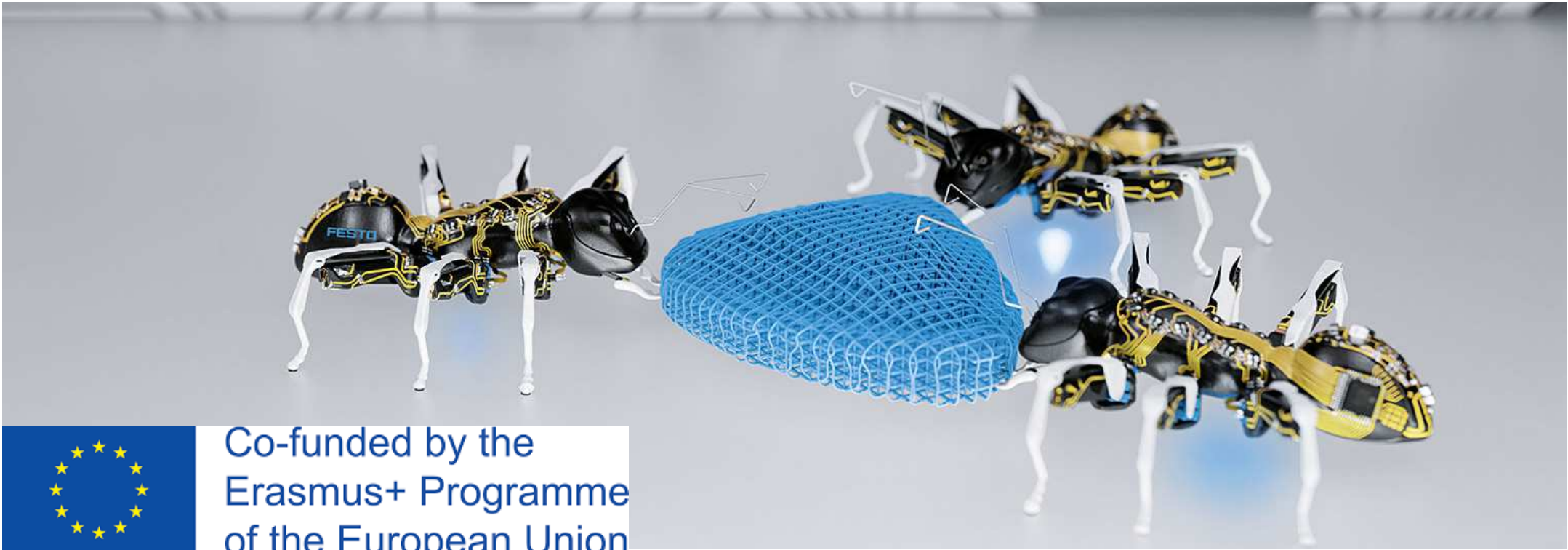


Process optimization with MES4



Co-funded by the
Erasmus+ Programme
of the European Union

5 Process optimization with MES4

1 Basics of Lean Management & Industry 4.0

2 Basics of Value stream analyses and -design

Bottom Up | From value add and waste...

Value add:

