

Exploring new X-Ray applications for Industry 4.0



Detlef Steck, President IXS

Vasa: A flagship sunk in 1628



Galaxy Note 7: A flagship sunk in 2016



- >100 customer phones caught fire
- Global recall of several million devices
- Production halted
- Reputation & brand damaged

Recent examples highlight that quality & safety have highest importance for our customers



TAKATA TKH Operations

Root Cause

Failure Mode

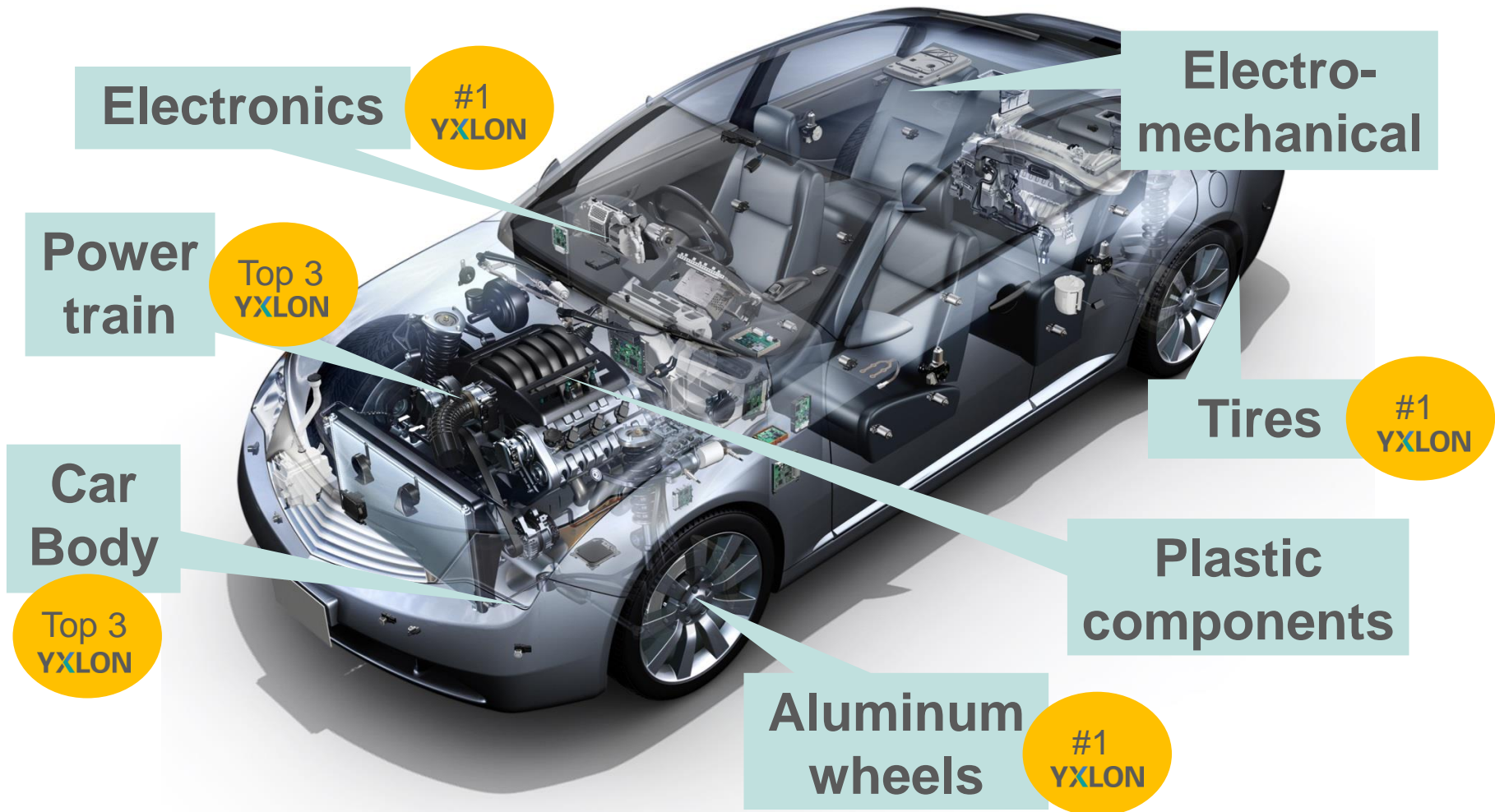
1. The tablet press upper feed hopper drive belt was slipping causing an under-feed condition in the Propellant Feed Tube.
2. The propellant feed tube sensor, as adjusted, did not detect the intermittent fill condition and stop the press.

