Next Level of Hygienic Performance
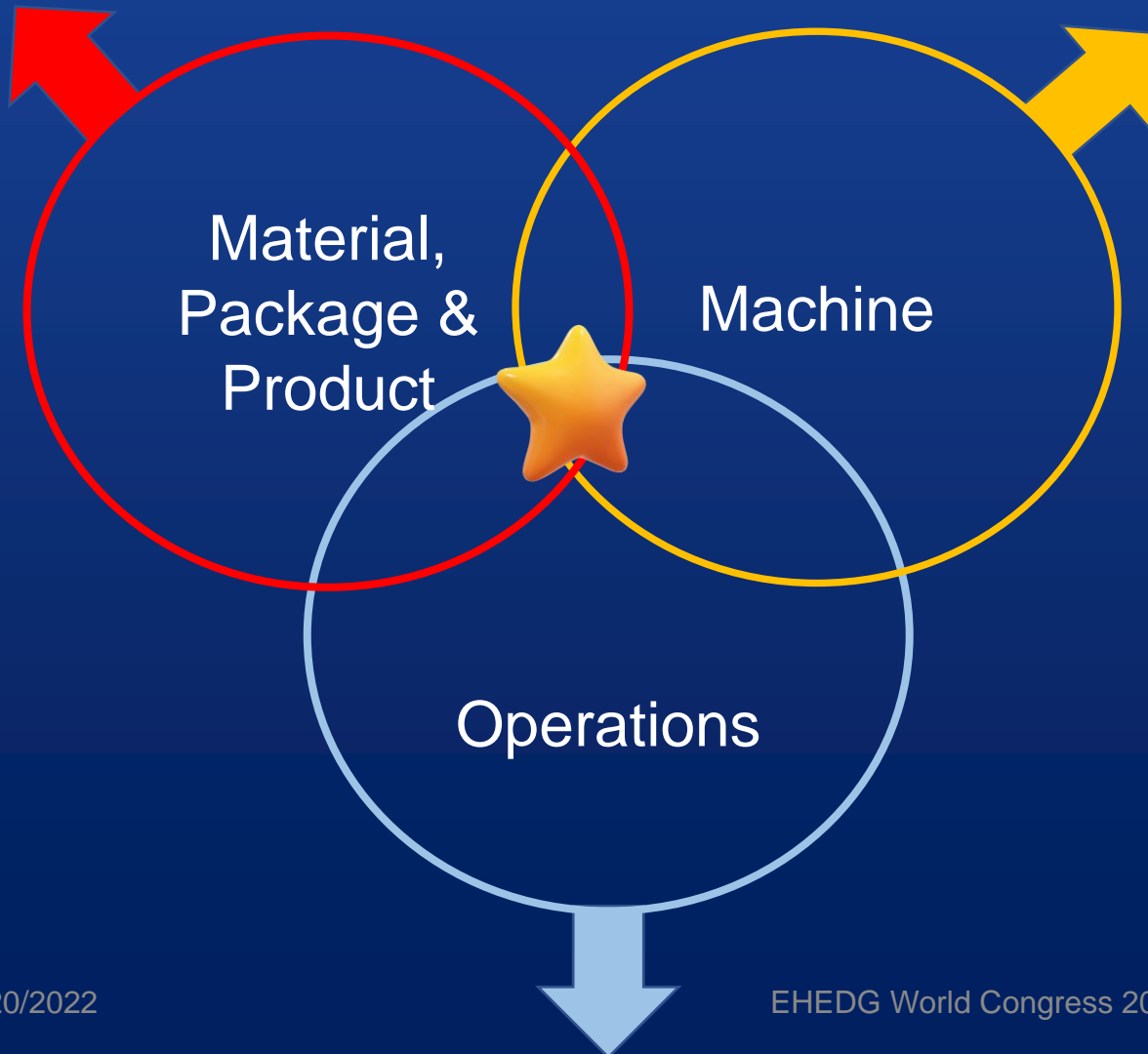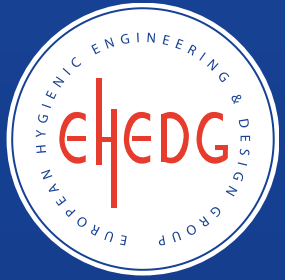
Tetra Pak – Vjeko Begic & Fredrik Hansen

