

((SENSONEO))

IT for managing Bottle Bill collection system

9

countries with our
DRS IT system

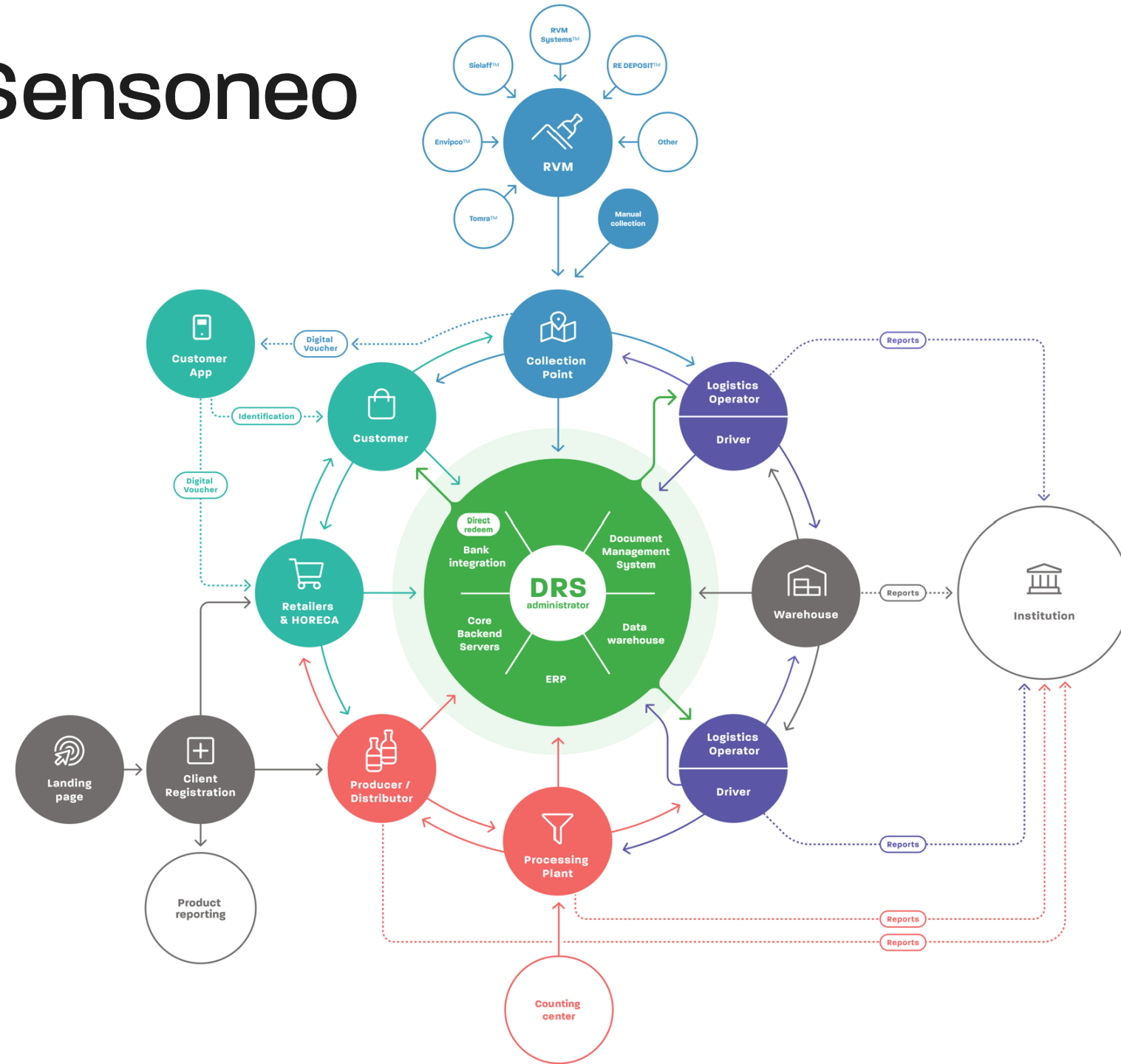


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DRS by Sensoneo



((s)) What to prepare for DRS project & IT



Target
Scope



Timelines



Program
Management



Legislation



Risks



Support



Master data registration

DRS

Company name

Super company

Register stakeholder

✓ Type

2 Details

3 Review registration

4 Submit

5 Agreement

Producer

Change type

Stakeholder details

Producer type

Choose

☒ Producer address is the same as company address
Staré Grunty 12, Bratislava, Slovakia 841 04

