



# GS1 INTERACT

**SUSTAINABILITY UNVEILED**

CONNECTING THE DOTS  
WITH GS1 STANDARDS

25 JUNE, 10:00 TO 16:00, AMSTERDAM  
HEINEKEN EXPERIENCE AND ONLINE

HOSTED BY



# Agenda for the day

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01

## Sustainability demystified

Heineken  
Playdesign / Vox  
Barilla  
Nestlé

02

## One barcode fits all

GS1  
EuroCommerce  
AISE

03

## Circularity and DPP

SHARP / Witgoed Brigade / Tapp  
Interloop Europe

04

## Deforestation and ESG

Aldi Süd  
Colruyt Group

05

## Packaging

Henkel  
SPAR and KNAPP  
Pellenc ST and Polytag

# New GS1 in Europe Publications!



- Sustainability regulations in the European Union
- Packaging and Packaging Waste Regulation (PPWR)
- Circular Packaging and GS1 Standards
- Technology-agnostic data attributes and code list for PPWR requirements
- Industry examples



How to use GDSN to exchange information about packaging





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**Lilith Lauk**  
Senior Packaging  
Engineer  
Henkel Consumer  
Brands



# SUCCESS STORIES ON TRUSTED DATA: PACKAGING EU CONFORMITY ASSESSMENT

LILITH LAUK, INTERACT 2025, AMSTERDAM JUNE 25<sup>TH</sup>



# LEADING POSITIONS IN INDUSTRIAL AND CONSUMER BUSINESSES



ADHESIVE TECHNOLOGIES

CONSUMER BRANDS

**LOCTITE**   **TECHNOMELT**   **BONDERITE**

**Persil**   **Schwarzkopf**   **all**



# DID YOU KNOW THAT...

... Henkel is a **global leader** in adhesive technologies?

... every second worldwide, the **hair of 20 consumers** is colored with **Henkel hair colorants**?

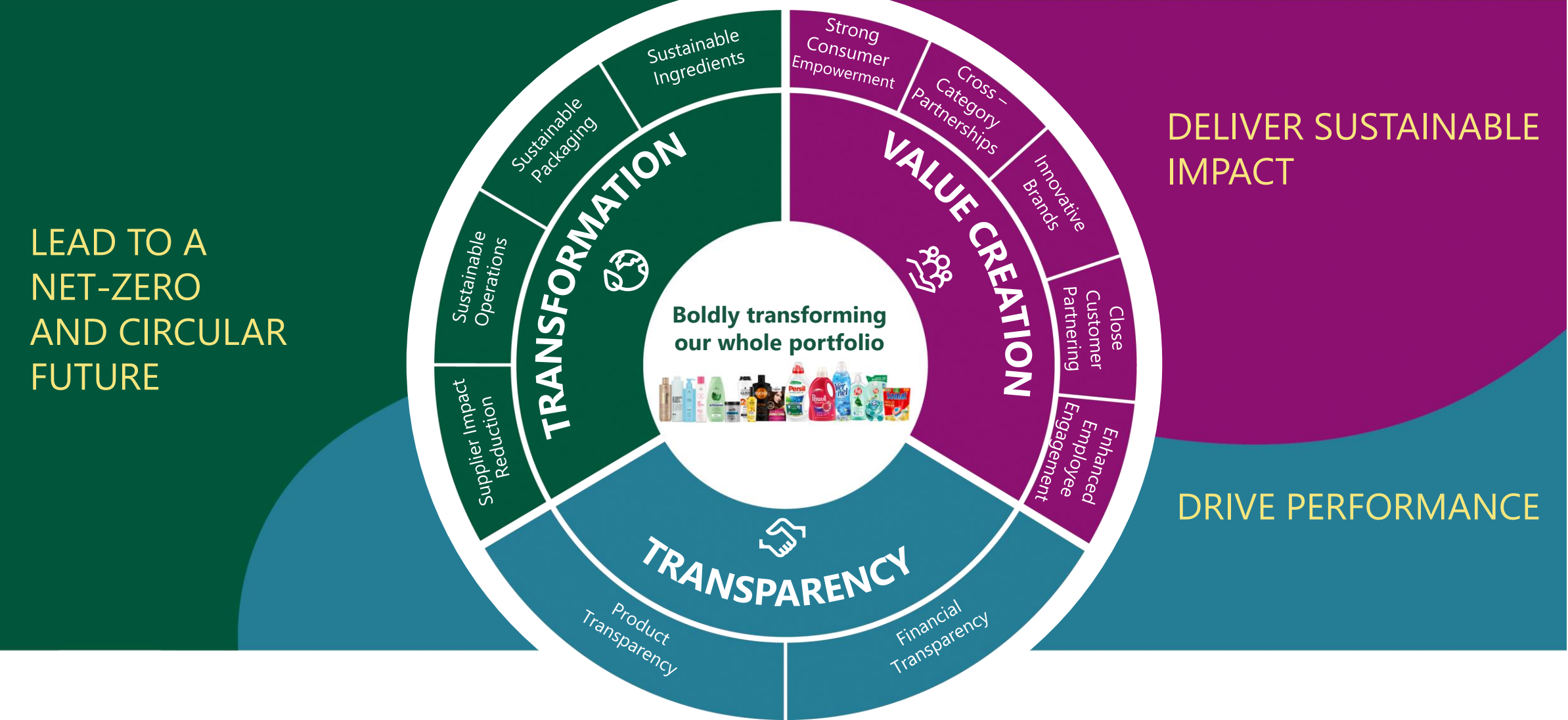
... every year **25 billion laundry wash loads** are cleaned with Henkel detergents?



# STRIVING TO MEET CONSUMER NEEDS BY DRIVING INNOVATIONS WITH ICONIC BRANDS & TECHNOLOGIES

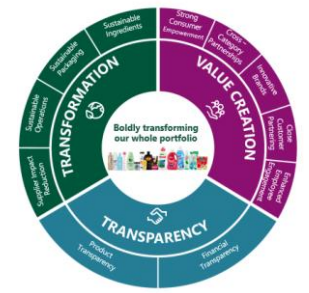


# WE DELIVER OUR CONSUMERS A **SUSTAINABLE CHOICE** WITH OUR **INNOVATIVE HIGH PERFORMING BRANDS**



# OUR PRIORITIES FOR 2025

## DRIVING HENKEL CONSUMER BRANDS TO A SUSTAINABLE FUTURE



**1** Portfolio Transformation



**2** Communication



**3** Data



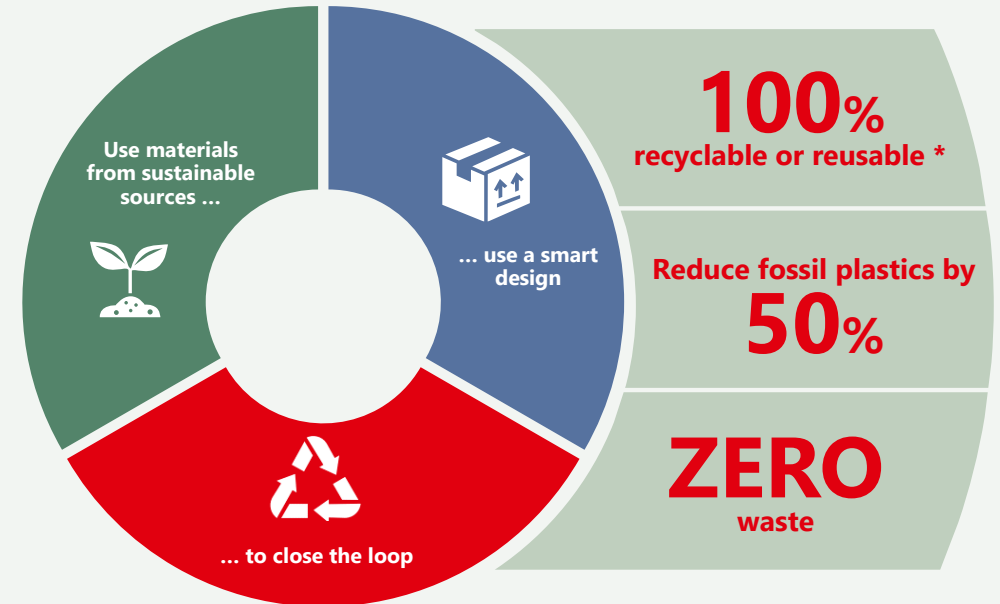
# CIRCULAR ECONOMY: GLOBAL TARGETS – REGIONAL CHALLENGES

## OBJECTIVES OF PPWR

- Make all packaging **recyclable** by 2030
- Increase **use of recycled plastics** and **substitute virgin materials**
- **Reduce impact** on the environment and address growing amount of **packaging waste**



