Module no. 1.

Name	**A journey with Lean** **Introduction to Lean, history, and theory**
Agenda	From 9 o'clock am to 3 o'clock pm incl. game (without game 3 hours) Estimated schedule: 09.00 to 12.00 Introduction, Lean history, Lean principals (breaks included) 12.00 to 15.00 Lean game (Chinese hats) (breaks included)
Overall objectives with this workshop	This is a workshop which purpose is to give awareness about Lean. Furthermore, an understanding of what Lean can bring to the organization. The same slide series can also be used as a general introduction in a light version for all employees in an organization. A significant element in the process is the Lean game.
Teaching objectives	To give participants: 1. An overview of Lean 2. Introduction to the Lean principles and how they are put in play in an organization 3. The essence in Lean 4. The Lean history
Teaching guide	Introductory, it is important to balance the participants' expectations. Moreover, if any of the participants have prior knowledge about Lean – what the participants want to know. There is material here for 2 to 4 hours of presentation dependent on how detailed you do it. So be aware of taking breaks. For instance, make a reflection break after slide 20 "the 5 Lean principles" and work with the questions: Are they relevant for your organization – if yes how and where? Use the game to illustrate the Lean principles in play. Process: 1. Introduction to Lean 2. Lean history 3. Lean principles 4. Lean game (Chinese hats) 5. Reflection

Introduction
In connection with the EU financed project Lean manufacturing in graphic companies, a simple concept is compiled with the purpose to offer European graphic companies a simple lean tool. It has been decided to focus on three central tools: VSM (Value Stream Mapping), 5S, and board meetings. There are other tools, but these three tools have been chosen as a start. The philosophy is to master these tools well, achieve results, and then move along on the lean journey.

What is Lean
Lean is creating more value with fewer resources. Lean means trimmed and is about productivity and customer satisfaction through efficiency.

The term Lean was invented by the scientists James P. Womack and Daniel T. Jones. They have registered how Toyota's production of cars was much cheaper then at the competitors. They wanted to examine the phenomenon. They found that Toyota used a certain system, where focus in all connections was to minimize waste. Womack and Jones chose the word lean to describe this special focus on waste, because it means trimmed. The point is that the companies, which work with trimming the manufacturing processes, are doing well.

Womack and Jones identify five central terms, which make Toyota a world class manufacturer. These are called the five lean principles:

1. Value for the customer
2. Value streams
3. Flow
4. Pull
5. Perfection

Elaboration of the five lean principles

1. Identify the **value creating activities** by means of the following core questions:
   Will the customer pay for this activity or process?
   Does the product become obsolete?
   Is the process done right the first time?
2. **Value stream analysis**
   Map which processes and activities the company have from customer request/offer to delivery of the finished graphic product.
   Identify the critical areas, where you in the current situation experience bottlenecks and/or many errors.
3. **Flow**
   With starting point in the value stream analysis you try to form the most optimal "order flow" through the company. A flow where orders (information and materials) flow through the company as freely and with as few disputed points as possible.
4. **Pull**
   Identify intern as well as extern (customer) pull, which gets order through the company as quickly as possible – with least possible resource consumption.
5. **Perfection**
   Identify areas in and around the company, e.g. maintenance of printing machines and ensuring that the machines are maintained optimally – by which break downs in stressful situations are minimized.
   Involve employees in chasing improvements and waste.
   Waste is defined as: Overproduction, waiting time, errors, transportation, handling, process waste, and storages.

Under these five lean elements are a number of tools, which can be put in play in different situations, connections, and levels all depending on whether you want to improve flow, minimize waste, etc.

Fact box:
http://www.economist.com/node/5102491?story_id=5102491 link to interesting article in The Economist: Still leaning, after all these years, applying the Toyota way to everything from computers to air travel.

"The machine that changed the World" was published in 1990 and becomes a bestseller. For the first time, Lean is put into words. In 1996 the book "Lean Thinking" is published, where the writer for the first time collects all the activities, which they have observed preliminary at Toyota – known as TPS (Toyota Production System).

Benefits of Lean for your company
Printers constantly deal with wasted time and materials. All production and activities time falls under two categories: value-added and non-value-added. Value-added activities change the form, fit, and/or function of information and materials in the process of becoming final printed product for sale to the customer. The customer pays for the value-added tasks and activities. Non-value-added tasks and activities do not change the form, fit, or function of parts, materials, or anything – they just consume resources through excessive movement of people, machines, and product. Customers do not pay for non-value-added tasks and activities so they become what is referred to as "The Hidden Factory of Waste." The non-value-added waste factors include:

1. Waste from overproduction
2. Process waste
3. Waste of work-in-progress and finished product inventory
4. Waste of motion
5. Waste from product defects
6. Waste from waiting
7. Waste from transporting
8. Waste of people

