

# TestForum 2017

## A short introduction to Lean concepts

# Agenda

KAVO

- KaVo Kerr
- Principles
- Value Stream Map
- Waste
- Daily management
- One piece flow
- Kaizen event & Rapid prototyping



# KaVoKerr Finland

- Largest Imaging Center of Excellence
- Personnel ~430
- R&D, Manufacturing, Management and Support
- 99% export, 100 different countries
- Production and offices ~13,000 m<sup>2</sup>



# Extraoral 2D

Panoramic



OC200D

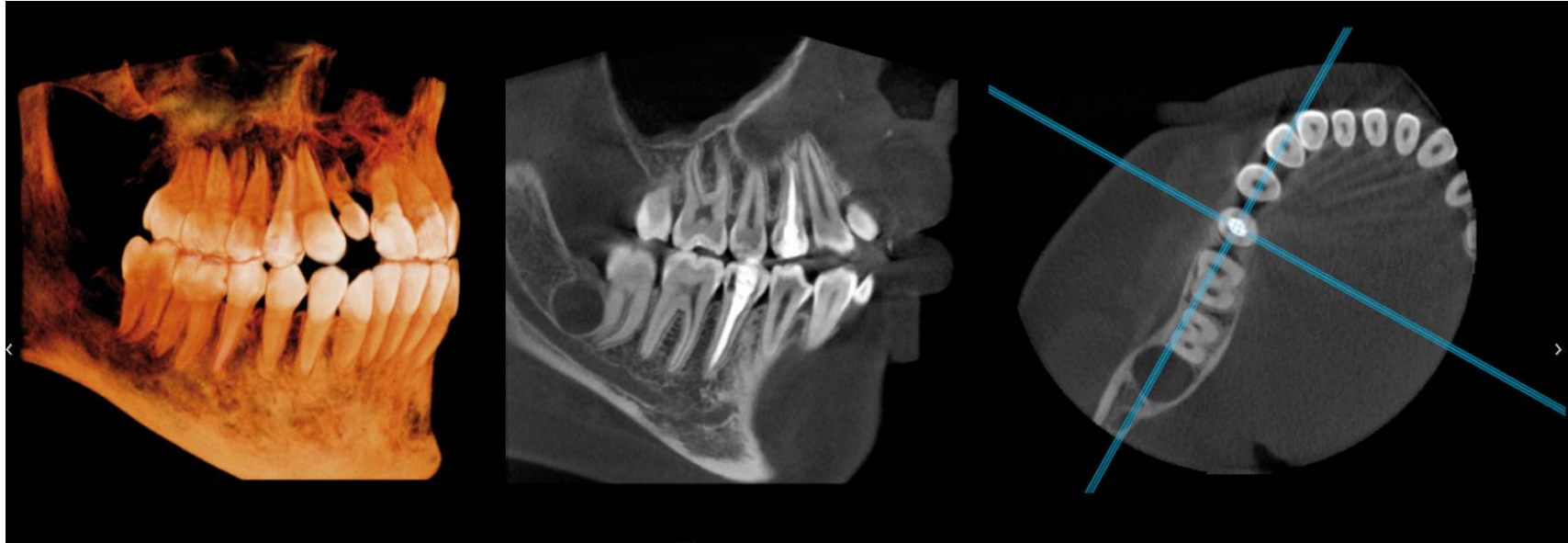


Cephalometric

# Extraoral 2D/3D

KAVO

3D



Cephalometric



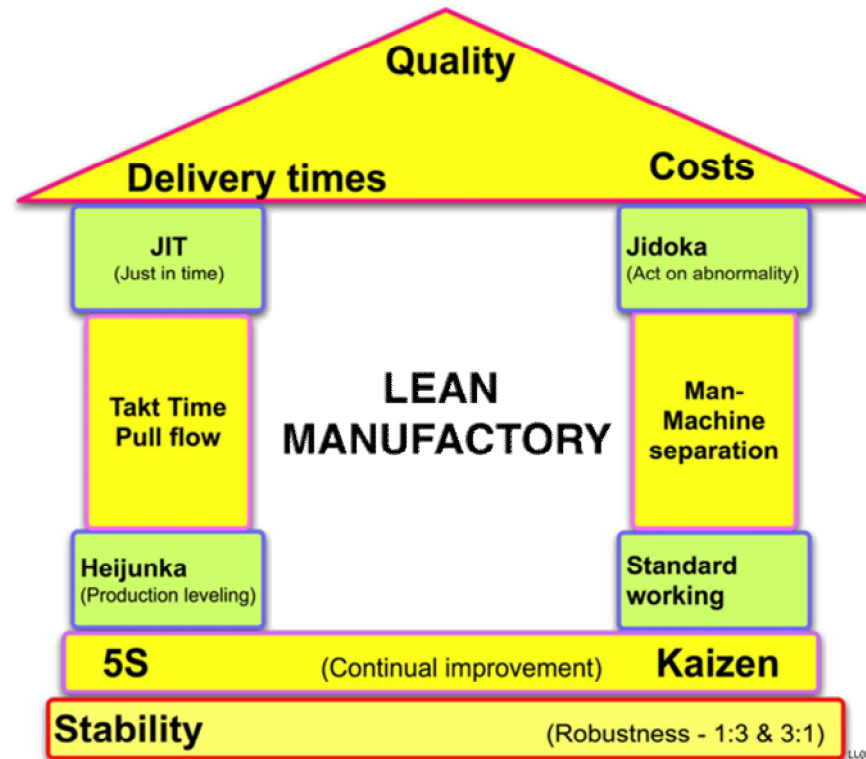
Panoramic



# Lean principles

# Five main principles

- Define value
- Identify value stream
- Create flow
- Pull the value through
- Continuous improvement

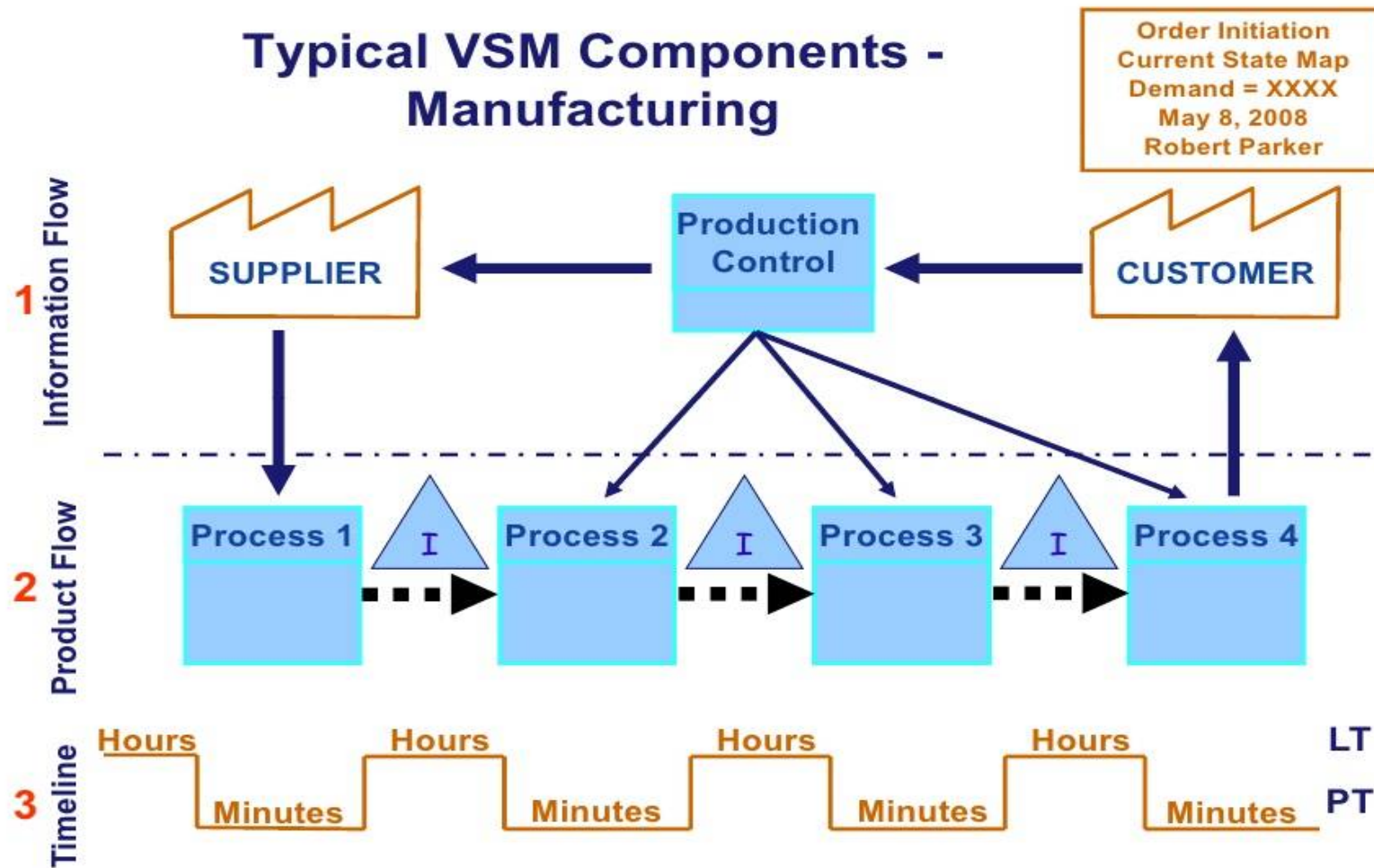


Womack, J.P. and D.T. Jones, Lean Thinking : Banish Waste and Create Wealth in Your Corporation. 1996.