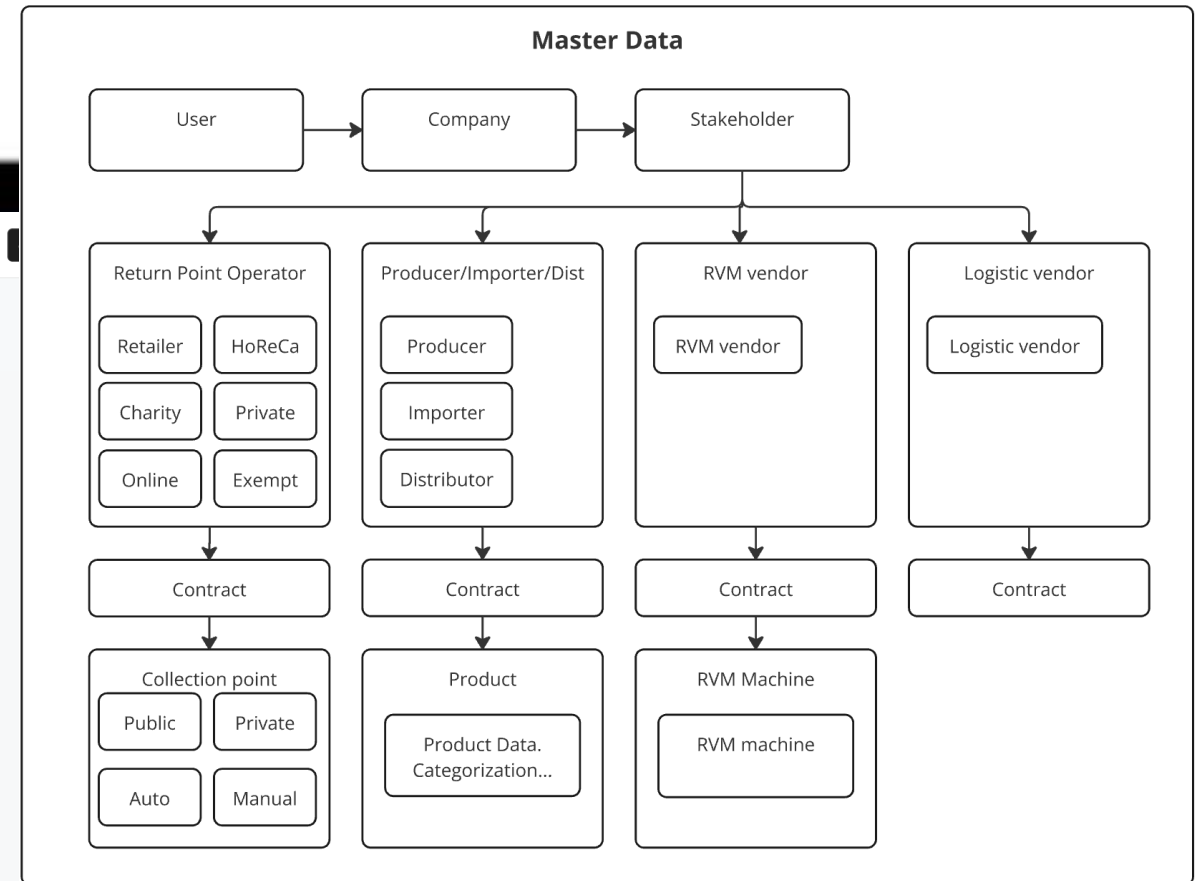
Primary contact

First name

Last name

Company role

Email



RVM & Counting Machine integration platform