## OUR PACKAGING AMBITION FOR 2025

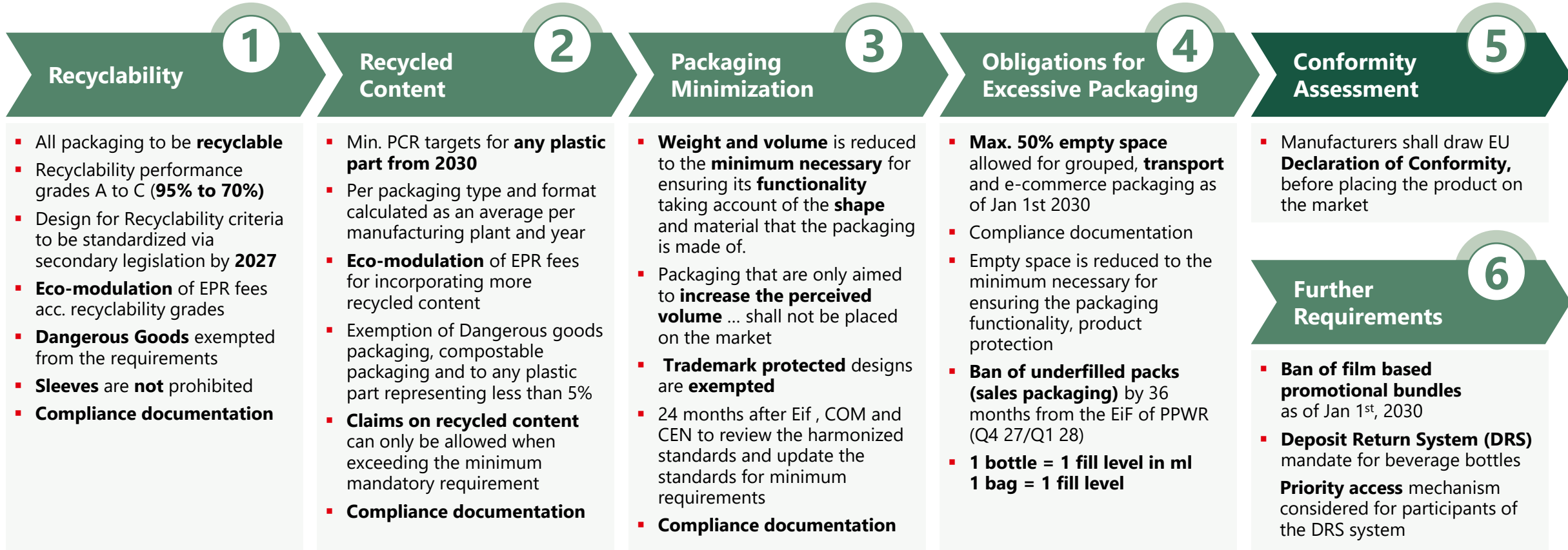


\* Excluding products where residue may affect recyclability or pollute recycling streams.

> **We fully endorse the PPWR!**  
**Nevertheless, some unclarities need to be resolved as soon as possible**

# PPWR REQUIREMENTS

PPWR entered into force  
on Feb 11th 2025



# HENKEL: PART OF THE FORUM REZYKLAT LEADERSHIP TEAM



## Forum Rezyklat

is the place where stakeholders from all sectors of the **Circular Economy** come together, forming links to develop practical and consumer-oriented solutions for recyclable packaging. They are also committed to increasing the use of recyclates in packaging.



GS1 Germany is responsible for managing the consortium



# PPWR EU Conformity Assessment

5

→ Forum Rezyklat: working group *Digitalization* identified the need to find a common approach for EU Declaration of Conformity

- Henkel stepped forward to share first approach and understanding: regular exchange with members on the topic to clarify, discuss and to find consensus
- All stakeholders of supply chain involved: Packaging Supplier, Producer, Licensing Partners, Solution Providers, Brand Owners, Retailers...



## OUR AIM

ONE common understanding of needed information for PPWR EU Conformity Assessment

- ✓ Efficient developments & data sourcing
- ✓ Ownership
- ✓ Collaboration

# PPWR EU Conformity Assessment 5



- Results will be made available via Excel:
  - Master Document, which generates:
    - EU Declaration of Conformity

## Are we there yet?

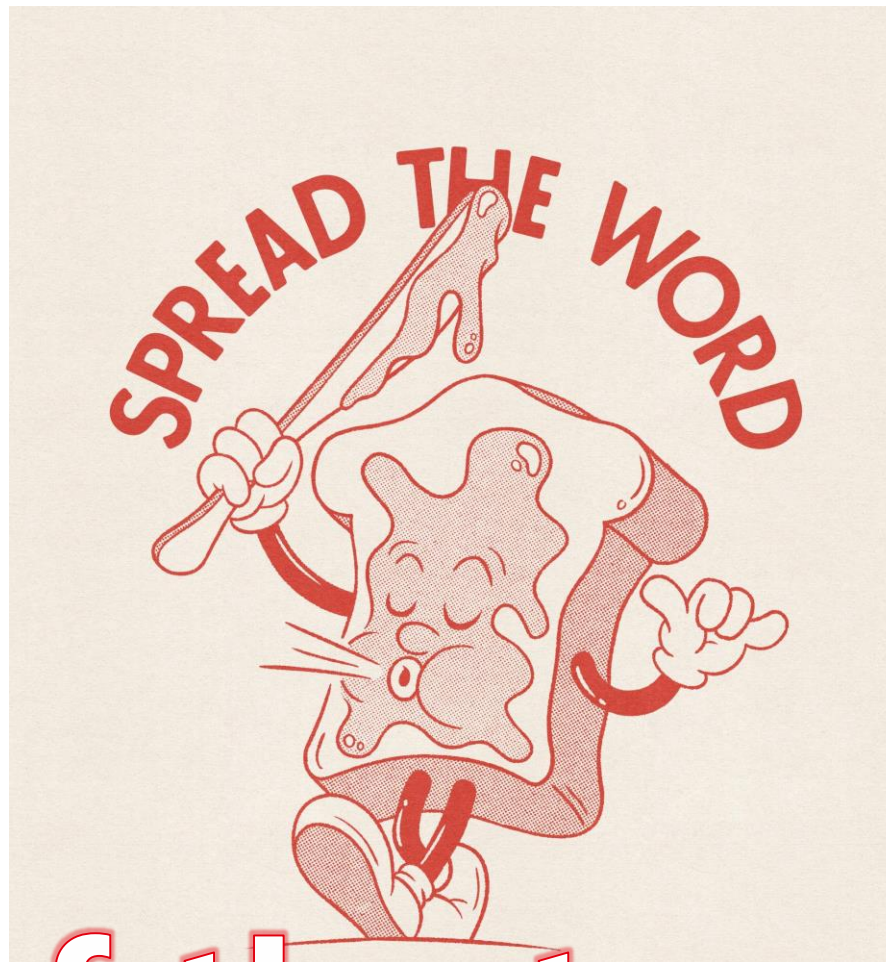
**No**, any doubt, open questions and need for clarification is passed on via different stakeholders to authorities

	A	B	C	D	E	F
1	<b>Main document for technical documentation</b>					
2						
3	<b>1. No...</b> (unique identification of the packaging)					
4	<b>2. Name and address of the manufacturer and, where applicable, the manufacturer's authorised representative</b>					
5	<i>This declaration of conformity is issued under the sole responsibility of the manufacturer.</i>					
6	<b>3. Object of the declaration (identification of the packaging allowing traceability)</b>					
7	description of the packaging:					
8	Description of the packaging					
9	<b>Art. 5: Requirements for substances in</b>					
10	<i>The sum of the concentrations of lead, cadmium, mercury and hexavalent chromium resulting from substances present in packaging or packaging components shall not exceed 100 mg/kg.</i>					
11	Designation of the component					
12	Does the packaging component contain lead, cadmium, mercury or hexavalent chromium?					
13	No	No	No	No	No	No
14	Was the limit value of 100 mg/kg complied with?					
15	Yes	No	No	No	No	No
16	<i>Proof in technical documentation!</i>					
17	<b>Information: A report on the effects of the substances of concern on humans and the environment</b>					
18	<i>From ... [18 months from the date of entry into force of this Regulation], foodcontact packaging shall not be placed on the market if it contains per- and polyfluorinated alkyl substances (PFAS) in a concentration equal to or above the following limit values to the extent that the placing on the market of packaging containing such a concentration of PFAS is not prohibited pursuant to another</i>					
19	Does the packaging in consideration get in contact with food?					
20	Yes					
21	Is the limit complied with? (a) 25 ppb for any PFAS as measured with targeted PFAS analysis (polymeric PFAS excluded from quantification).					
22	No	No	No	No	No	No
23	Is the limit complied with? (b) 250 ppb for the sum of PFAS measured as the sum of targeted PFAS analysis, where applicable with prior degradation of precursors (polymeric PFAS excluded from quantification), and					
24	No	No	No	No	No	No

work in progress  
→ will be available soon  
here



**WHAT CAN YOU DO?**



**Make use of the template**

# WAY FORWARD



**PPWR asked for  
cooperation on all  
levels**



**Ambitions can be met  
together**



**Circularity needs  
more alignment**



**ONE understanding  
breaks boundaries**



**Responsibility is  
with all of us**

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**SUSTAINABILITY UNVEILED**

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# Thank you!

