

VALUE STREAM MAP INSTRUMENT OF LEAN MANUFACTURING SYSTEM

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Abstract: *The map of the value stream* is a diagram where are included all the necessary steps to cover by the information flow and materials from the receiving of a control to the product's delivery. Lining (tracing) the value stream map can be a repetitious process but can also be a requirement (necessary condition) for improvement. Within the framework of this article one will make a description of this instrument of Lean Manufacturing system, of the stages necessary to its accomplishment and one will emphasize the information that can be obtained after its accomplishment.

Key words: Lean Manufacturing, value stream map, improvement, processes.

1. INTRODUCTION

The Value Stream Map is a visual instrument, used for the first time by Lean Manufacturing Toyota, with the help of which can be observed how is created the value into the enterprise and where we can correct [1].

The value stream map displays thoroughly the materials and information flows starting with external suppliers of the enterprise and finishing with external customers.

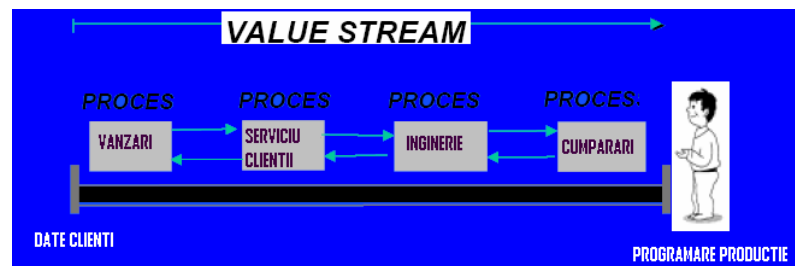


Fig. 1. Steps covered by the information and materials flow

The achievement of the value stream map supposes the covering of the following steps:

1. Definition of the products and of the product family
2. The building of the current value map – the value stream map in the current situation includes the steps covered at present by the product from ordering to delivery, in order to determinate this way the accomplishment existing conditions of the respective product,
3. The building of future valuable maps – The future map of the value stream may improve the mending opportunities identified in the current map, for reaching this way a superior performance level. In some cases, it is advisable to achieve an ideal map, that emphasizes the mending methods generated by the introduction of all known specific lean methods,
4. The development of the plan to turn the future value map into a current value map [2]

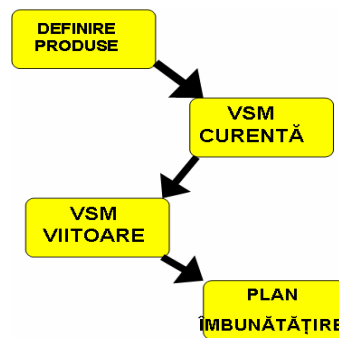


Fig. 2 Stages of achieving the value map

2. DEFINITION OF THE PRODUCTS OR OF THE PRODUCT FAMILIES [3]

The significance of a product family for Lean professionals is the fact that it represents the starting point in the accomplishment of value stream diagrams. It is outstanding the fact that the product families can be defined from the point of view of each customer (external customer) in a broaden value stream, which starts from the final customer towards the intermediate (middle) customers during the production process.

In this stage it is followed:

- The understanding of the business purpose and of the customers purpose,
- The choosing of the persons who accomplish the value map,
- The choosing of the products or of the product families.

In the definition of the product family one should take into consideration the following criteria:

- It is necessary the separation of the high runners products to the low runners products
- One should take into consideration the common processes and equipments used at the accomplishment of products
- One should analyze the routing to identify the common sequences basing on: the operations specific to the products family, on the manufacturing lots and on the customers.

Building of the current value map – in this stage one accomplishes the following:

- One gathers information from customers – the number of ordered products, the quantities, the carry time up to the customer, the production forecast time, how many days before the stable order is performed,
- One defines (describes/designs) the manufacturing cells
- One gathers data concerning the processes inside the cell and at the levels of inventory – the name of the operation, the time of the production cycle (C/T), the number of machinemen (operators), the size of the manufactural lot, the changing time, the available time, the available machines number etc.
- One identifies the papers whereby the commodity is delivered to the customer
- One gathers information about the suppliers
- One designs the information flow