Product Whitelist w/properties

Transactions incl. rejects

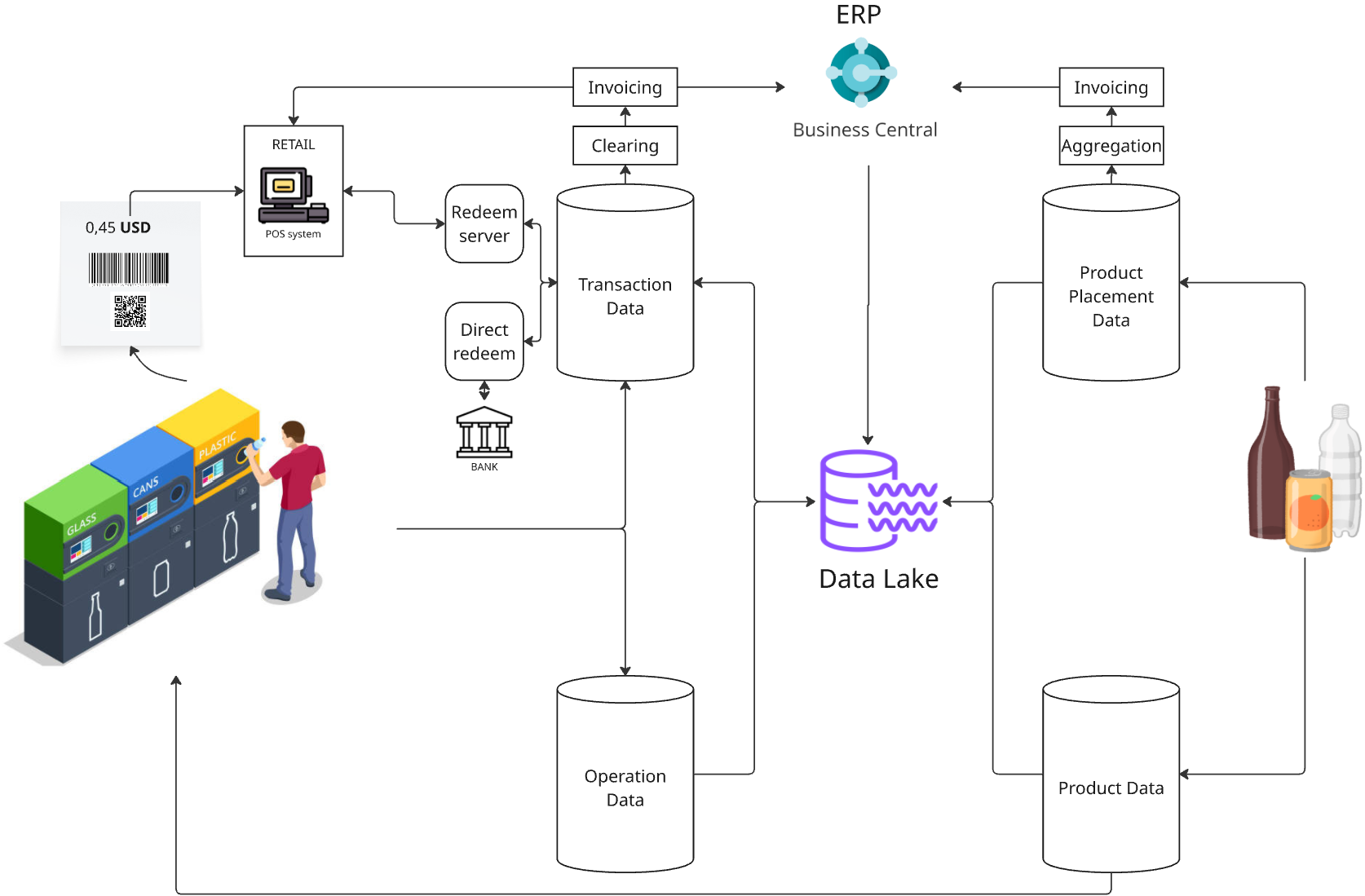
Operational status heartbeat

Daily status

((s))



