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ILA-LEAN

Tablet course

Chapter 3.4. A3 Report implementation in knowledge work

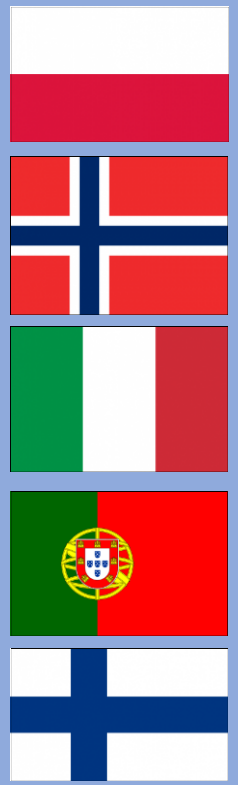
Dorota Stadnicka

Rzeszow University of Technology

„Innovative Learning Approaches for Implementation of Lean Thinking to Enhance Office and Knowledge Work Productivity”

ILA-LEAN Project No 2016-1-PL01-KA203-026293
2016-2018

2018



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Project Title

Innovative Learning Approaches for Implementation of Lean Thinking to Enhance Office and Knowledge Work Productivity

Project Number: 2016-1-PL01-KA203-026293

A3 Report

ILA-LEAN

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STEPS OF ANALYSIS

Title: What do you want to write about?	An owner of the problem:	Date:

1. Problem description
Why do you want to write about this problem?

2. Current situation
What is a current situation?
Use visual tools to present the current situation (schemes, flowcharts, pictures, diagrams, VSM, spaghetti diagram etc.)

3. Goal(s), indicators
The goal(s) should be SMART (Specific, Measurable, Achievable, Realistic, Time-bound)
Indicators should give the possibility to assess improvements in the future

4. Analysis
What are the source causes of the problems?
Use a tool which will help you to find the causes of the problem (5xWhy?, Ishikawa diagram, interrelationship diagram, brainstorming, etc..)

5. Proposed countermeasures
What do you propose to implement to achieve the goal(s)?
How the proposed solutions can influence the source causes of the problem and change the current situation to achieve the future state?

6. Plan
What do we have to do?
What is a deadline?
Who will be responsible for the activities?
How much will it cost?
You can use Gant chart, table or other visual tool.

7. Further improvement
What kind of problems can appear (risk analysis)?
Use PDCA to plan further improvement.
Assess what was achieved.