Note: Feed Frame Top Cover Removed

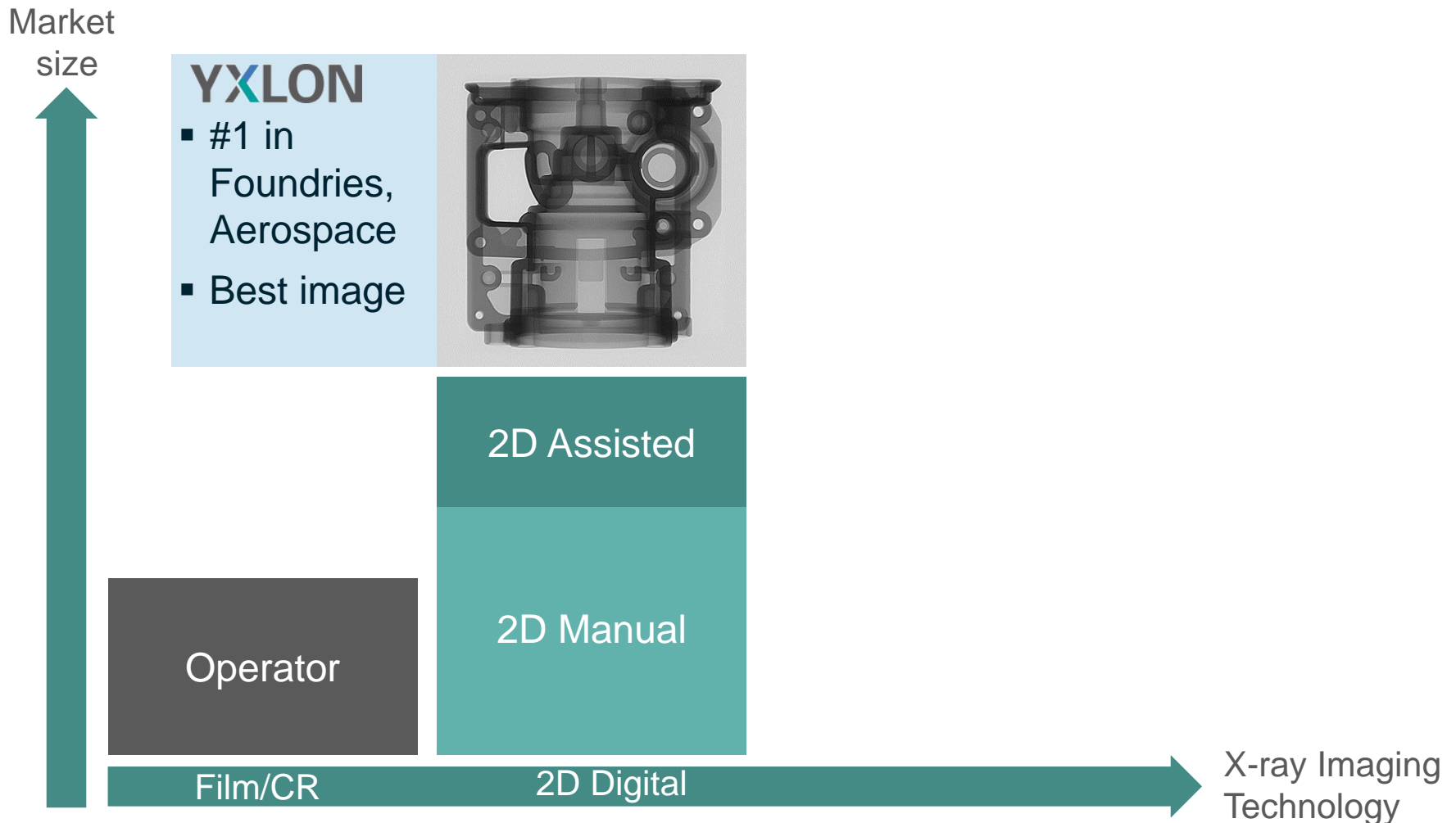
What our customers need for their products:

