

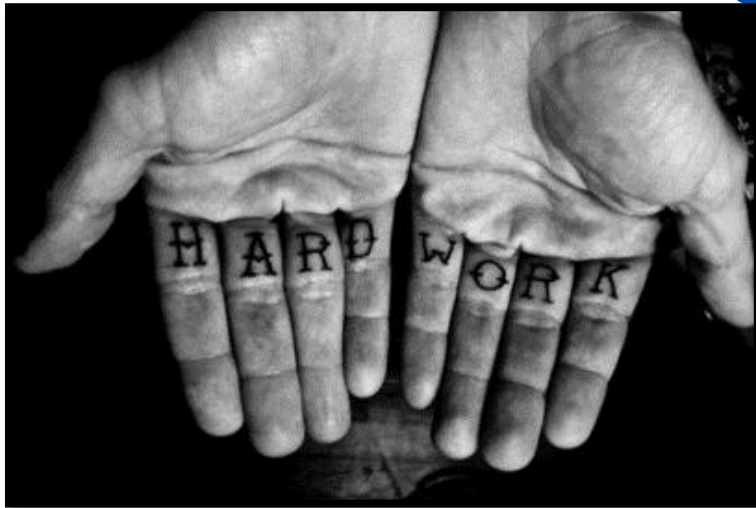
Federatie Textielbeheer Nederland

Robotics in de wasserij; een inkijk in de factory of the future



Laundry Experience Event 2019 – Clova, Wommelgem, België

Increasingly less manual labour in the laundry



2019 is marked with the entry of true robot technology for industrial laundry



laundry
robotics



CONTENTS

- About myself
- Laundry Robotics
- robin
- Past – Now – Future



MARKUS KOBEL

- Married since 2010, 2 children
- Hobbies: Table tennis, Snowboard
- Master of Science in Computer Science, Diploma in Software Engineering and Pattern recognition
- CEO BIKO Engineering AG, CH
- CEO Laundry Robotics B.V., NL



LAUNDRY ROBOTICS

SALES AND SERVICE Landuwasco B.V., NL

MANUFACTURING BIKO Engineering AG, CH

FINANCE Blycolin B.V., NL

DEVELOPMENT AND TESTING BIKO & Landuwasco & Blycolin



GOAL

The development, production and implementation of laundry machines that improve the production process socially and ergonomically, are cost efficient and eco-friendly. This is done by using robotics, vision systems and software based on artificial intelligence.



WHAT ABOUT ROBIN?

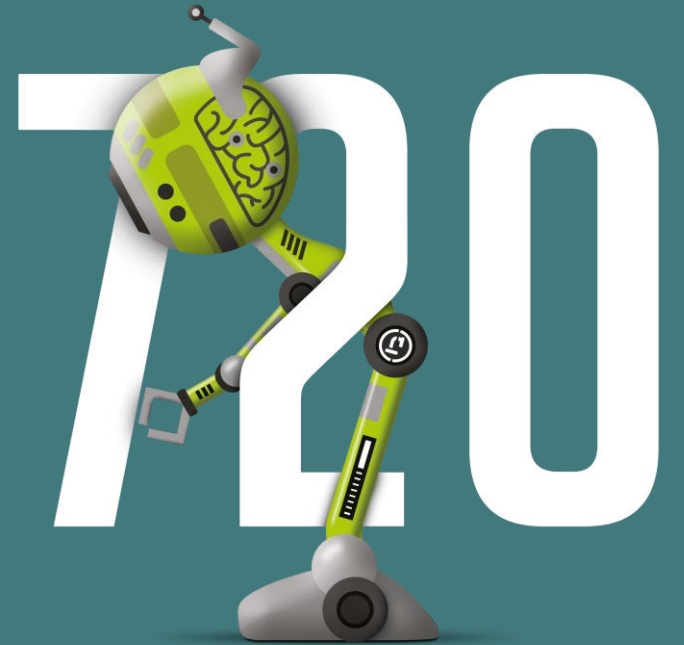
ROBIN KNOWS A TOWEL WHEN HE SEES ONE



HOURS A DAY



100% QUALITY



TOWELS AN HOUR

MORE ABOUT ROBIN!

- Development start: August 2017
- Start-up in first laundry: June 2019
- Several machines on order
- Ongoing developments
 - Detection of customer logos on towels
 - Automatic sort out of towels with tears and stains
 - Processing of facecloths



TECHNOLOGY BEHIND ROBIN

Artificial intelligence combined with known technology

- Neuronal network, trained to detect corners, edges, surfaces, angles, borders, ...
- All moving parts based on mechanical technology that is already proven in laundries

Result: reliable and understandable technology



IMPACT ON LAUNDRIES

Repeatable tasks can be done by robots

- Supervision will be more important than actually doing a task
- Invest in process oriented staff
- Personal customer relation will be more important

How to prepare?

- Think how you would solve your problems
- Do not follow every hype but always be open to investigate on new technology
- Streamline your product portfolio



PAST - NOW

Technology changes since ~2007 minimal

- Improvements in productivity
- Automation of repetitive tasks

Artificial intelligence available now

- Systems can adapt to specific situations
- Automation of difficult tasks becomes possible
- Systems are trained by humans



FUTURE

Coming 1-5 years

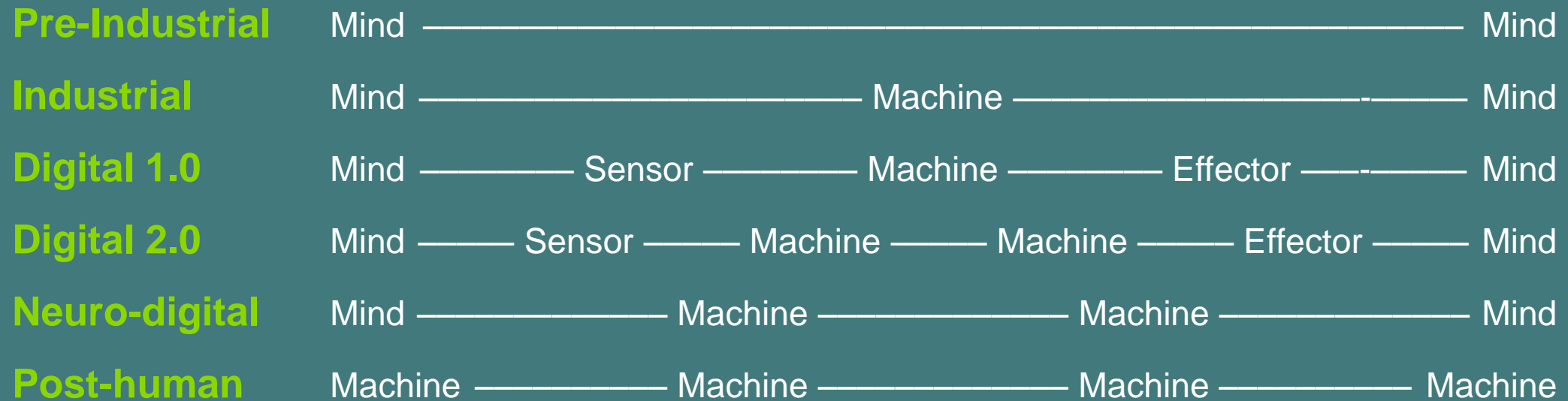
- Artificial intelligence integrated in all day tasks
- Laundries: Technology spread in all areas now, robots are working with towels, tomorrow they will work with sheets, napkins and next week with garments