*The slide deck and recording of the session will be shared afterwards*



# GS1 INTERACT



**Daniel Stojoski**  
Strategic  
Innovation  
Manager  
SPAR

## SUSTAINABILITY UNVEILED

CONNECTING THE DOTS  
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**Marinus  
Bouwman**  
Systemintegration  
Product  
Management  
KNAPP

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# The real cost of packaging throughout the value chain

**Warning: this presentation contains product placements**





Daniel Stojoski  
Strategic development



Marinus Bouwman  
Product Manager



# SPAR

Ebergassing, AT

## FOOD RETAIL

Used at 12 ergonomic  
Pick-it-Easy Case  
work stations

Picking of fresh and  
shelf-stable goods

650 large pack units/hour  
on average

Perfect sequencing from  
the OSR Shuttle™  
(12 rack line systems,  
89,000 storage locations)



# KNAPP profile



**Headquarters**  
Austria  
Hart bei Graz

★  
Founded in  
**1952**

**1.803 billion** EUR  
turnover in  
fiscal year  
**2023/24**



**49** 

Locations\*  
worldwide

**80 million** EUR

investment in  
research and  
development  
4,5 % of turnover



**~ 2,100**  
Systems worldwide\*\*


**11**   
production locations

## Employees


**~ 7,700**   
Employees  
worldwide


**~ 4,100**   
employees  
in Austria

**~ 1,700**   
employees  
in software

**~ 2,200**  →  of which  
employees  
in Customer Service **~ 1,150**  
Resident Engineers

  
**~140**  
apprentices  
in training

 **7,690** MWh  
energy consumption  
Hart bei Graz location

 **727,984** kWh  
electricity generated in house  
Hart bei Graz location

**Responsibility** 

## Core industries



Fashion



Food retail



Healthcare



Industry



Retail



Wholesale

Subsidiary\*: has its own legal form including shareholding and may have several branches  
Systems\*\*: the approx. 1.500 installations from Apostore are not included here

## Certifications

ISO 9001  
Quality  
management

ISO 45001 2018  
Occupational  
health and safety

ISO 14001  
Environmental  
management

ISO 27001  
Information  
security

Find out  
more about  
sustainability

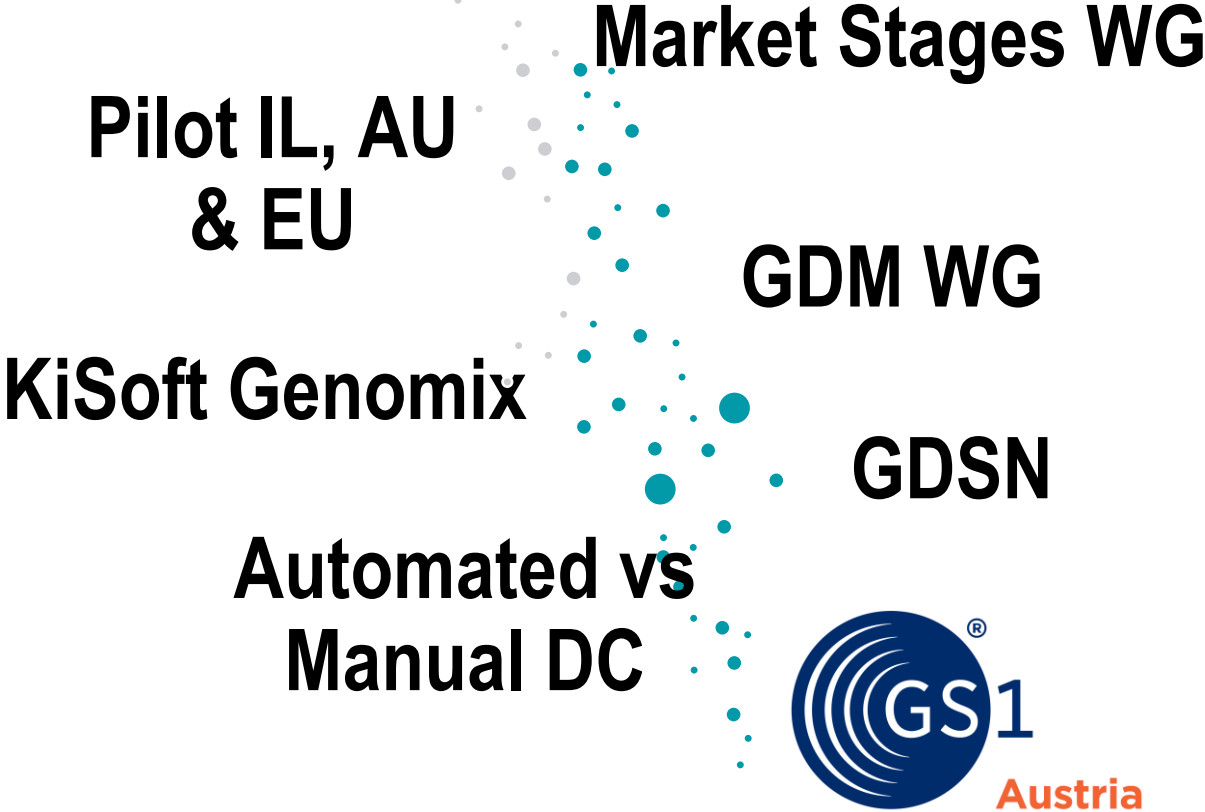
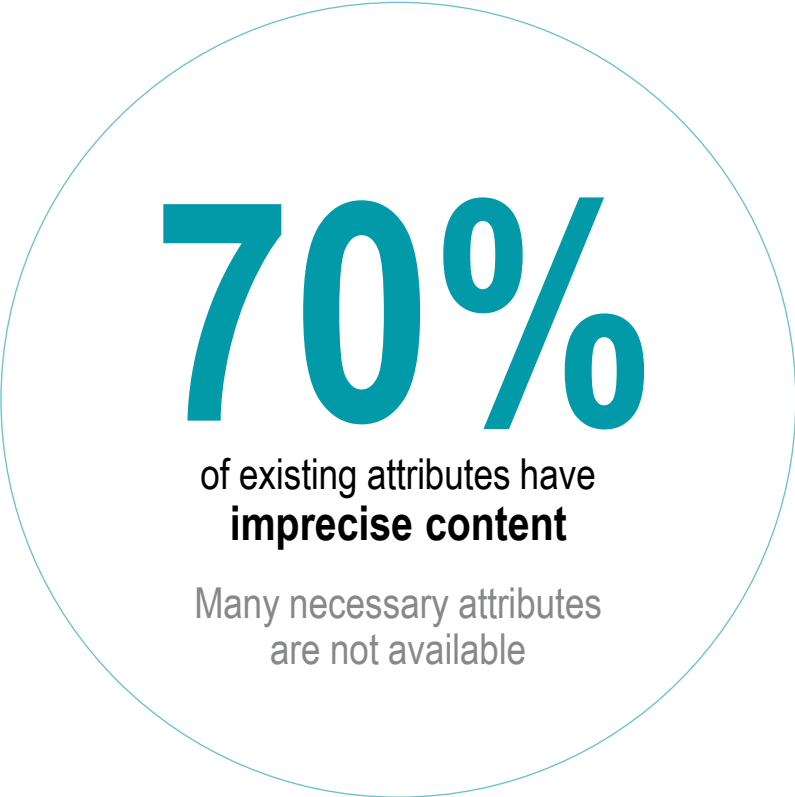
SCAN ME



# KNAPP's history with GS1



**Podcast** The Automation Advantage:  
Revolutionizing Warehouses  
with Quality Data with KNAPP



# WHY

is this story relevant?

# RISKS AND COSTS OF POOR DATA QUALITY

and its impact on your entire business

## ↑ TOP 3 Errors

1. Listing the wrong products
2. Listing inaccurate product attributes
3. Duplicate listings or content

*\*Source: Jason Lavik, Sr. Item Operations Manager, Target*



70% of the data reaching the warehouse is not fit for automation

*\*Source: GS1 Austria KNAPP Case Study, 2019*

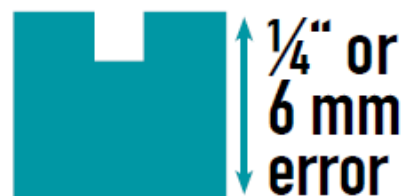
Fixing item data costs up to

**\$ 7 per item**

For 20k items this means

**\$ 150k per year**

*\*Source: Vizient, 2018*



in case height means  
1,000 fewer cases per truckload  
20 fewer cases per pallet  
6 more trucks than necessary