- Cost optimization & production yield
- Fast, innovative functionality and resource optimized design
- Predictable quality & safety

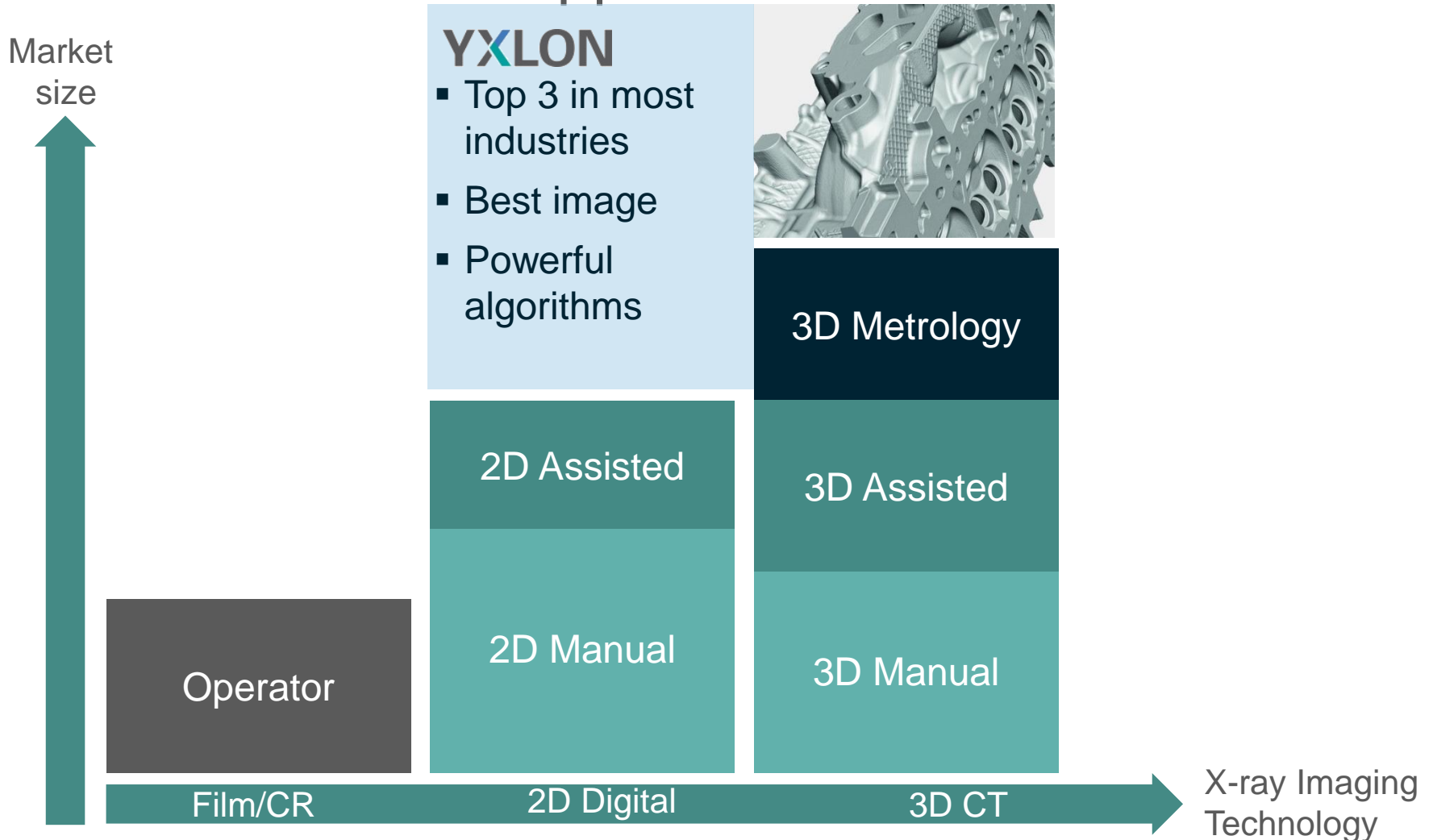
Our customers increasingly use X-ray & CT to ensure their product meets demanding needs