Coming 5-10 years

- Systems will train themselves
- Artificial intelligence will decide better than humans
- Machines interact with machines on complex topics



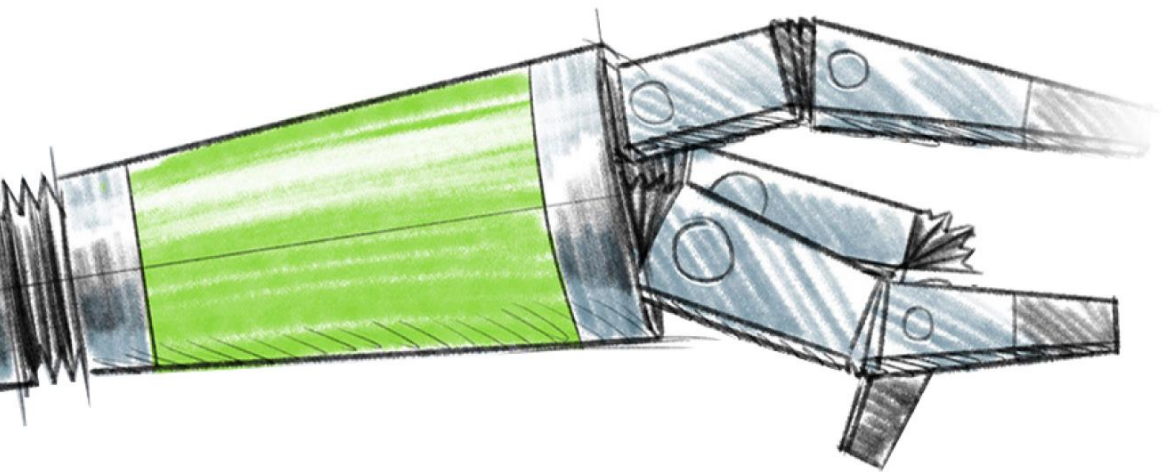
STADIUM OF INTELLIGENCE



Augmented Intelligence › Amplified Intelligence › Automated Intelligence



THANK YOU



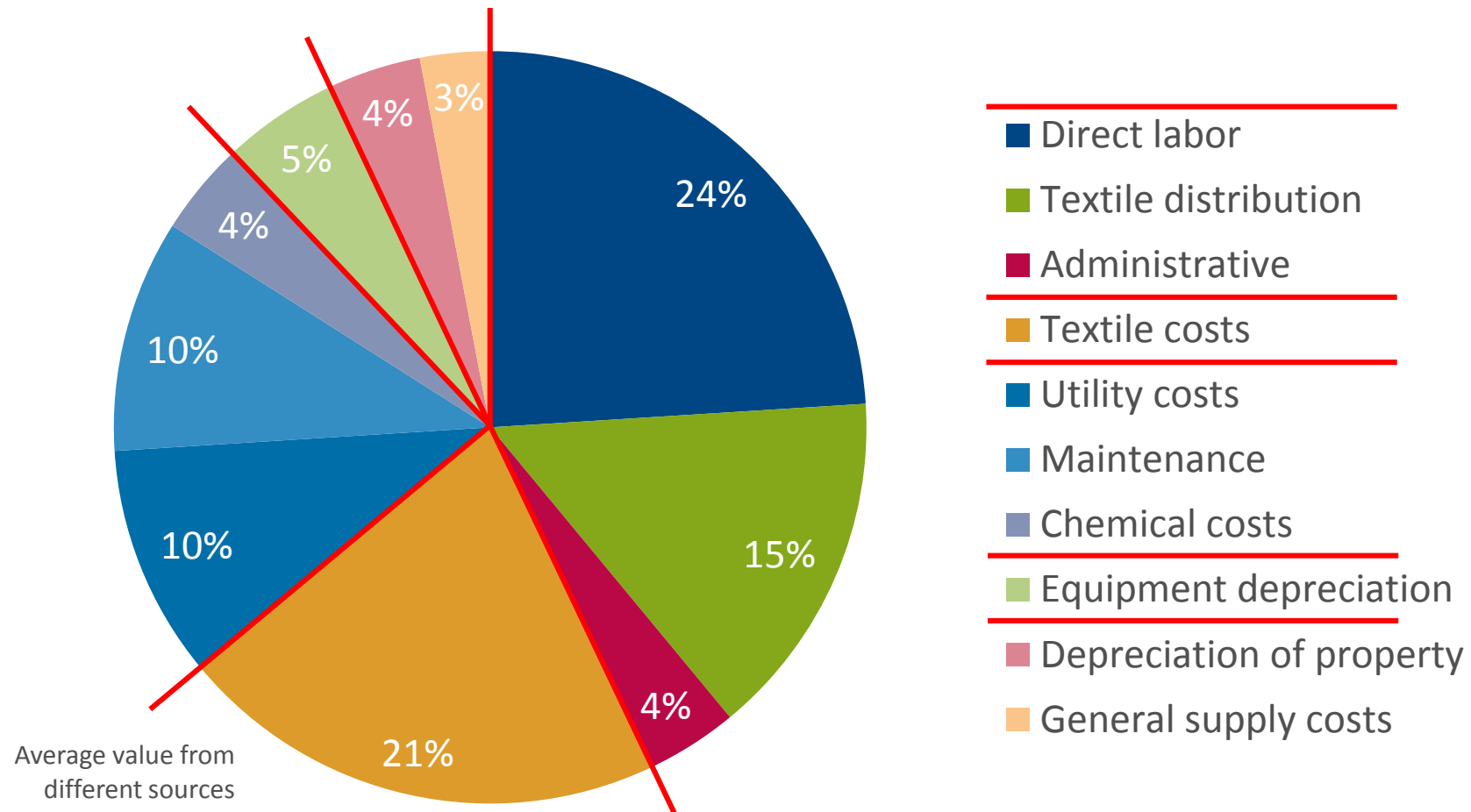
 **LAUNDRY
EXPERIENCE** 
Event 2019



Kannegiesser®

THE INTEGRATION OF ROBOTICS IN LAUNDRY LOGISTICS

DIRECT LABOR, TEXTILE DISTRIBUTION AND ADMINISTRATION ARE 43 % OF THE TOTAL COSTS



The Revolution is Here

We understand that receiving perfectly clean laundry, on time every time, is essential to successfully running your hotel. That's why we have rebuilt the entire laundry process from the ground up.

Our Services

We've implemented the only system of its kind in North America, providing a fully automated workflow that significantly reduces typical laundry errors, cleans deeper, presses and folds better and extends linen life far beyond conventional standards.



THE SMARTLAUNDRY CONCEPT

A STEP TOWARDS INDUSTRY 4.0 FOR TEXTILE SERVICE PROVIDERS

Increasing Productivity



Master Diversity



Guarantee Delivery
Quality



A close-up photograph of a person's hand placing a wooden block on top of a stack of Jenga blocks. The blocks are made of light-colored wood and are arranged in a staggered pattern. The background is blurred, showing a person wearing a blue shirt.