# Value Stream Mapping



# VALUE STREAM MAPPING



# VSM EXAMPLE

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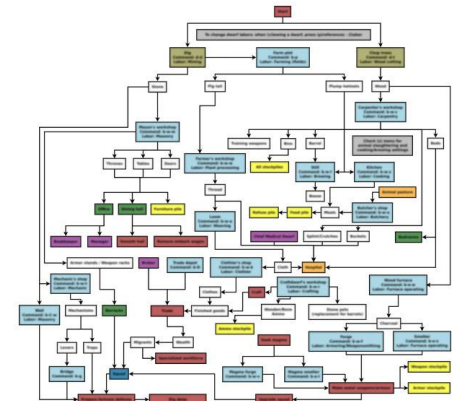
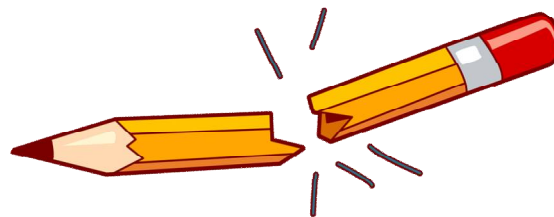
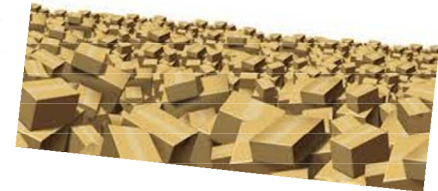


# Waste

# Types of waste according to Taiichi Ohno

- Waste (Muda)
  - Any activity that consumes resources without creating value
  - Any activity for which the customer is not willing to pay

- Transport
- Inventory
- Motion
- Waiting
- Overproduction
- Over Processing
- Defects



**EIGHTH WASTE: UNUSED CREATIVITY!**

# Eliminate waste

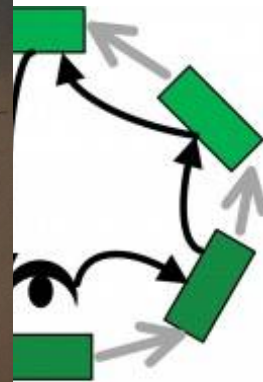
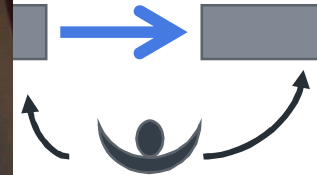
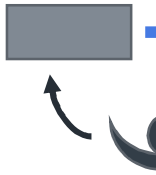
Traditional process



Lean Process



Waste  
Value added



d Cell

# One Piece Flow

# One Piece Flow

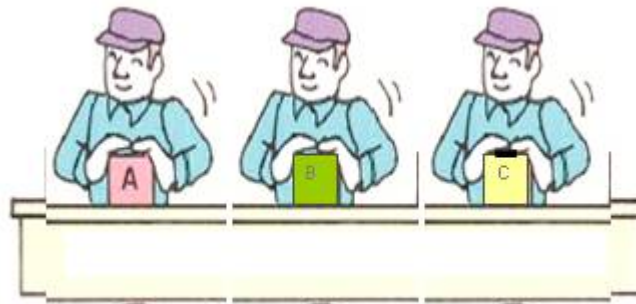
## Batch production



Each phase takes 1 hour and batch size is 10 => Throughput time 30+

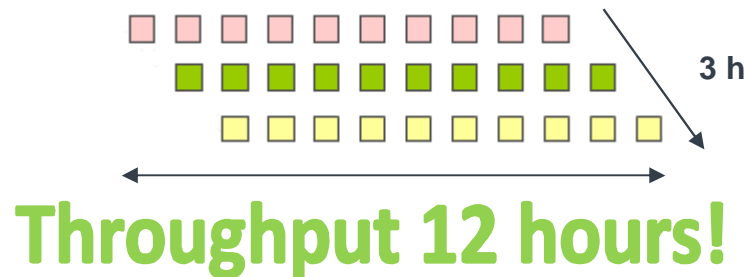
## One Piece Flow

- Smaller foot print
- Smaller WIP
- Defects detected immediately
- Less inventory and transport
- No investments
- Work is exactly same



What happens?