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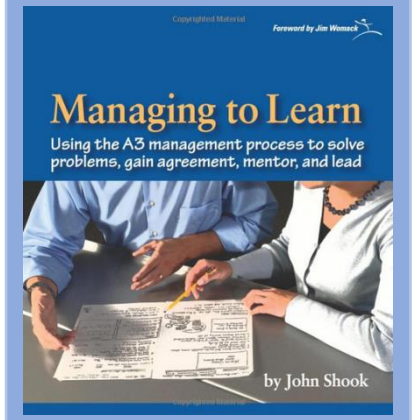
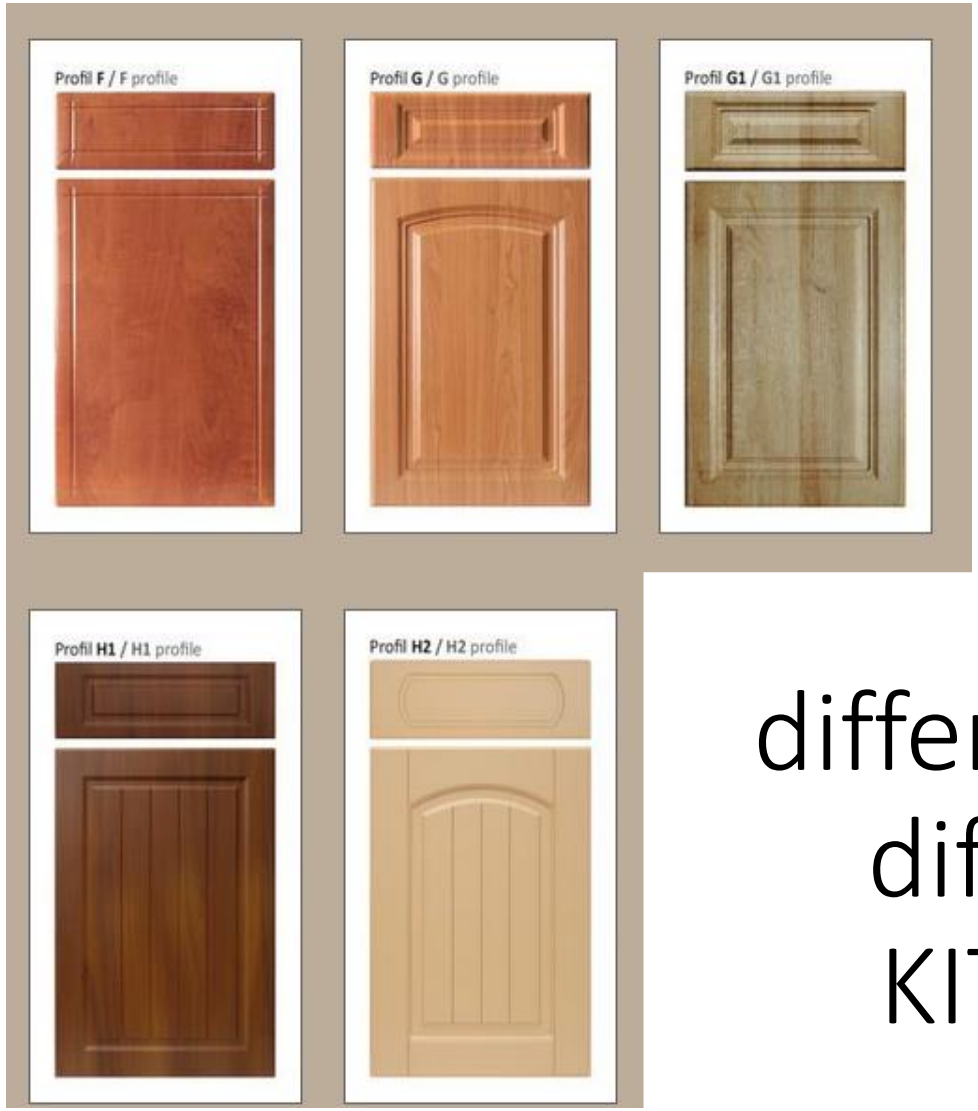


John Shook: Managing to Learn: Using the A3 Management Process Pap/Chrt Edition. Lean Enterprise Institute, Inc., 2008

Visualization of the products



Planning process problems

different profiles types
different colors of
KITCHEN FRONTS

PROBLEM DESCRIPTION

12

Problems

Delays in deliveries to customers → Unsatisfied customers may stop collaborating with the company

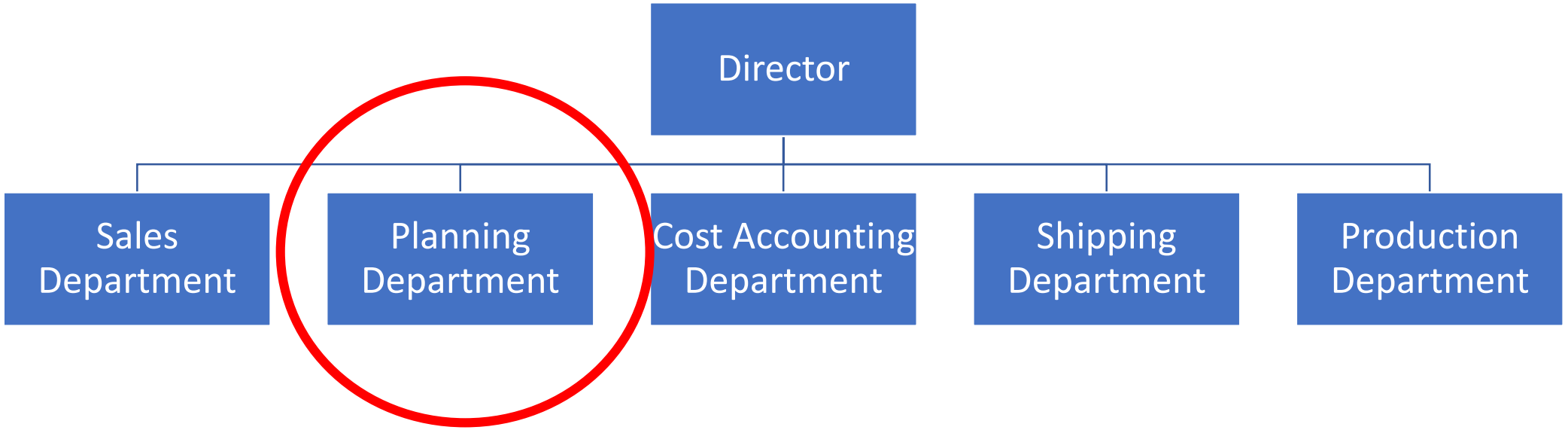
High costs of materials → Low profit

TEAM FOR A PROBLEM ANALYSIS:
Knowledge workers from each department of the company