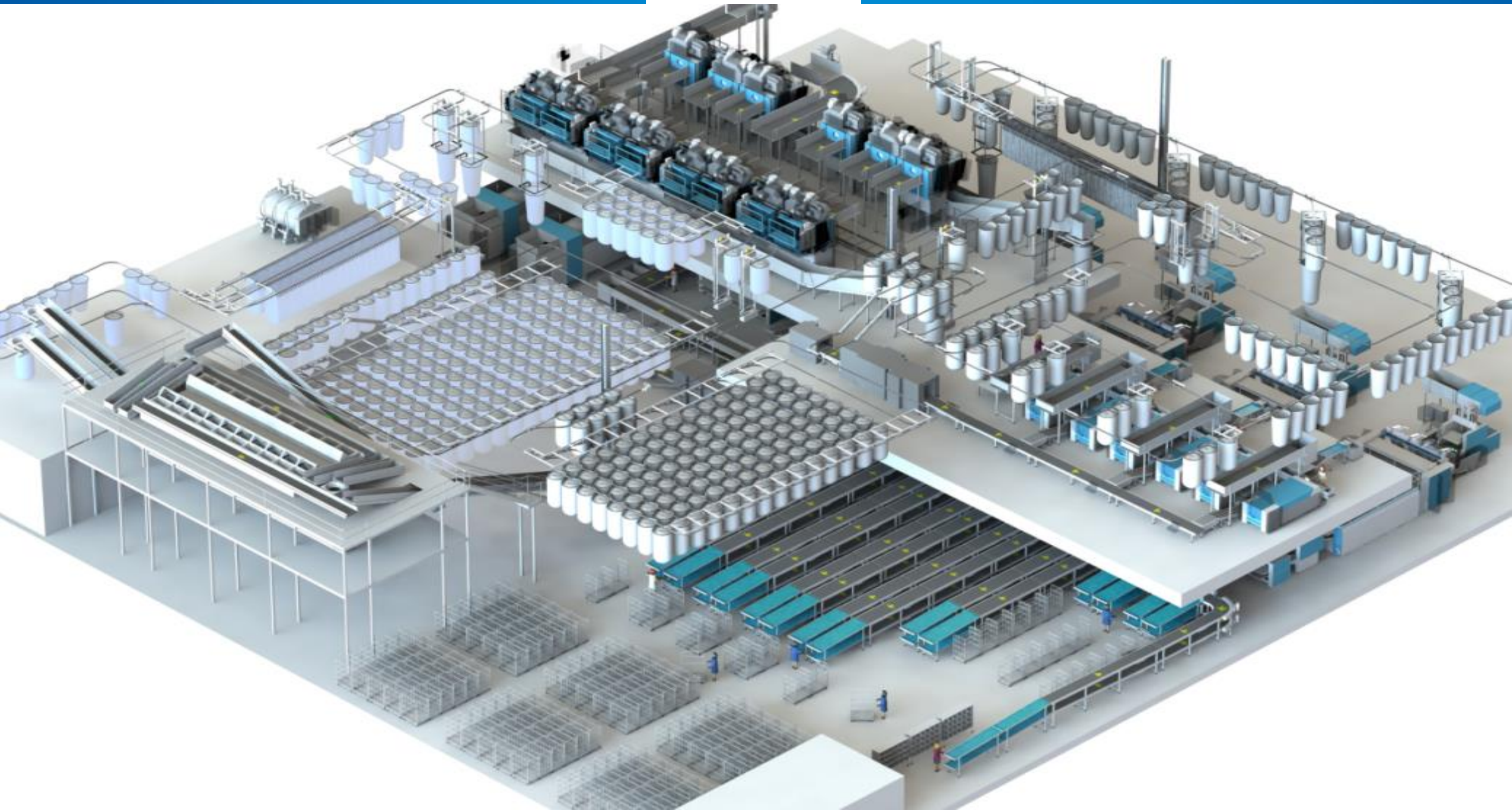
Robotics
Digitalization

SmartLaundry

Machine Technology

Machine Technology



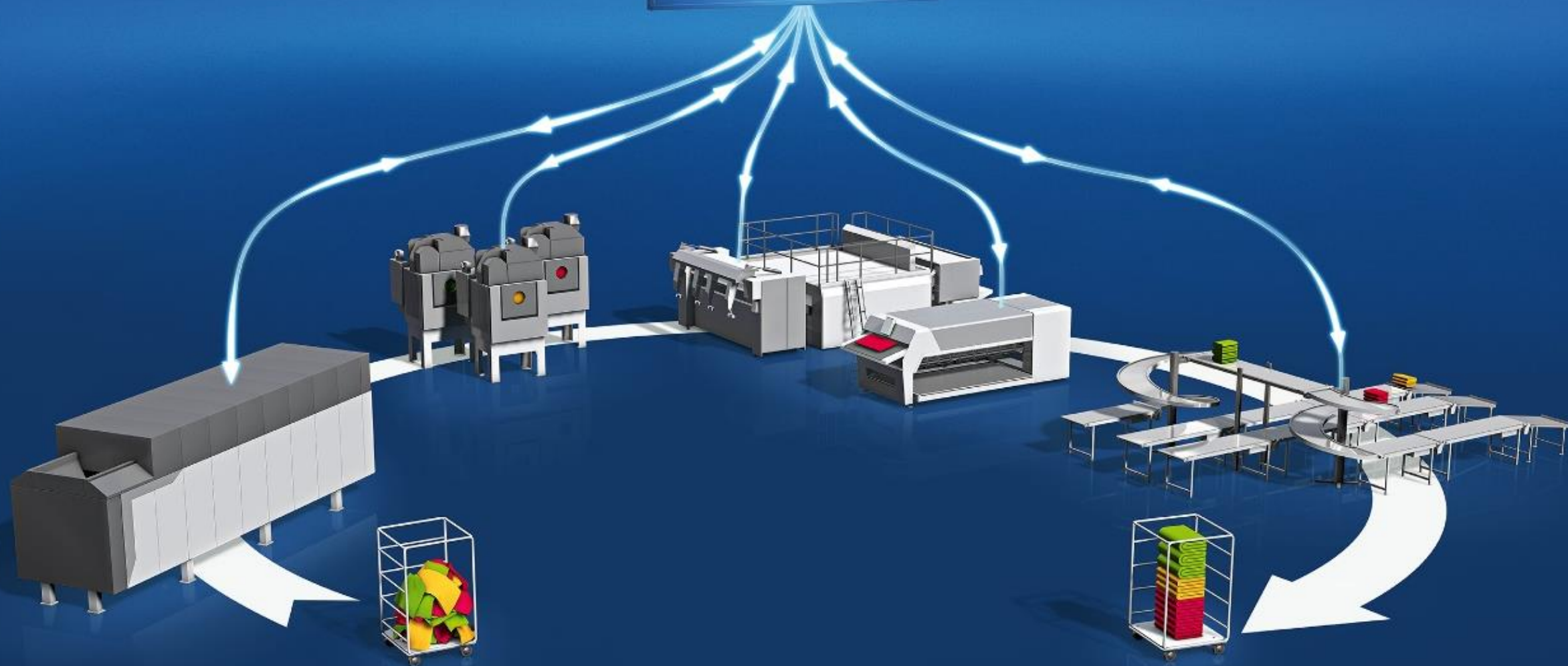


PROCESS CONTROL

SMARTLAUNDRY

PROCESS CONTROL

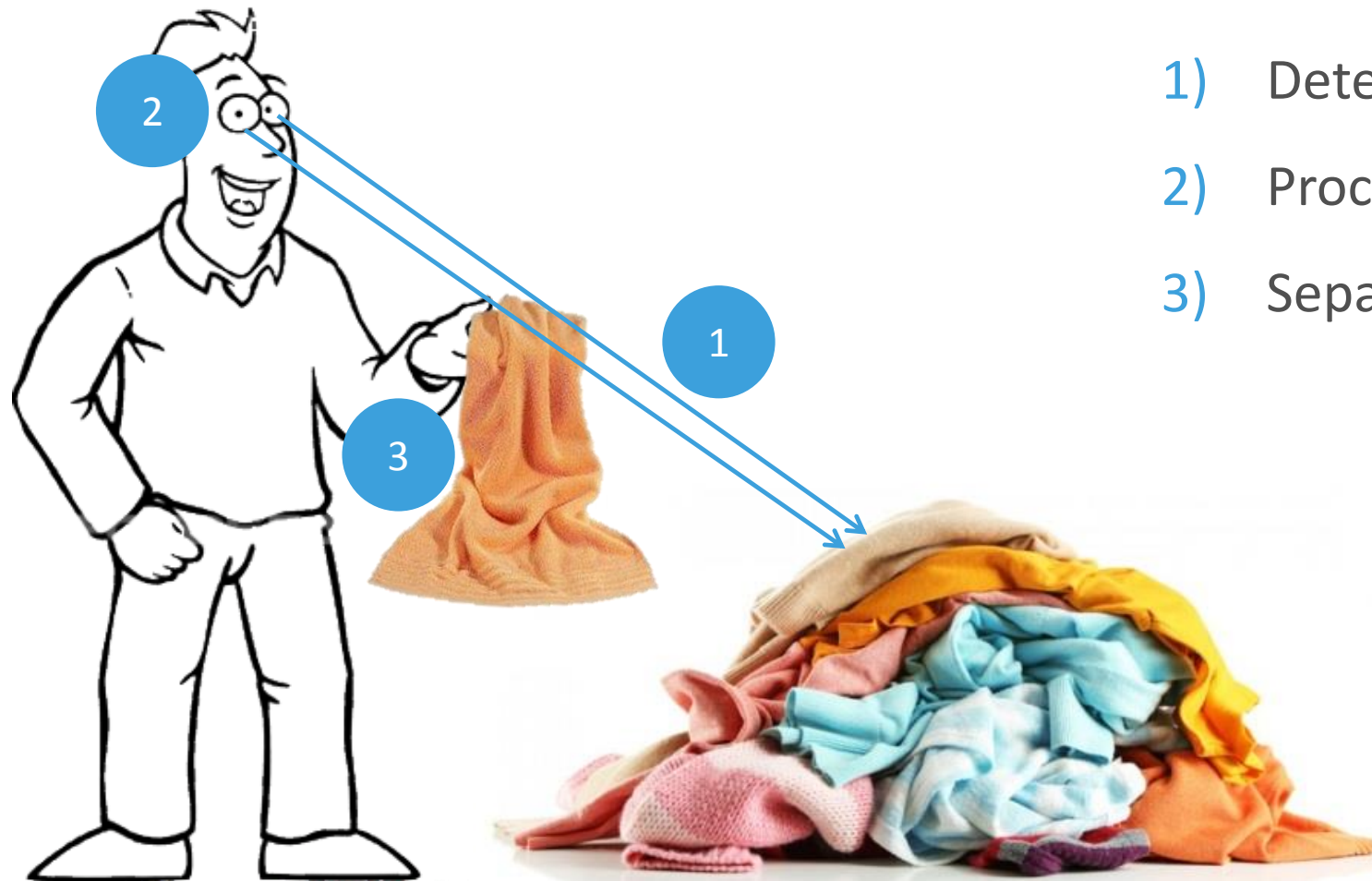
DATABASE



ROBOTICS



A CHILD'S PLAY FOR HUMANS



