



AI Monday

Pharmaceutical Factory of the Future



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CDO
Körber Pharma





1. Digital
2. Pharma
3. Supply Chain
4. Technologies



How the Körber AG is linked to Körber Foundation

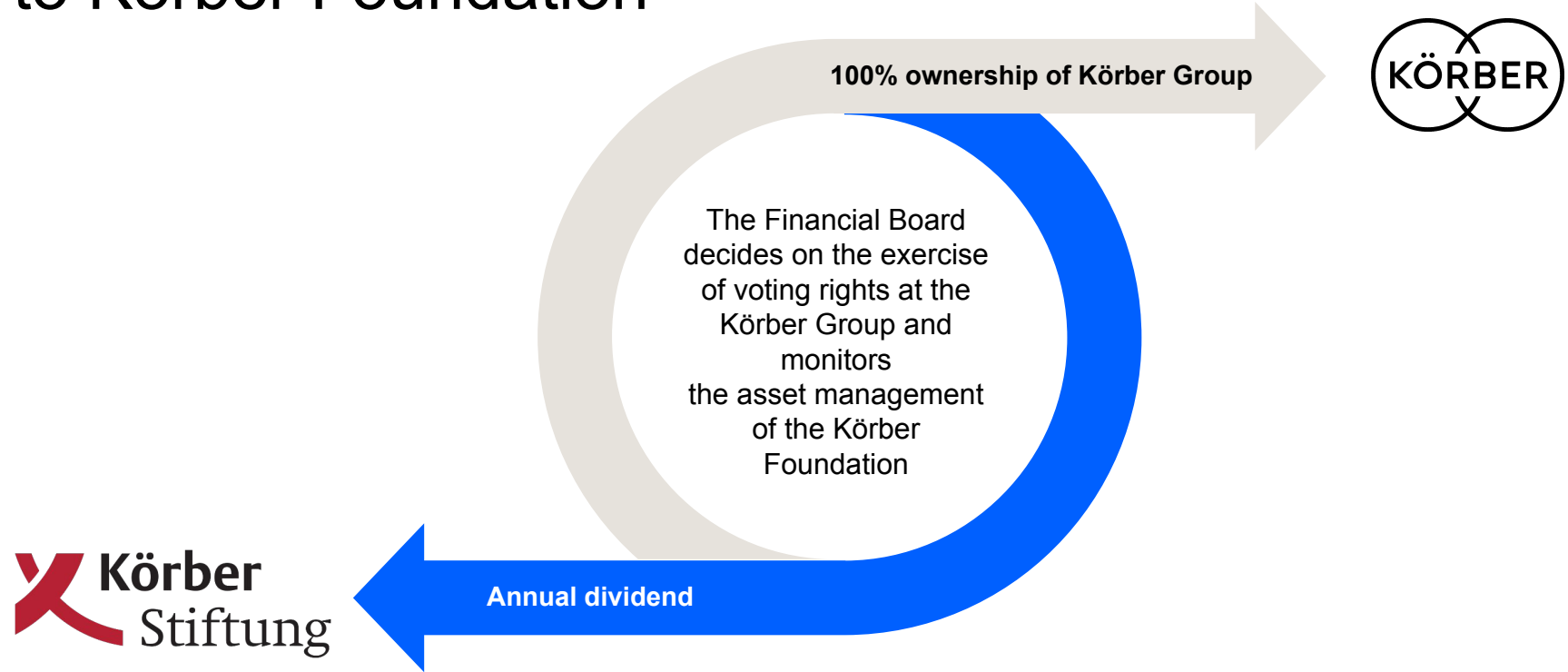


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Why we focus on digitization in pharma

Shaping future-proof progress:

Interpreting market dynamics to anticipate the pharmaceutical industry's future.

Trends

- Biotech / Biopharma
- Personalized Medicine
- Importance of Generics
- Commoditization
- New Business Models
- New Players
- Outsourcing

Impacts on Value Chain

- Reduced Time-to-Market
- Wise CapEx Spending
- Cost Pressure
- Industry 4.0
- Small / Flexible Production
- One-Stop Shop
- Integrated End-to-End Supply Chain