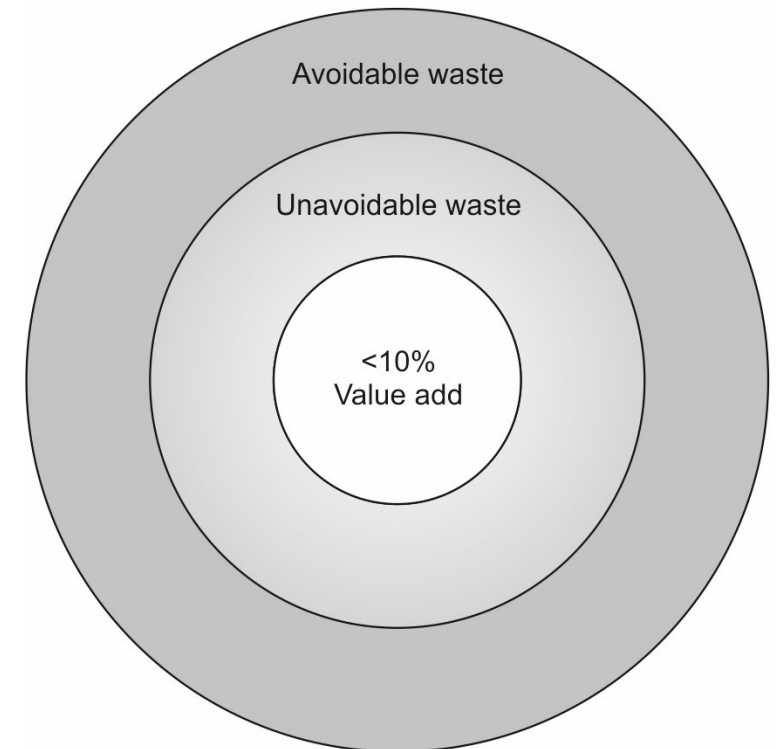
Value added is that part of an activity for a product or a service for which the customer is actually willing to pay.

Unavoidable Waste:

All activities which are strongly necessary to enable value add but without an own part of value add.

Waste:

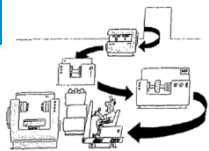
Work that does not result in a benefit for the company or the employees, but which circumstances dictate has to be done.



Seven kinds of waste | Overview

1. Transport

Any kind of transport is waste because it doesn't add value.



Is there a shorter way or is it possible to avoid the transport completely?

2. Inventory

Inventories are products that do not pull in sales yet.



Problems often and only become visible, after inventory has been reduced!

3. Movement

Searching for material, tools, documents, etc are unnecessary movements.



Could the order or layout be improved so that the important things are instantly within one's reach?

4. Waiting

Waiting means not being able to keep on working because of waiting for something.



Waiting is easy to detect. The process has to be reorganized so that no waiting occurs.

5. Overproduction

Overproduction means to produce too much or too early.



Only produce, what is needed, when it is needed; in the required quantity!

6. Overprocessing

Often we work more exact as the customer demands.



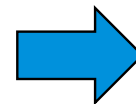
Is there an easier and faster way to reliably solve the task?

7. Scrap & rework

Waste caused by scrap and rework has to be avoided under all circumstances.



Quality from the beginning! – Customers only pay for good quality, not for faulty parts.



Detect waste, problems have to be visible!



Module 5

5 Process Optimization with MES4

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2 Basics of value stream analyses and -design