*\*Source: GS1 US Data Quality ROI Calculator, 2016*

**+25%**

Use of inaccurate transactional data can cost up to 25% more in labor

*\*Source: GS1 US Land O'Lakes Case Study, 2017*

Correcting master data in the warehouse takes up to **10 minutes per item.**

Using **KiSoft Genomix**, this is reduced to **30 seconds.**

*\*Source: KNAPP, 2023*



80% of retailers are not confident in their product data

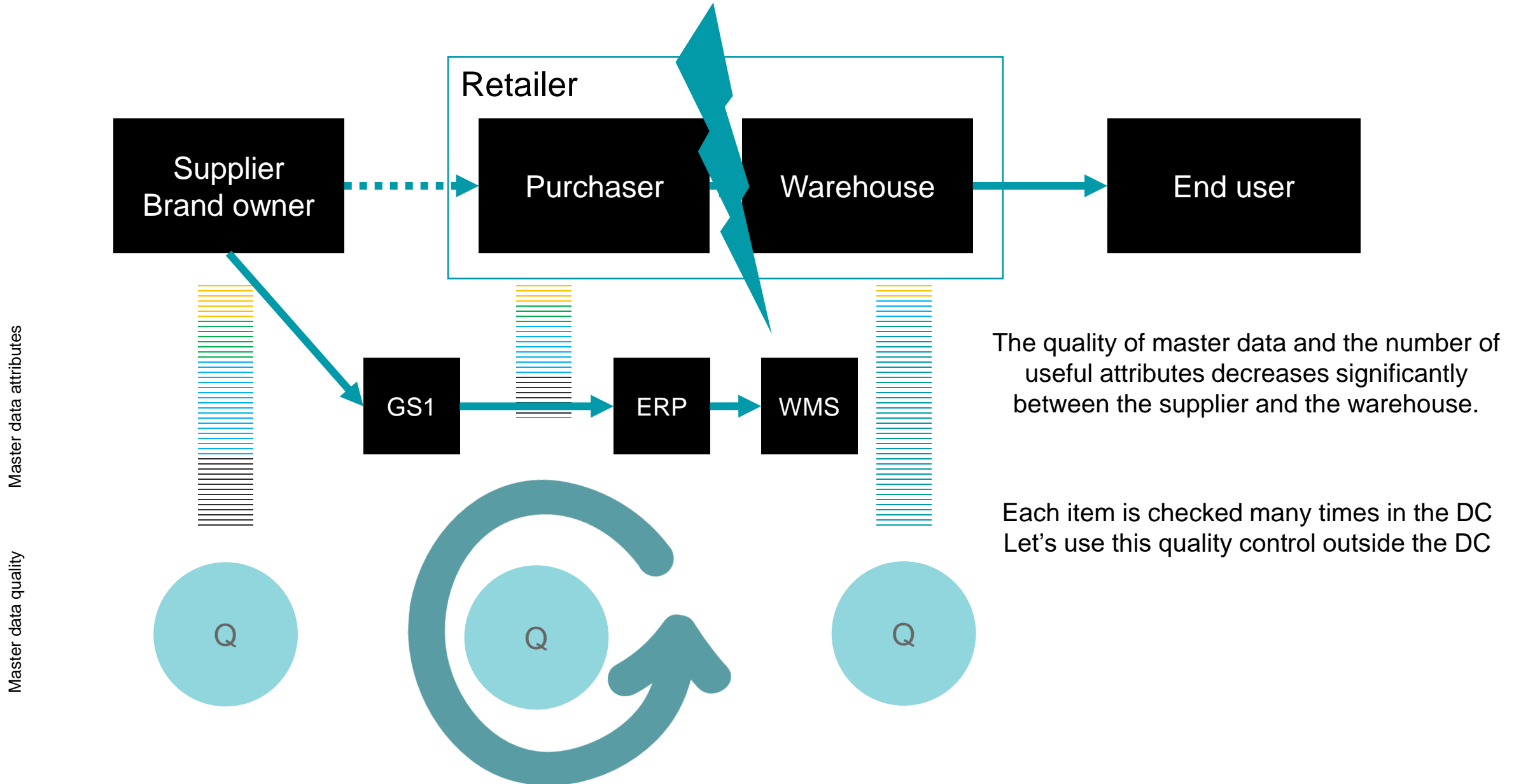
*\*Source: E-retailers beware: 3 perils of unvalidated product information. Internet Retailer, December 2016*

On-site automation expert to manage automation master data costs up to

**\$ 100k per year**

*\*Source: KNAPP, 2023*

# Build the bridge, close the gap using structured data sharing

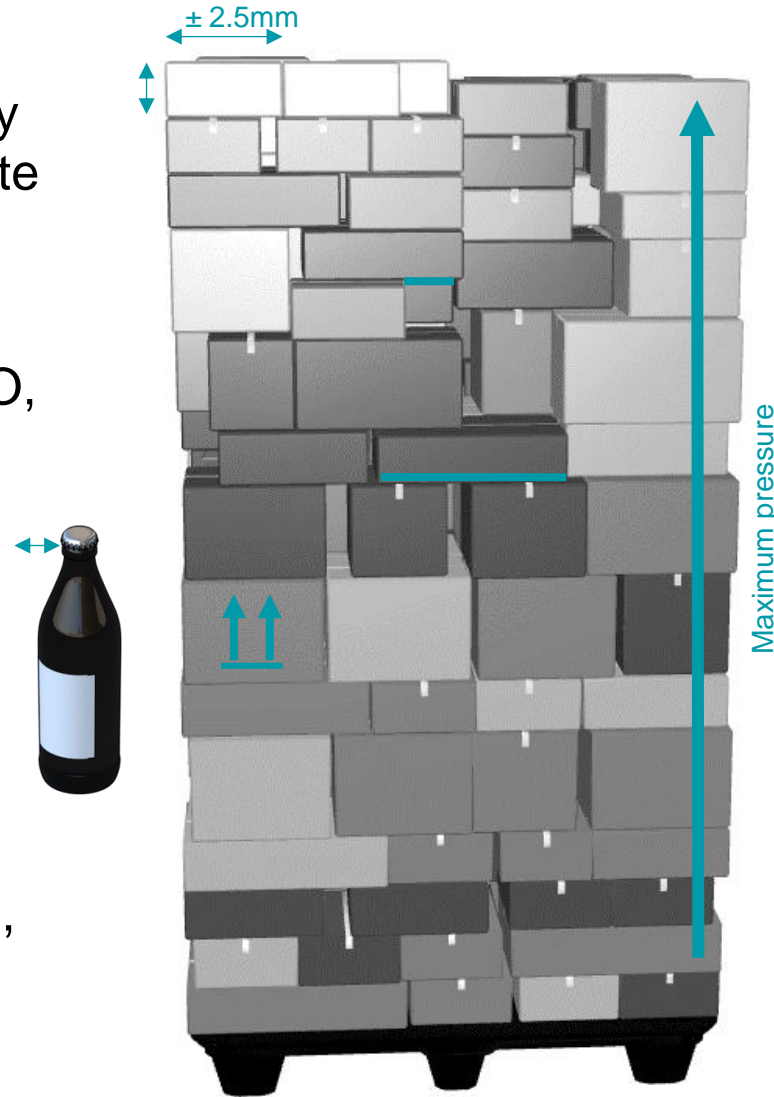


# HOW

does this affect my supply chain?

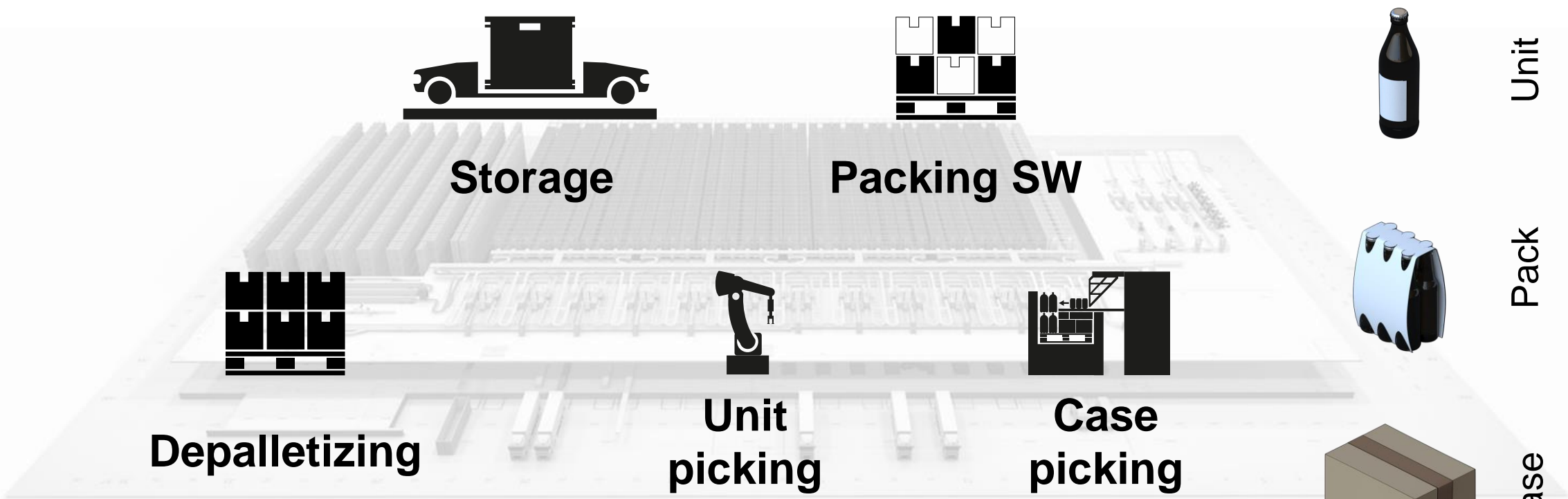
# Over 60 attributes necessary for automated mixed palletizing