200 000 000 000

99.99X%

99

More important than ever

Material - examples:
- New material structures for sustainability
- Advanced closures
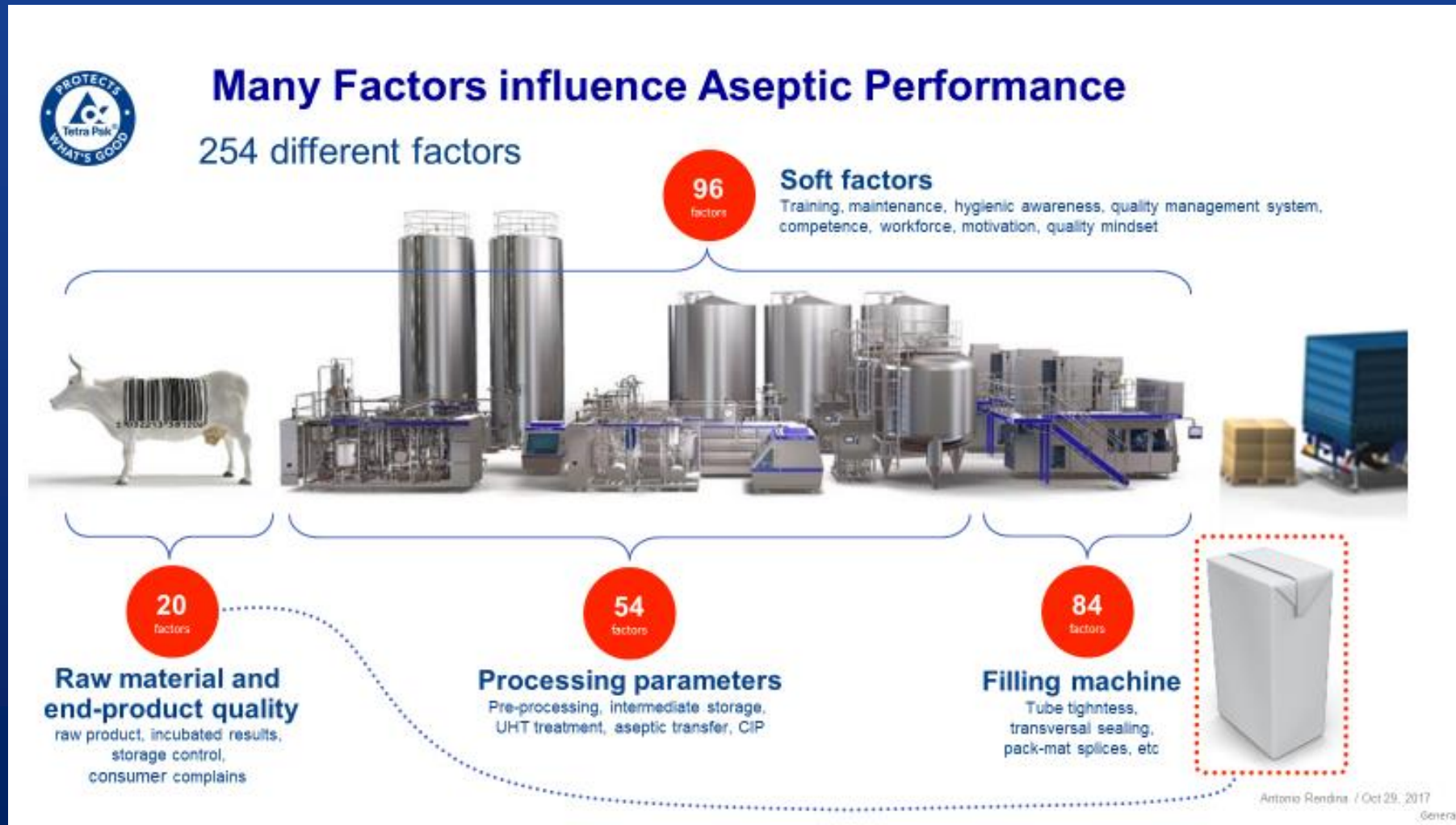- New liquid food categories
- Advanced formulations of products

Machine - examples:
- High capacities (40 000 p/h)
- Higher flexibility, complex shapes
- Increased number of different SKUs
- Higher OEE

Operations - examples:
- Cost reductions
- Labour scarcity & competence
- Increased number of different SKUs
- New Producers

