufacturing, to describe the Japanese approach when the team recognised that Taiichi Ohno's Toyota Production System was aimed at far more than simply minimised inventory levels. Of course, it is very unlikely that we will ever achieve the situation of waste being completely eliminated. There will always be some opportunities for further improvement.

And how do we start a Lean improvement programme? How do we identify the areas of greatest waste? We have heard many stories of 'scatter gun' approaches being adopted whereby several recognised Lean techniques are thrown at various aspects of an operation. Although such approaches can obviously bring about benefits, which each initiative improving something, they will rarely offer the most resource-effective improvement programme. The adoption of Lean can be difficult and we should make sure that we focus on those areas that bring about the greatest benefit within the 'big picture' of the corporate goals.

In many cases the relative priorities of the different issues are clear for all to see. Long lead times for certain types of component and large piles of work queuing by specific work centres point towards an exercise in set-up time reduction and smaller batches. Poor productivity in an assembly operation can suggest a 5S programme to improve housekeeping and reduce the amount of time spent locating fixtures or measuring equipment.

Sometimes, however, the greatest opportunity for improvement may not be as clearly visible, or perhaps consensus is hard to reach. The technique of Value Stream Mapping is built upon recognition of one of the core definitions of Lean, namely that any activity which does not add value is waste, and upon representing this waste visually. If we can present the activities undertaken within a process visually and assess the relative value-adding content throughout the process then we can hopefully identify the area or areas which should be the focus of our improvement efforts.

The key aspects of VSM are:

Manufacturing Operations v Office Functions

The most obvious examples of mapping value arise in the manufacturing or supply chain areas where it is relatively easy to plot the movement of components through a factory, measuring the time spent at each stage. However, the same approach can apply to business processes in an office environment – for example in setting up a new householder for Council Tax purposes.

Current State v Future

The first step in any activity is to map the current position. This usually requires a considerable amount of effort – since if the position were clear to see without such a degree of effort then we probably wouldn't need VSM in the first place!

Having mapped the position we can see the areas of greatest opportunity for improvement and thus can start to put together action plans. Many of the standard texts then set definition of the future map as a pre-requisite. Whilst we always promote the development of the future vision as essential within any form of fundamental process re-engineering, we counsel caution when thinking of the future in Value Stream terms. In some cases we can readily identify that three weeks for a particular activity is far too long and that the whole thing should be completed within one, we may not know how. Perhaps it will only be when the improvement activity has commenced and the project team got its teeth into the issues that the future way of working can be established and any assessment made of the future map.

Mapping Techniques

Various conventions have evolved over the years for the symbols to be used within a Value Stream Map, for example arrows using straight lines for manual information flow (pieces of paper passed from one department to another) and zigzag arrows for electronic (customer bank details entered to a computer system and displayed on screen as required). Physical movement may be represented by a box with different symbols showing withdrawal from stores and receipt to stores.

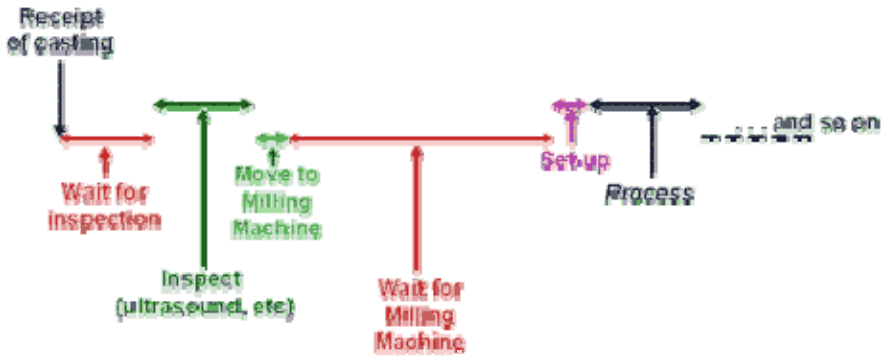
Although these exist, and continue to evolve with some very good ideas (and some rather more gimmicky) coming along, what matters is that each project team finds an approach with which the team members are comfortable. This must not, however, be taken as an endorsement by us of companies re-inventing wheels. Standard techniques are established and proven and all project teams should understand these approaches before deciding what will work best for them.

VSM v Process Mapping

Of course, the objective here is a simple value-adding / non-value-adding assessment of a straight line process. What we want is to document the steps within the process and then beneath these to demonstrate where waste, in the form of activities which do not add value or time spent with no value added, should be addressed. A Value Stream Map is by necessity much simpler than a traditional flowchart used to document various process streams coming together.

Simple Example

This is a very simple example showing a machined component in the early stages of production. The different types of activity are here are shown in different colours although the key point of course is that all are either on the value-adding line, or on that indicating waste.



(With set-up time shown as value-adding for the benefit of any accountants present. We always initiate the debate by asking whether we have it right – about 3cm of the 15cm shown being value-adding. Of course, nobody other than those who keep the books genuinely believe that setting up a machine is really adding value and we are more than happy to concede this. The inspection activity is also shown as value-adding and we are happy to concede that this should perhaps be considered as waste – though in some cases such certified NDE activities may be a customer requirement and a service for which the customer is paying. In such a situation then the inspection is really adding value.)

Simple v Cumulative Display

In this case the waste (or wasted time) is clearly seen to be the major element within the lead time of the component. We could, if we wished, display the position in graphical form with time on the x-axis and cumulative value monitored on the y. While this may demonstrate matters more clearly for some people on some occasions we have to be careful. In the above example we would probably plot value based on standard costs – which could drag us into some questionable conventions.

Final Thoughts

There is much to consider in the field of VSM and some excellent material available in the public domain ranging from text books to published case studies. We would suggest two final thoughts:

- As explained earlier VSM is aimed at simple measurement within a single straight line process – the steps through which a key component is made available for production and the product prepared for despatch. It is not focused on the big picture in the way that, say, Business Process Reengineering looks at all the aspects of converting a customer's order into an invoice and then cash in the bank with various process streams through different areas within the business and its partners. There is therefore a danger of functional improvement rather than the structural change that may be needed. If we focus on one straight line we can reach the position where our process is not appropriate – but we do it efficiently.

- As with many tools, VSM is best kept simple – it is easy to hide real lessons in the complexities of jargon or methodology. Like most management tools VSM can now be undertaken using software and, as with most tasks undertaken by software, there exists a very real danger that we can be too clever. If we allow the system to be too sophisticated then perhaps only the system experts really understand what is going on. This not only brings the danger of incorrect conclusions being drawn but also of decisions not be taken on a collective basis. Some people may be 'blinded by science' and agree to change programmes not because they understand and agree with the conclusions but because they don't want to be seen as not comprehending.

- Some respected authorities extend the simplicity to recommending that maps are drawn in pencil. A major benefit of this is that it may make the maps easy to change, which helps avoid putting people under pressure to get the map right first time. There will often be differences of interpretation and the need to work through several iterations to reach consensus.

~ Ian Henderson ~

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