Pain Points

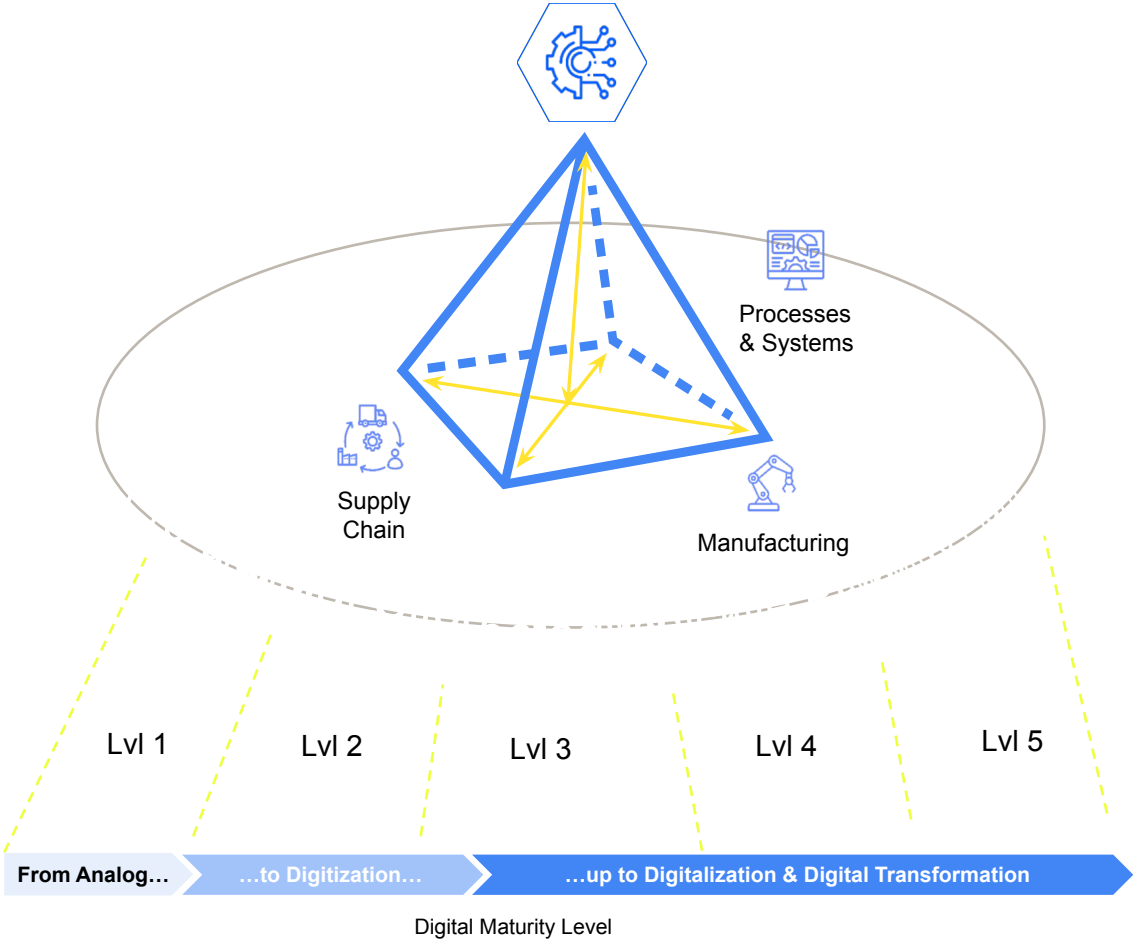
- OEE
- Changeover Time
- Smaller Batch Sizes
- Cyber Attacks
- Sterilization
- False Rejects
- Data Management

Your path to full digitalization

Enhancing your digital maturity level

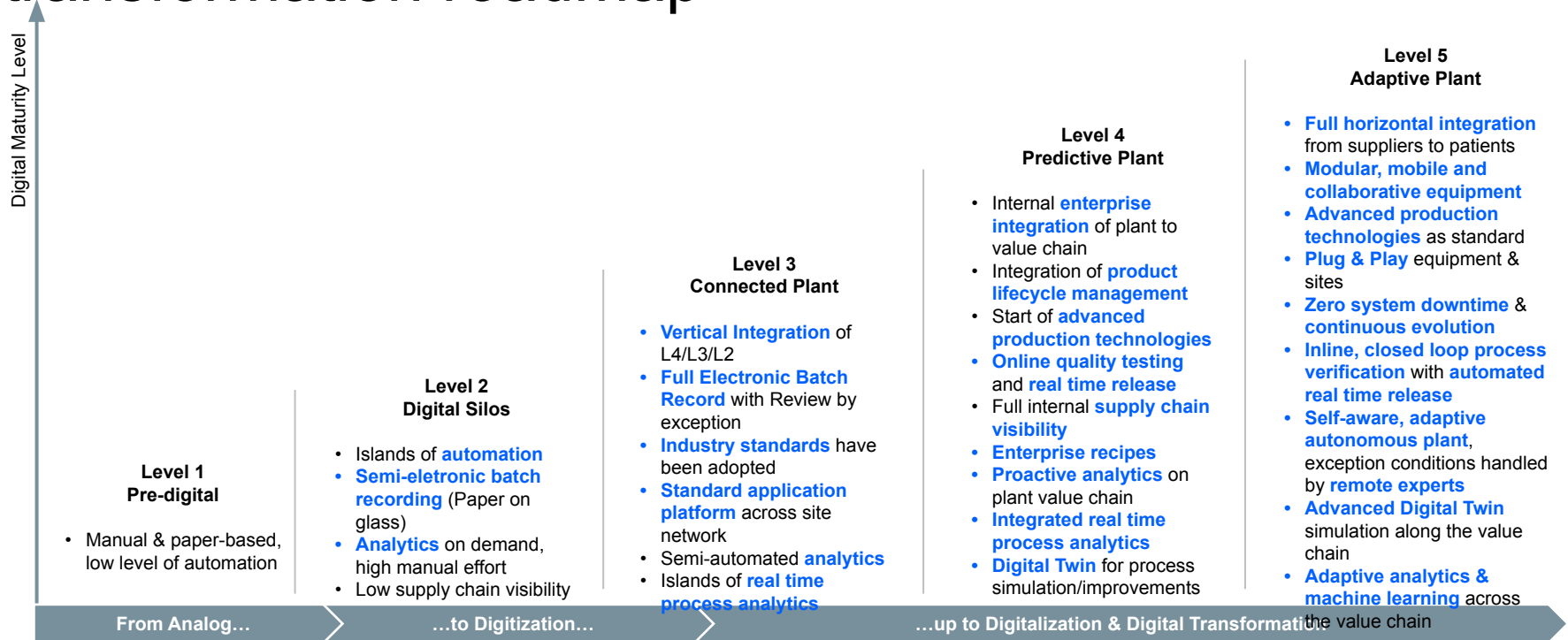
No matter where you are in the digitalization process, together we will find your individual solutions on your ambition for the factory of the future - from analog to fully digitalized

- Transparent
- Flexible
- Scalable
- Efficient



The different maturity levels on the digital transformation roadmap

The experience of leaders from different disciplines allows the realization of the specific digital ambitions