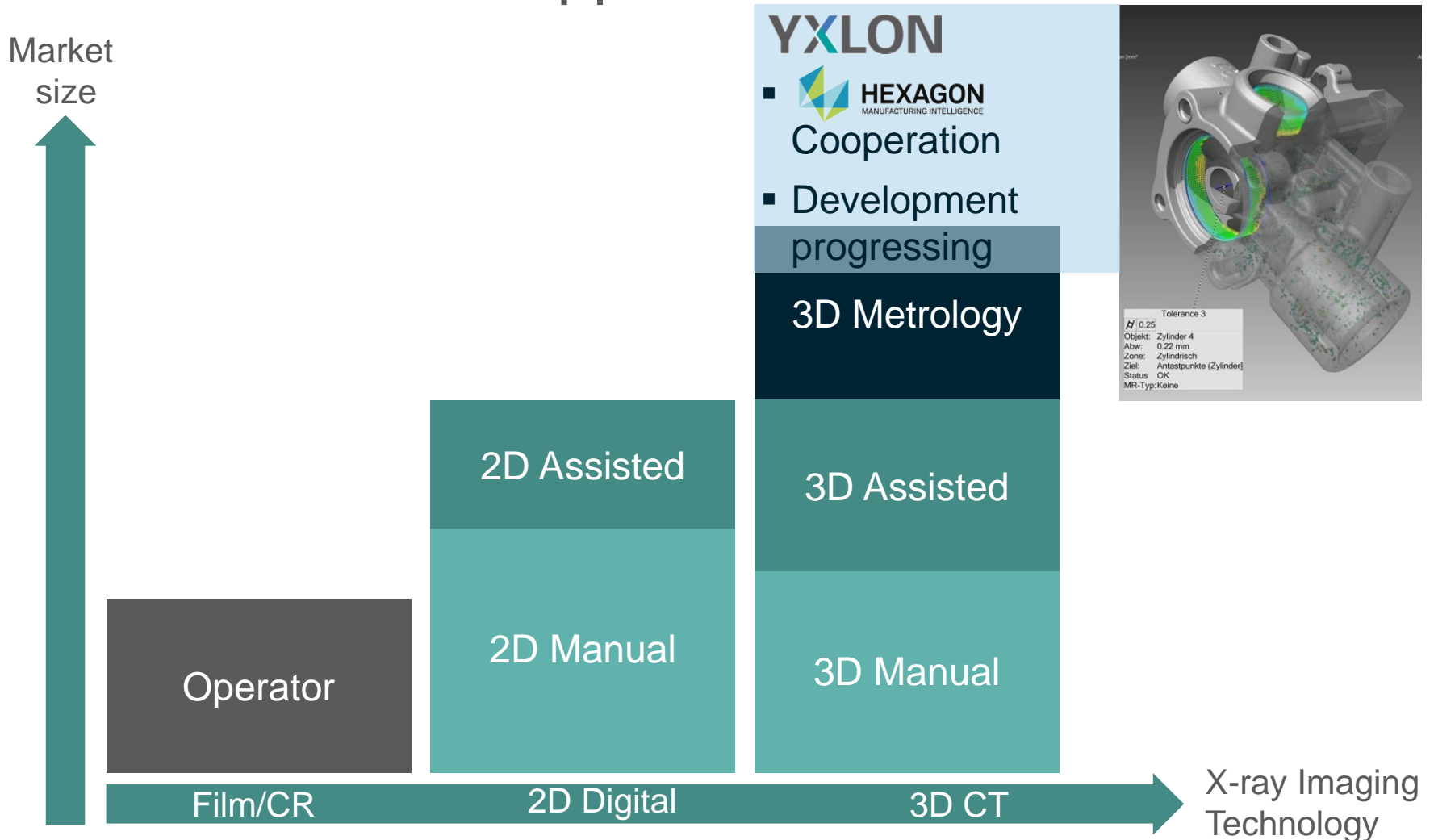
Improvements in imaging technology allow to extend customer applications