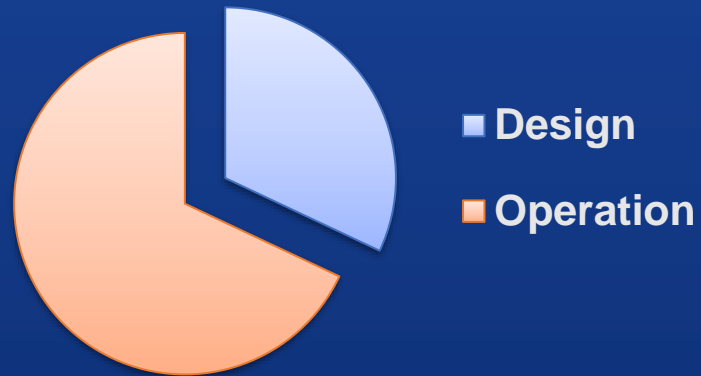# Aseptic Technology is Fantastic but....

Every Instrument on the Right Note

What Goes Wrong?

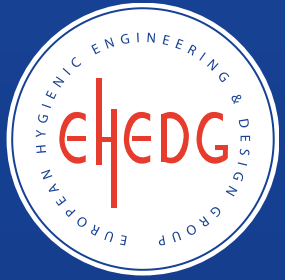**Root cause areas**

■ Design
■ Operation

Adressing operational mistakes is the best "bang for the buck"??

Design must be changed in a way to better support operation (and solve design issues)

General

The Desired State

- The operator actions & decisions shall not impact system performance – system either OK or Not OK
  - In case of wrong or missing action – crystal clear feedback

- Impact of wrong or missing maintenance shall be eliminated– system either OK or Not OK
  - In case of wrong or missing action – crystal clear feedback

General

What can we do?

EHEDG World Congress 2022 - Munich, Germany

The Solution – from Autonomous Vehicles

- Level 0 – No Driving Automation

- Level 1 – Driver Assistance

- Level 2 – Partial Driving Automation

- Level 3 – Conditional Driving Automation

- Level 4 – High Driving Automation
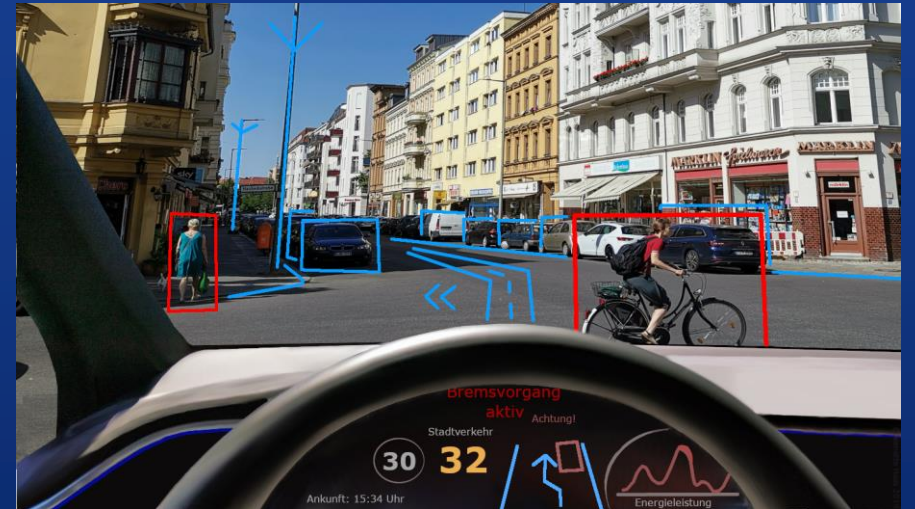
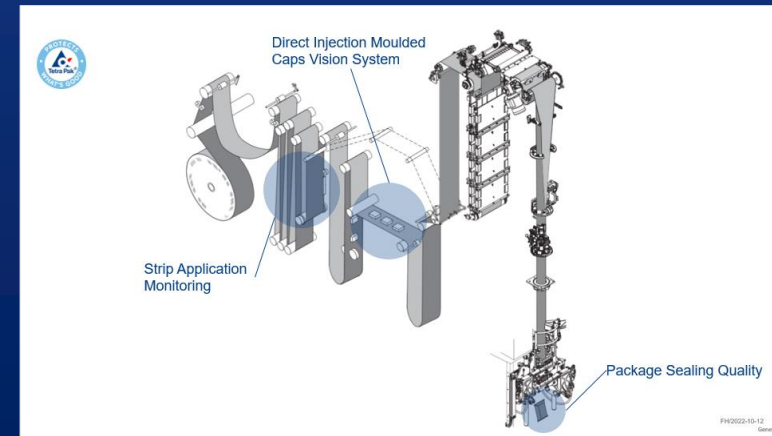- Level 5 – Full Driving Automation