- Dimensions and Weight
  - Accuracy < 5mm necessary
  - Better shuttle and tray fillrate
- Packaging type
  - Shrinkwrap, Big bags, IFCO, Carton ...
- Narrowing
  - Stability in packing pattern
- Tilttable
  - Better shuttle fillrate, flexibility in packing pattern, Height/width ratio for conveyor stability



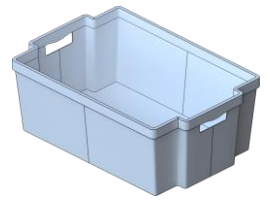
- Transparent
  - Sensor efficiency
- Crushability
  - Pallet stability, prevent damage
- Depal program
  - Prevent damage
- Friction
  - Automation efficiency, prevent damage

# Automation in a nutshell

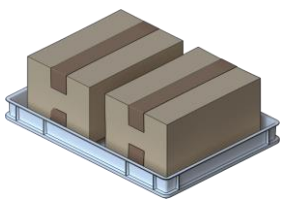


**Hierarchical level  
& Packaging classes**

## Load carriers



Tote

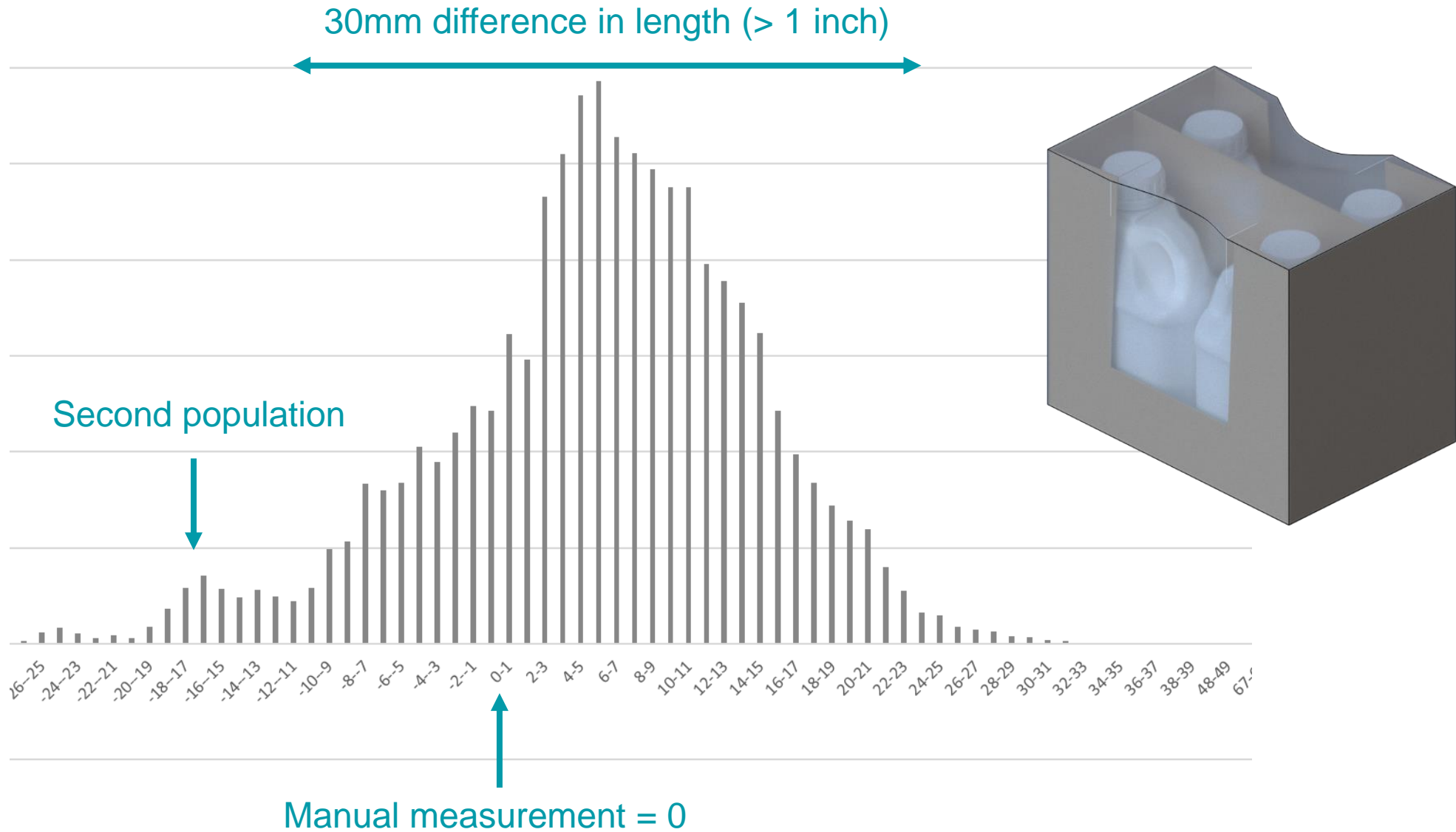


Tray



Pallet  
RC

# What does accurate really mean?



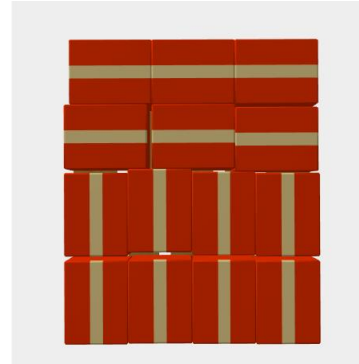
# Level of accuracy in automation

0.0787402 inch

2 mm



# What if the data is not accurate?



# What if something changes?

	Production system	OK?	Reason
1.	Pallet conveyor	Yellow	Transport not a problem, pallet remains stable. However, side edge protectors should be used to prevent premature loosening of the cardboard sleeve.
2.	Highbay	Green	OK, if pallet conveyor is OK.
3.a.	Automated decanting incl cutter	Red	Article cannot be automatically decanted because it cannot be tilted. A cutter can damage cans, causing liquids to escape.
3.b.	Automated depalletising	Green	Paper wrap can be depalletized. Paper pack can be depalletized.
4.	Descrambling	Yellow	Descrambling is possible if paper wrap is tight. See also 6.b. conveyor.
5.	Traymerge	Green	OK
6.a.	Tray conveyor	Green	OK
6.b.	Conveyor (roll, belt)	Yellow	Shrinkwrap or tray may loosen up if stretched too much, cans can
7.a.	Shuttle system (OSF)	Green	OK
7.b.	Miniload	Green	OK
7.c.	Lift	Green	OK
8.	Orientation line	Yellow	See 6.b. conveyor
9.a.	Automated picking Typ I RUNPICK	Green	OK
9.b.	Automated picking Typ II Robot arm (suction or clamp)	Red	Article cannot be sucked in individually.
9.c.	Automated picking Typ III PIER	Red	No, neither CASE nor UNIT can be sucked in from above.
10.	Manual picking	Green	OK
11.	Wrapper	Yellow	OK, but wrapping plastic too tightly can damage the paper wrap, which can lead to problems during picking in the store.
12.	Automated cartising	Green	OK
13.	AGV (open shuttle)	Green	OK

Reduce shrinkwrap and plastics

**WHAT  
can I do?**

# Reduced Packaging Volume and Weight

## PPWR

### *Packaging and Packaging Waste Regulation*

The PPWR prohibits packaging from being larger or heavier than necessary and sets a maximum empty space ratio of 50% for collective, transport, and e-commerce packaging by 2030. This will push retailers and brand owners to optimize packaging sizes.

## EUDR

### *EU Deforestation Regulation*

If packaging is made from wood or wood-derived products (like paper and paperboard)

## ESPR & ESG

### *Ecodesign for Sustainable Products Regulation & Environmental, Social, and Governance*

- Material selection
- Design for circularity
- Waste Management
- Carbon Footprint

# Right-sized Packaging Automation

This will drive the adoption of automated packaging systems that can "right-size" packages based on product dimensions, minimizing void fill and material usage.