Simplified data flow



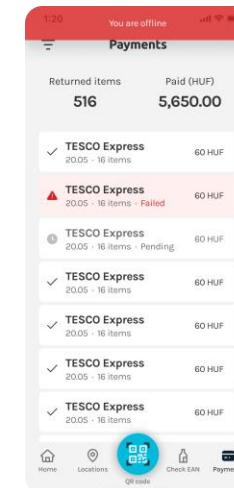
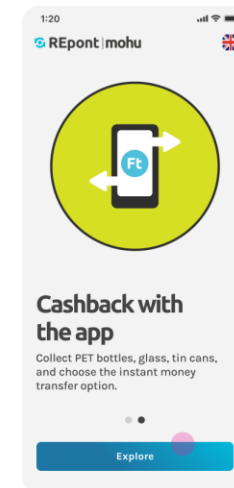
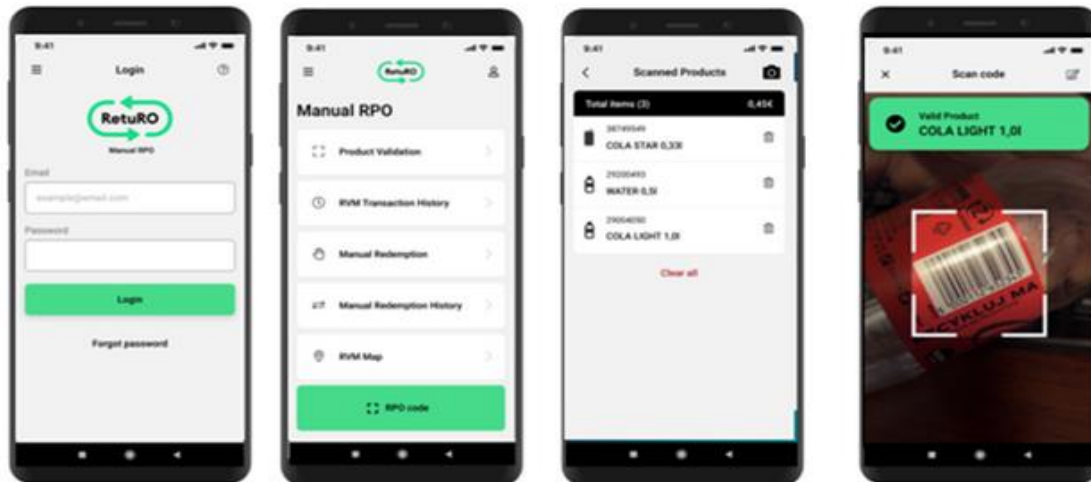
((S)) RPO & consumer mobile applications

RPO:

- Product Whitelist sync
- Product Validation
- Transactions creations & voucher printing (optional)
- Bag closure
- Pick up request (manual or automated)
- Summary report
- Android & iOS versions

Consumer:

- Product Validation
- Map of collection points and availability
- Direct deposit transfer
- Issues reporting
- Android & iOS versions



((s)) Take Back System integration

System prepared for TBS integration

Data received from DRS



User
identity



Registration
data



Transaction
data



Closing
bags data



Counting and
sorting center
data

((s)) With this preparation TBS integration is just about deployment and configuration