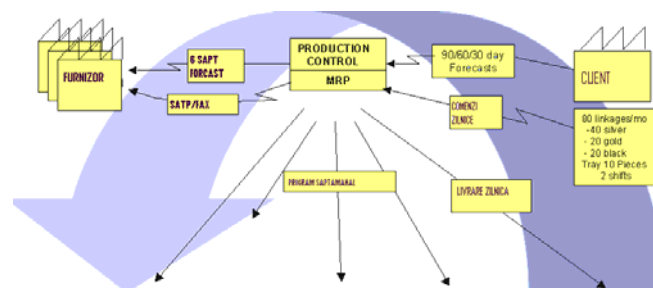


Fig 3 The information flow

- One designs the routes of materials among the processes

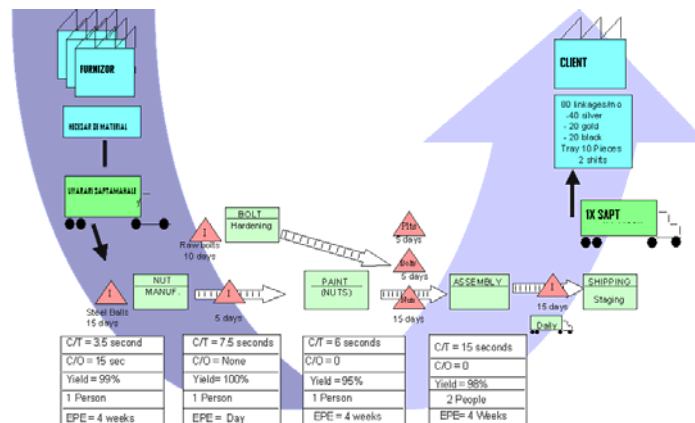


Fig.4 The materials stream

- One designs the production process time

The main symbols (signs) used in materials stream representation are described in figure 5 and the ones used in the information flow representation are presented in figure 6 [6].

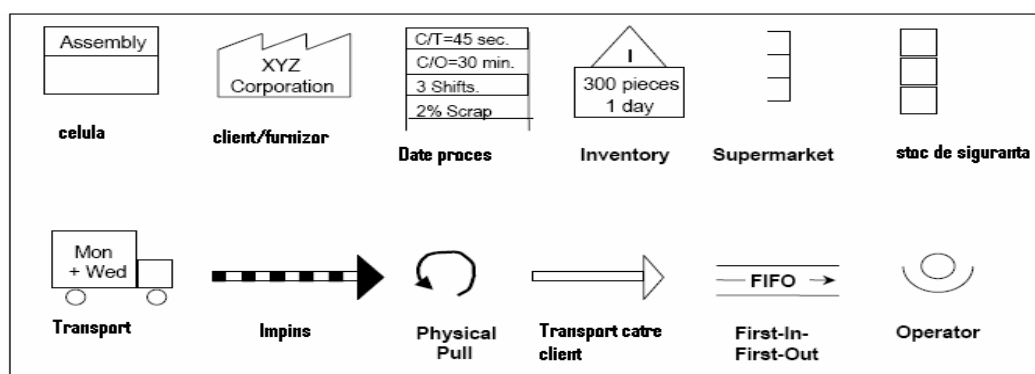


Fig. 5 Symbols for material streams

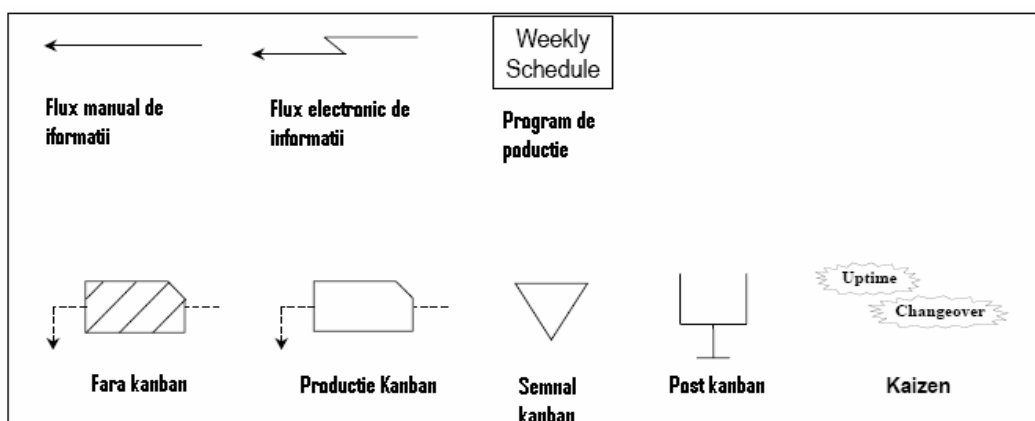


Fig. 6 Symbols for the information flow

In figure 7 is described a current value map:

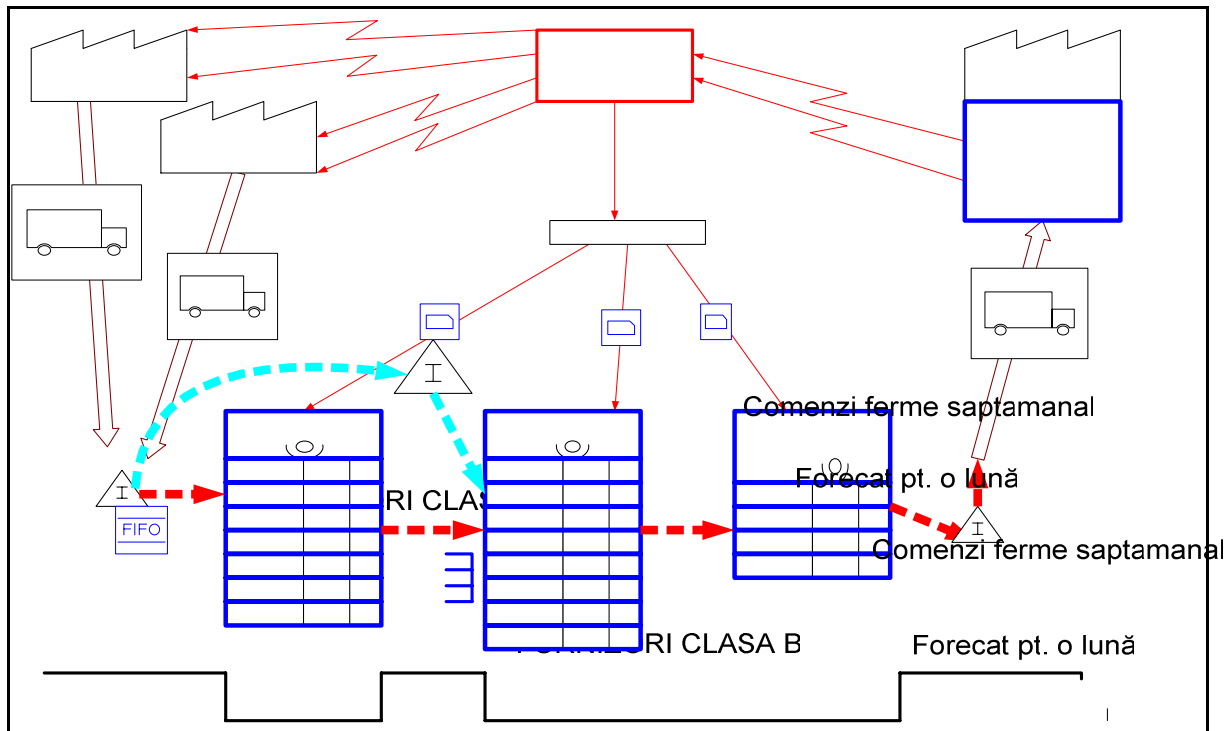


Fig.7 Current value spread map

3. BUILDING OF THE FUTURE VALUE STREAM MAP

It is built with the help of a list of queries. The answers to these questions will help us to discover the losses in the factory and to be aware of the improvements we can bring (produce)

- Where can be used the continuous flow?
- Where is it necessary to use a supermarket to control production?
- Where can the stream be improved?
- Where can the stream be improved?
- When to schedule the customer's demand?
- How do you order the necessary materials?
- Which is the value of takt time? [4, 5]

The future value stream map is presented in the following figure.

CROIRE LECTRA

re. 3			
C/T	1	MIN/ SET	
Q	40	BUC	
KS	3	Unit	
E/T	1	MIN/ SET	
C/O	20	MIN	240min
A/T	24	H	
U/T	60	%	

SEWING

28	
C/T SOC	25 3
C/T LC	12 4
KS	2
Q	40
A/T	16
E/T	6 8
U/T	90
C/O	0 16

Lead time 8 zile

0,15 +4 =4.15 zile

Proces time

40min

1012 min

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