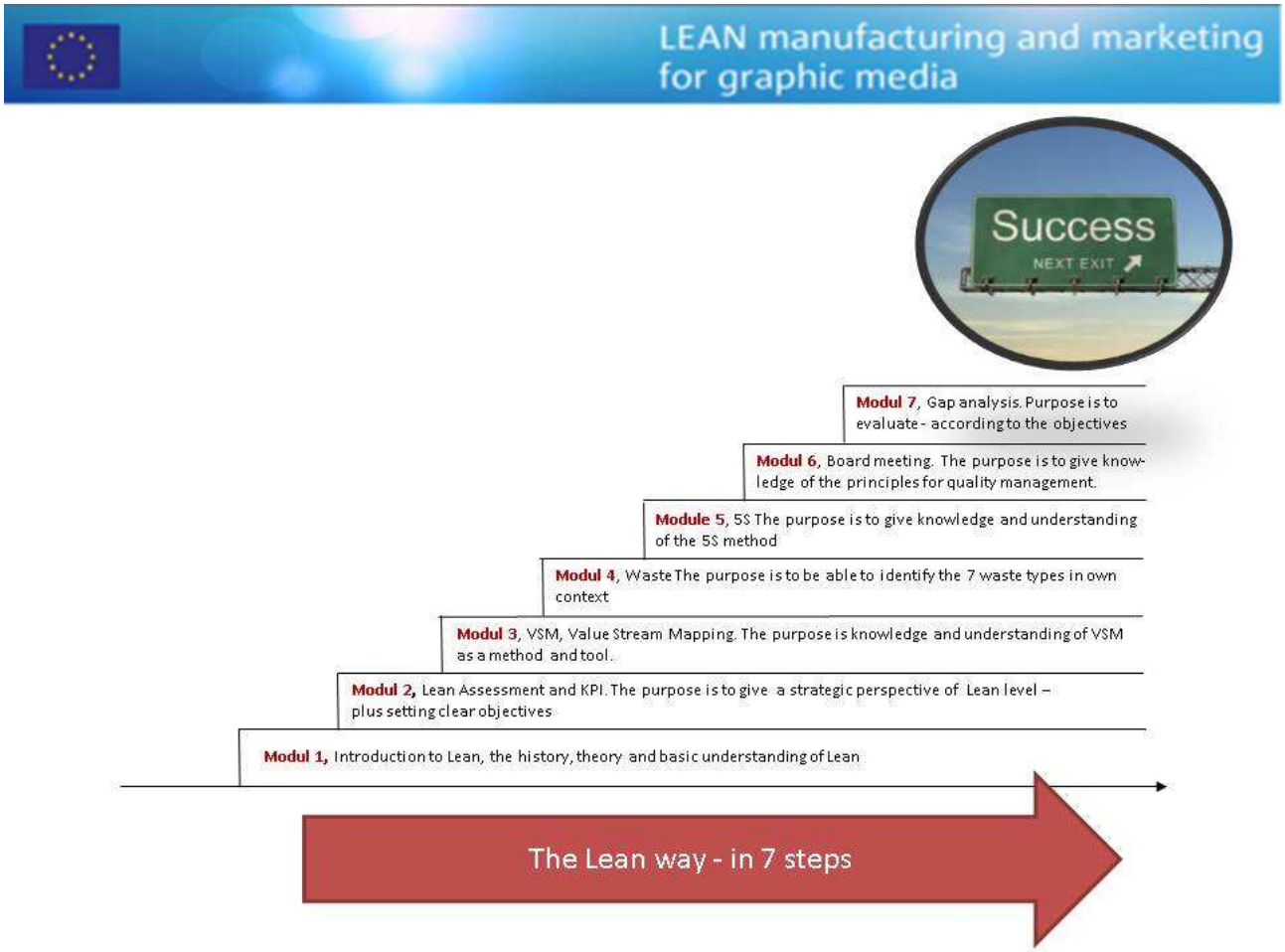
The hidden factory of waste is where people are moving far more than product is moving. When waste is focused on, there is one issue that is continually spoken of throughout plants – the fact that there are many newer people who have a lesser degree of experience. Although everyone works hard, waste, downtime, and process inefficiencies occur. The lack of understanding process capabilities, poor communications, activities improperly done, inefficient techniques, and mistakes all result in longer production workflow and people moving far more than the product. The typical response to people lacking experience is, they need more training. Although training may very well be needed – people must know what to do and how to do it – the answer lies within the processes themselves.

It must be determined if everything needed to do the job meets people's needs, including information, tools, equipment, and materials, which must:

- Be correct
- Function properly
- Be easily accessible

And it needs to be that way all the time. Process controls and error proofing methods must be in place and followed. The best practices and techniques need to be continually developed, accepted, implemented, and shared.

How to implement Lean
A simple and practice-oriented implementation model has been developed, where you in 7 steps (modules) start learning about Lean and following learn about the different Lean tools. Before you start, it is important that you consider which objectives you want to achieve. It is incorporate in the process that you work with objectives, but it can qualify the process, if you consider where you are now, and where you want to go in connection with the five Lean elements!



When you are at the 7th step, you have com e along way regarding implementing Lean and can see the result, which the process has given. In the project, the Lean tools are ready. E.g. Global Control in Excel – which is a comprehensive implementation tool. To get a good profit of this or similar tools, it requires a certain level of Lean knowledge in the single organization. It is this level, which is offered by the 7th step module build model.