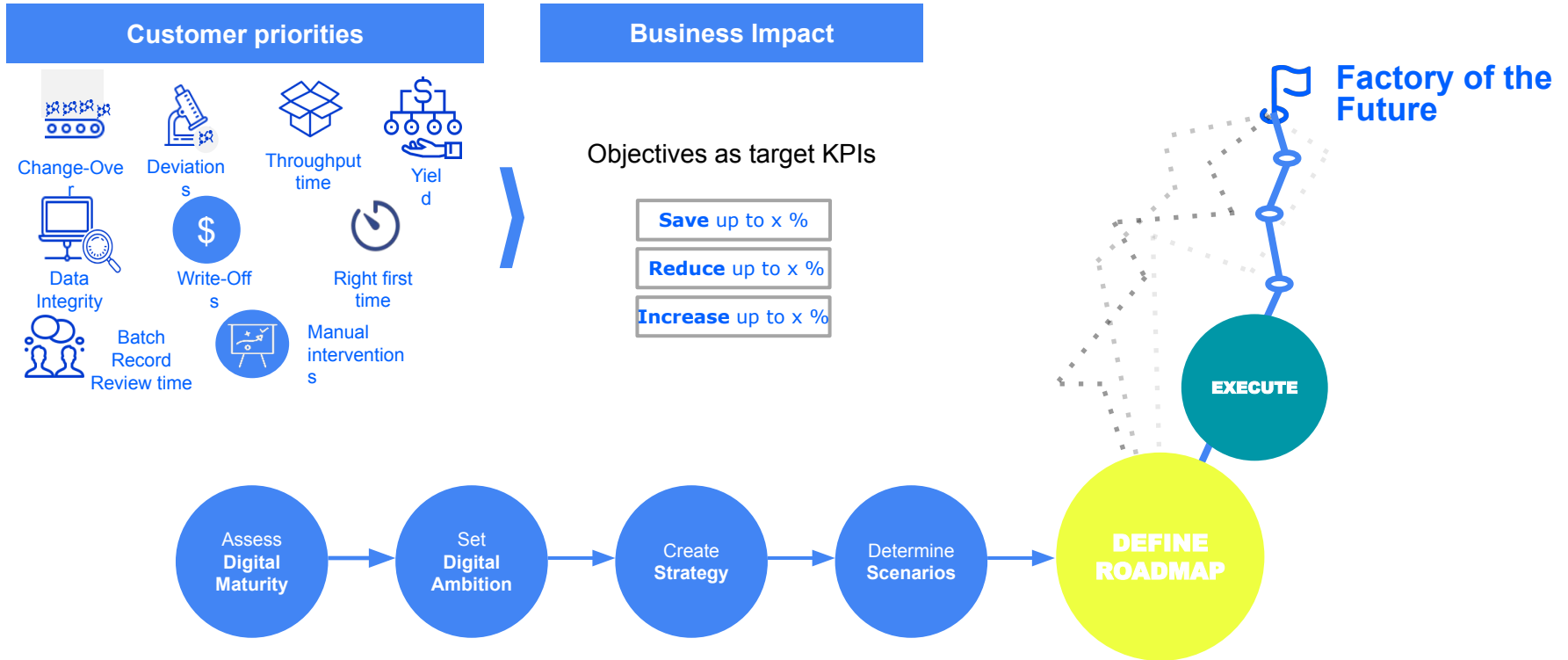


Business Value Identification

End to End Processes Thinking

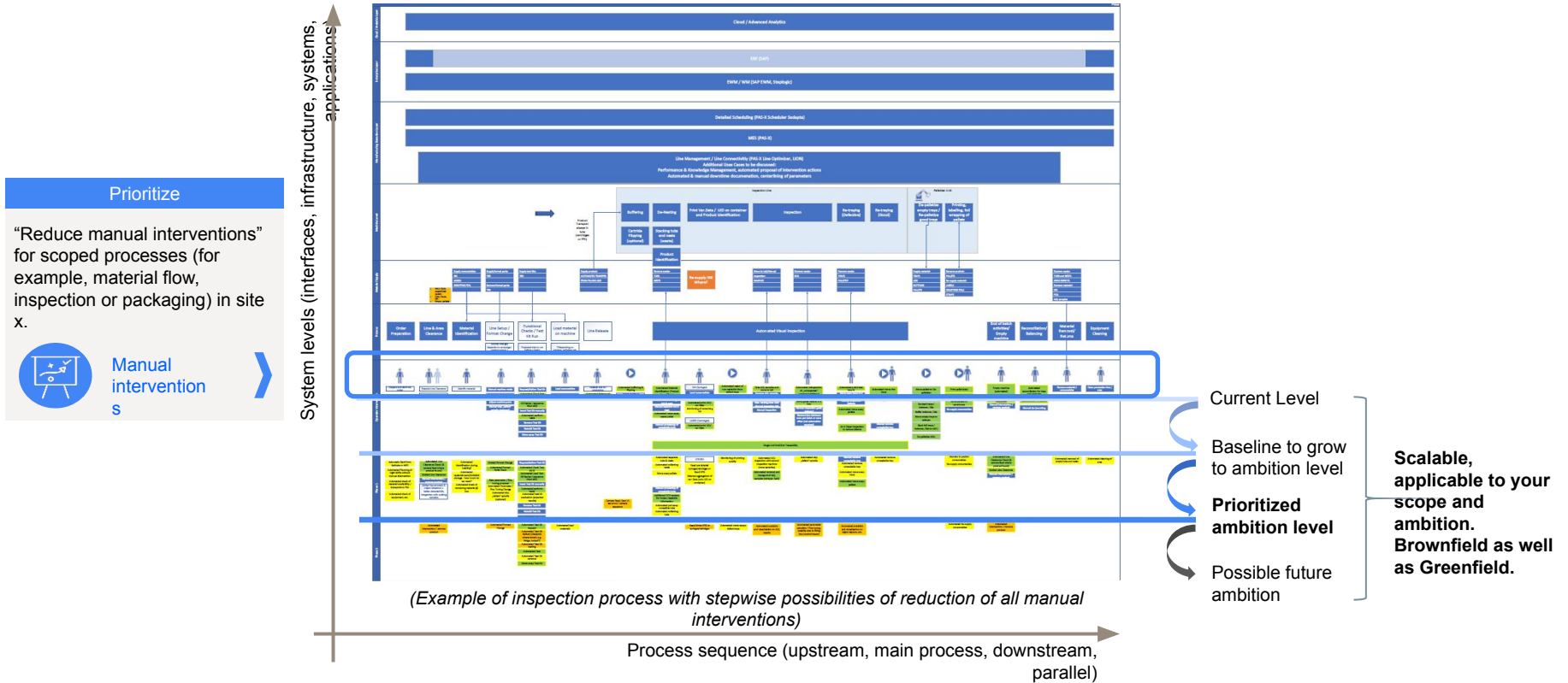
Our straight way forward starts with understanding