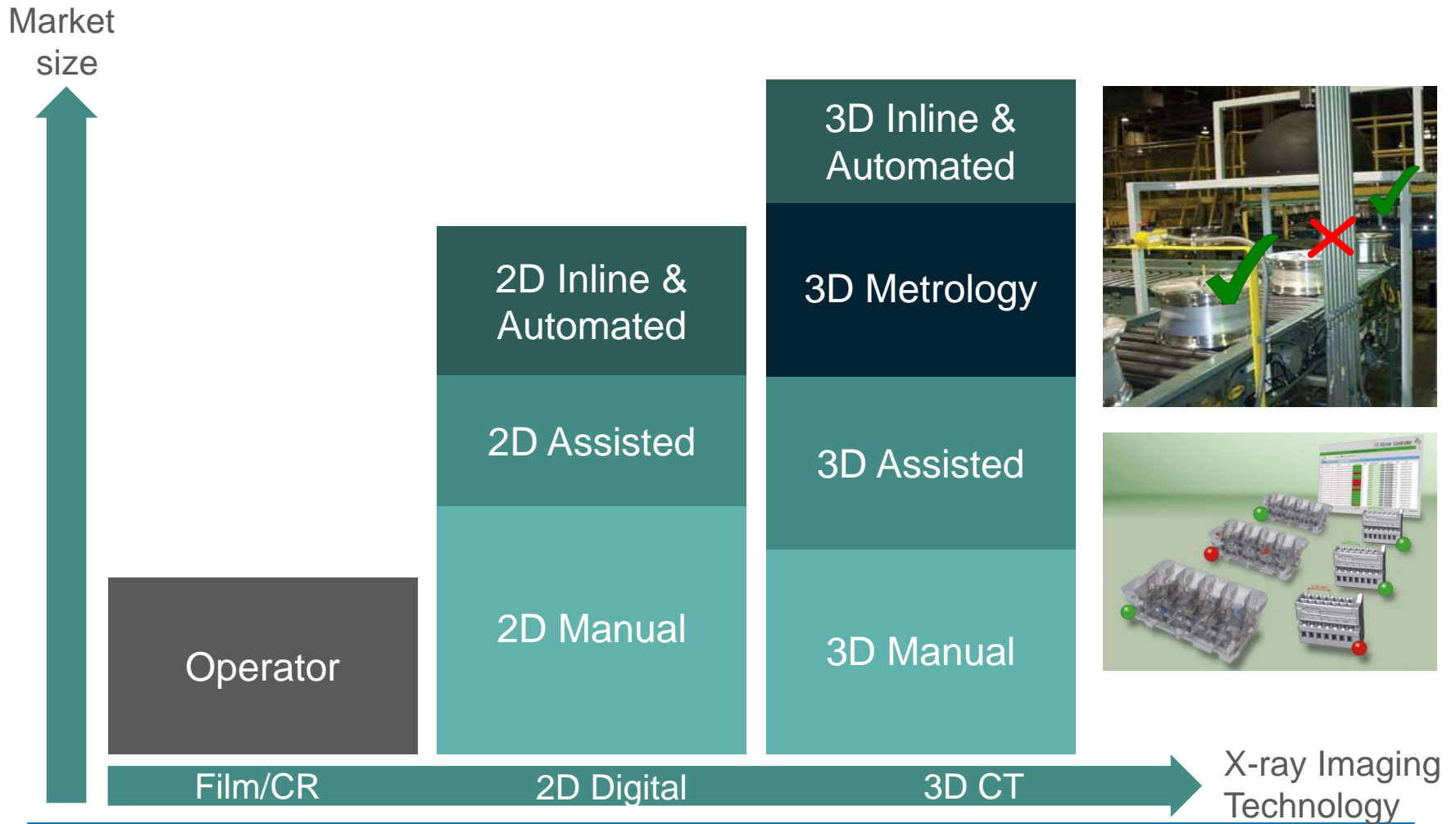
Improvements in imaging technology allow to extend customer applications