First unit is finished in 3 h

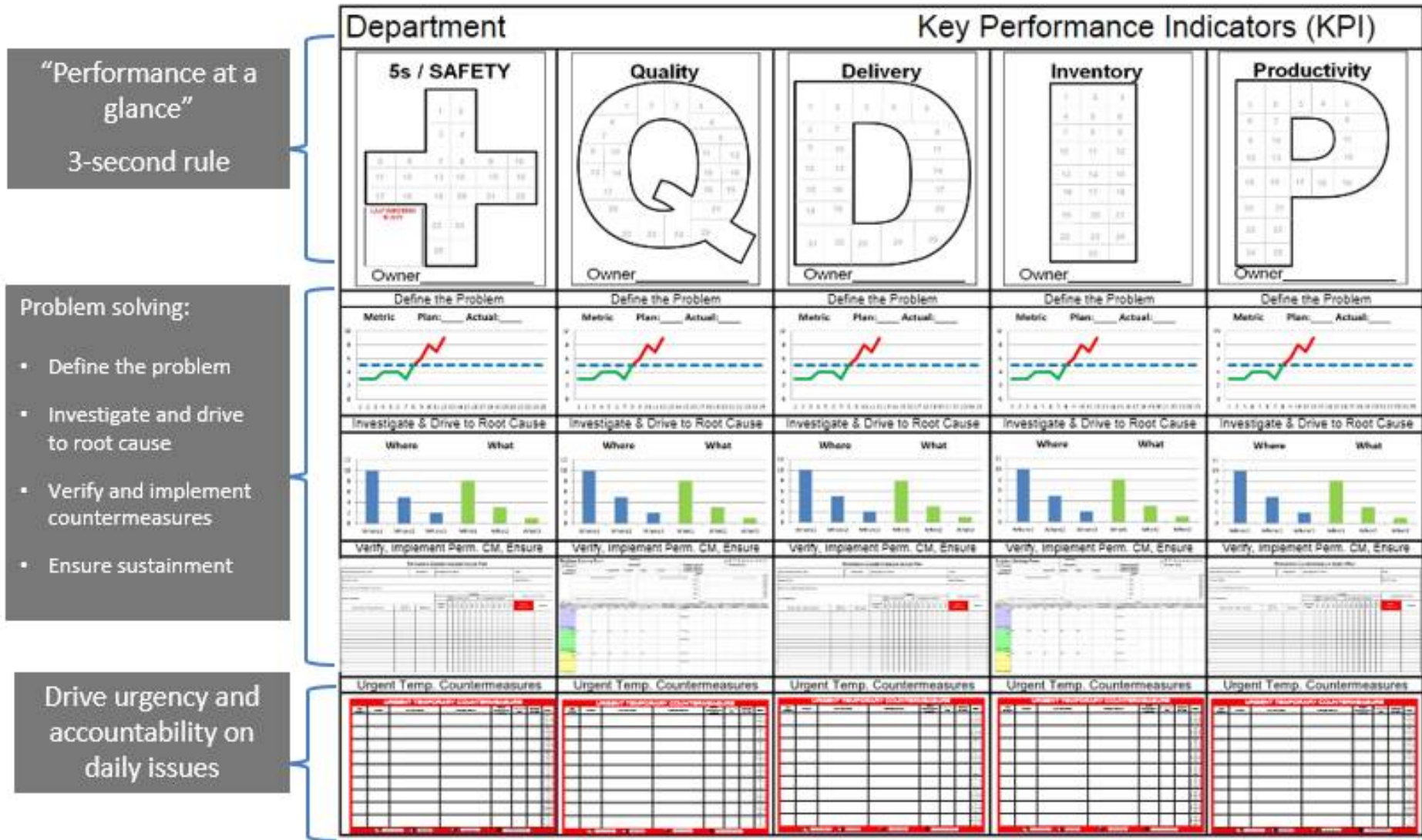


Lead time improved over 60%

# Daily Management



# Visual daily management



# Visual daily management boards

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Production

R&D



# Kaizen Event & Rapid Prototyping

# Kaizen Event & Rapid prototyping

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- 2-5 days
- Operators, managers, and support staff of a process in one place
- Planned thoroughly in advance
- Improves on the existing process
- Engagement and ownership
- YTD 26 events in Tuusula