Powerful software for all stakeholders



TBS Modules

Portal

Warehouse Management

Order Management

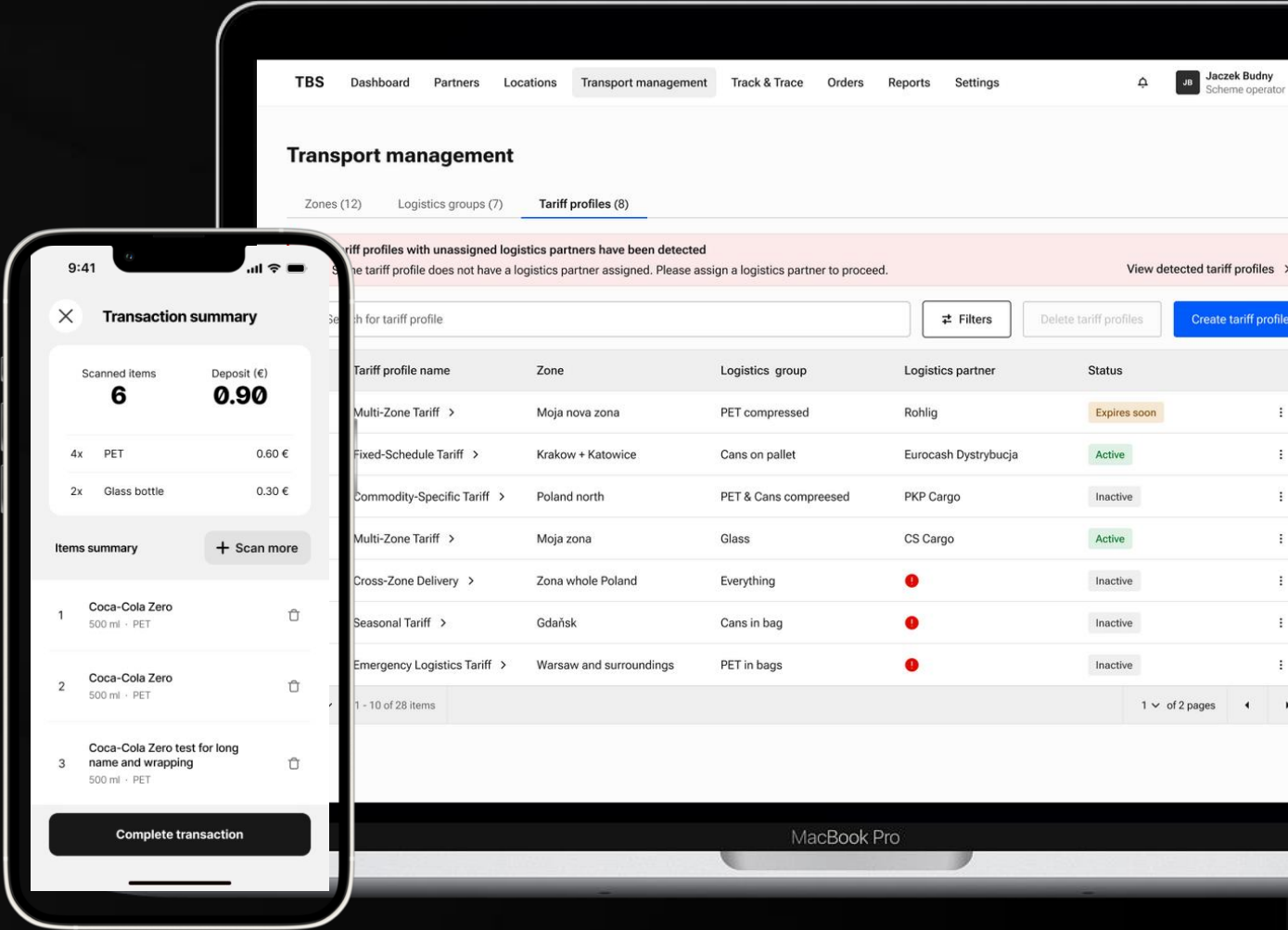
Transport Management

Mobile apps

RPO Collections (RPO App)

Logistics partner (Driver & Warehouse App)

Processing plant (Warehouse App)



((S)) Locations | Storages | Stock

Complete overview of stock

PSK Dashboard Partners Locations **Stock** Track & Trace Reports Settings

Stock

Search for container ID, location, storage... Filters

Cans

In receiving	In stock	Ready	Allocated	Blocked
12 cans	59 bags	46	10	0

Glass

In receiving	In stock	Ready	Allocated	Blocked
12 bottles	48 crates	23	0	0

PET

In receiving	In stock	Ready	Allocated	Blocked
12 bottles	120 bags	100	0	0

Container ID	Location	Storage	Commodity type	Collection type	Container type	Status	Status details
97364778	Central sklep W...	Front Storage	Glass	Manual	Crate	In stock	-
93847987	Lidl Tamka	Backyard storage	PET	Manual	Bag	In stock	Ready
93847987	Wilanow Wisoc...	Backyard storage	PET	Manual	Bag	In stock	-
98273548	Central wareho...	Storage 1	PET	Manual	Bag	In stock	Ready
92732949	Central sklep W...	Storage	Cans	Manual	Bags	In stock	Allocated

Container 92732949

Closed at:	Included in order:	Amount:	Weight:
5.3.2025, 8:12	097497439	56 cans	-

Track & Trace

MacBook Pro

List of Locations belonging to the Stakeholder

TBS Dashboard Partners Locations **Stock** Shipments Reports Settings

Locations 28

Grid view List view Map view

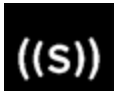
Search input text Filters

Map view showing locations in London:

- Wembley
- Camden Town
- Notting Hill
- Kensington
- Hammersmith
- Greenwich
- Woolwich
- Stratford
- Hackney
- Wood Green
- Walthamstow
- Tottenham
- Woodford
- Ilford
- Barking
- Dagenham
- Erith
- Welling