Customer-specific identification of opportunities



Szenario planning

Example of prioritized key problem to solve to reach targeted ambition level of digital maturity



“Walk-the-Talk”

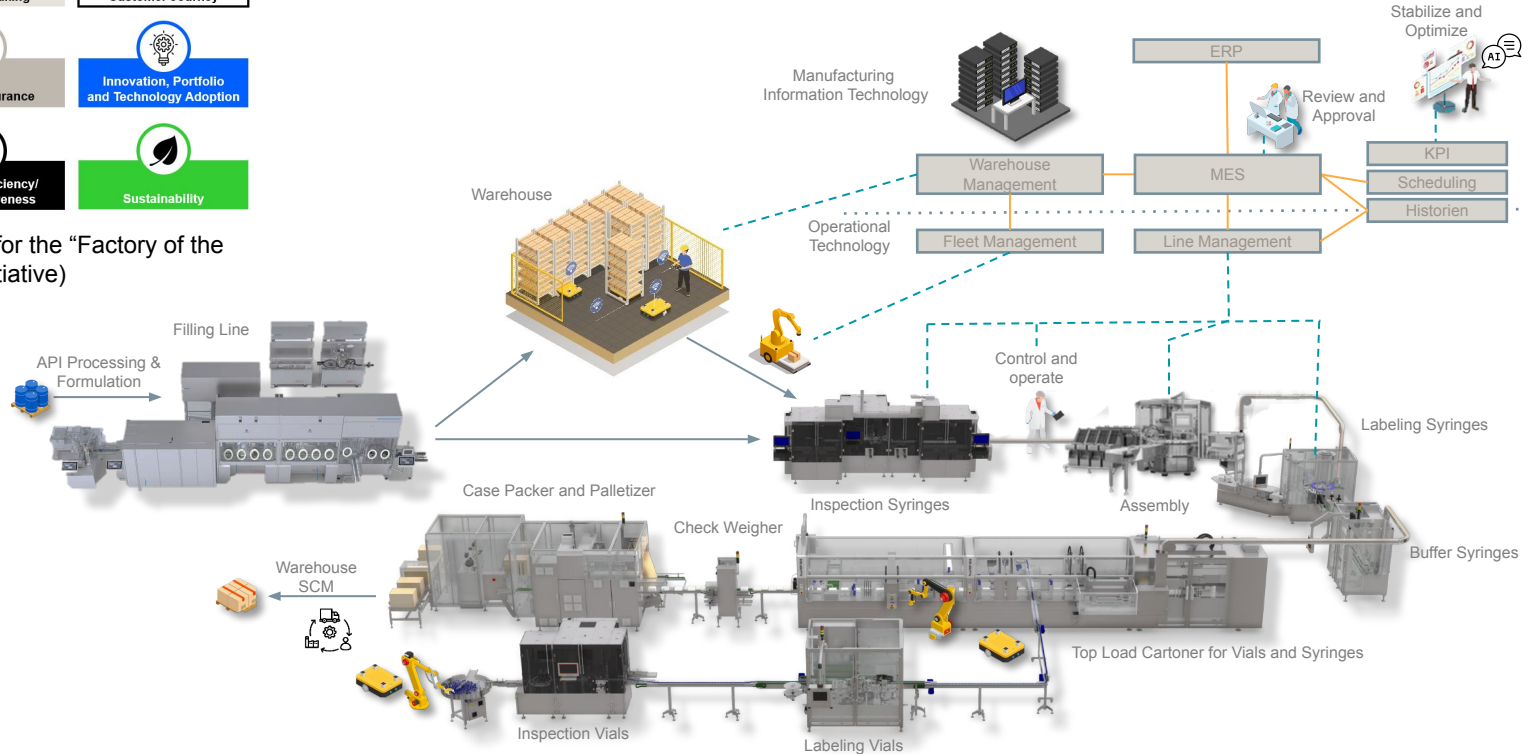
Transfer of the concepts into
production

Factory of the Future

End-2-End process interoperability enables the factory of the future for green and brown field projects