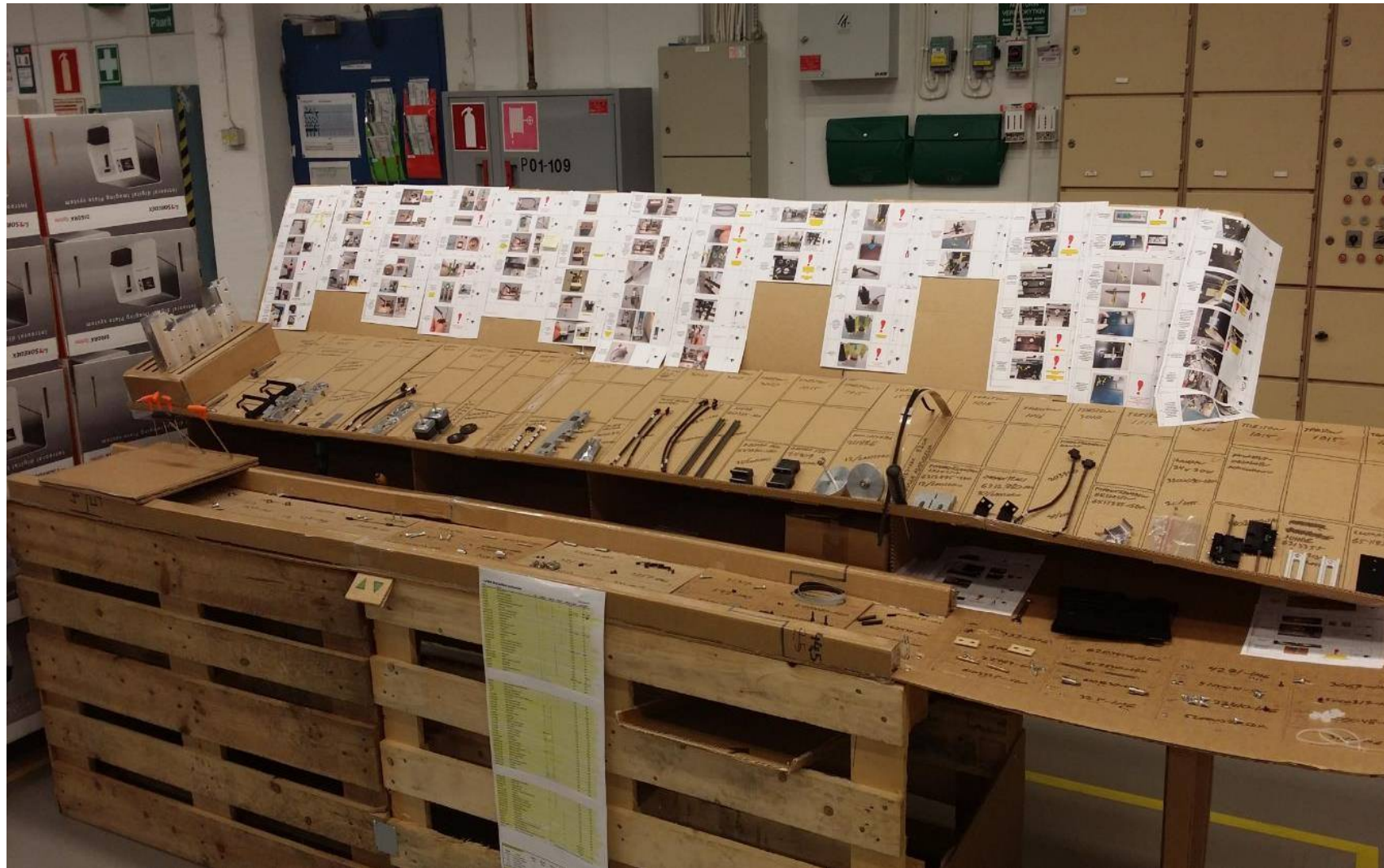
# 3D-Model of packing area

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# Assembly line prototype

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**Mikko Karjalainen**

R&D Manager, Manufacturing Execution System

**KaVo Kerr Group Finland**

Nahkelantie 160 | 04300 Tuusula | Finland

M: +358 (0)41 434 8999

[mikko.karjalainen@kavokerr.com](mailto:mikko.karjalainen@kavokerr.com) |

[www.kavokerr.fi](http://www.kavokerr.fi) | [www.kavo.com](http://www.kavo.com)

[www.linkedin.com/in/mikkotkarjalainen](http://www.linkedin.com/in/mikkotkarjalainen)