



Konstanz (visitable at short notice)

## LEAN AND VALUE-STREAM MAPPING 4.0

Application for the manufacturing industry - Both material and information flows require synchronization and networking along the entire supply chain

### SUMMARY

To enable short delivery times, material and information flows need to be synchronized and optimized. Value-Stream Mapping 4.0 is a new method that identifies potential in the company and in the supply chain for ensuring a smooth flow of material through accelerated, reliable flows of information.

### CURRENT SITUATION

Classic value-stream mapping primarily analyzes the material flows and the associated production control of a production process. The media used by employees to pass on information (order forms, drawings, Excel evaluations, ERP, MES, etc.) are generally disregarded. In the event of product changes, for example, this can make it more difficult to search for semi-finished products or materials which are stored externally, and modified machine codes may need to be entered manually, increasing the risk of error.

### PROJECT DESCRIPTION

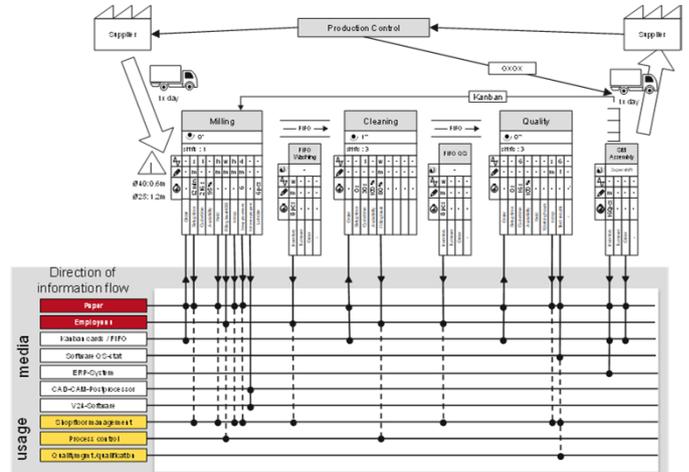
In collaboration with small and medium-sized enterprises, value-stream mapping as a lean method has been enhanced so that it provides a clear, comprehensible overview not only of the order flow but also of all media/systems used. The new method has been tested successfully in more than 20 SMEs and is a target-oriented entry into Industry 4.0.

### SCIENTIFIC BASIS

[www.hanser-elibrary.com/doi/abs/10.3139/104.111533](http://www.hanser-elibrary.com/doi/abs/10.3139/104.111533)  
[www.sciencedirect.com/science/article/pii/S0007850617300057](http://www.sciencedirect.com/science/article/pii/S0007850617300057)

### INDUSTRY 4.0 FEATURES

Value-Stream Mapping 4.0 visualizes all media discontinuities between systems, machines and people in a way that is easy to understand. The avoidance of media discontinuities is one of the most important tasks for the implementation of Industry 4.0.



### PARTNERS



### SOLUTION

The method is used to analyze the individual steps in a (cross-departmental) order processing workflow, identifying waste in the process/material flows and in the information flows. An analysis can extend from the initial customer contact, through production, to the sent/used product. All media and information used to process the order are drawn in as horizontal lines (swim lanes) under the value stream (see lower part of diagram). If, for example, a person uses several media in parallel for an activity, this is indicated by dots on the vertical line. This makes it easy to identify media discontinuities and the problems associated with them. A requirement from practice is that, for each item of information entered/created, there must also be an activity that uses the data, such as process improvement, predictive maintenance or documentation. Dashed lines are drawn for this purpose to the activities used.

### CONTACT

**Tobias Meudt**  
Mittelstand 4.0-Kompetenzzentrum Darmstadt  
[t.meudt@ptw.tu-darmstadt.de](mailto:t.meudt@ptw.tu-darmstadt.de)

### STANDARDIZATION APPROACHES

The existing VDI Guideline 2870 "Lean production systems – List of methods" must be extended to include Value-Stream Mapping 4.0.