Illustration by Eschenzweig
https://creativecommons.org/licenses/by-sa/4.0/deed.en

Current system functions are typically a mix – from 0 to 4

Examples

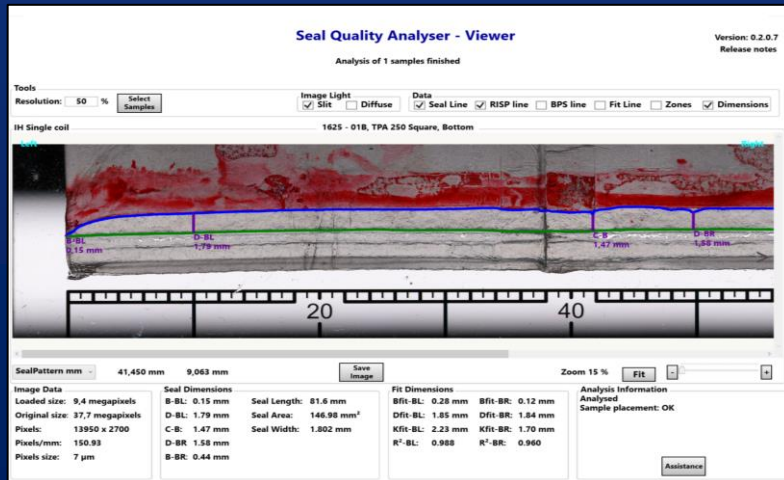From very simple to "science fiction"

Seal Quality Analyser (SQA)
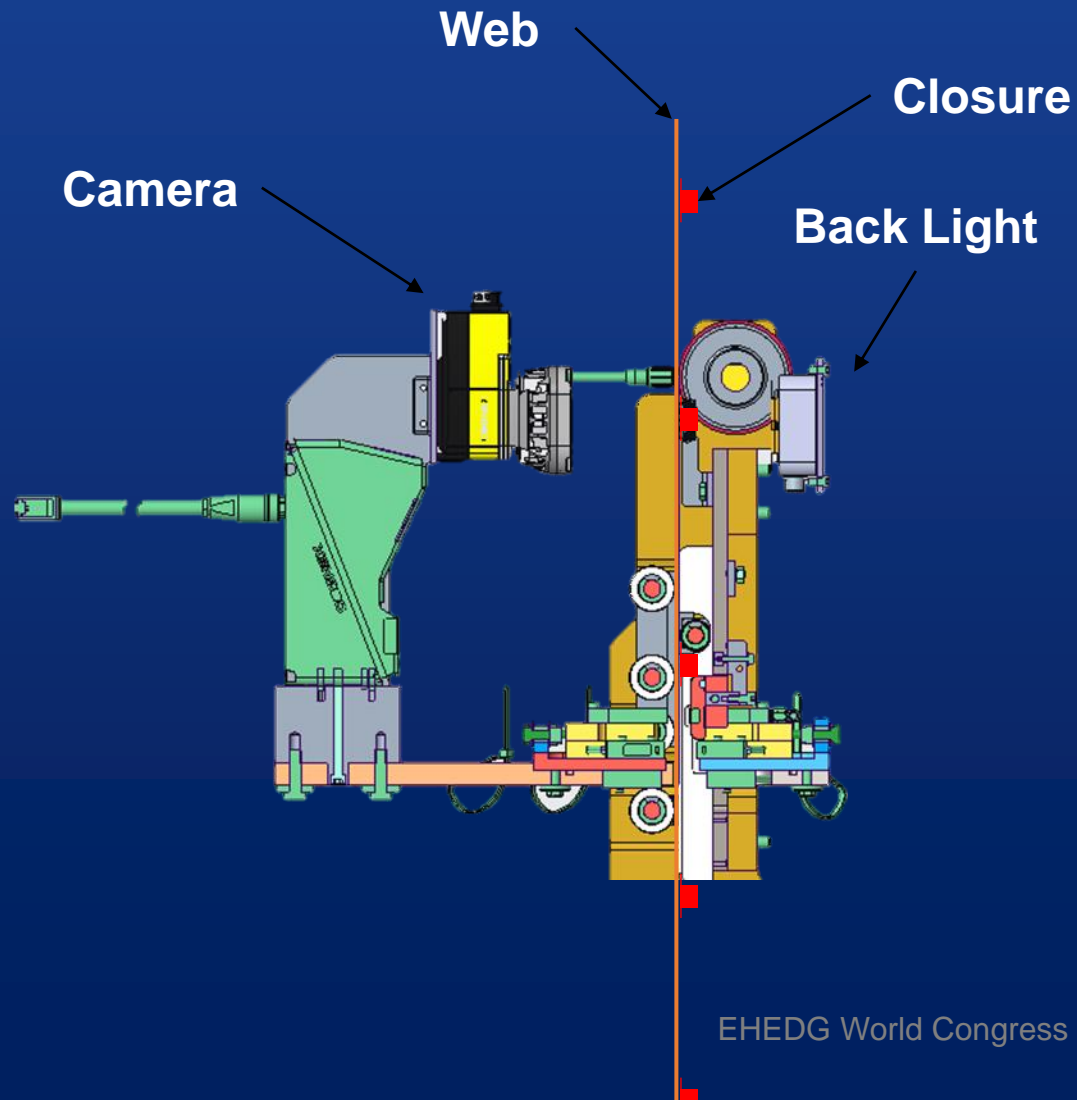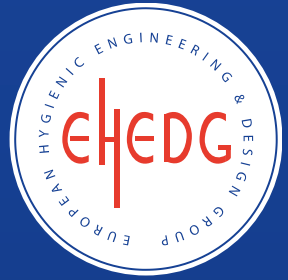