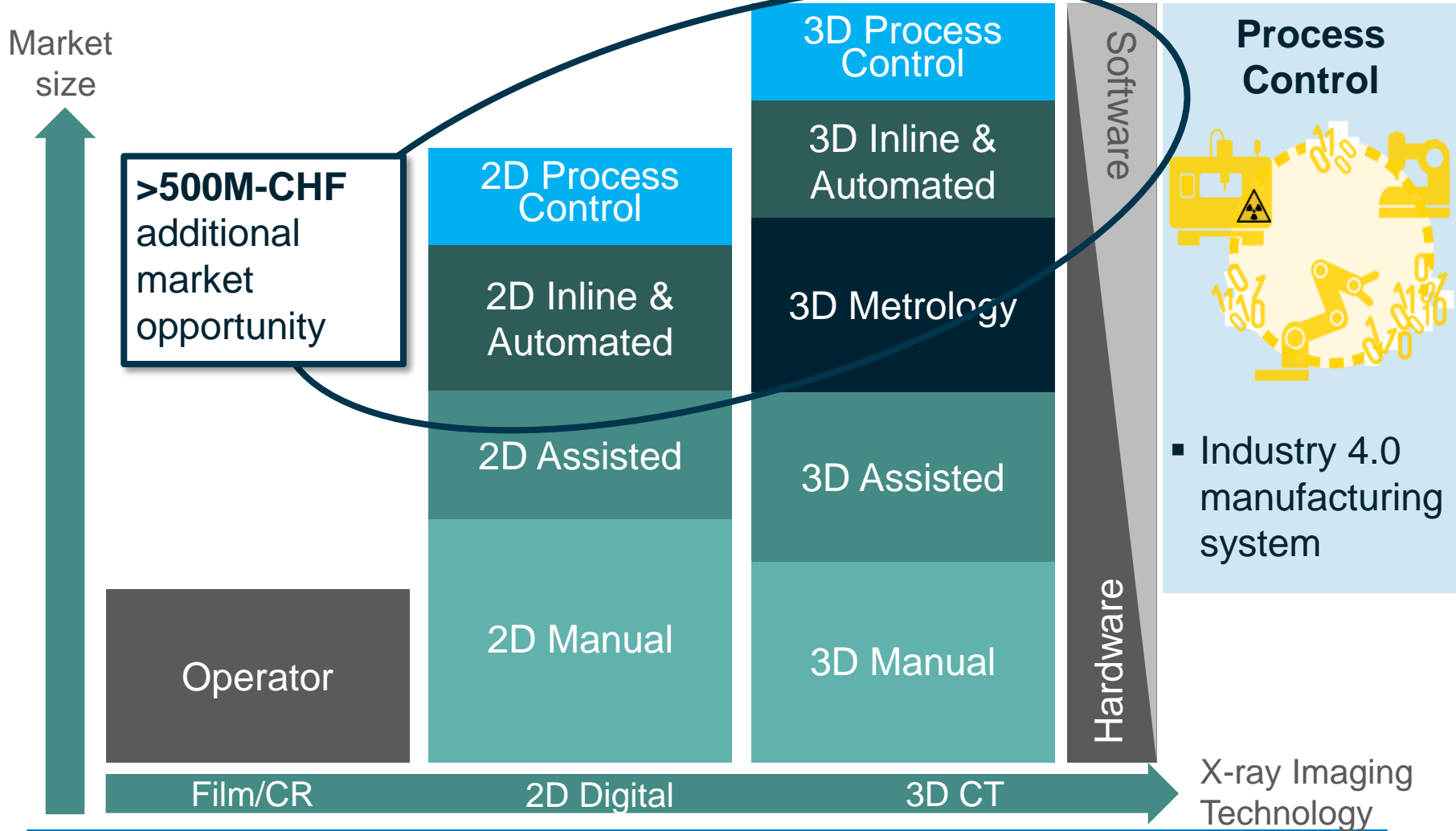
Improvements in imaging technology allow to extend customer applications