1) Detect



2) Process

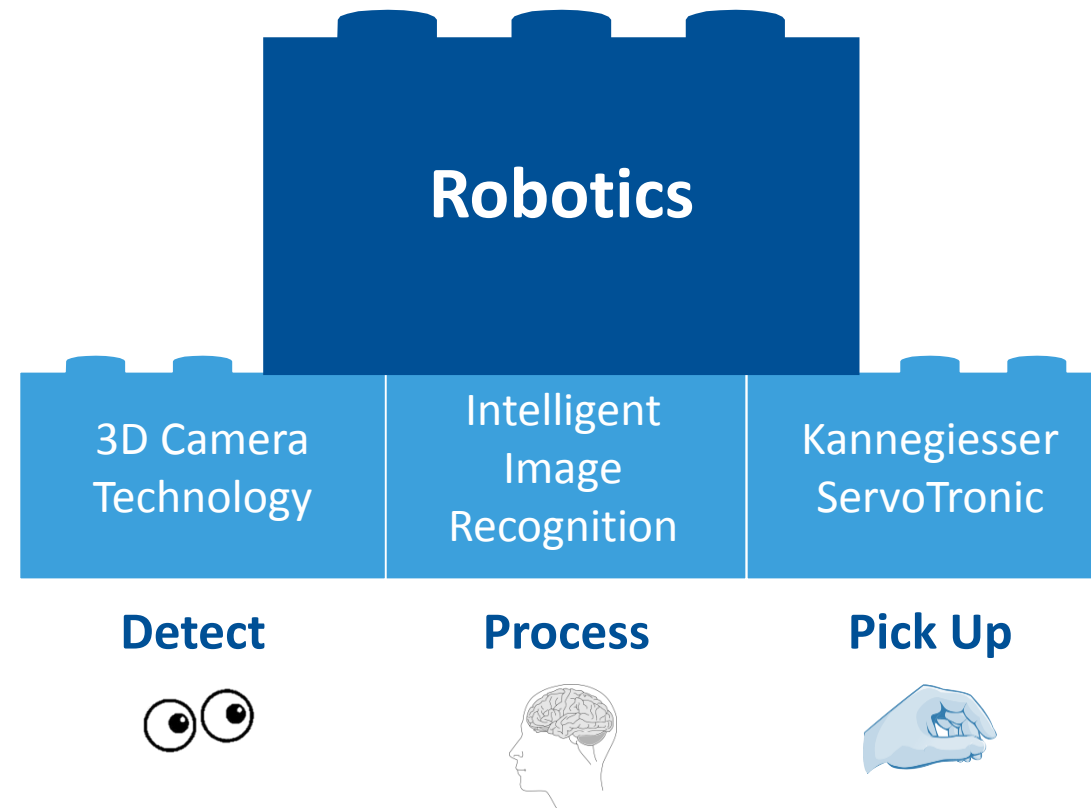


3) Separate/Pick Up



THE SOLUTION FOR ROBOTS

The 3 columns of Kannegiesser Robotics



SOILED SORTING

SOILED SORTING

SEPARATING

IDENTIFYING

SORTING

GRIPMASTER

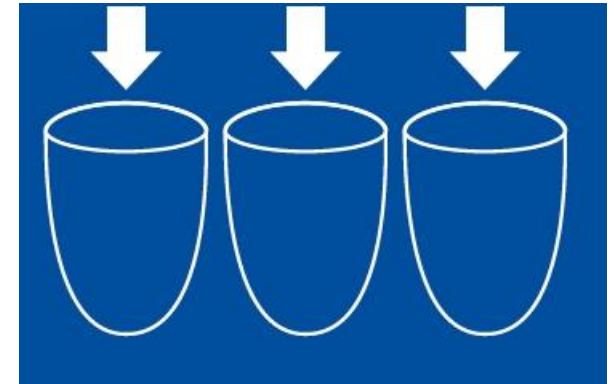
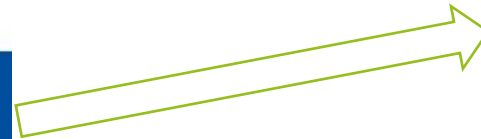