Participants in the project:

- GA, Graphic Association Denmark
- Consultancy house CUBION A/S in Denmark
- Fundació Industries Gràfiques de Catalunya, School for print and multimedia in Barcelona
- Dienstencentrum, a Dutch consultancy company
- Innowise, a German research and consultancy company
- The Hellenic Open University-EAP in Athens
- Stivako, a Dutch vocational education institution. Stivako coordinates the project.

Visit the project's website: www.leangraphicmedia.com

Colophon:
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Composed for education

Project logo

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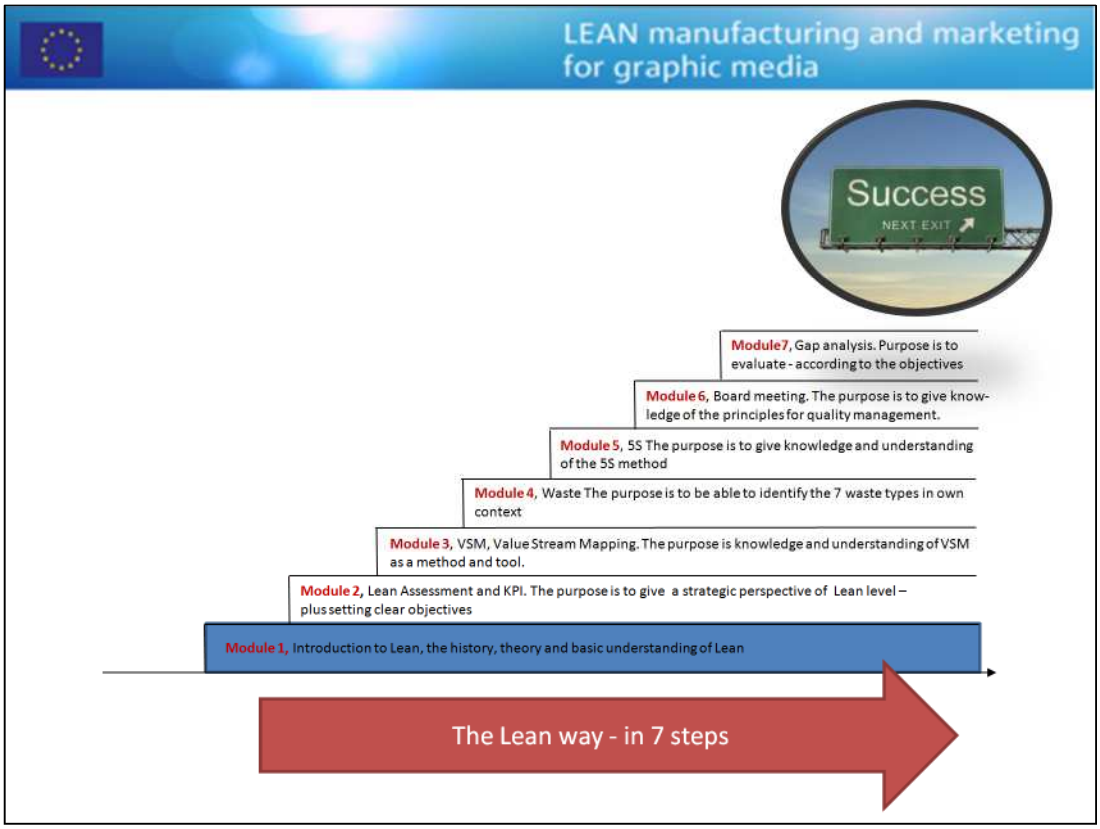
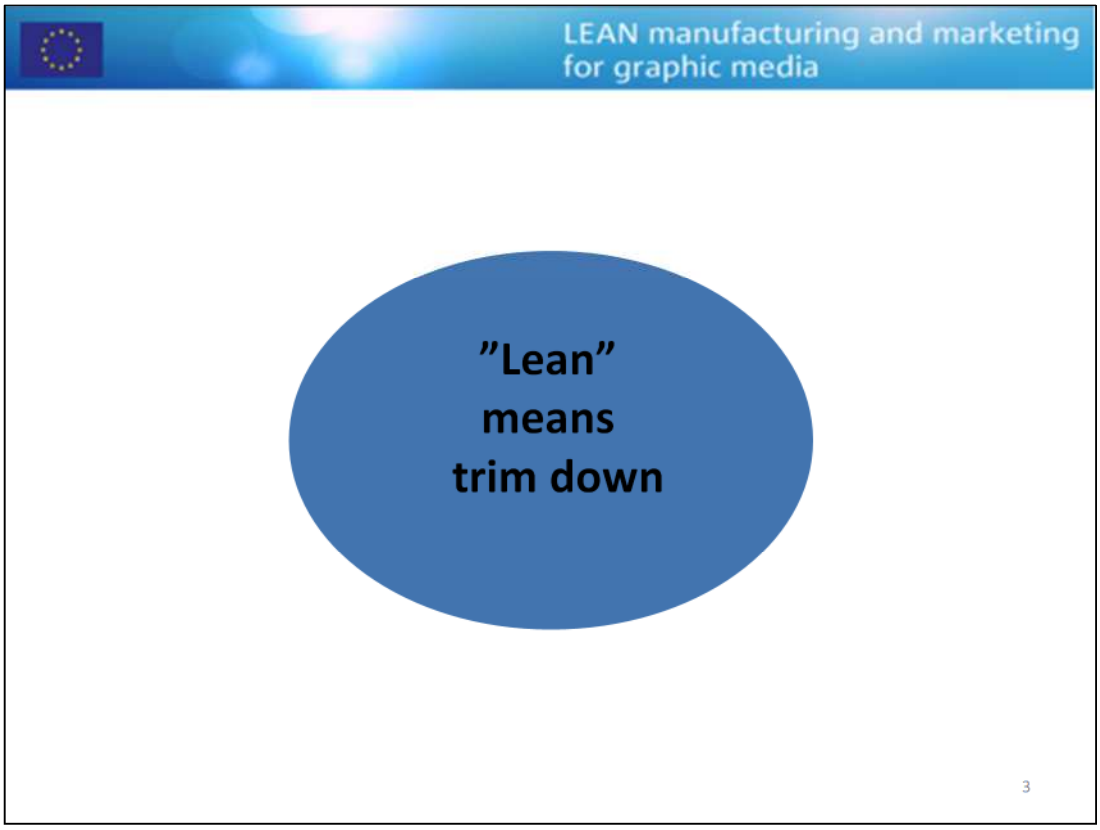
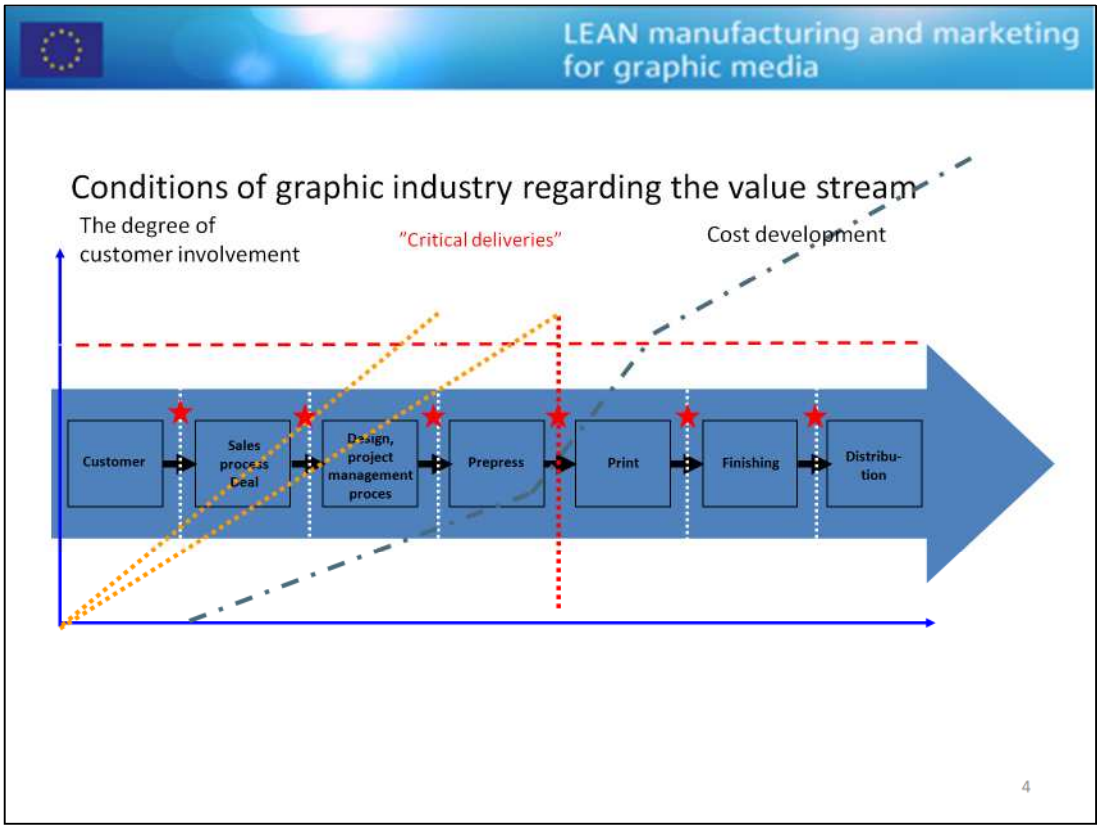
EU, Education and culture DG, lifelong learning programme.