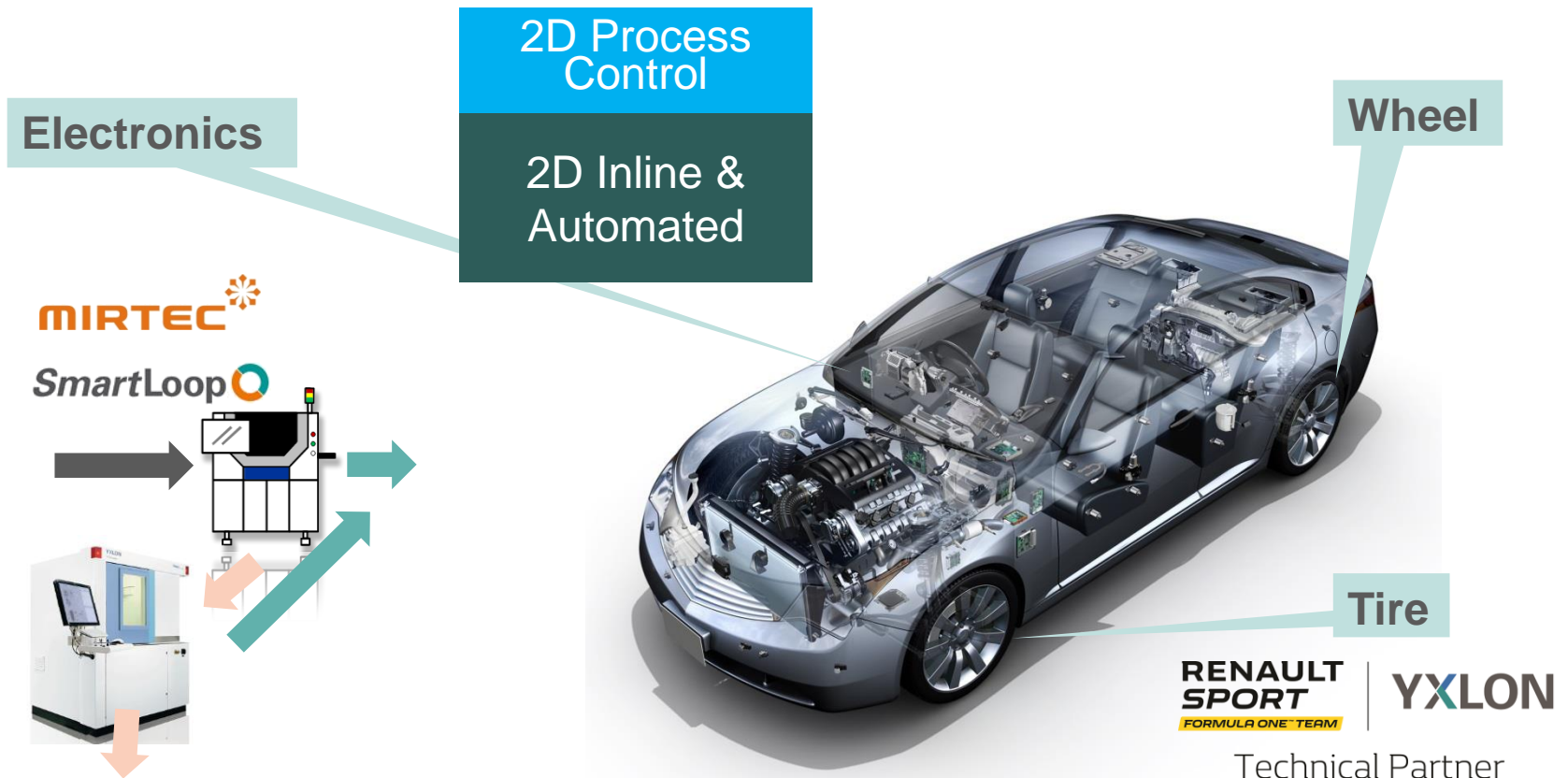
Industry 4.0: Inline & Automated X-ray inspection provide new levels of safety, quality and yield



