THIS IS LEAN

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What is lean?

- Way of working
- Philosophy
- Approach to improvement
- Approach
- Systems thinking
- Culture
- Quality system
- Way of life
- Method

- Production system
- Strategy
- Eliminating waste
- System for understanding
- Mind-set
- Values
- Management system
- Tool box
High level of abstraction

Low level of abstraction

Fruit

Pear

Whole

Piece

Apple

Green

Red
Three central choices
Alison thinks she has cancer

First contact

Waiting

Waiting

Waiting

Waiting

42 days

Diagnosis
Sarah feels a lump in her breast

One stop breast clinic

First contact

Diagnosis

2h
Any difference?

42 days 24h = 1008h

2h

500 times faster
WHY?

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Two different views on efficiency
RESOURCE EFFICIENCY ➔ FOCUS: RESOURCE

First contact → Local doctor's surgery → Mammography & ultrasound → Breast clinic → Cytology → Breast clinic (Diagnosis)

Waiting 42 days
Filming the “source”

Resource efficiency
(focus on one single resource)

Flow unit
Flow unit
Flow unit
Flow unit

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FLOW EFFICIENCY ➔ FOCUS: FLOW UNIT

First contact

Local doctor's surgery

Mammography & ultrasound

Breast clinic

Cytology

Breast clinic

Waiting

Waiting

Waiting

Waiting

42 days

Diagnosis

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FLOW EFFICIENCY ➔ FOCUS: FLOW UNIT

Flow efficiency
(focus on one single flow unit)

Resource → Resource → Resource → Resource

Maximising value receiving time

Flow unit

Filming the “receiver”
### Two different strategies

<table>
<thead>
<tr>
<th>Resource efficiency</th>
<th>Flow efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus</strong></td>
<td><strong>Resources / functions</strong></td>
</tr>
<tr>
<td><strong>Goal</strong></td>
<td><strong>High capacity utilization</strong></td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td><strong>Parts / “Islands”</strong></td>
</tr>
<tr>
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<td><strong>Specialists / “depth”</strong></td>
</tr>
</tbody>
</table>
What shall we prioritize first?

**RESOURCE EFFICIENCY**

- Long throughput time
- High capacity utilization
- Waste

**FLOW EFFICIENCY**

- Short throughput time
- Low capacity utilization
- Free capacity
What happens when “a system” is busy?

- A diagnose will take long time
- We have to handle many patients at the same time
- We have to restart the diagnose many times
What happens when “a system” is busy?

→ Things will take long time
→ We have to handle many things at the same time
→ We have to restart the value adding process many times
Different indirect effects

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<td>System / “Ocean”</td>
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<td>Multi-competence / “Width”</td>
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<td>Through-put time</td>
<td>Long</td>
<td>Short</td>
</tr>
<tr>
<td>Number of units</td>
<td>Many</td>
<td>Few</td>
</tr>
<tr>
<td>Restarts</td>
<td>Many</td>
<td>Few</td>
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Resource efficiency drives "system waste"

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Negative result
- Unsatisfied customers
- Unsatisfied personnel
- Waste

Failure demand
- Forget, frustration, rework, search...
- Difficult to handle, Under-capacity...
- Quality problems, no system responsib...
Three sources of inefficiency

- Many restarts
- Over-focus on resource efficiency
- Many flow units

Secondary need
The efficiency paradox

By NOT focusing on maximizing capacity utilization, MORE capacity will be available.

Total capacity (100%)

Superfluous work (Secondary need)

Value-added work (Primary need)

Value-added work (Primary need)
The efficiency matrix
The efficiency matrix

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The efficiency matrix

- Resource efficiency
  - Low
  - High

- Flow efficiency
  - Low
  - High

Strategy to increase resource efficiency
The efficiency matrix

![Diagram of the efficiency matrix with axes for resource efficiency and flow efficiency, showing a strategy to increase flow efficiency.]
This is lean = an operations strategy
How to do the “how”? 

Flow efficiency

Resource efficiency

Low

High

Low

High

Current state

How?

Future state

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TOYOTA PRODUCTION SYSTEM

JUST-IN-TIME
1. Deliver what is wanted
2. Deliver when it is wanted
3. Deliver just the amount wanted

JIDOKA

Increase productivity and customer satisfaction through short and stable lead time
Just-in-time and Jidoka

Perfect understanding of:
• The process / the system
• + / -
• Progress
Welcome to Stockholm School of Economics!
How can we develop operations where everyone “sees” everything and has perfect progress control all the time?

**TOYOTA PRODUCTION SYSTEM**

**JUST-IN-TIME**
1. Deliver what is wanted
2. Deliver when it is wanted
3. Deliver just the amount wanted

**JIDOKA**
1. Develop a standard
2. Visualise the standard in order to “see” deviations instantly
3. Deal with deviations immediately
4. Identify root-cause of deviations and prevent reoccurrence
5. Improve the standard

**ONE CLICK AWAY ➔ ONE LOOK AWAY**
Monitor resource efficiency

Monitor the outcome from "my island"

Flow efficiency

Monitor the progress of the system
When is an organisation lean?

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PROACTION ACTION REACTION

0 1 2 3 4 5 6

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1. SET
1. SET 2. TEST

NORMAL FLOW

PROACTION  ACTION  REACTION
1. SET
2. TEST
3. EVALUATE

PROACTION  ACTION  REACTION

NORMAL FLOW

1  2  3  4  5

DEVIAION

A

DEVIATION

B
1. SET
2. TEST
3. EVALUATE

NORMAL FLOW

ACTION

REACTION

PROACTION

DEVIATION

NORMAL OUTCOME

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1. SET
2. TEST
3. EVALUATE
4. ANALYZE

NORMAL FLOW

DEVIATION WHY?

NORMAL OUTCOME

DEVIATION WHY?

DEVIATION WHY?
1. SET

2. TEST

3. EVALUATE
4. ANALYZE
5. LEARN

AHA!

AHA!

AHA!

AHA!

AHA!

AHA!

AHA!
THE LEARNING LOOP

SET

TEST

EVALUATE

ANALYZE

LEARN

IMPROVE
The learning organisation

Flow efficiency (%)

Current state

A dynamic state “continuous evolution”

Current state

Time

The learning organisation

Flow efficiency (%)

Current state

A dynamic state “continuous evolution”

Current state

Time

The learning organisation

Flow efficiency (%)

Current state

A dynamic state “continuous evolution”

Current state

Time

The learning organisation

Flow efficiency (%)

Current state

A dynamic state “continuous evolution”

Current state

Time

The learning organisation

Flow efficiency (%)

Current state

A dynamic state “continuous evolution”

Current state

Time

The learning organisation

Flow efficiency (%)

Current state

A dynamic state “continuous evolution”

Current state

Time
Resource efficiency

Monitor the outcome from “my island”

Reactive execution

Flow efficiency

Monitor the progress of the system

Proactive learning
THANK YOU!