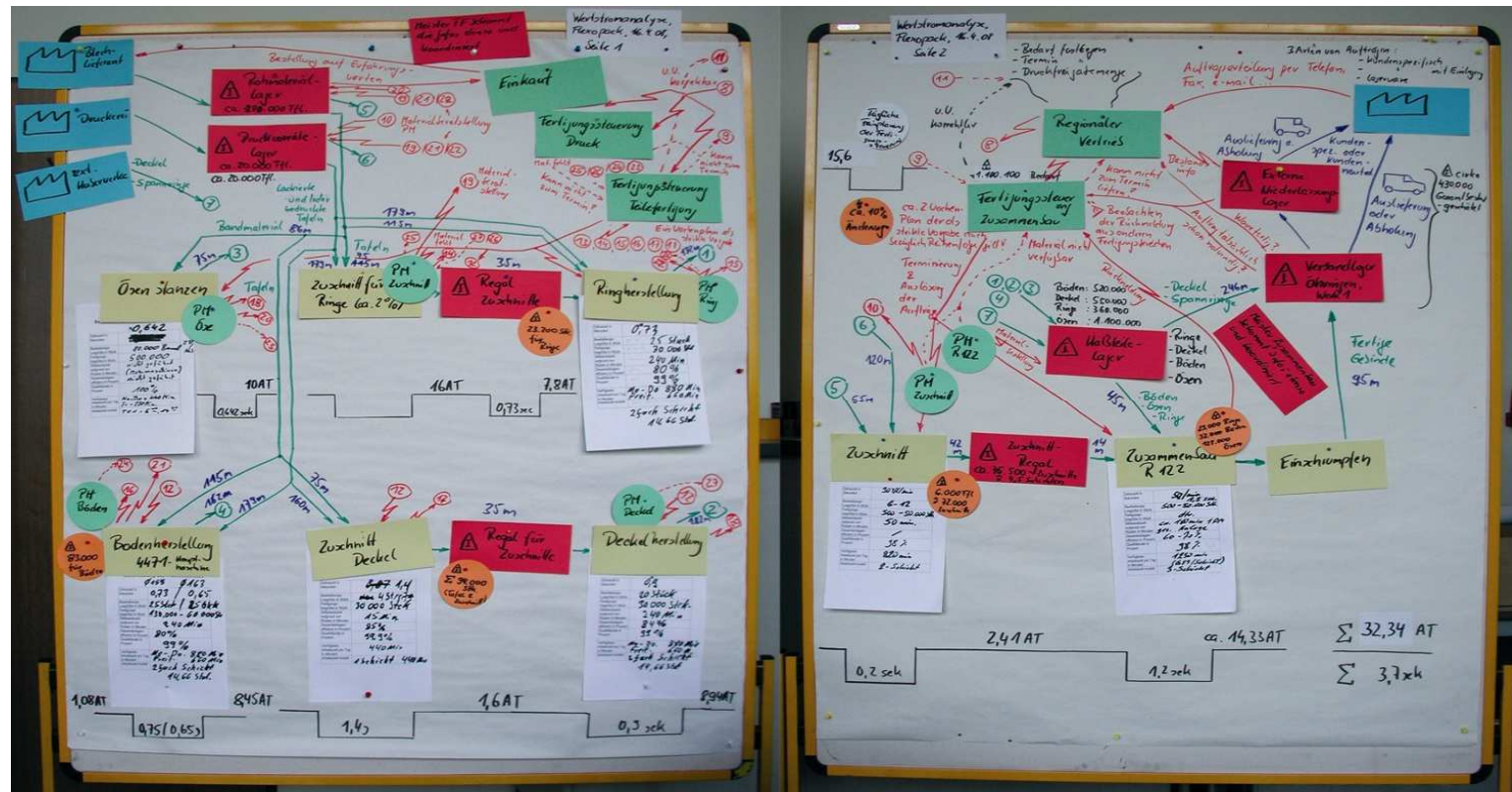
Value stream mapping | Introduction

1. Value stream mapping

A tool for the identification of value streams in companies ...

2. Value stream design

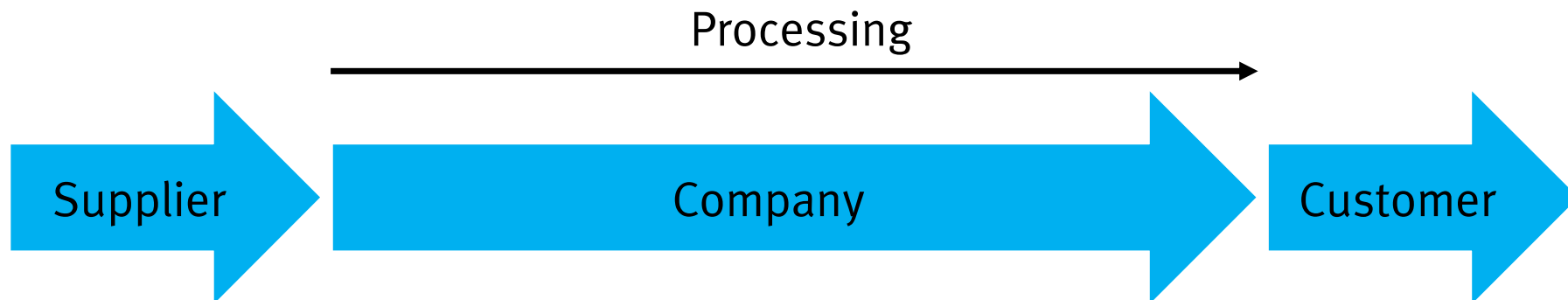
... to allow **substantial** improvement of the process.