Figure 14: SQA – Recorder camera rig

- SQA – Recorder
  - Records the dissolved Transversal Seal
  - Stitches several pictures into one high resolution picture

- SQA – Viewer
  - Performs image analysis
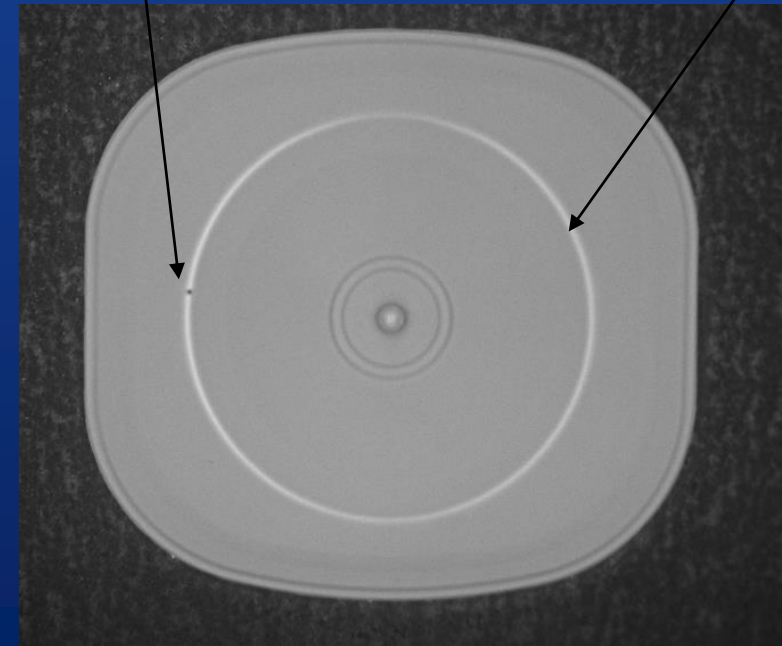 - Visualizes the B-, C- and D-dimensions