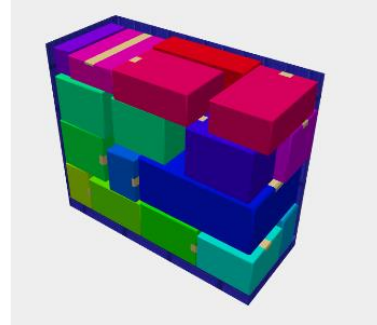


<https://www.packsize.com/>

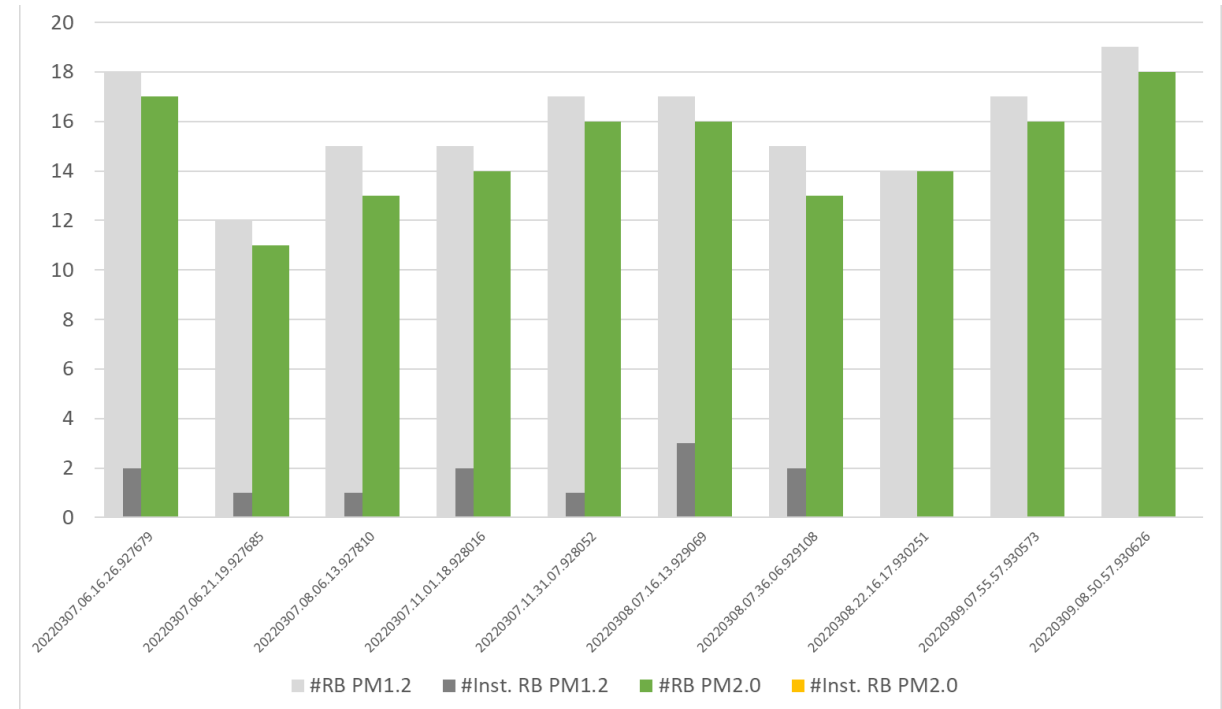
**But they will need additional master data in the right quality for that!**

# Impact on Storage Density

Focus shift: from Steel to Software



Smaller, more efficient packaging can lead to higher packing density in racks and shipping containers, potentially improving storage capacity and space utilization within warehouses and the shipping of less air.



# Other topics

## EWP

### *Einwegpfand/deposit regulation*

The deposit system for single-use drinks containers made from plastic and metal is introduced in Austria on January 1, 2025 and poses significant logistical challenges

### **Packaging from recycled material**

Focus is on plastic pallets made out of 80% recycled granulate, which have a longer life cycle than wooden pallets, especially in automation



# Example SPAR - What makes it so special?

- A fully **planted roof** with small biotopes that blends harmoniously into the surrounding landscape and bird sanctuary
- A **parking lot made of grass pavers**, where even a parking space has been omitted to preserve an old tree
- An assortment of **around 8,000 items on 400 m<sup>2</sup>** that leaves nothing to be desired - with a focus on freshness and regionality
- A modern walk-in refrigerator for drinks that ensures **constant temperatures and contributes to efficient cooling**

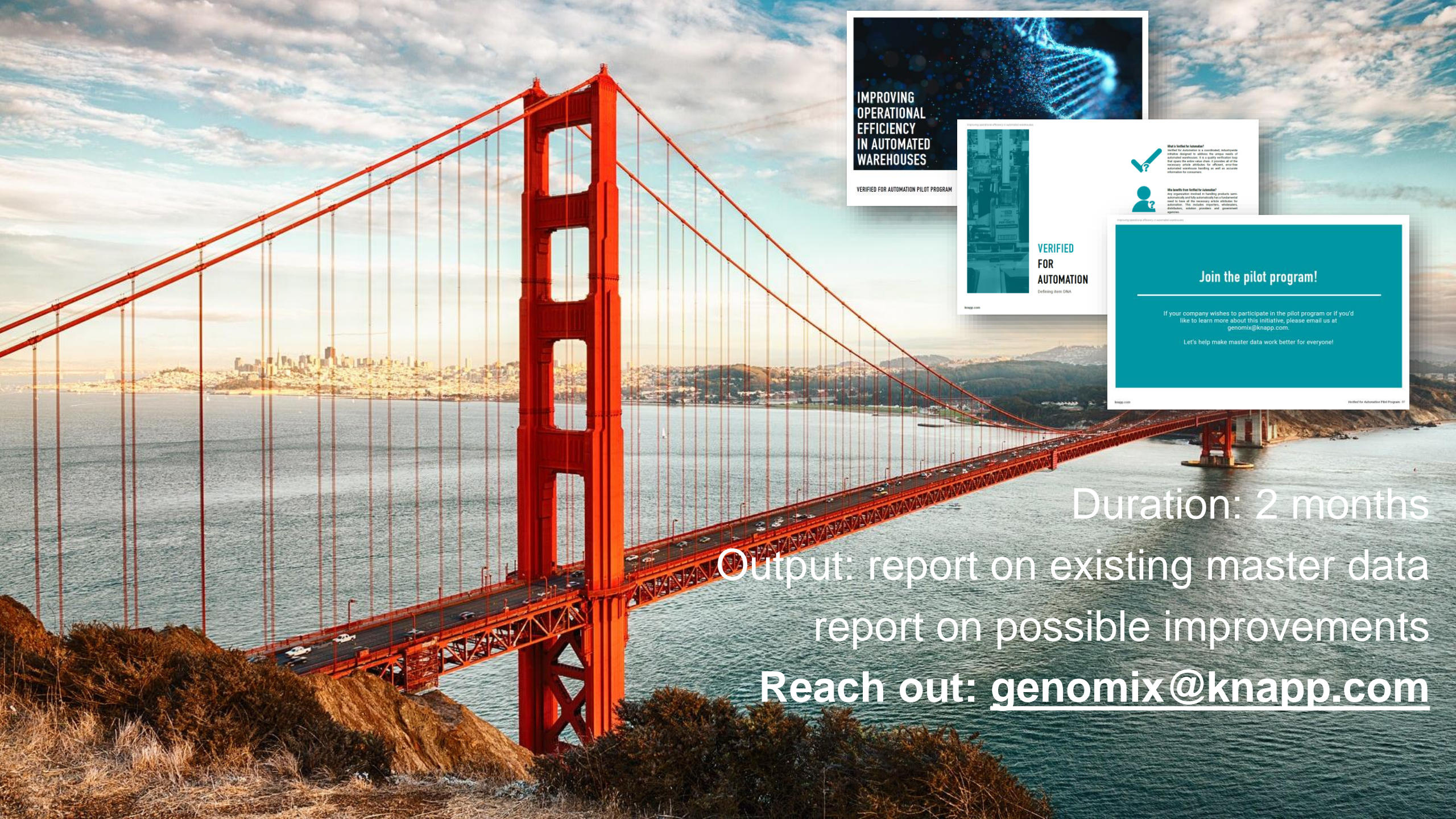


# Loop that could support the Strategy

Over **30%** of all GDSN attributes are necessary to obtain **all** automation attributes

Data **completeness** and data **accuracy** are imperative

**IF all GDSN data is complete and correct, we could deduct necessary automation master data**



**IMPROVING OPERATIONAL EFFICIENCY IN AUTOMATED WAREHOUSES**

VERIFIED FOR AUTOMATION PILOT PROGRAM

**VERIFIED FOR AUTOMATION**  
Defining Item UTM

**What's verified for Automation?**  
Verified for Automation is a coordinated, industry-wide initiative designed to address the unique needs of automated warehouses. It is a quality verification tool that spans the entire value chain, from the manufacturer to the retailer, to ensure that automated warehouse handling is well-informed and accurate.

**Who benefits from verified for Automation?**  
Any organization involved in handling products, from manufacturers and 3PLs to retailers and fulfillment centers, can benefit from verified for Automation. This includes suppliers, manufacturers, distributors, retailers, producers and government agencies.

**Join the pilot program!**

If your company wishes to participate in the pilot program or if you'd like to learn more about this initiative, please email us at [genomix@knapp.com](mailto:genomix@knapp.com).

Let's help make master data work better for everyone!

Duration: 2 months

Output: report on existing master data  
report on possible improvements

Reach out: [genomix@knapp.com](mailto:genomix@knapp.com)

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# Thank you!

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# GS1 INTERACT



**Antoine  
Bourely**  
Co-founder  
PELLENC ST

## SUSTAINABILITY UNVEILED

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**Alice Rackley**  
CEO and co-  
founder  
Polytag

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A background image of a waste sorting facility. It shows a conveyor belt with various pieces of waste (plastic, paper) moving through a series of yellow and blue sorting machines. The machines have "PELLENC ST" and "MISTRAL" branding. A large yellow and blue circular graphic is overlaid on the left side of the image, containing the main title and speaker information.