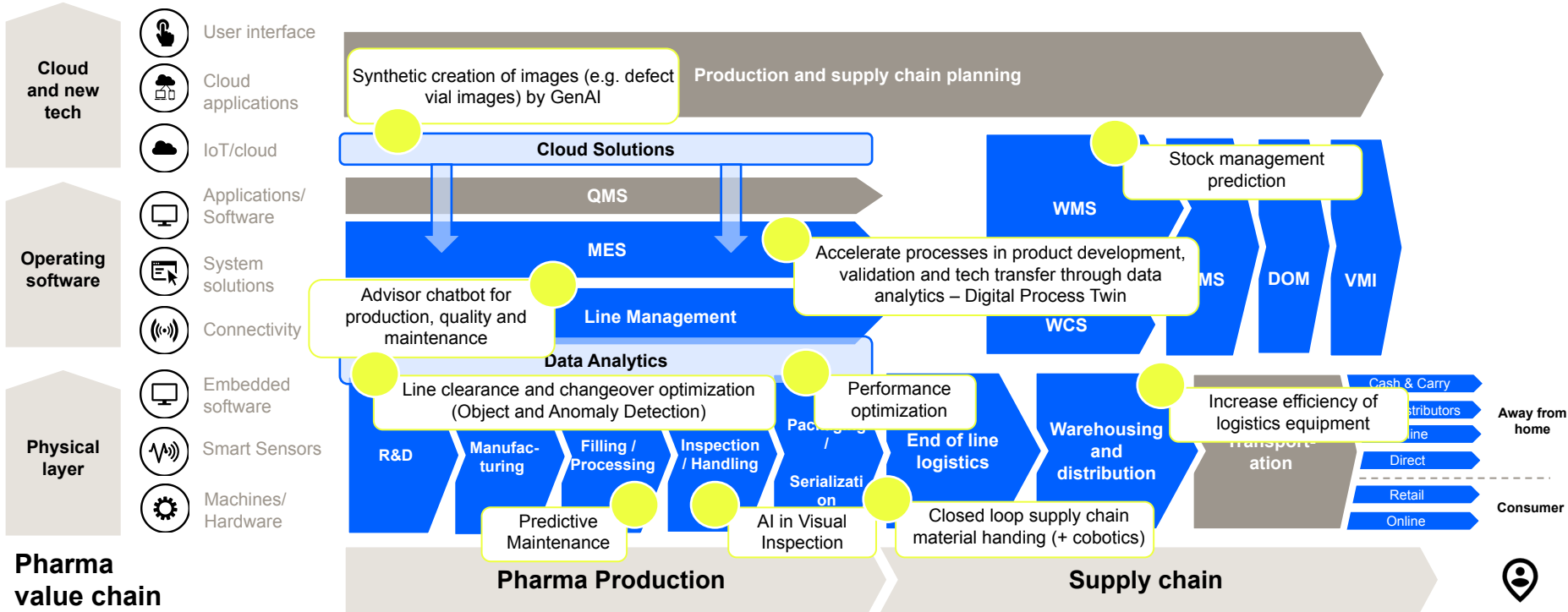
(Core areas of operation for the "Factory of the Future"-initiative)



Pharma expertise along the entire pharma value chain

Selection of AI use cases as building blocks for the factory of the future

xxx Use Cases



“Walk-the-Talk”