Module no. 1 - A journey with Lean


LEAN manufacturing and marketing for graphic media
Success
NEXT EXIT
Module 7, Gap analysis. Purpose is to evaluate - according to the objectives
Module 6, Board meeting. The purpose is to give knowledge of the principles for quality management.
Module 5, 5S The purpose is to give knowledge and understanding of the 5S method
Module 4, Waste The purpose is to be able to identify the 7 waste types in own context
Module 3, VSM, Value Stream Mapping. The purpose is knowledge and understanding of VSM as a method and tool.
Module 2, Lean Assessment and KPI. The purpose is to give a strategic perspective of Lean level – plus setting clear objectives
Module 1, Introduction to Lean, the history, theory and basic understanding of Lean
The Lean way - in 7 steps



This slide’s purpose is to point that Lean is not a abbreviation – but it occurs as the word’s meaning!



This slide is about visualizing that within the graphic value stream, there is a lot of stop and go, many critical deliveries between different professionals, where the potential of misunderstandings is huge. The red stars represent these critical deliveries. The yellow lines shows the level of interaction/dialogue with the customer. At the same time, it is possible to change things, correct, give new suggestions up until the red line almost without any material costs, whereas after the red line it is expensive to change anything. Therefore, there is a point in being especially careful with getting 100 % solid ground under the feet regarding the job, before it goes to print.

Exercise:

Dialogue two and two:

Make the participant discuss their own company ex: Describe your company in steps, do you have critical deliveries, does the customer follow beyond the read line in your company?

The history behind – highlights

Ford created the assembly line,
mass production – flow!

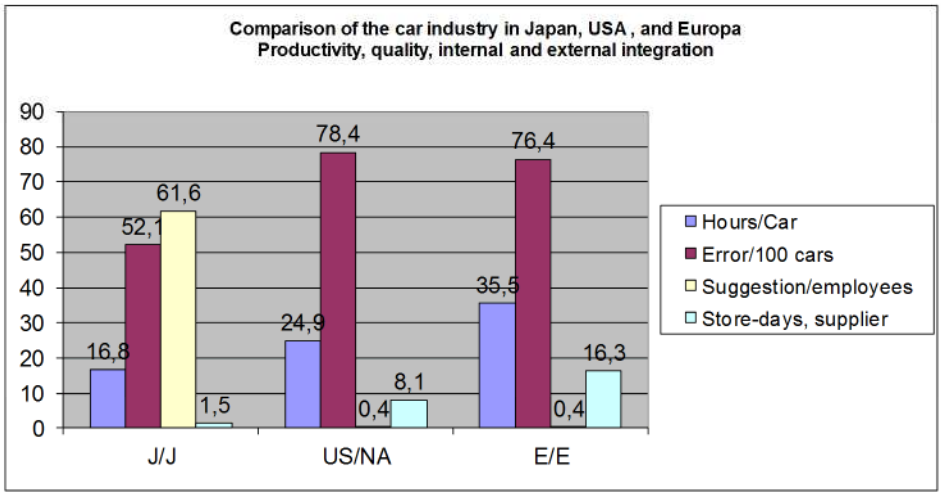
Toyota refined it, sought perfection,
involved all in Kaizen – maintained flexibility!

This slide and the next can be used to tell that LEAN is not a unambiguous philosophy, but a result of practical experiences, theories, theorists, and different cultures and markets, which through a 100 year period have developed and in the late 21st century became the Lean philosophy.

The history behind – highlights

Henry Ford
1891 Engineer at Edison
1903 Ford Motor Company
1910 Highland Park factory
1913 Continuous moving assembly line (84 steps)
Specialized employees
Taylor helps with balancing
1918 Half of all cars in USA is a Ford T
1920 Rouge River Plant
1926 Book by Ford: Today and Tomorrow
1927 Rouge River contains all processes of manufacturing – focus on machine utilisation

Taiichi Ohno
1902 Sakichi Toyoda established Toyota (weaving mill)
1936 Toyota began car production
Kiichiro Toyoda stayed at Ford for an year, developed JIT
1953 Super markets appeared in USA, Taiichi Ohno was inspired by Shingo Shingeo and Deming consultants at Toyota
1991 The machine that Changed the World - Womack & Jones
1996 Lean Thinking – Womack & Jones



J. Womack , D. Jones: The principle that changed the world. Trimmed production. Massachusetts Institute of Technology. 1991

