

Value-stream mapping

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Your efficiency GPS

A value-stream map uses standardized icons to help visualize processes, information and material flow. Such additional information as cycle times, changeover times, lead times, time between workstations and material between workstations are added to provide the viewer with all relevant information about the current processes within the company. All links to the production process are visualized, including vendors, production planning, customer communications and order follow up, through the entire organization. From suppliers to order processing, through production and back to the customer, each information unit is documented. Through the value-stream map, the non-value-adding activities (activities not directly contributing to the product) become visible, indicating the performance of equipment, quantifying work in process (WIP) and giving important key figures to be used as performance indices or in further calculations. For example, these may include value-added time, direct labour costs per part, manufacturing lead time, and value WIP. As a result, the map can also be used as a management tool to pinpoint constraints, determine target-oriented activities, initiate, implement, focus and follow up.

To take advantage of the value-stream map, actual data has to be gathered and documented. But before mapping, the goals need to be defined. These could include improvements to costs, overhaul of a certain part of a production area, reduction of lead times or improvement of administrative processes. The map can be developed on the macro (big picture) or micro (a part only) level. Depending on the goal, a team will be established consisting of value-stream-trained engineers, operators, and possibly, employees from shipping, administration, or purchasing. Once the focus area is set, the team starts counting parts, mapping process steps, measuring cycles and changeover times and interviewing operators. In macro-mapping, the team looks at the entire stream of the order, starting with the customer transmitting the order and ending with receipt of the goods. In micro-mapping, the team is focused on processes directly linked to a part or part family. This reduces complexity, but allows the team to get into details. All such tasks as counting and measuring can be done independently, and are therefore easy for the team leader to manage. It is very important to stay focused and not get lost in details. The drawing can either be made by hand or on a computer. It is most efficient to draw a draft by hand during data gathering and create a computer graphic at the end.

The value-stream map now provides everyone with valuable information about the current state of the mapped process or processes. Many companies using manufacturing processes realized the advantage of having a map as a discussion topic a long time ago and developed their own rules and templates to create a process flow map. Many of these systems can show significant advantages over value-stream mapping. However, the advantage of value-stream mapping is its standardization over all industries. Having similar mapping principles, as well as one terminology, will improve internal and external communication significantly. New employees, suppliers, consultants and managers can now understand your processes in a short time, and will more easily understand follow-up conversations and meetings. Constraints discussed in those meetings can now be pinpointed and targets can be defined and visualized on the map, allowing managers to follow up on improvement progress.

Value-stream maps can help you visualize where and why inventory will build up and why a continuous flow is held up. They also clearly show where set-up times or changeover times are true bottlenecks and where effort in set-up time reduction needs to be placed. The value-stream map does not solve the

problem, but it illustrates the problem and the some of the solutions.

Implementing value-stream mapping may take time and money to train people and create a working protocol. It is important to have management's full support. Management needs to understand the tool and its advantages. Once implemented, these maps become the standard way of communicating about complex material and information flow issues. The maps provide measurable facts and lead to internal competition. The results can be staggering. Depending on the starting point and the specific situation, WIP, lead time and floor space requirements can be cut in half. Quality improvement and productivity increases can go up by 30 to 50 percent.

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