Transfer of the concepts into production - examples

AI in visual Inspection

AI-POWERED
CLASSIFICATION

IMAGE-
BASED

AI-POWERED
CLASSIFICATION

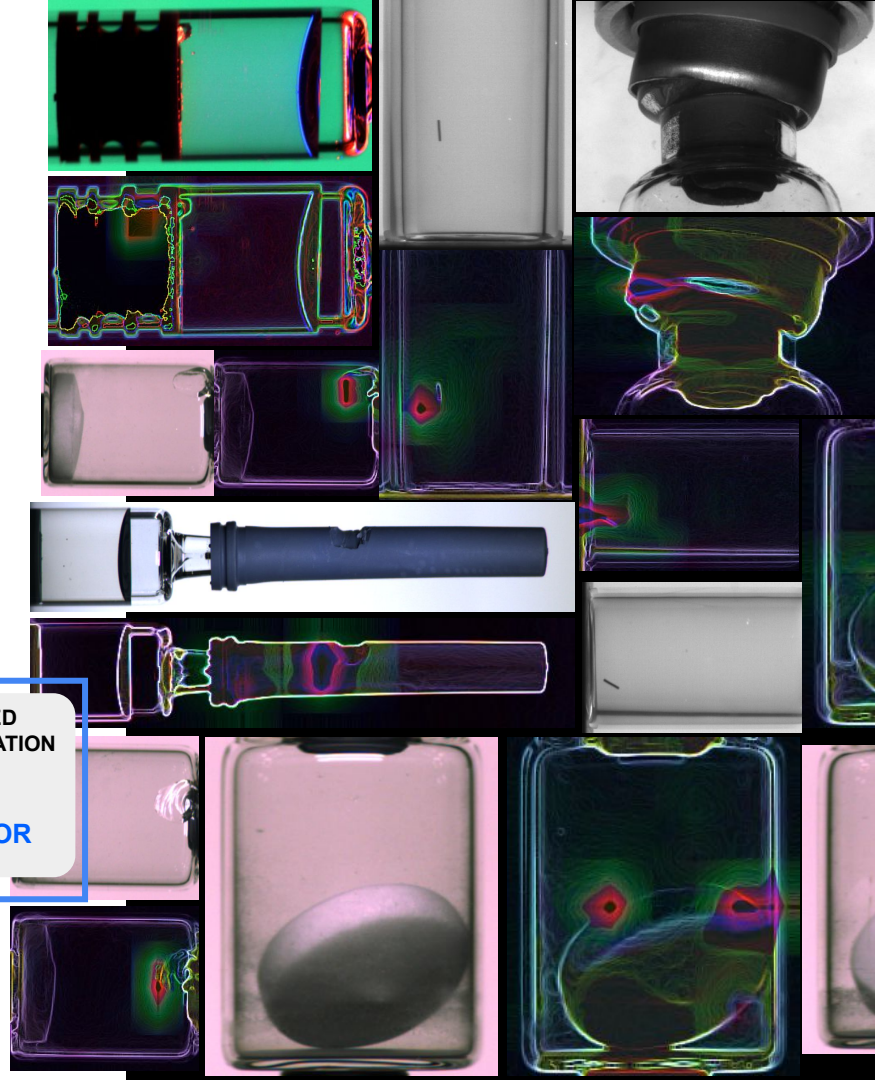
SEQUENCE-
BASED

AI-POWERED
CLASSIFICATION

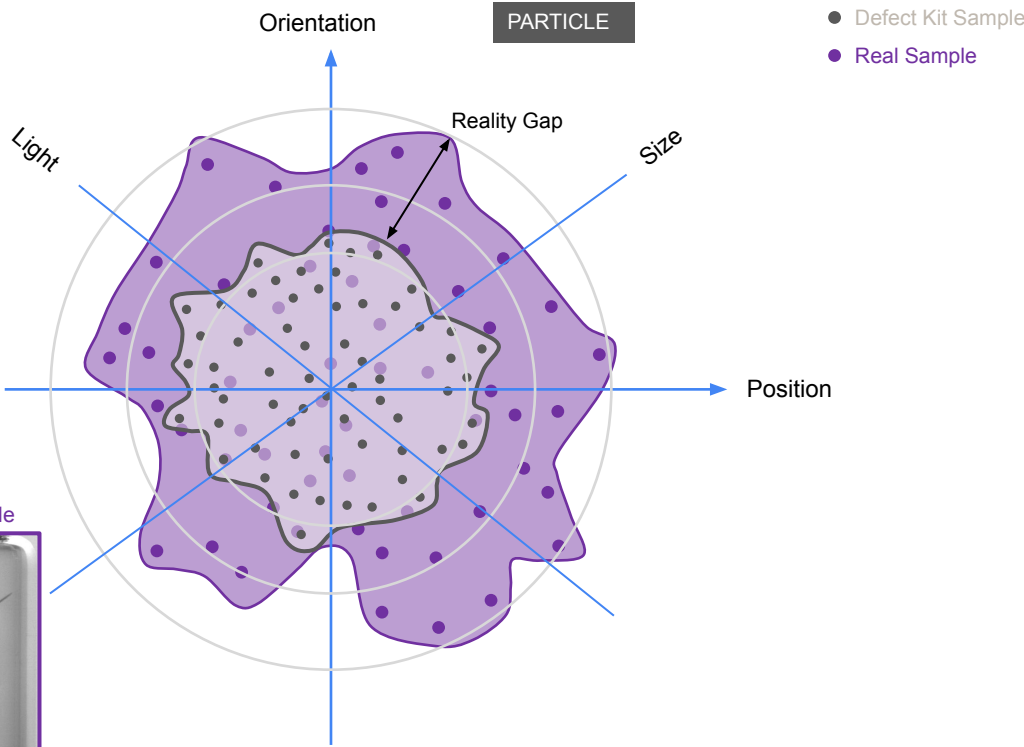
OBJECT
DETECTION

AI-POWERED
IMAGE GENERATION

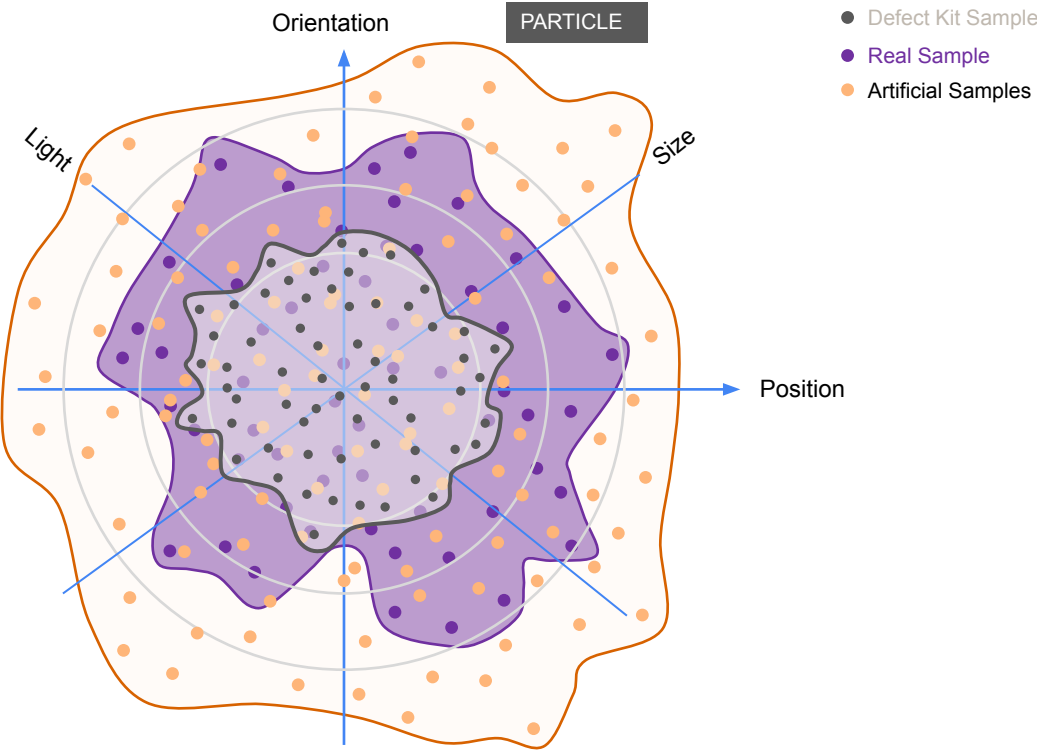
IMAGE
GENERATOR



Innovation: Artificial Data Creation (leveraging GenAI)



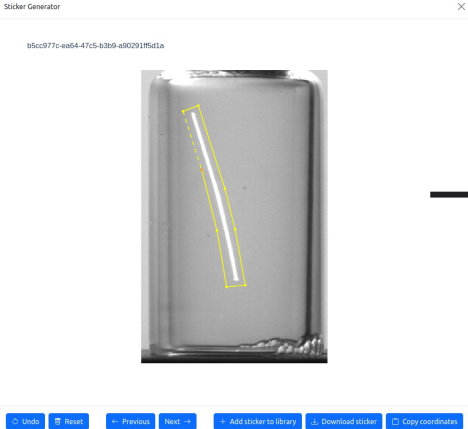
Innovation: Artificial Data Creation (leveraging GenAI)