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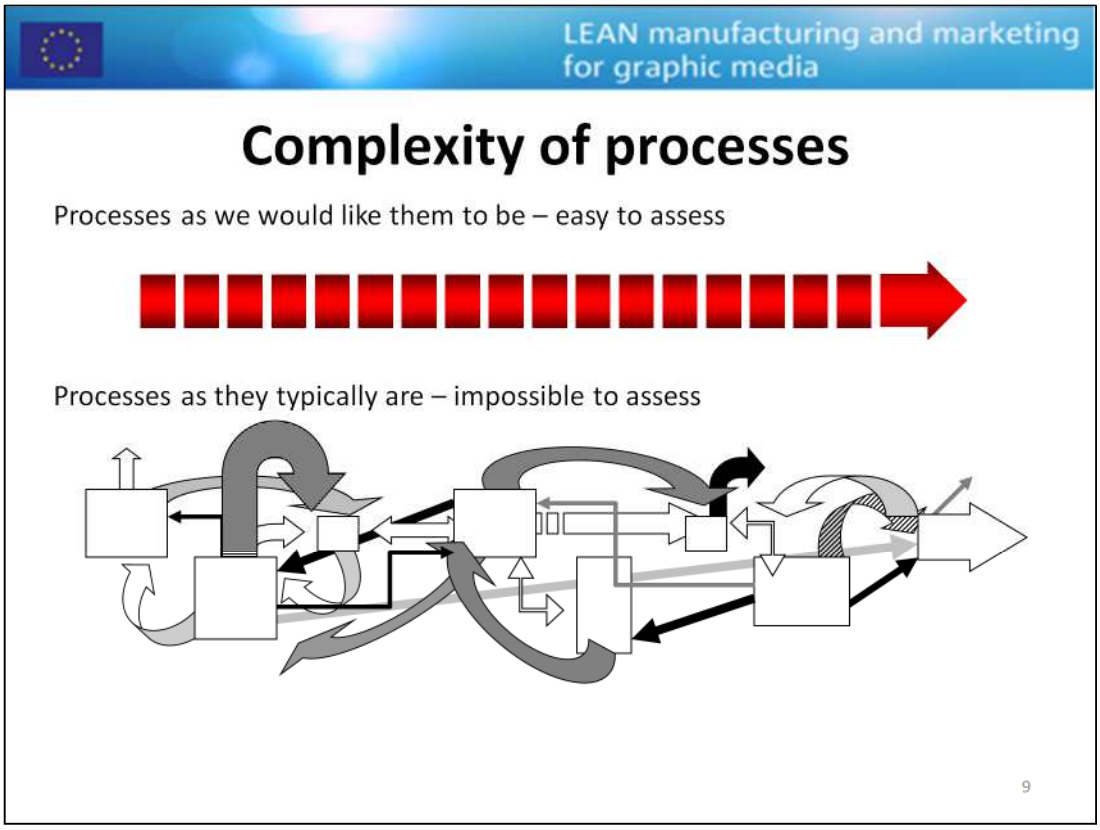
Source: Womack and Jones "the machine that changed the world". Point of this figure is that it shows suggestion per employee, and as it shows there is a large input from employees in Japan compared to the others.

J/J: Japan
US/NA: USA and North America
E/E: Europe

The vision with Lean is…

To get a process which only makes
what the next process needs
– and when it needs it.
Link all processes from start
to end customer in a flexible flow
with the shortest possible lead time
in the best quality
and with the lowest possible costs



This slide begins with the lowest figure. It illustrates a classic organization, where decisions are made quickly, organization and intern language happens by gemmation. "Different" languages are spoken in the organization. The individual employee does not have an overview of what happens before and after, and does not even care.

The top illustrates a transparent process, where all participants have a full overview of what happens from start until end. There is a joint language and a joint picture of the whole process.