PROBLEM DESCRIPTION

13

Organizational structure of the company



PROBLEM DESCRIPTION

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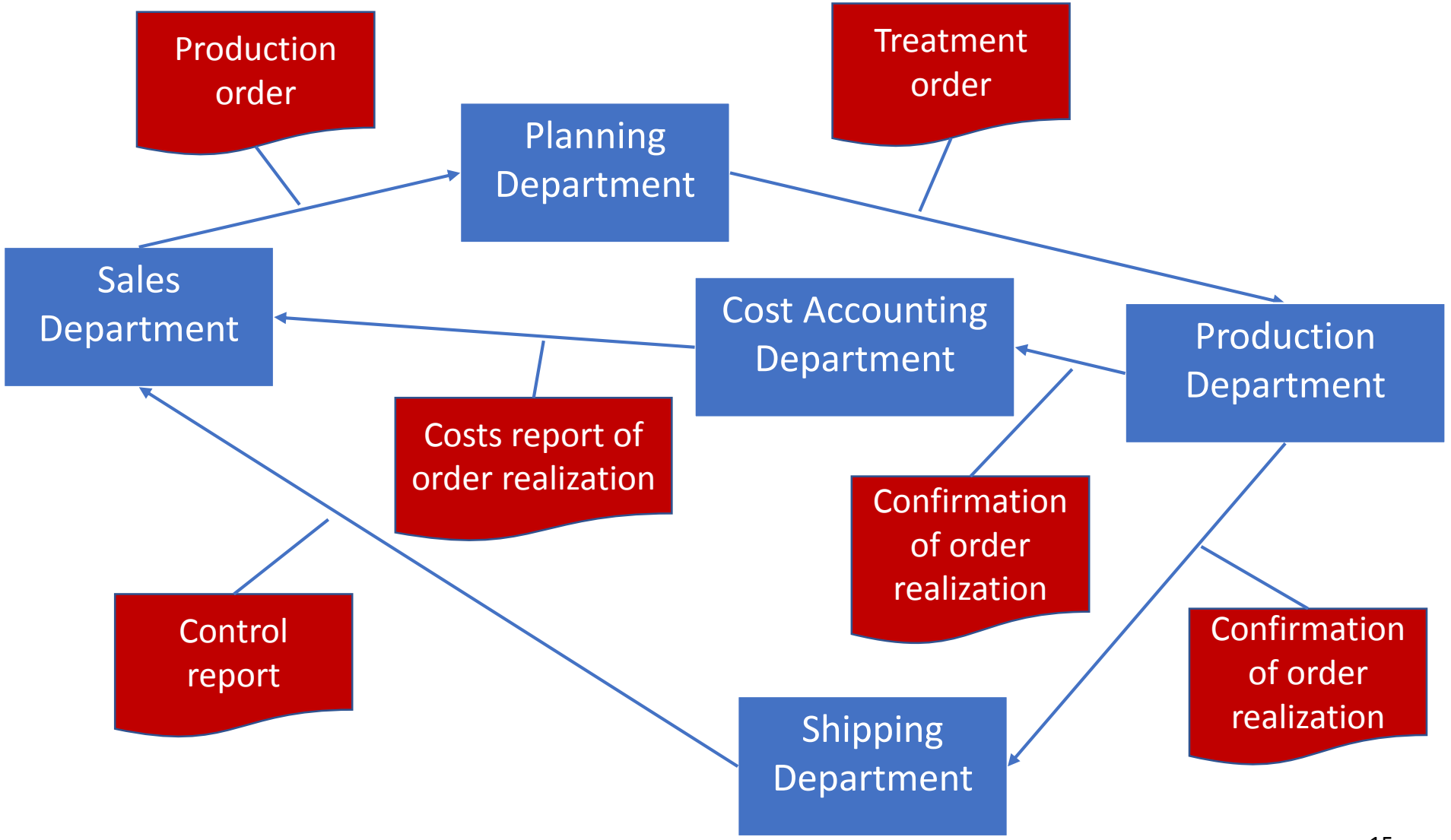
The information flow



PROBLEM DESCRIPTION

Cutting Optimization

PROBLEM DESCRIPTION

16

5x10 50

PP...../CC...../F...../K.....