A New Level of In-line Quality Control

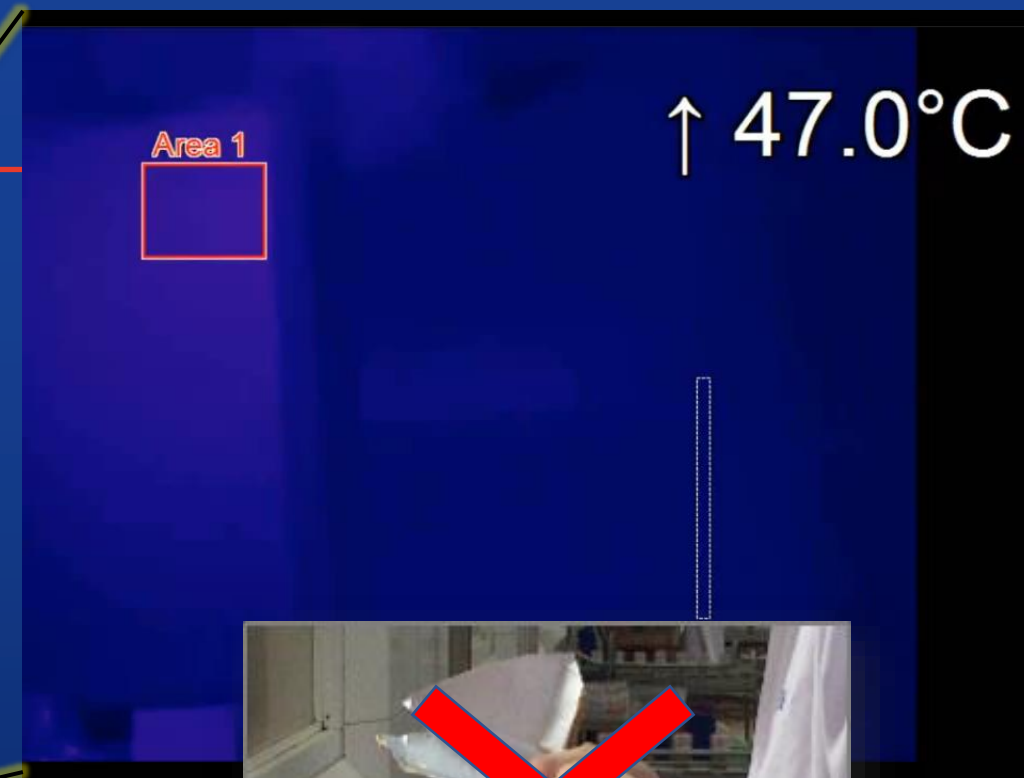## Pilot tests results in >50% reduction of consumer complaints

Camera

Web

Closure

Back Light

Black spot
(Ø ≥ 0.12 mm)

Bright membrane
(thickness 0.19mm)