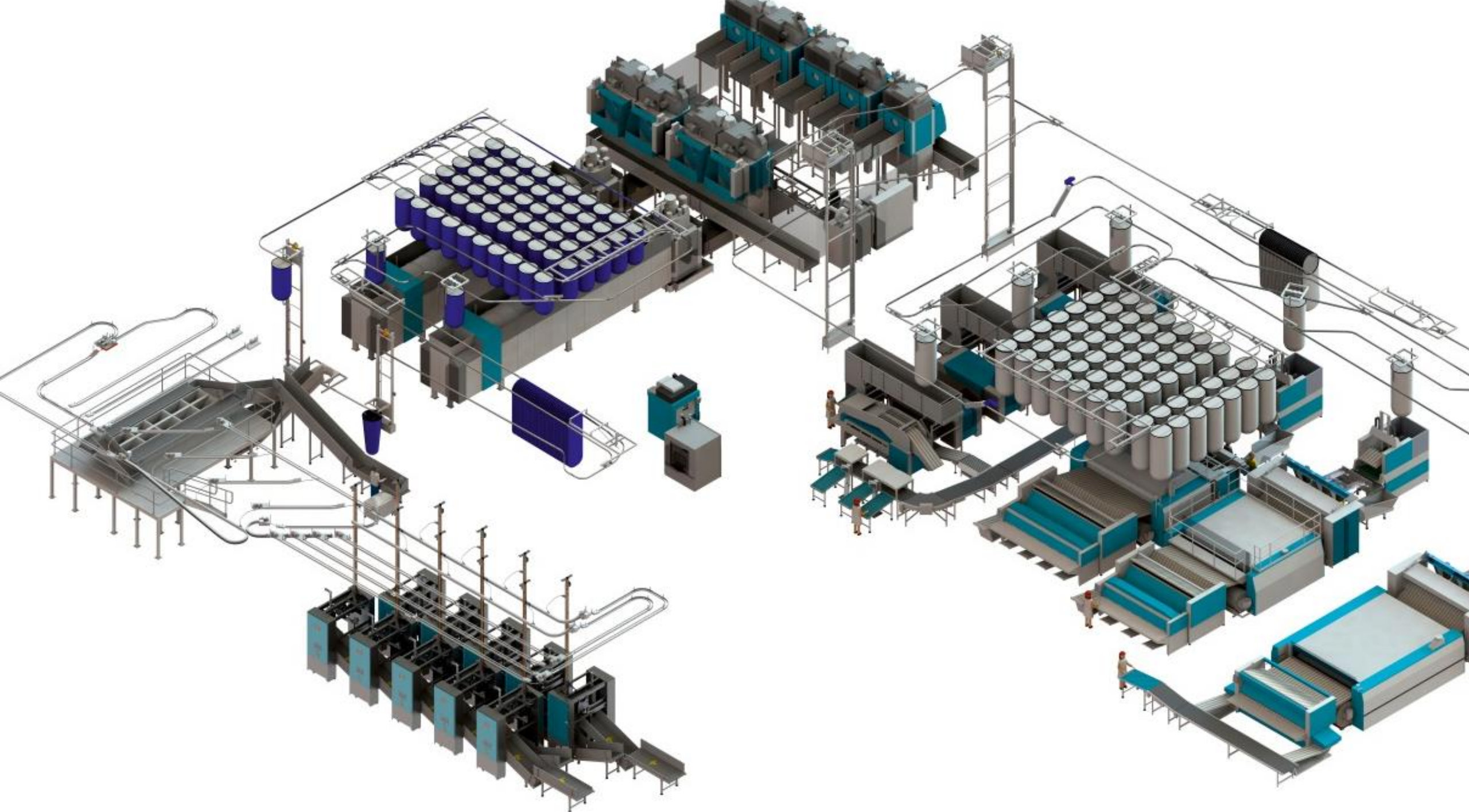
TEACH-IN



Undetected items

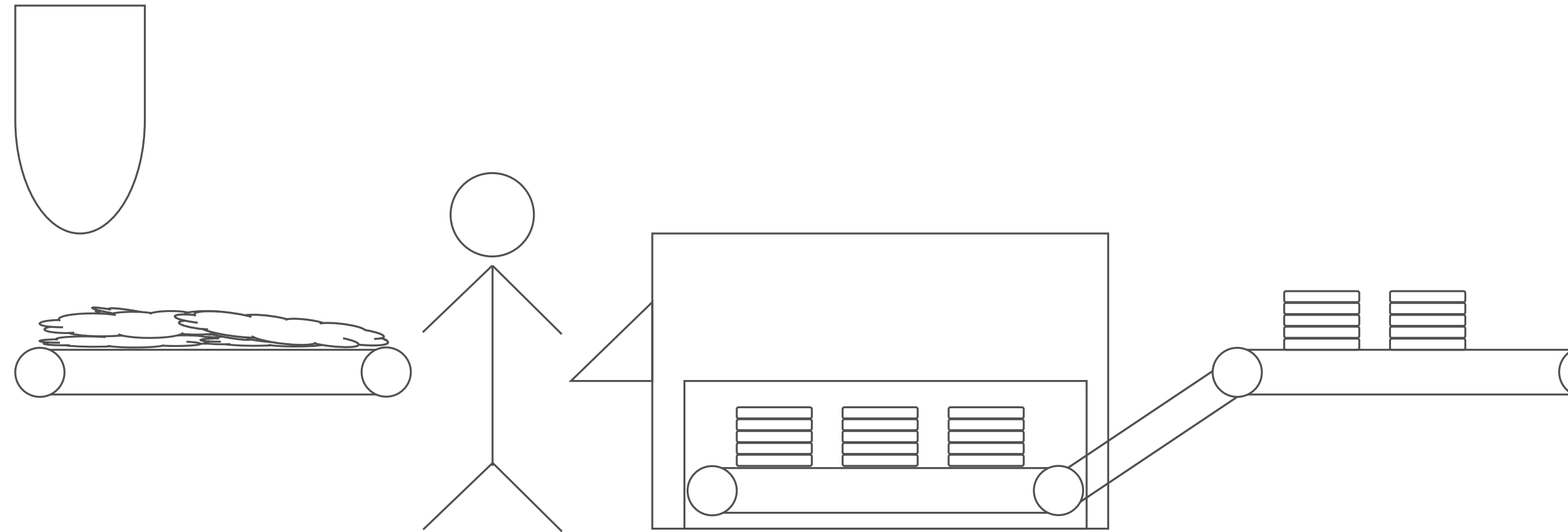
3D CAMERA KAMERA



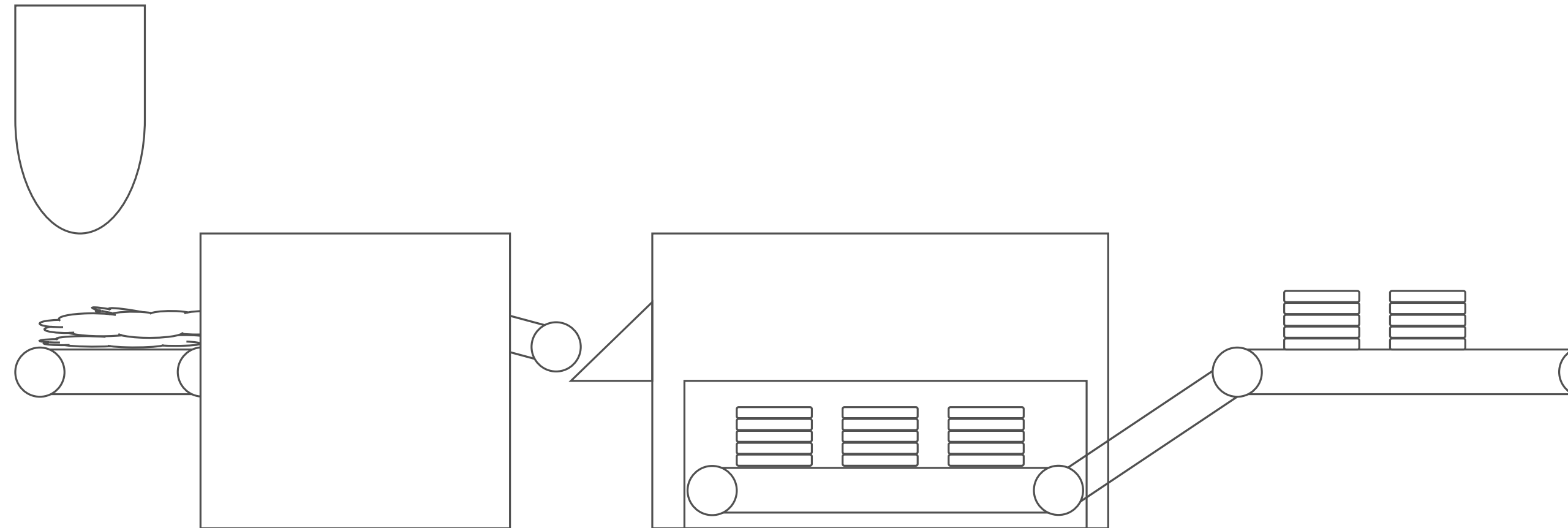