4x10 40

PP...../CC...../F...../K.....

3x7 21

PP...../CC...../F...../K.....

5x15 75

PP...../CC...../F...../K.....

7x7 49

PP...../CC...../
F...../K.....

5x8 40

PP...../CC...../F...../K.....

Cutting Optimization

5x10 50 PP...../CC...../F...../K.....	4x10 40 PP...../CC...../F...../K.....	5x8 40 PP...../CC...../F...../K.....
5x10 50 PP...../CC...../F...../K.....	4x10 40 PP...../CC...../F...../K.....	5x8 40 PP...../CC...../F...../K.....
5x10 50 PP...../CC...../F...../K.....	4x10 40 PP...../CC...../F...../K.....	5x8 40 PP...../CC...../F...../K.....

GO TO **CHAPTER 3.1**

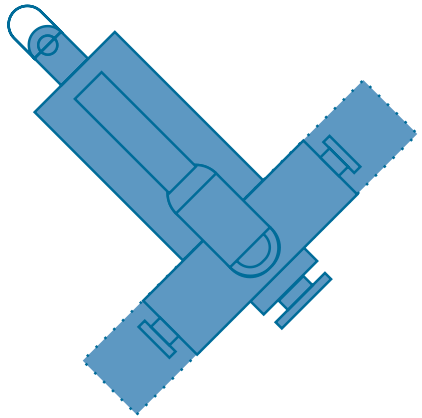
PROBLEM DESCRIPTION

Cutting Optimization

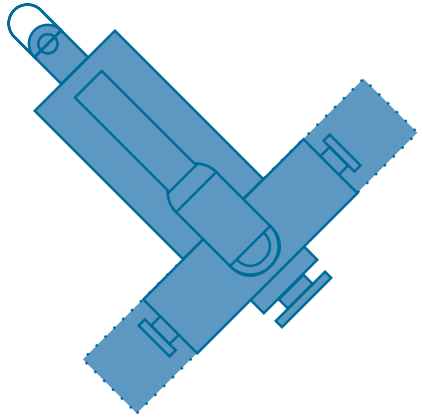
5x10 50 PP……/CC……/F……/K……	4x10 40 PP……/CC……/F……/K……
5x10 50 PP……/CC……/F……/K……	4x10 40 PP……/CC……/F……/K……
5x10 50 PP……/CC……/F……/K……	4x10 40 PP……/CC……/F……/K……

PROBLEM DESCRIPTION

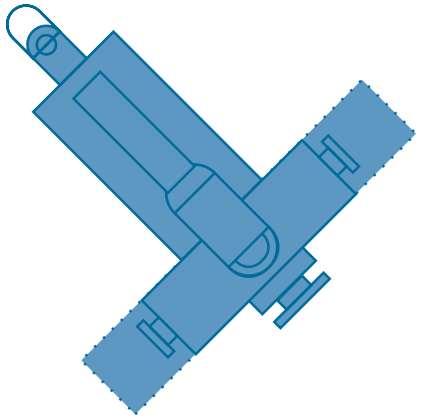
Milling Process Optimization



Milling machine 1



Milling machine 2



Milling machine 3

CONSTRAINS

- Availaible working time
- Kind of profile
- Number of set-ups
- Set-up time

PROBLEM DESCRIPTION

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Laminating Process Optimization

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restol

PROBLEM DESCRIPTION

5x10 50

PP...../CC...../F...../K.....

Different colour of laminates

20

A3 Report

Title: A wrong planning process which influences the punctuality of clients' order realization and high material costs.

PROBLEM DESCRIPTION

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A3 Report

PROBLEM OWNER

An owner of the problem:	**Date**:
Manager of the Planning Department	16.12.2016

A3 Report

PROBLEM DESCRIPTION

1. Problem description

A wrong planning process causes delays in product deliveries to customers as well as wastes of material. It is because the employees responsible for the planning optimization have not enough time to find an optimal solution and the planning process takes much time. Additionally, each employee has his/her own goals and doesn't take into account the goals of employees responsible for other processes planning. Planners have to take under consideration many constrains in the planning process . The optimization made in the process is made only with the use of human intelligence based on experience. There are three people responsible for the planning process.