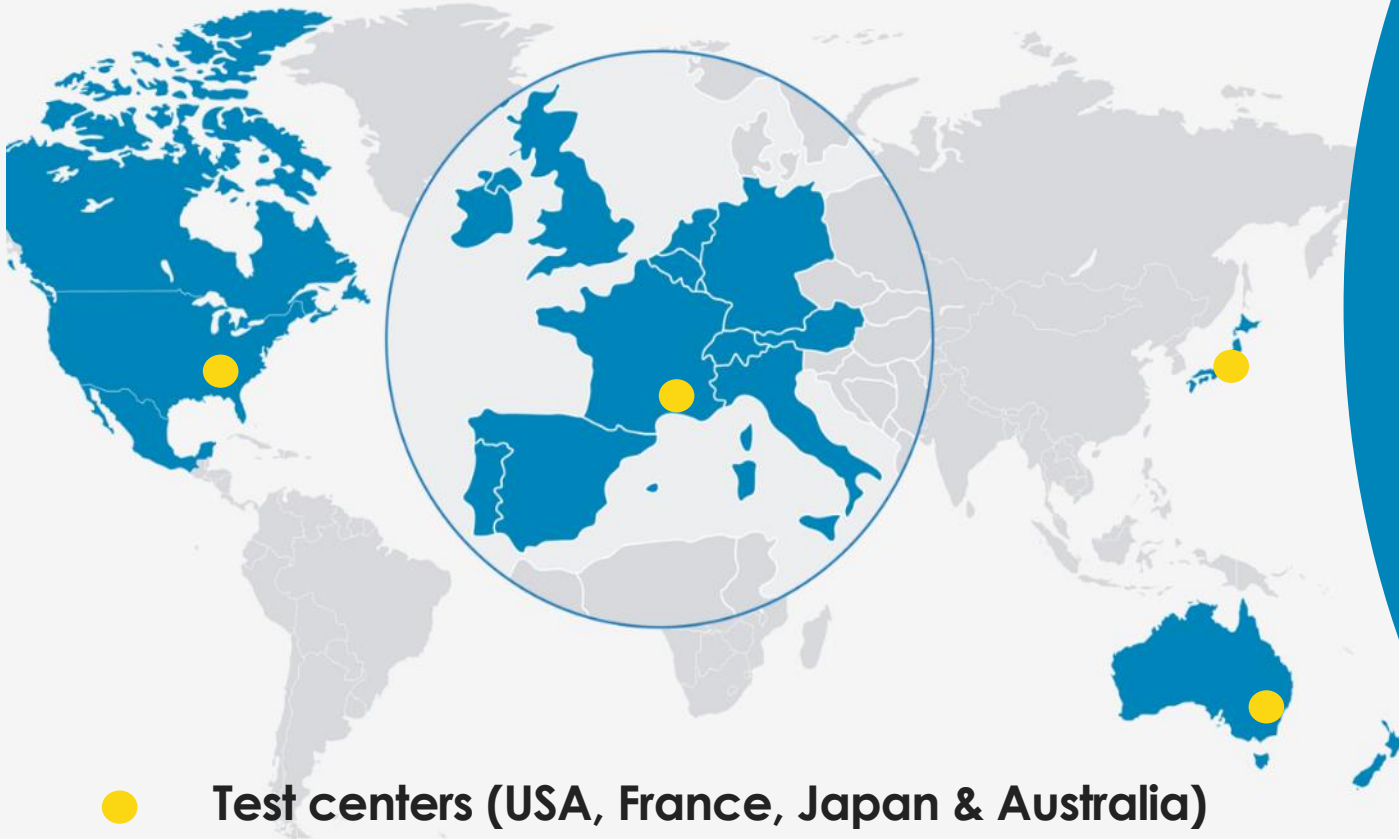
# How Can UV Watermarks Unlock Secondary Sorting for Circularity

ANTOINE BOURELY, CHIEF SCIENTIFIC OFFICER

GS1 INTERACT, AMSTERDAM, 25 JUNE 2025



## PELLENC ST: An Industrial Partner with start-up spirit!



**3000 optical sorters installed**

**2001**  
YEAR FOUNDED

**81 M€**  
2024 TURNOVER

**270**  
EMPLOYEES

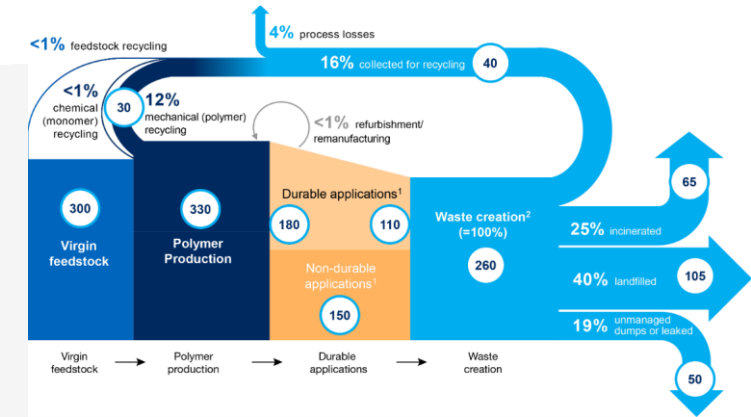
**+15%**  
CAGR  
SINCE 2013

**600**  
SITES IN 40 COUNTRIES



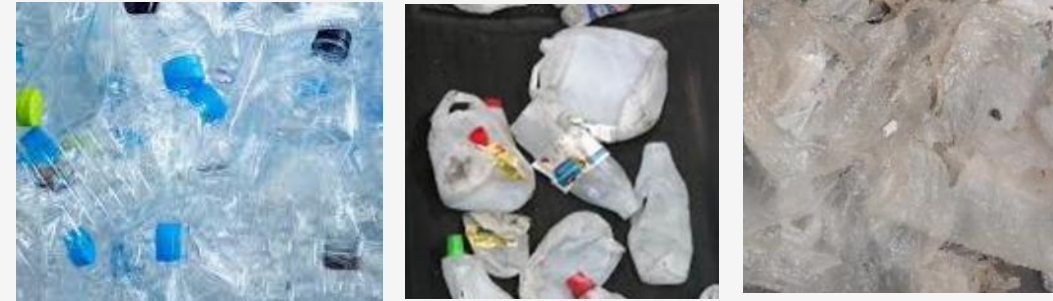
# Circularity State of Play

## World plastic production 2018



### Some products are circular:

- Clear PET for drink bottles (**best case ≈ 25%**)
- Colourless HDPE for milk bottles (UK)
- Clear unprinted PE films



### But many are downcycled:

- Coloured PET bottles → insulation material
- Most PET trays (especially multilayers)
- HDPE and PP rigids → garden furniture, pipes...
- All printed, coloured and multilayer flexibles → incineration or pyrolysis





## PPWR Ambitious Targets and Implications

- Recycled content targets for 2030
- > 30% for PET plastic bottles;
  - > 10% for contact sensitive packaging (non PET)
  - > 35% for other packaging
- Recycling rate target for 2035
- > 55%

### High recycled content and quality recycling need high granularity:

- Sort by **usage**: food, cosmetic, detergent, hazardous, other
- Route each package to the **best recycling technology**:  
Deinking, delamination, extraction, dissolution,...

Sorting is controlled by **recycling attributes**,

Mostly not provided by NIR/VIS => markers or AI are needed



Example: Dissolution => Clear PP



# How to sort by recycling attributes

## Fluorescent tracers (2006-2024)

Up to 4 inks

Limited encoding (15 products)



## Digital Watermarks

(2015-today)

No ink needed

Printing pattern modified

SKU level identification

Proprietary design



Looks like this



Performs like this

## Machine vision with Artificial Intelligence

OK for rigids

(shape, colour,

Labels are relevant)



Food vs non-food PET bottles

Not OK for flexibles





# The Holy Grail 2.0 Project



## Prototype development

2021

Digimarc **Digital Watermarks**

module combined  
with Mistral+ Connect



## Semi-industrial Tests

Sept 2021 – March 2022

Prototype tested in  
Copenhagen

125,000 samples from 260 SKUs

Sorting ≈ 95%



## Industrial Tests 2023-2024

Two sites: Verdun (FR), Hündgen (DE)

**5.5 millions post-consumer  
objects sorted**

**5000 SKUs** identified

Sorting ≈ 90%



# How to Save A Much Needed Idea?

Holy Grail had **outstanding technical results**

But it was completed in 2024, not 2022 as planned, and many brands have left:

- AI was one competitor,
- but the main risk was the lock-in with one supplier: not acceptable for most brands