SA Quality Attribute

In line failure mode detection
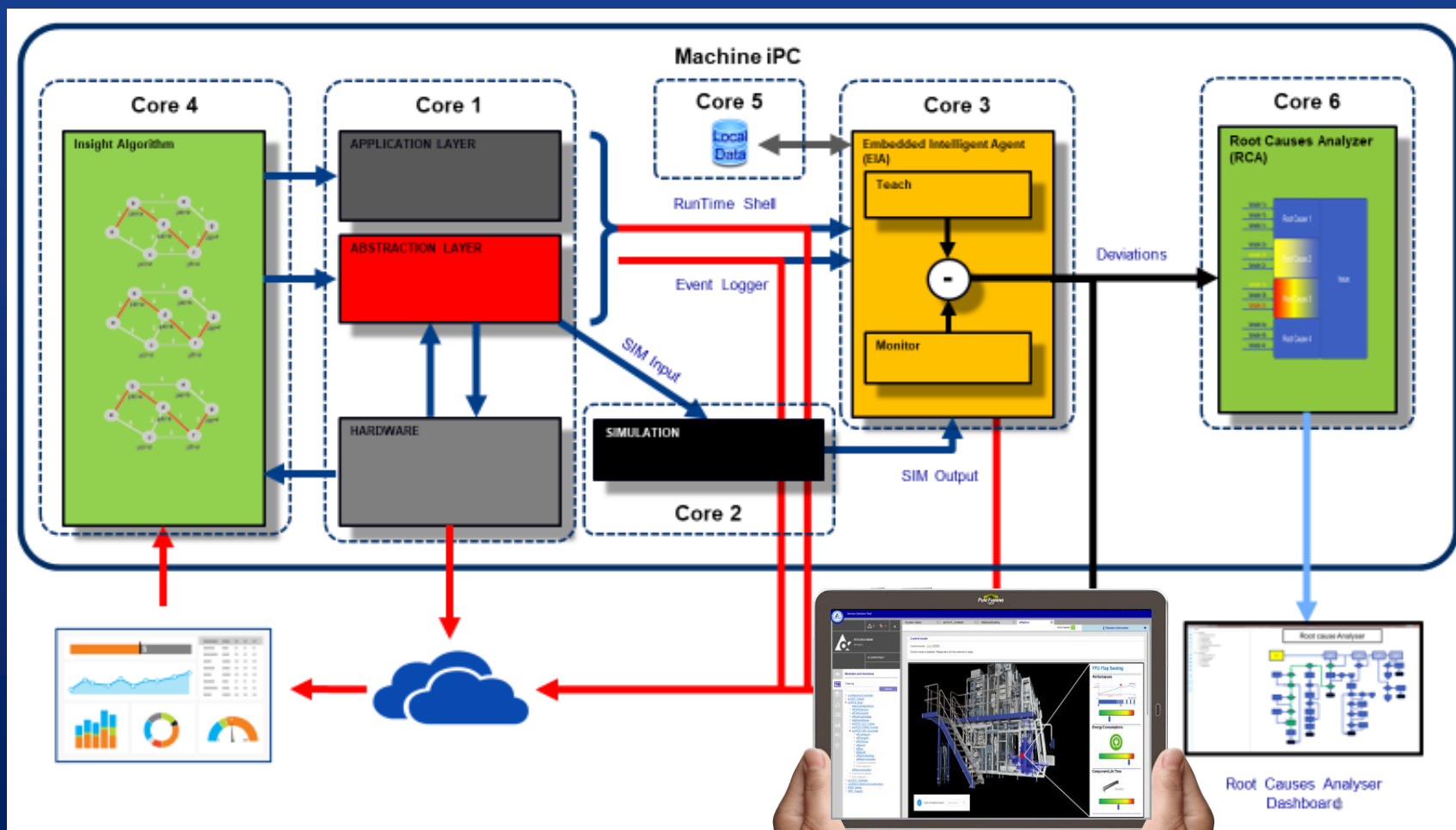

↑ 47.0°C

Area 1

Streaming in...

Pre-planned Quality Checks
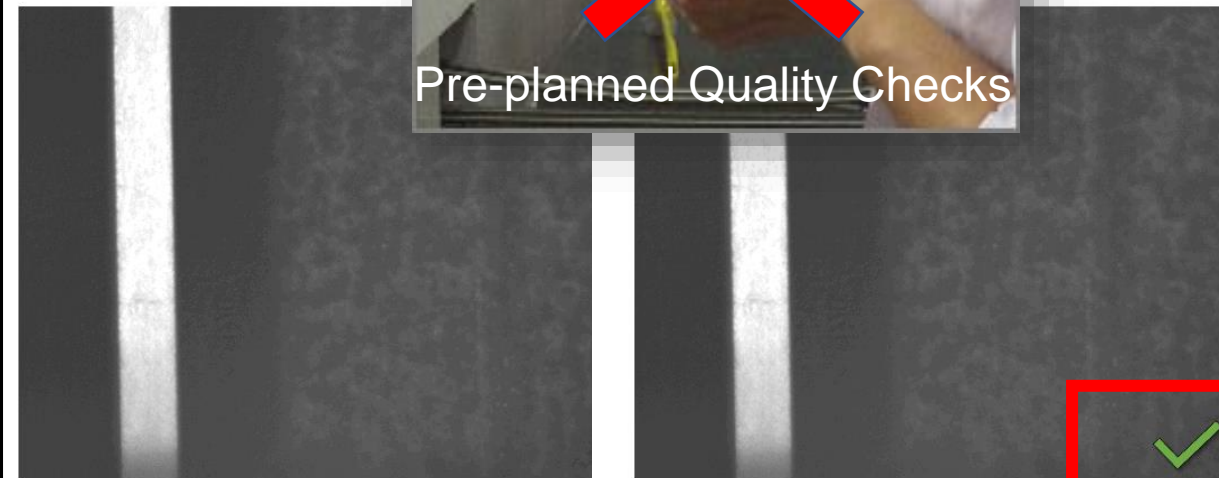
The "Ultimate" Control

Some Hurdles to Overcome

- Sensors technology – methods, robustness, accuracy
- Customer Cost – Investment & Operations
- Understanding – Data → Knowledge → Solution
- Development Cost
- New machine vs. installed base

What Does This Mean?

Testing the Tesla autopilot (self driving mode)
Attribution:
Marc van der Chijs, Flickr

99.9999X%

Thank You!