A3 Report

2. Current situation

3 employees assigned to plan the process. Low capacity of the planning process.

High costs of employment

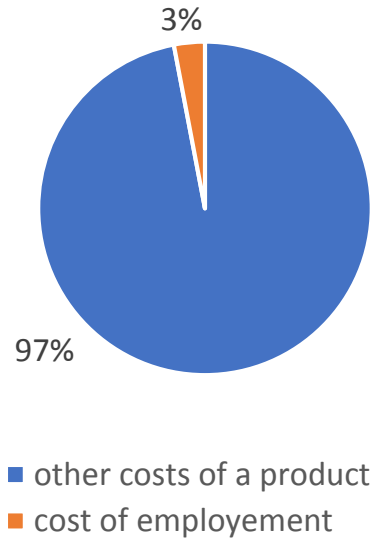
Non effective optimization

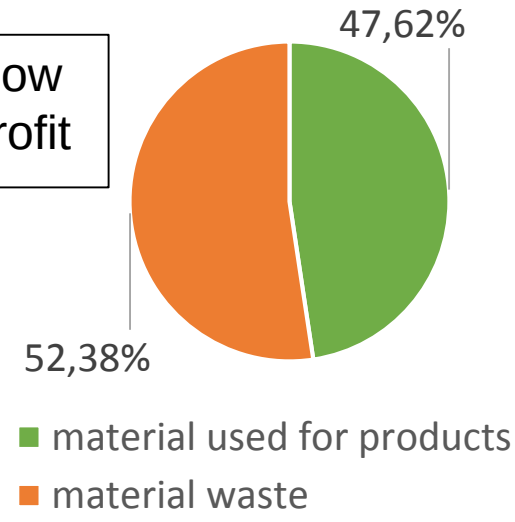
Material wastes: 1 m^2 of ready product needs 2.1 m^2 of laminate

Capacity of the laminating process: **91 sheets** of laminates in the process per shift

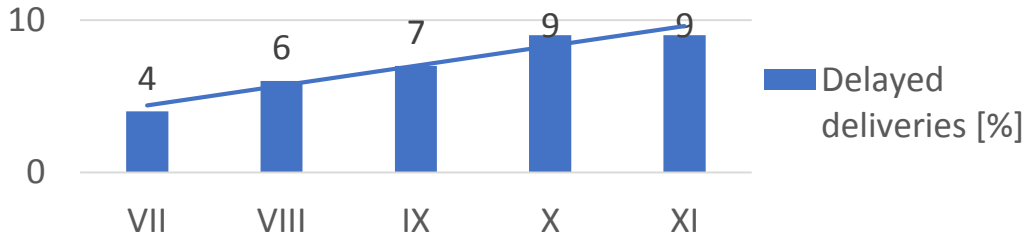
Low productivity of the laminating process: 750 fronts per shift made with the use of 91 sheets

Low profit





Delays in deliveries



CURRENT SITUATION

A3 Report

3. Goal(s), indicators

Goal 1	Increasing the productivity of the laminating process: **900 fronts per shift** made with the use of **91 sheets,** i.e. productivity should be on the level **9.89**
Goal 2	Decreasing the number of delayed deliveries to max 4%

Indicator 1	*Productivity =*	$\frac{\text{Number of products}}{\text{Number of sheets}}$	
Indicator 2	Delayed deliveries =	$\frac{\text{Number of delayed deliveries}}{\text{Number of deliveries}}$	$x\ 100\%$

GOALS
INDICATORS

A3 Report

4. Analysis

Why is there low capacity of planning process employees?	Because the planning process takes much time.
Why does the process take much time?	Because the process is very complex.
Why is the planning process very complex?	Because it has many constrains.
Why does taking into consideration all constrains take so much time?	Because the optimization process is realized manually.

Conclusion:
The planning process has low capacity because it is realized manually.