## **Polytag's bright solution:**

a smart compromise between tracers and digital watermarks

Uses UV fluorescence to become independent of the artwork

Directly **writes the GTIN (bar code) into a GS1 Data Matrix**

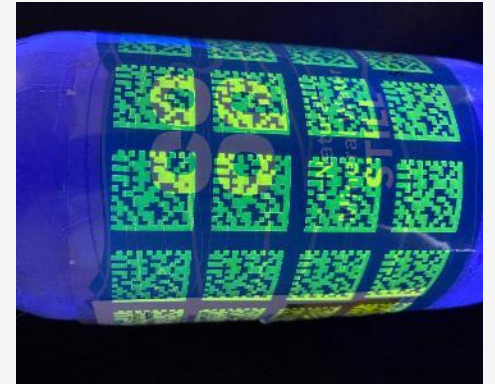
Unlike tracers, one UV ink is used, not more

Unlike digital watermarks, the pattern is written in clear form

with a proper lighting, it can be read with any smartphone

→ **No risk of lock-in with one supplier**

Bonus: **simpler** and cheaper technology





## UV Watermarks: Sorting Performance

Pellenc ST and Polytag have built a UV watermark module into an NIR sorter

And tested it in Pellenc ST's Innovation Centre

### Machine conditions:

Belt width : 1200 mm Belt speed: 3 m/s

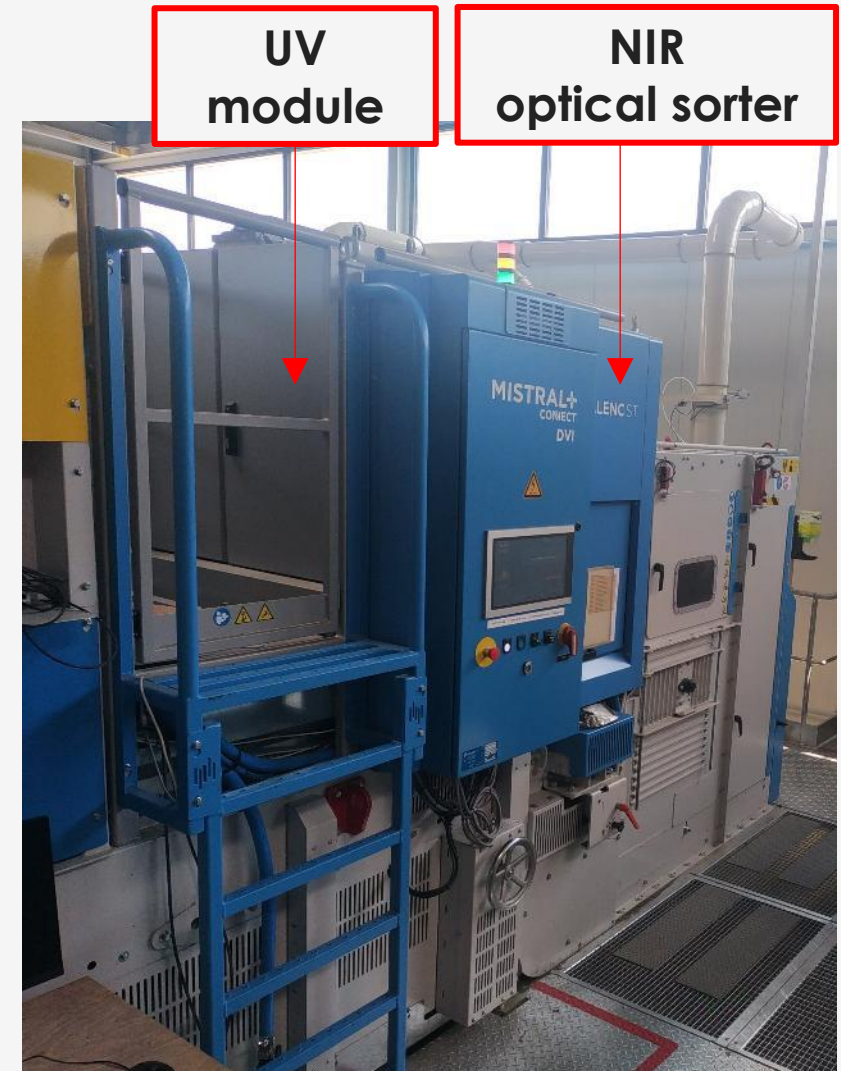
Throughput: 2500 kg/hour

### Test conditions:

50 PET bottles x 5 label types = 250 marked bottles  
mixed with 750 unmarked bottles

Test results:      **Efficiency > 95 %;**      **Purity > 95%**

Next : post-consumer products soon tested





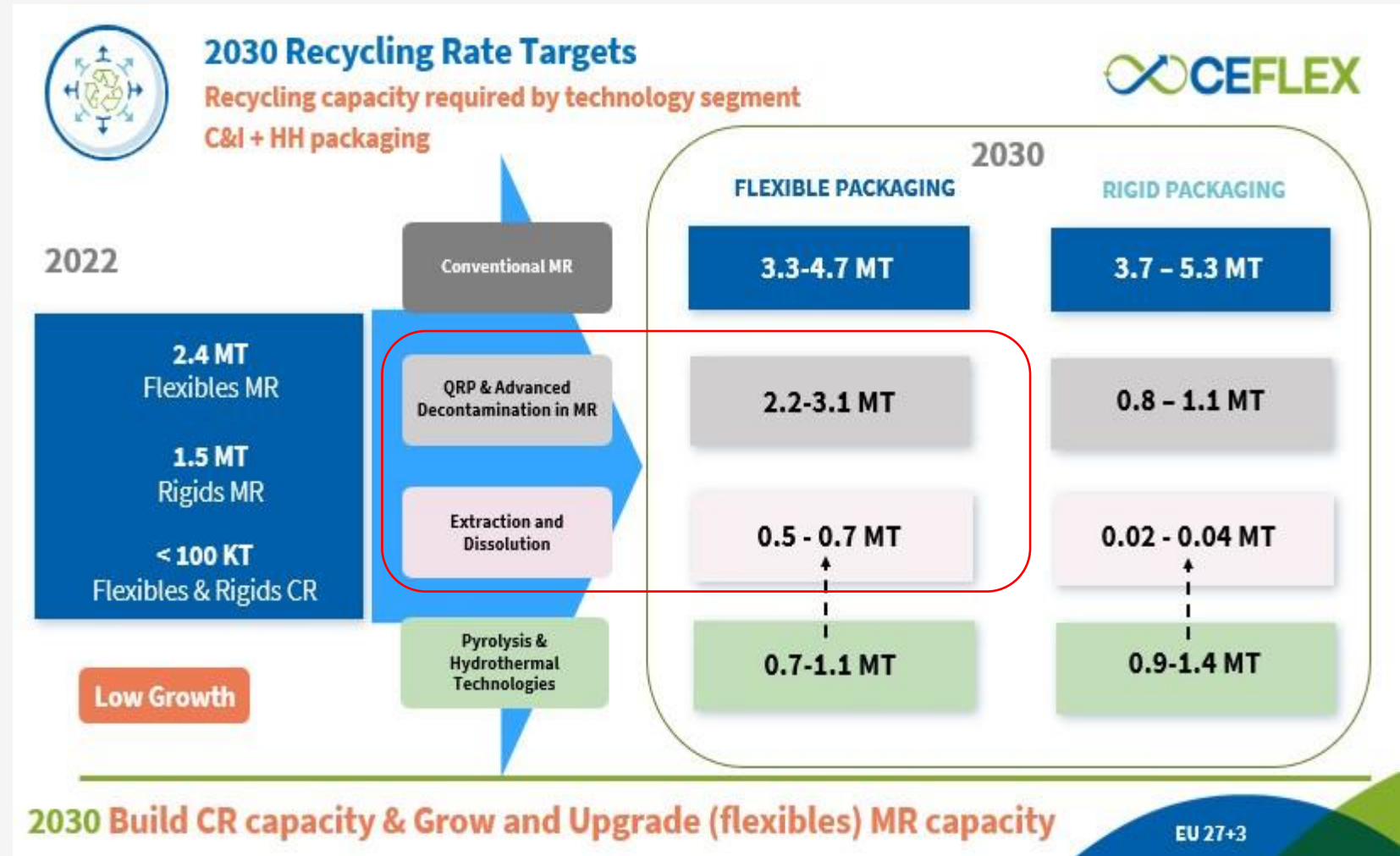
# Use Cases: Zoom on Flexibles (EU + UK)

Reminder : no AI for flexibles

PPWR targets for flexibles:

7 MT vs 2.4 MT to be recycled

**3 MT will use secondary sorting,**  
i.e. (UV) watermarks, to feed  
quality recycling technologies





## Takeaways

- **Circularity** is changing the recycling landscape: **granularity** is needed
- Markers at **SKU level** enable **granularity**, and **traceability**
- **UV watermarks** are a cost effective solution at SKU level
- Since they follow **GS1 open standards**, several suppliers can compete
  
- They unlock circular recycling routes for **millions of tons** in Europe
  
- Polytag and Pellenc ST offer **industrial solutions today**

# GS1 INTERACT

**SUSTAINABILITY UNVEILED**

CONNECTING THE DOTS  
WITH GS1 STANDARDS



# Thank you!

*The slide deck and recording of the session will be shared afterwards*