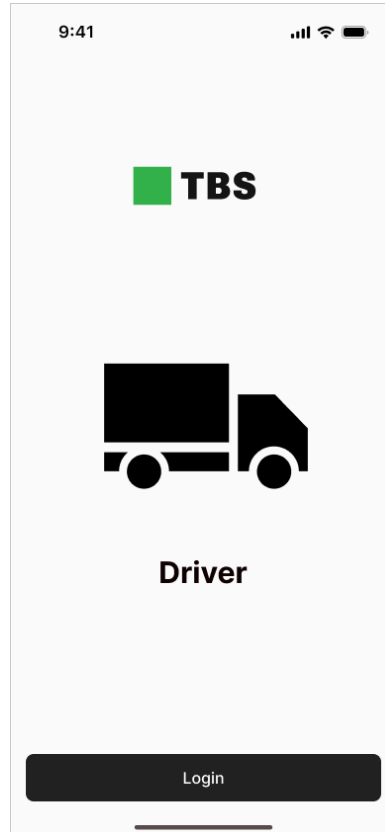
Warehouse

15 Bridge Street, London

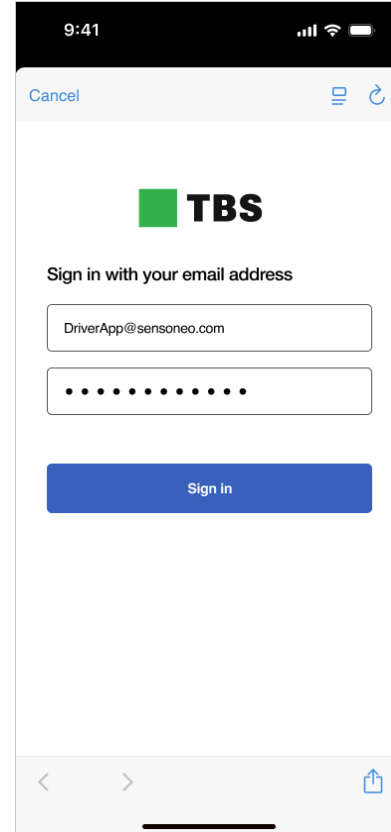


Shipment processing via Driver App

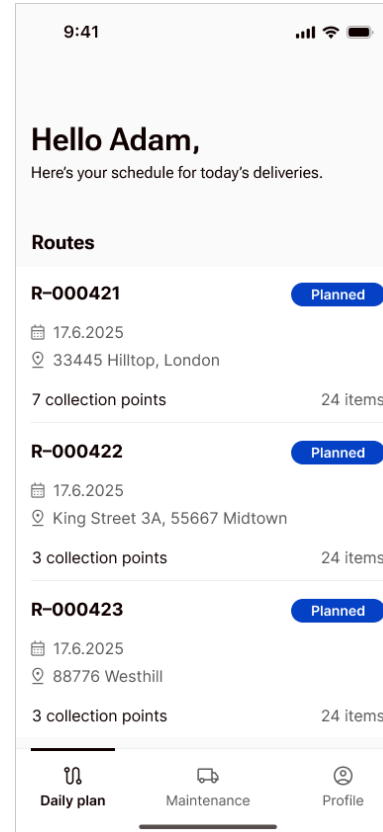
Quick & Secure Login



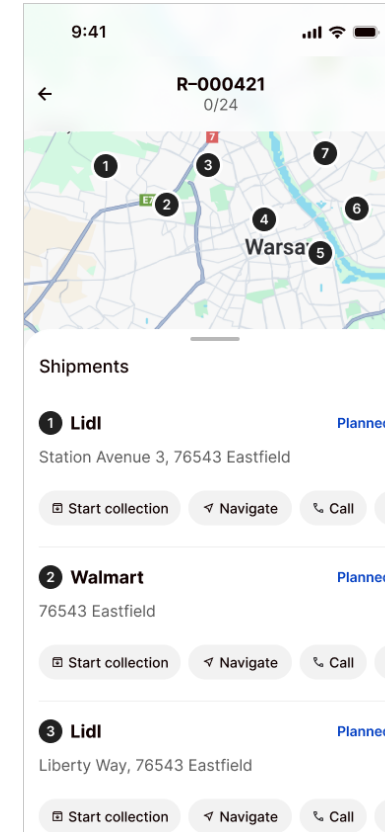
Quick & Secure Login



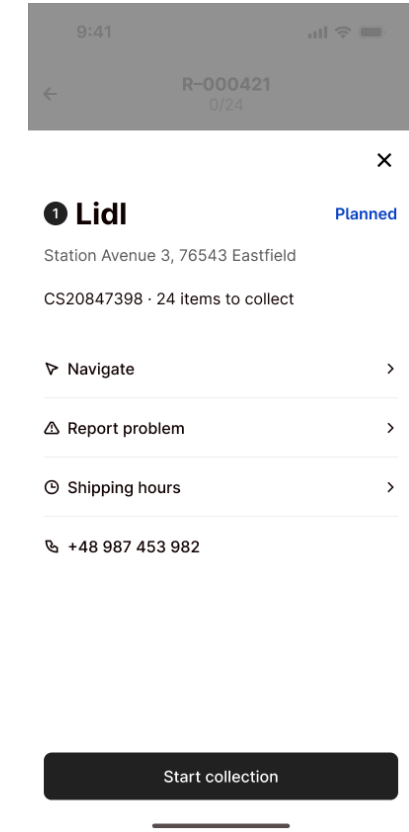
List of Routes



Shipments in Route

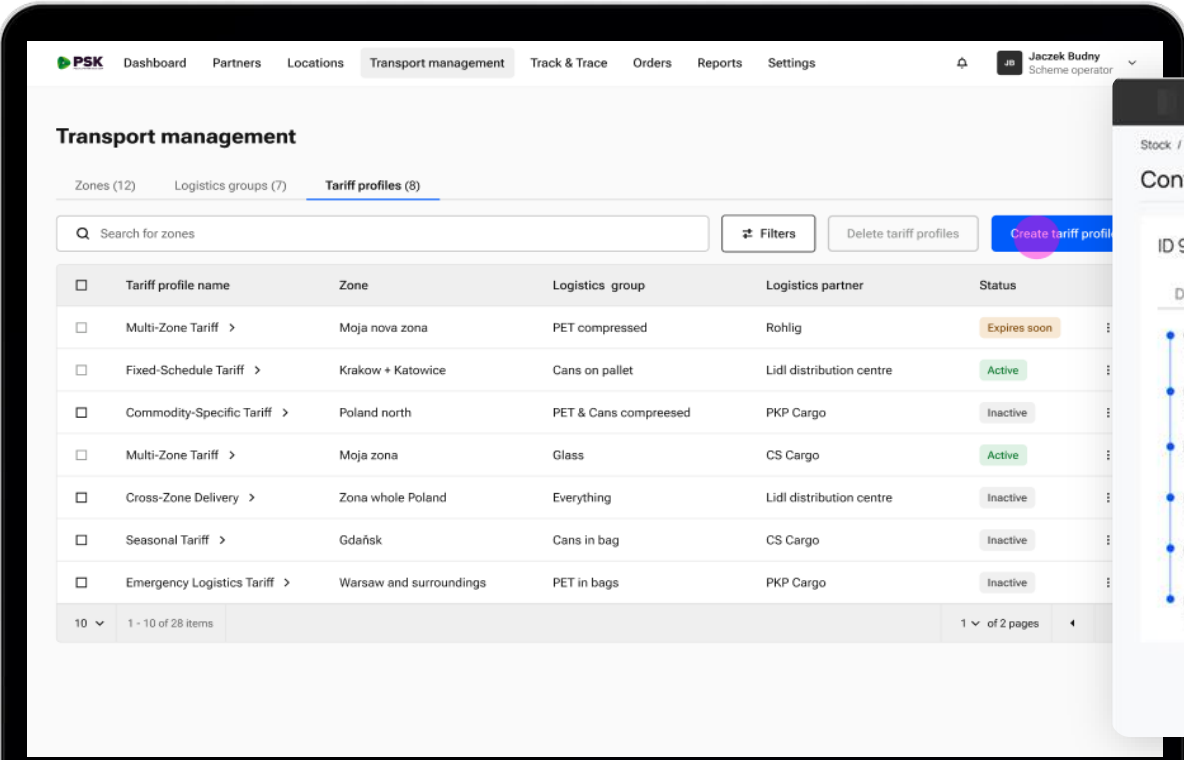


Collection process



((S)) Tariff profiles | Track & Trace

Transport setup through Zones, Log. Groups and Tariff Profiles

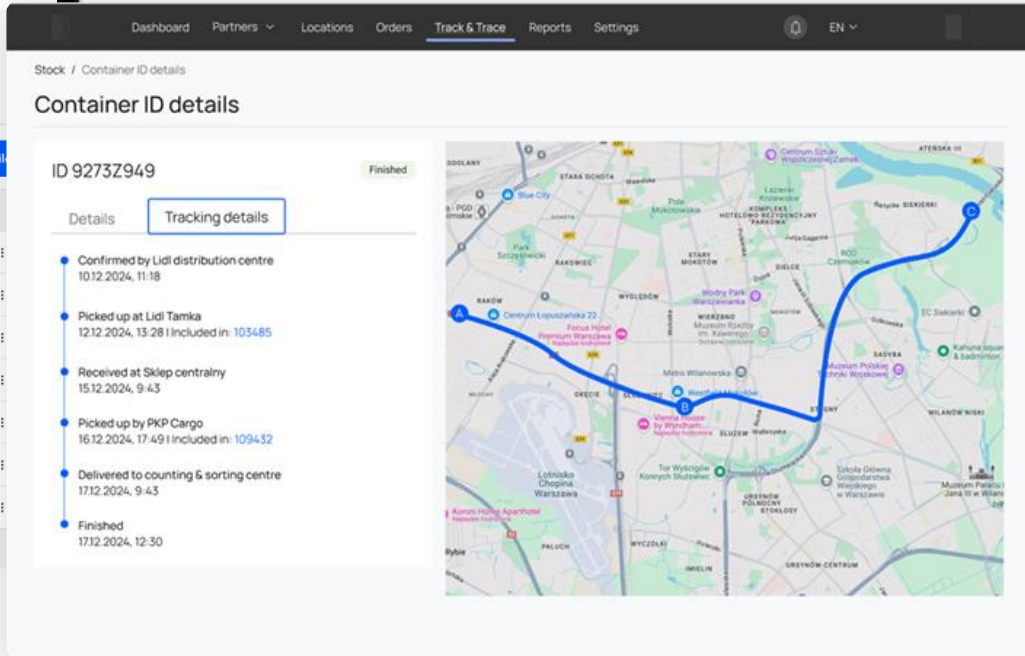


The screenshot shows the PSK Transport management dashboard. The 'Tariff profiles (8)' tab is selected. A table lists various tariff profiles with columns for Tariff profile name, Zone, Logistics group, Logistics partner, and Status.

☐	Tariff profile name	Zone	Logistics group	Logistics partner	Status
☐	Multi-Zone Tariff >	Moja nova zona	PET compressed	Rohlig	Expires soon
☐	Fixed-Schedule Tariff >	Krakow + Katowice	Cans on pallet	Lidl distribution centre	Active
☐	Commodity-Specific Tariff >	Poland north	PET & Cans compressed	PKP Cargo	Inactive