PROBLEM ANALYSIS

A3 Report

4. Analysis

Why are there delays in deliveries?	Because the products are not manufactured in a certain manufacturing process in one day.
	An employee of Sales Department promised a client to meet a deadline which was impossible to meet
Why aren't the products manufactured in a certain manufacturing process in one day?	Because an employee who optimizes the process tries to save material and waits with the order till the next day.
Why does this cause delays?	Because the next manufacturing processes can have not enough capability in the next days.
Why can the next manufacturing processes have not enough capability in the next days?	Because of existing constrains.

Conclusion:
There are delays in deliveries because of constrains existing in the next processes.

PROBLEM ANALYSIS

A3 Report

4. Analysis

Why are there delays in deliveries?	An employee of Sales Department promised to client a deadline which was impossible to meet
Why did the employee of the Sales Department promise a client to meet a deadline which was impossible to meet?	Because the company rule is that in four days it is possible to complete an order.
Why are there orders impossible to complete in four days?	Because they can be complex, that means different profiles and different colours.
Why doesn't the employee of the Sales Department know which order is impossible to realize in four days?	Because he/she doesn't have any tool to support him/her in decision making.

Conclusion:
There are delays in deliveries because an employee of the Sales Department doesn't have any tool to support him in decision making

PROBLEM ANALYSIS

A3 Report

5. Proposed countermeasures

The planning process has low capacity because it is realized manually.	1 – Implementation of IT solution to support an employee in the planning and optimization process

Annex 1 - Possibilities of planning process improvement by TonCut 7.0 implementation

There are delays in deliveries because of constrains existing in the next processes.	2 – Train planning employees on the best practices which can be used in the planning process

Annex 2 - Production planning – Best practices

There are delays in deliveries because an employee of the Sales Department doesn't have any tool to support him/her in decision making	3 – Implementation of a manufacturing process simulation for different manufacturing plans

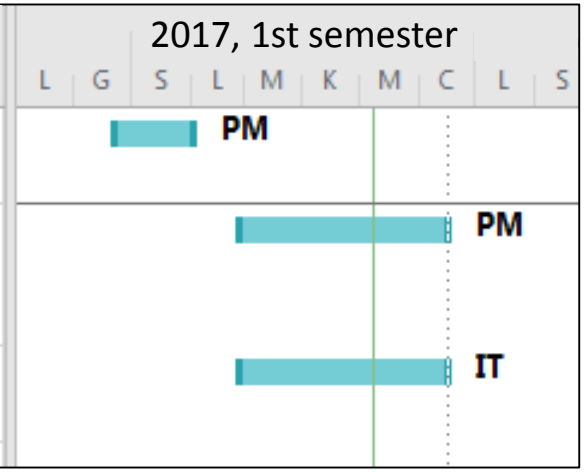
Annex 3 - System Dynamics simulation of the manufacturing process

A3 Report

6. Plan

Gant chart

Task	Duration	Start point	End point	Responsible	Cost
1. Implementation of TonCut 7.0	30 dn	czw, 16-12-22	śro, 17-02-01	PM	1 300,00 zł
2. Implementation of priority rules for orders and operations	80 dn	pon, 17-02-27	pią, 17-06-16	PM	500,00 zł
3. Develoment of a simulation model	80 dn	pon, 17-02-27	pią, 17-06-16	IT	4 000,00 zł



PLAN

A3 Report

7. Further improvement

Frequent changes in customers' requirements can often force changes in a simulation model.

Wrong priority rules implemented can make the results of the planning process worse

Real costs of the solution implementation can be higher than it is expected.

Primarily implemented solutions may be enough to achieve the goal.

FURTHER IMPROVEMENT

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A3 Report

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A3 Report

Title: Wastes in planning process

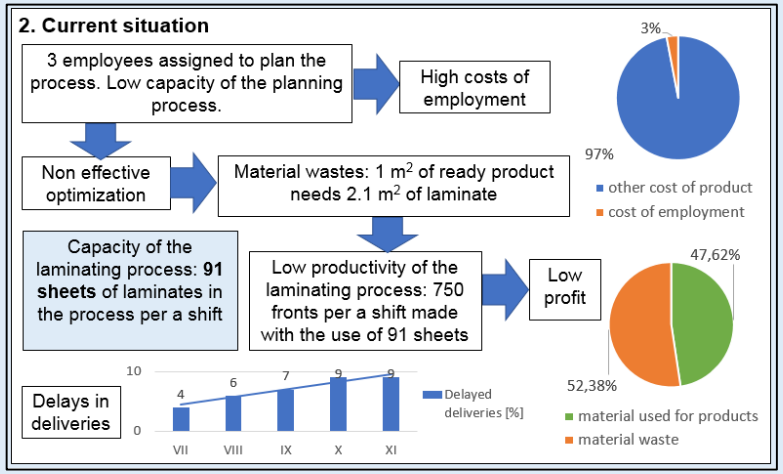
An owner of the problem: Manager of the Planning Department