Detecting defects outside of defect kits

Generalization – Location augmentation

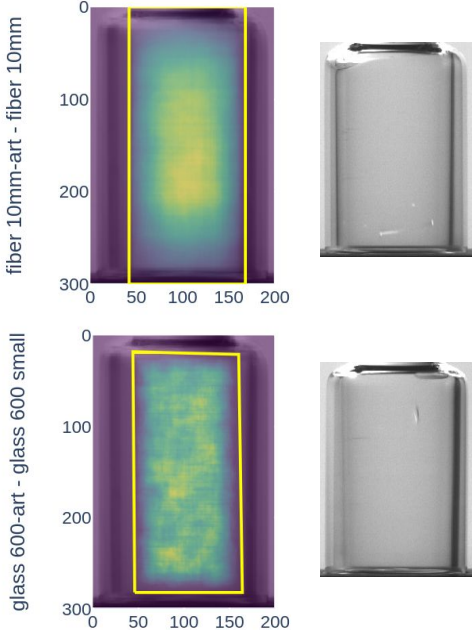
AI-based cutting out **stickers** for each defect type



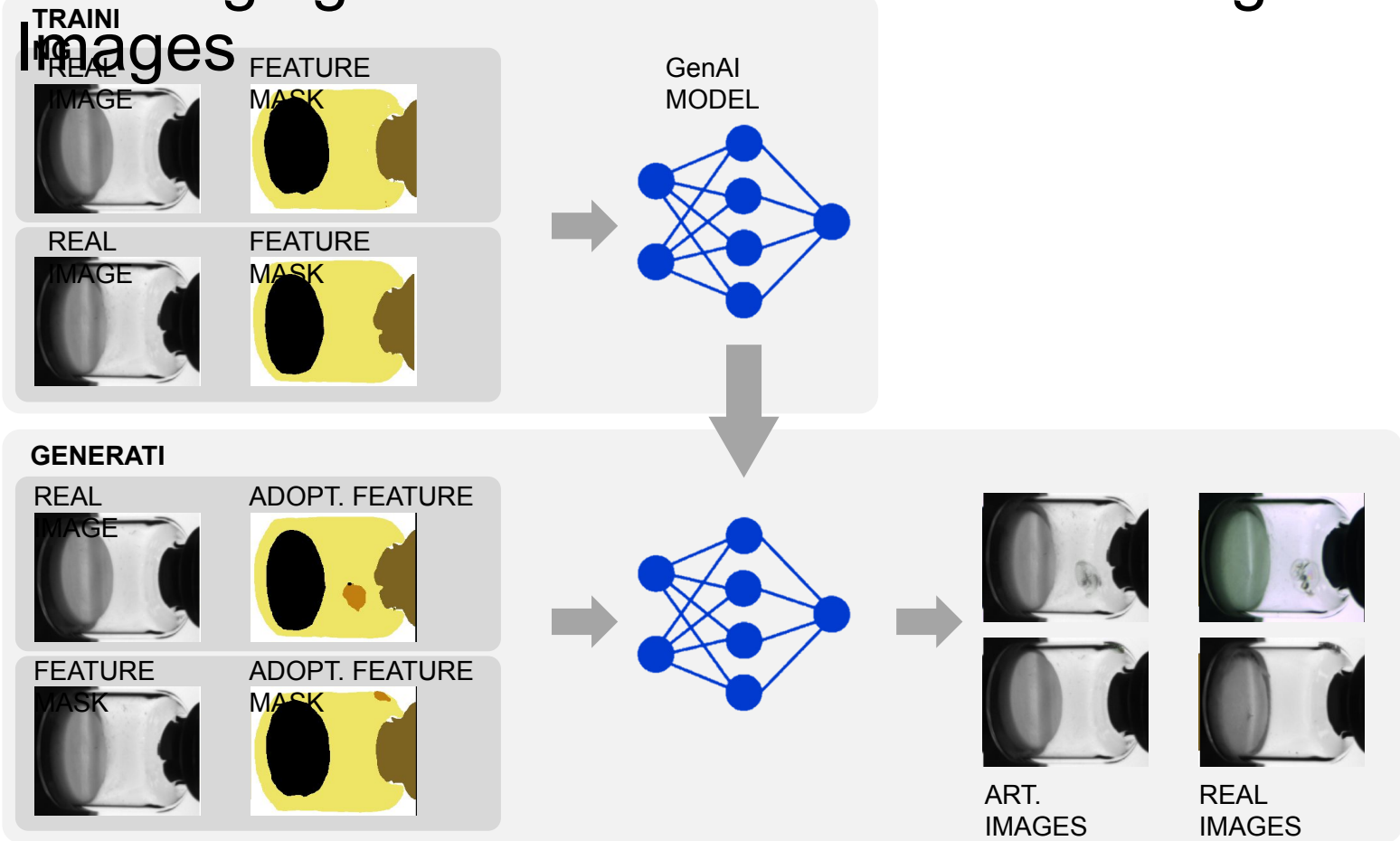
Defect Library (effects)

black-dots	4 items
cracks-painted	7 items
fiber 10mm	66 items
fiber 15mm	58 items
glass 400	76 items
glass 600	64 items
glass 800	70 items
glass 1000	78 items
hair 1mm	42 items
hair 2mm	34 items
hair 3mm	28 items
hair 4mm	40 items
M2-con-dirty-i120-s160	26 items
M2-cra-circumference-i120-s160	22 items
M2-cra-high-i120-s160	28 items
M2-cra-large-side-i120-s160	24 items
M2-cra-small-side-i120-s160	32 items
M2-scr-painted	8 items
outlier-stickers	10 items
outlier-stickers-training	18 items
steel 200	40 items
steel 400	32 items
steel 600	40 items
steel 800	34 items
stopper 200	52 items
stopper 400	32 items
stopper 600	40 items
stopper 800	52 items
white-lines	9 items