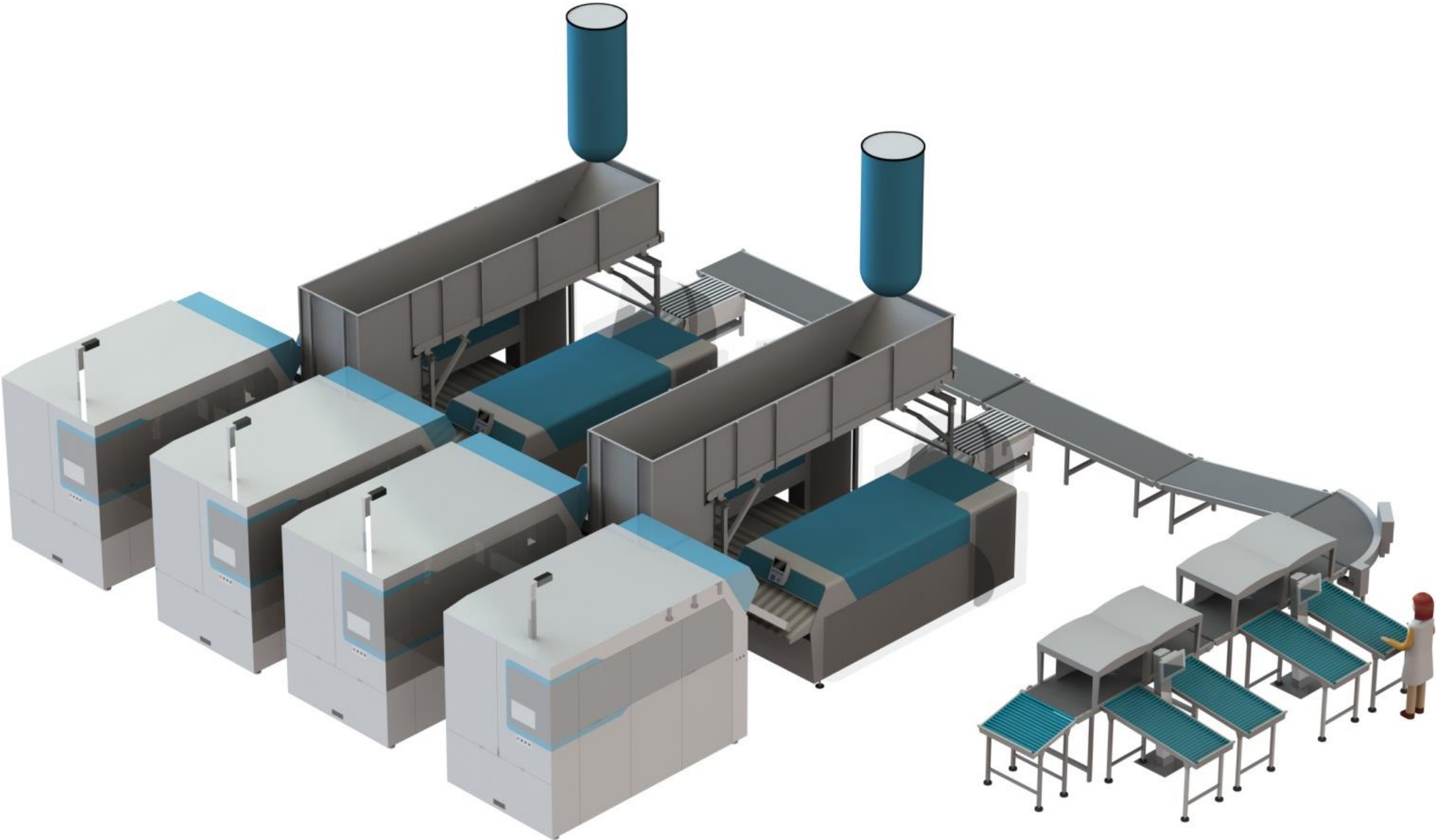
AUTOMATIC PROCESSING OF DRY WORK

PROCESSING OF DRY WORK



RFT: ROBOTIC FEEDING OF DRY WORK





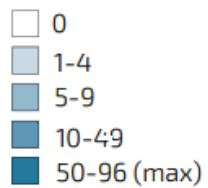