Industry 4.0: X-ray to control batch size one manufacturing of integrated lightweight products



Industry 4.0: we are already exploiting opportunities in 2D X-Ray ...



... and in 3D: from data to information, with steadily increasing opportunities

Adaptive process control
→ **uptime, quality, yield**



3D Process Control

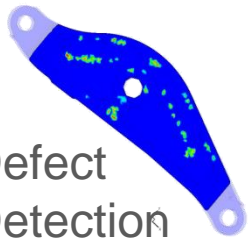
3D Inline & Automated

Automated design verification
→ **Batch size 1 customization**

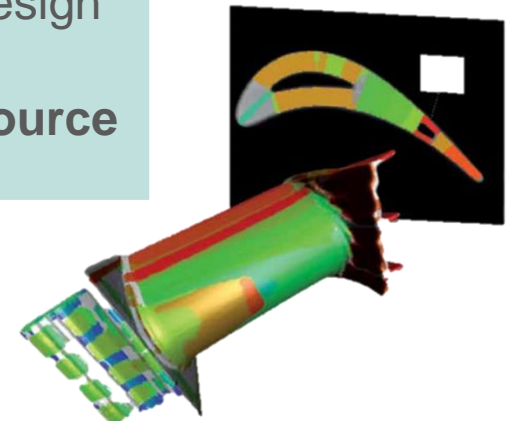
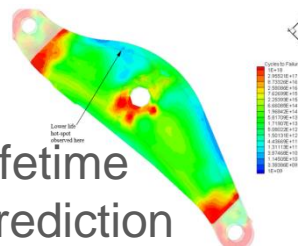
Predictability of performance
→ **safety & availability, predictive maintenance**

Automated design adjustments
→ **yield, resource efficiency**

Defect Detection

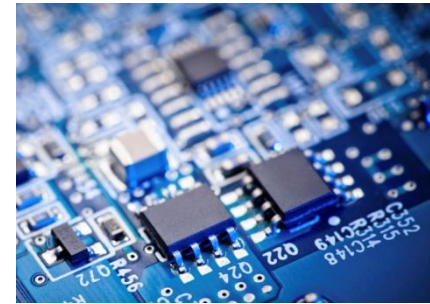


Lifetime Prediction



We enable our customers to create a connected world of safe and resource-optimized products

Inline, automated detection, metrology
and process control



What our customers need for their products

- Cost optimization & production yield ✓
- Fast, innovative functionality and resource optimized design ✓
- Predictable quality & safety ✓



Questions & Answers