The elements behind Lean

- Value
- Value creation "stream"
- Flow
- Pull
- Perfection

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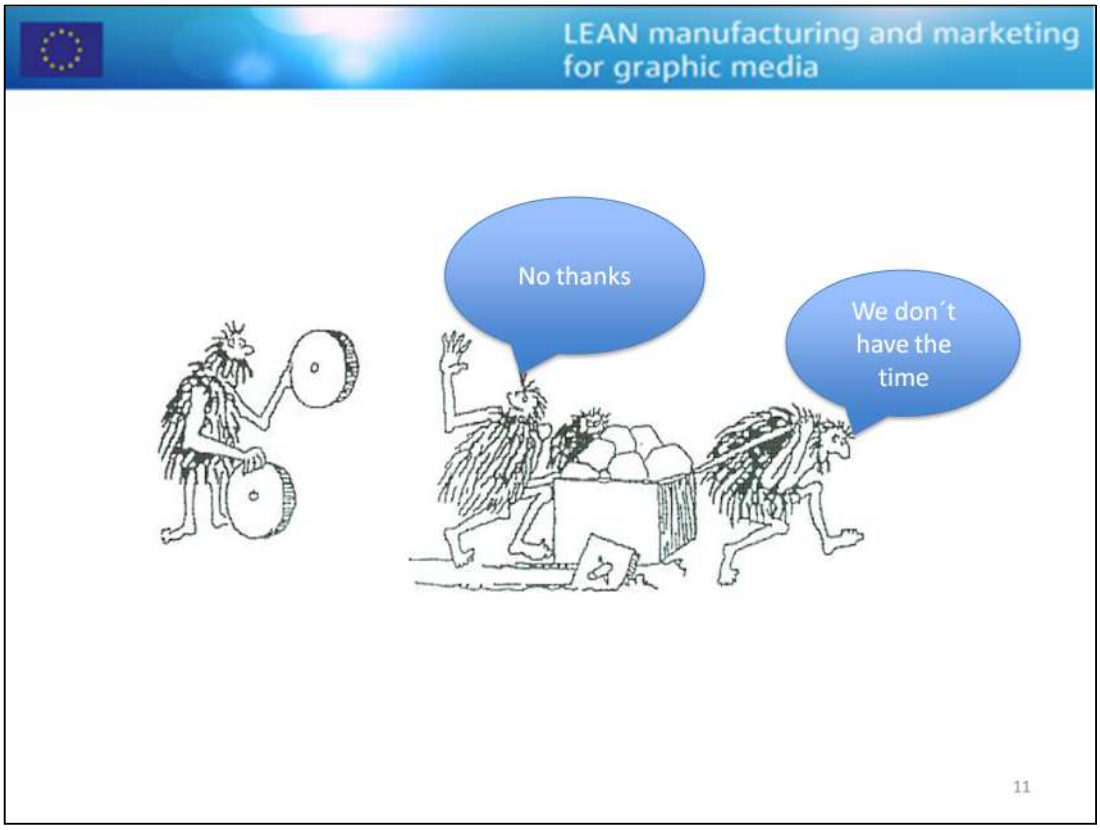
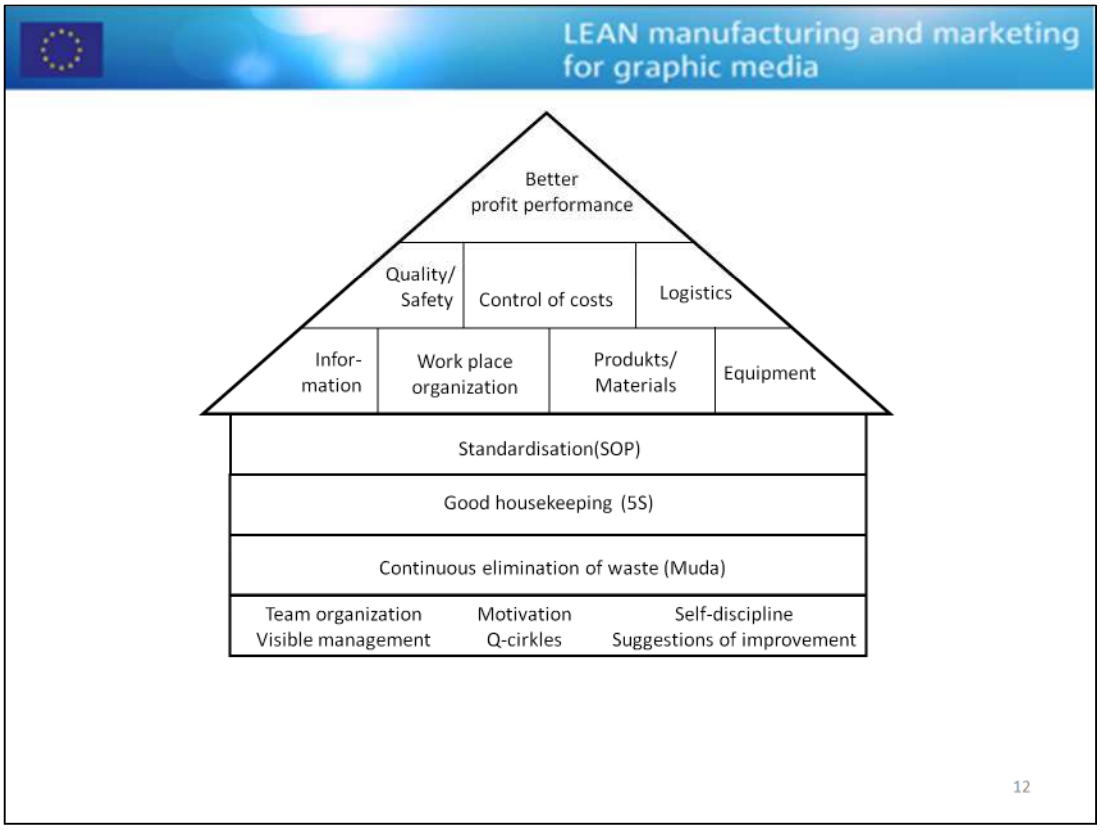
The 5 Lean principles according to James P. Womack and Daniel T. Jones in the book "Lean Thinking" were published for the first time in 1996 and revised in 2003.
Their first book about Lean was published in 1990 with the title "The machine that changed the world" and it was the first time that Lean production was mentioned, and in Lean Thinking the 5 Lean principles or elements are supported.



Can be used as a teaser for starting continuous improvements – it is often that changes are inconvenient for organizations.



The model: "The house of Gemba" (Gemba means where things happen) and it was published in the book GEMBA/KAIZEN by the writer Masaki Imai.

The house illustrates how you successful build a quality behaviour in your company. It is developed and tested in private companies. The point of the writer is that you must crawl before you can walk – that there are different evolutionary steps in an organization's quality development.

Lean – What is also part of Lean?

Team, self-evaluation, service, skills, performance, et cetera…

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This is an example of a top leader, picture to the left, who is filming a 5S workshop for the purpose of using it as an evaluation and improvement tool. It is also an example of a top leader that sets a standard for his organization – here leading a 5S workshop.