Thanks for your attention

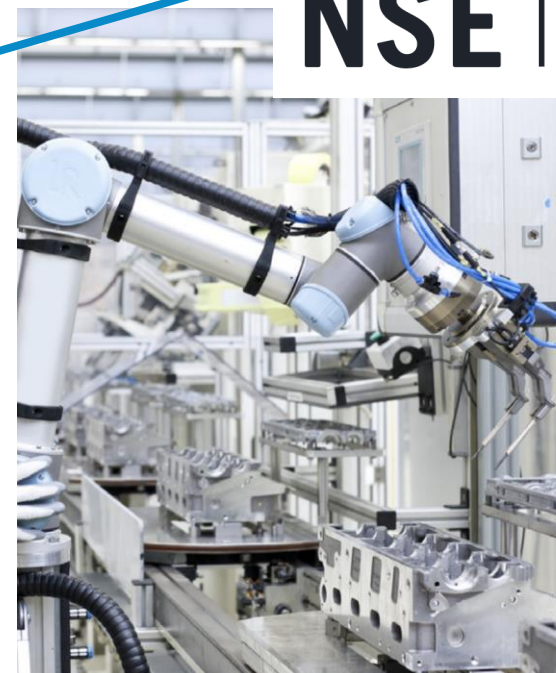
#Laundrynerd
Mads Andresen

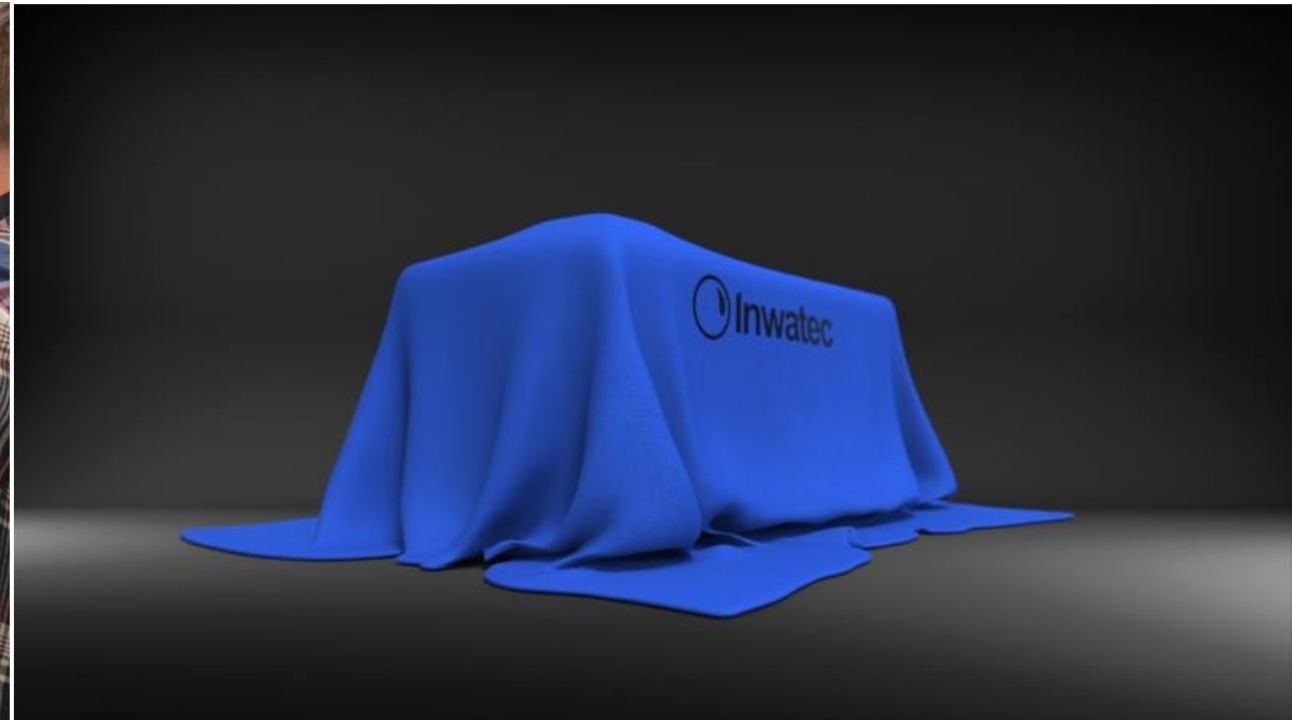
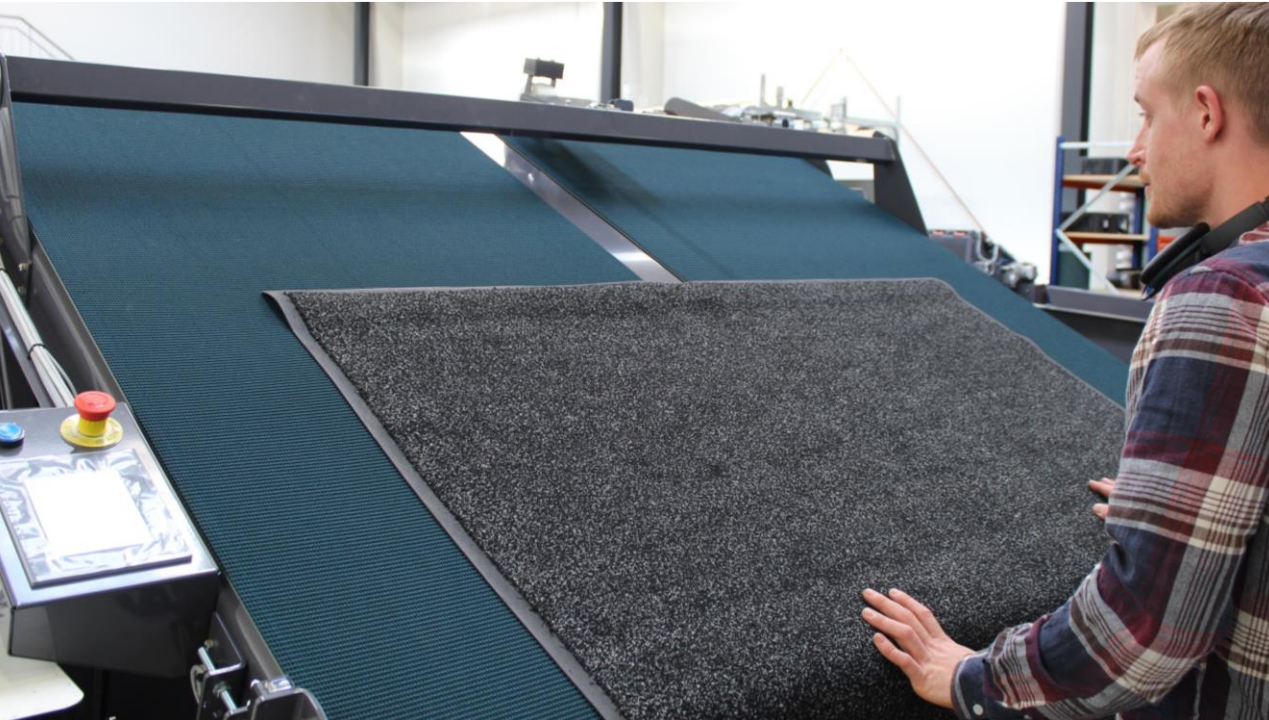