Value stream mapping | What is a value stream?

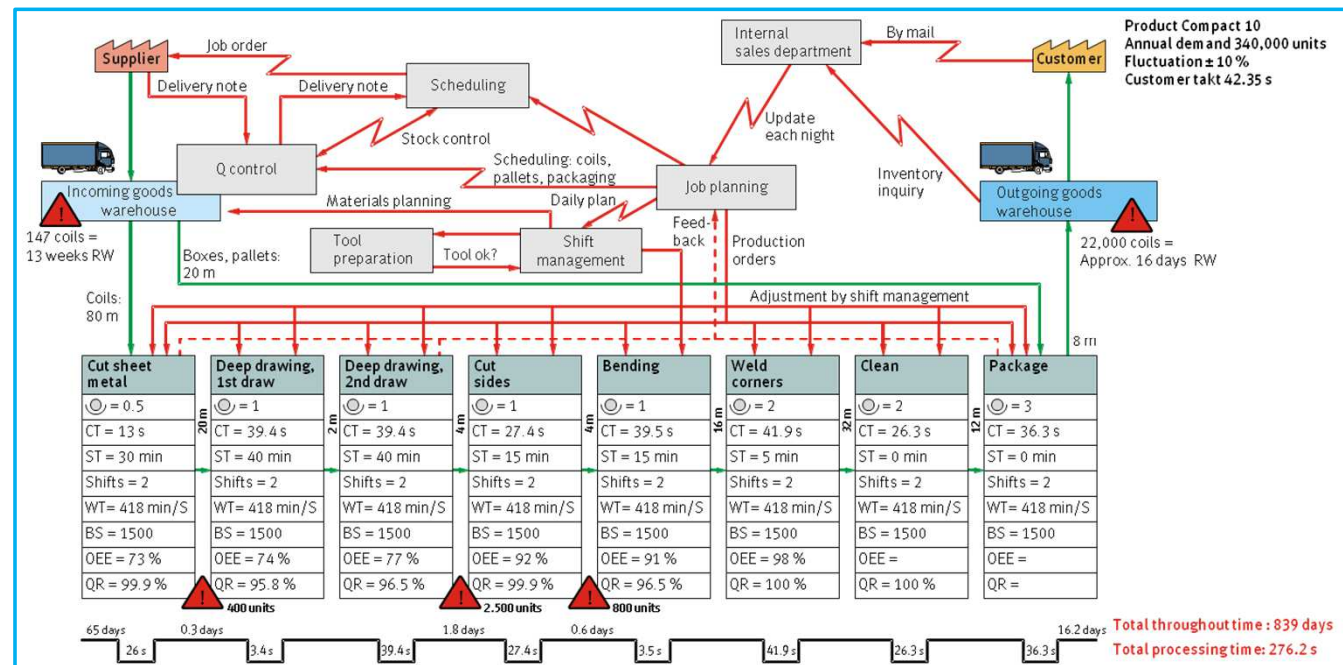
A value stream represents all activities (value-adding and non-value-adding) necessary to produce and market a product.

- The production workflow of a raw part/raw material until the finished product reaches the customer.
- Every company process or workflow.



Value stream mapping | Steps to establish the current status

1. (Preparation)
2. Selection of the product and product family
3. Establishing customer data
4. Value stream mapping from job order to delivery (material flow)
5. Value stream mapping from customer order to job order (information flow)
6. Collecting data on the quality of process steps
7. Collecting data on distances, inventories and the timeline



Value stream mapping | Example Air Pump Inc. – Product Air Pump 2000



- Air pump 2000
- Available in four different colors
- 375.000 products / year
- **Production steps**
 1. Sawing piston rod
 2. CNC turning of piston rod
 3. Cleaning
 4. Assembly
 5. Gravure / type labeling
 6. Packaging and shipping