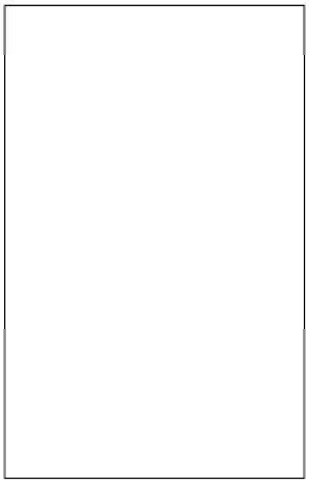
Think about it

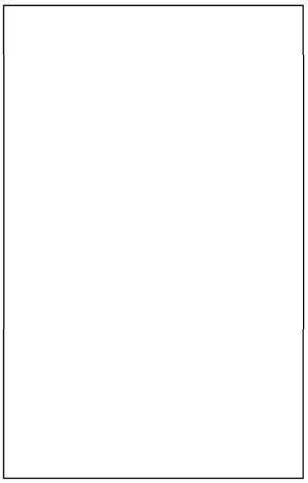
- What does Lean mean for your company?
- Where is the core challenges in the House of Gemba for your company?
- Give some examples of how you work with Lean in your company today
- For next time: where should the company focus to get highest possible value working with Lean

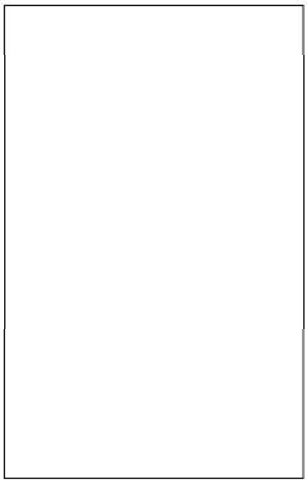
Exercise

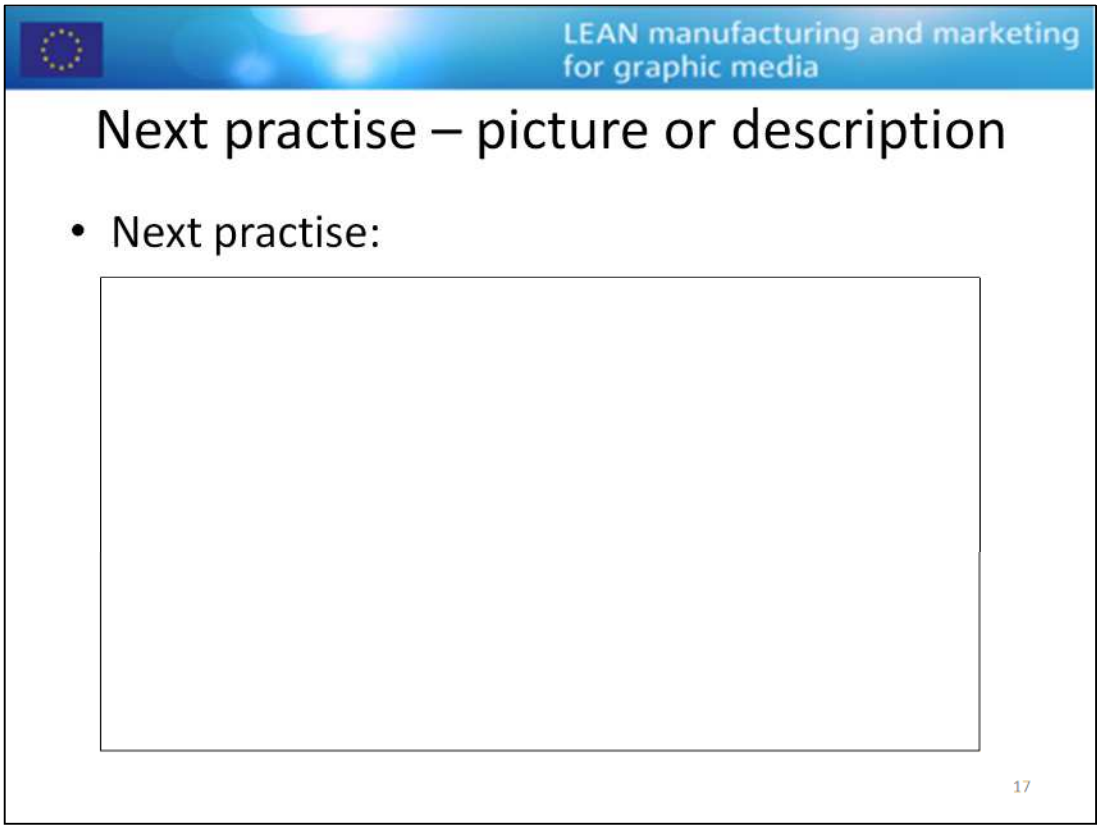
- During the course take 3 pictures of examples of Best practise from your own daily working practise.
- In addition, take minimum 1 picture of an example of next practise or describe one example of next practise.
- Bring your photos and/or description at module 7.

Best practise - pictures









The concept next practise is used to show that the goal is not just to disseminate best practise, but rather to strive after all the time to develop and improve best practise – which in that way becomes next practise.

LEAN manufacturing and marketing for graphic media

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