Automation & Robotics for Industrial Laundries



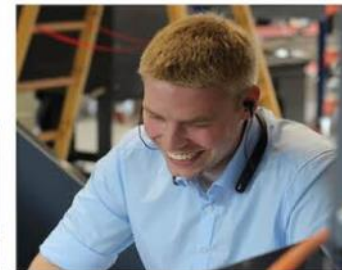
ODE | ROBO
NSE | TICS







#Laundrynerds





Why automation and robotics?





**Inwatec's
innovations on the
market**

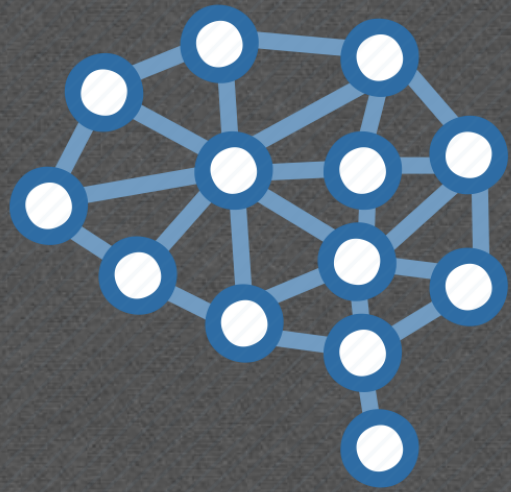


 Inwatec









Artificial Intelligence, deep learning & big data

Please select an Object type

belongs to the garment (1)

rubber band (2)

needle-hairpin (3)

paperclip (4)

penlike object (5)

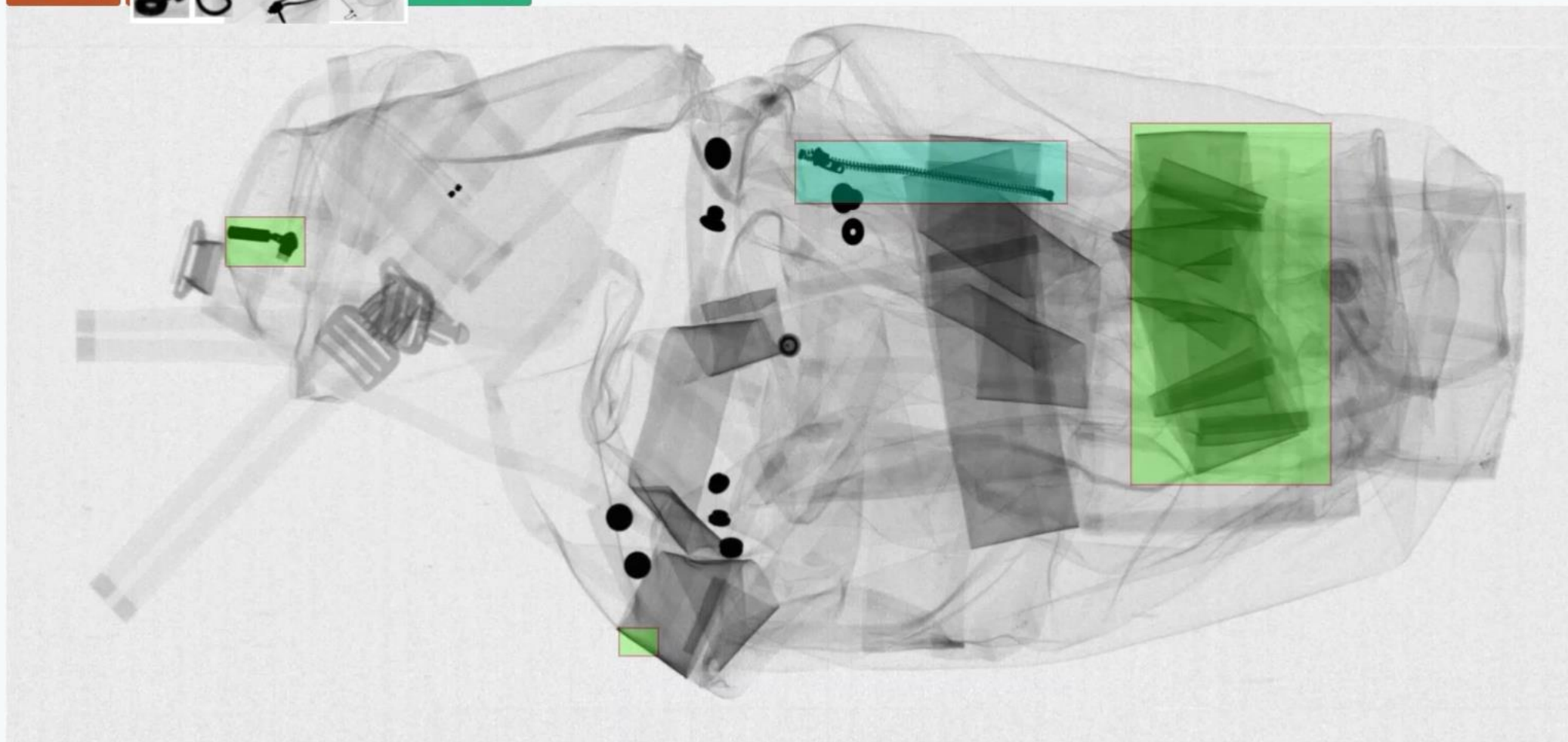
foreign object (6)

zipper (7)

unknown (8)

Broken image

to the next image







Predictions

WhiteUniform	<div><div></div></div>	0.957
WhiteSheet	<div><div></div></div>	0.020
GreyWorkwear	<div><div></div></div>	0.007
DuvetCover	<div><div></div></div>	0.007
WhiteTowels	<div><div></div></div>	0.006



Predictions

WhiteTowels	<div><div></div></div>	0.985
WhiteSheet	<div><div></div></div>	0.004
GreyWorkwear	<div><div></div></div>	0.004
DuvetCover	<div><div></div></div>	0.003
WhiteUniform	<div><div></div></div>	0.002

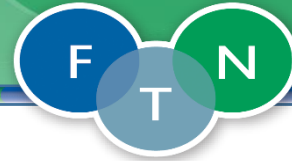


Looking into the future of laundry automation



www.inwatec.dk





Federatie Textielbeheer Nederland

Thanks for your attention