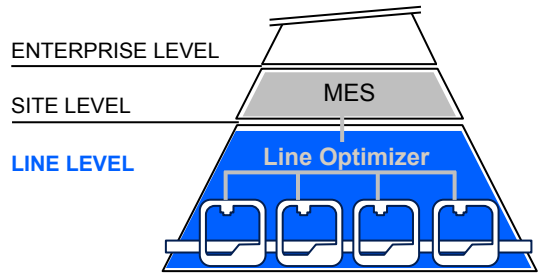
Good coverage of defect variations



Leveraging GenAI to create even the toughest Artificial Images



AI in Line Management



Connect

Standardized equipment connection



Manage

Control and visualize Pharma production lines



Execute

Digital guided operations



Detect

Assisted line clearance



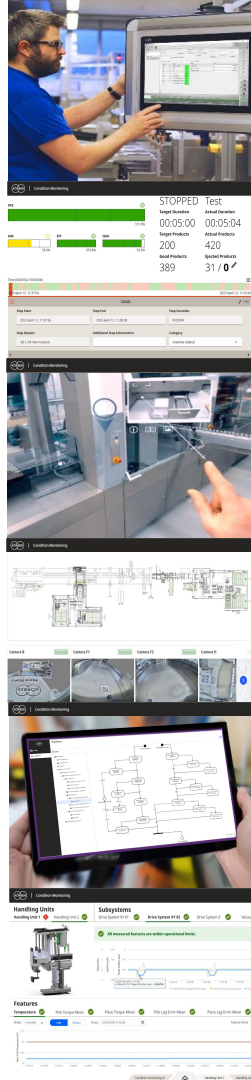
Design

Digital modelling of processes and workflows



Smart Maintenance

Condition monitoring and data analytics



Process & Workflow

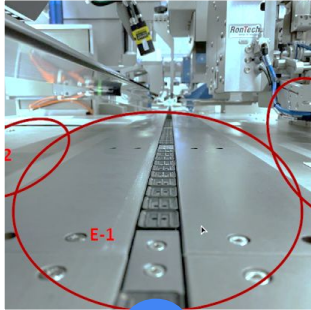
How to execute the line clearance with automated visual checks



1

Initiate

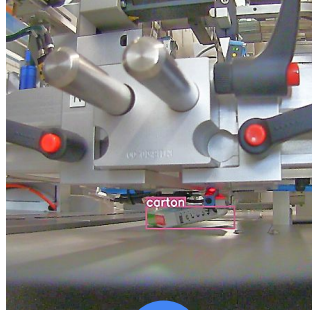
automatic line clearance out of standard EBR execution



2

Keypoint check

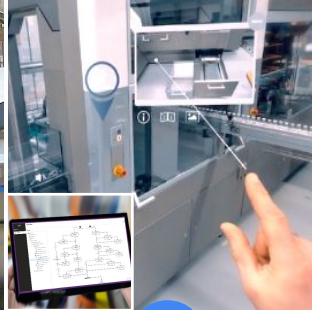
with installed cameras



3

Recognition

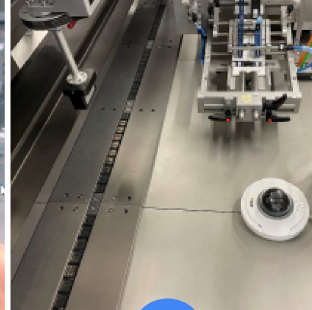
of nonconforming objects and flag it



4

Guide operators

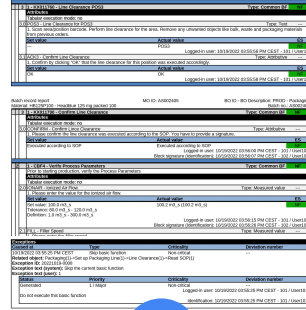
to key point with detected objects to remove them



5

Inspection

of clearance status (camera supported)



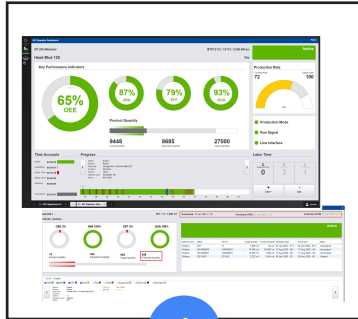
6

Documentation

of successful line Clearance

Continuous shop floor improvement

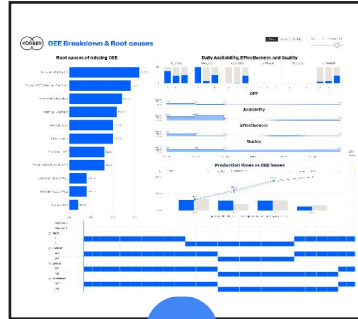
A good KPI/OEE solution enables root cause analysis, process stability and reduction of unscheduled downtime



1

Transparency

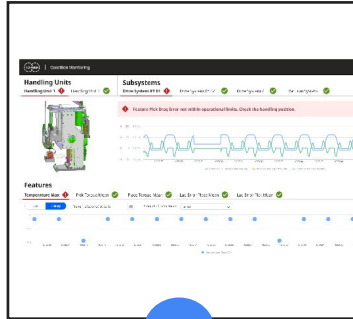
detect problems before they happen



2

Analysis and detection

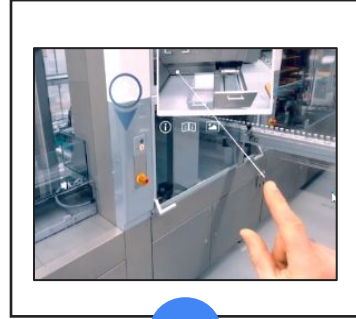
go deeper into OEE and perform root cause analysis



3

Recommendations

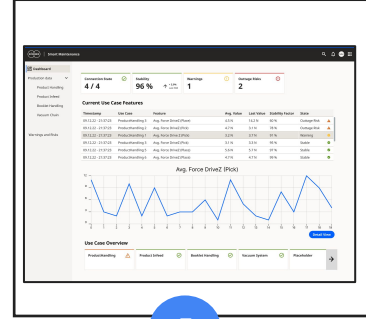
Data-driven continuous improvement



4

Guide operators

Data-based adjustments, digital expertise always at hand



5

Continuous improvement

Measurable improvement



What is the next step that you take

Step by step into the digitalization and adoption of advanced technologies



Thank you

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