Date: 16.12.2016

1. Problem description

Wrong planning process causes delays in product deliveries to customers as well as wastes of material. It is because the employees responsible for the planning optimization have not enough time to find an optimal solution and the planning process takes much time. Additionally each employee has own goals and doesn't take into account goals of employees responsible for other processes planning. In the planning process planners have to take under consideration many constrains. The optimization made in the process in making only with the use of human intelligence based on experience. There are three people responsible for the planning process.

2. Current situation



3. Goal(s), indicators

Goal 1	Increasing the productivity of the laminating process: **900 fronts per a shift** made with the use of **91 sheets,** i.e. productivity should be on the level **9.89**
Goal 2	Decreasing the number of delayed deliveries to max 4%
Indicator 1	*Productivity =* $\frac{\text{Number of products}}{\text{Number of sheets}}$
Indicator 2	Delayed deliveries = $\frac{\text{Number of delayed deliveries}}{\text{Number of deliveries}}$ x 100%

4. Analysis

Why there is low capacity of planning process employees?	Because the planning process takes much time.
Why the process takes much time?	Because the process is very complex?
Why the planning process is very complex?	Because has many constrains.
Why taking into consideration all constrains takes so much time?	Because the optimization process is realized manually.

Conclusion:
The planning process has low capacity because is realized manually.

Why there are delays in deliveries?	An employee of Sales Department promised to client a deadline which was impossible to meet
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Why there are orders impossible to complete in four days?	Because they can be complex, that means different profiles and different colors.
Why the employee of Sales Department doesn't know which order is impossible to realize in four days?	Because doesn't have any tool to support him in diction making.

Conclusion:
There are delays in deliveries because an employee of Sales Department doesn't have any tool to support him in diction making

Why there are delays in deliveries?	Because the products are not manufactured in a certain manufacturing process in one day.
Why the products are not manufactured in a certain manufacturing process in one day.	An employee of Sales Department promised to client a deadline which was impossible to meet
Why this causes delays?	Because an employee who optimizes the process tries to save material and waits with order to the next day.
Why the next manufacturing processes can have not enough capability in the next days?	Because the next manufacturing processes can have not enough capability in the next days.
	Because of existing constrains.

Conclusion:
There are delays in deliveries because of constrains existing in the next processes.

5. Proposed countermeasures

The planning process has low capacity because is realized manually.	1 – Implementation of IT solution to support an employee in the planning and optimization process
There are delays in deliveries because of constrains existing in the next processes.	2 – Train planning employees on the best practices which can be used in the planning process
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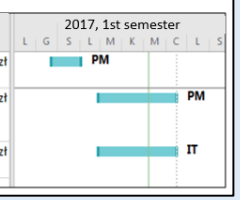
1. Implementation of TonCut 7.0	30 dn	czw, 16-12-22	śro, 17-02-01	PM	1 300,00 zł
2. Implementation of priority rules for orders and operations	80 dn	pon, 17-02-27	pią, 17-06-16	PM	500,00 zł
3. Develoment of a simulation model	80 dn	pon, 17-02-27	pią, 17-06-16	IT	4 000,00 zł



7. Further improvement

Often changes in customer requirements can force often changes in a simulation model.
Wrong priority rules implemented can make the results of the planning process worse
Real costs of the solution implementation can be higher than it is expected.
Firstly implemented solutions may be enough to achieve the goal.

A3 Report

OBTAINED RESULTS

Report of achievements

Date: 1.02.2017

IT solution allowed to achieve the following results:

Indicator	Before	Goal	After
Productivity	8.24	9.89	10.99
	100%	+20%	+33%
Number of employees	3	1	1
Delivery delays	9%	4%	6%

The implementation of the first solution allowed to achieve the first goal.

Delivery delays are on the level of 6% - not enough comparing to the planned level.

Other proposed solutions still have to be implemented.

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