☐	Multi-Zone Tariff >	Moja zona	Glass	CS Cargo	Active
☐	Cross-Zone Delivery >	Zona whole Poland	Everything	Lidl distribution centre	Inactive
☐	Seasonal Tariff >	Gdańsk	Cans in bag	CS Cargo	Inactive
☐	Emergency Logistics Tariff >	Warsaw and surroundings	PET in bags	PKP Cargo	Inactive

At the bottom of the table, it shows '1 - 10 of 28 items' and '1 of 2 pages'.

Tracking of the collected commodities



The screenshot shows the 'Container ID details' page for container ID 9273Z949. The 'Tracking details' tab is selected. A timeline shows the container's journey from confirmation to delivery and finally to a finished state. A map on the right shows the route.

Container ID details

ID 9273Z949

Details | Tracking details

- Confirmed by Lidl distribution centre 10.12.2024, 11:18
- Picked up at Lidl Tamka 12.12.2024, 13:28 | Included in: 103485
- Received at Sklep centralny 15.12.2024, 9:43
- Picked up by PKP Cargo 16.12.2024, 17:49 | Included in: 109432
- Delivered to counting & sorting centre 17.12.2024, 9:43
- Finished 17.12.2024, 12:30

The map shows the route from the Lidl distribution centre (A) to the Lidl Tamka (B) and then to the PKP Cargo (C) and finally to the counting & sorting centre (D).

Addressing Fraud in DRS Schemes

Protecting system integrity

((S))



A **key challenge** for North American Deposit Return Systems is the **rising threat of fraud**, which undermines both financial stability and data integrity.

These vulnerabilities demand proactive measures to protect the future of recycling programs and sustain public trust.



((SENSONEO))

We stand as a recognized European **leader in DRS IT solutions**, with successful implementations across 9 different countries.

We can help North American DRS programs strengthen fraud prevention and system integrity even in existing schemes.

Estimated % of fraud's rates

< 1 %



1-3 %



2-5 %



Estimated scale of fraud losses

\$ 300 - \$ 500 mil. / year



((s)) The Hidden Costs of DRS Fraud

Common Fraud Schemes



Out-of-state container redemption



Counterfeit barcodes



Non-deposit container redemption redemption



Multiple redemptions redemptions



Organized large-scale fraud fraud

Financial & Integrity Impact



Financial leakage



Data distortion



Eroded public trust

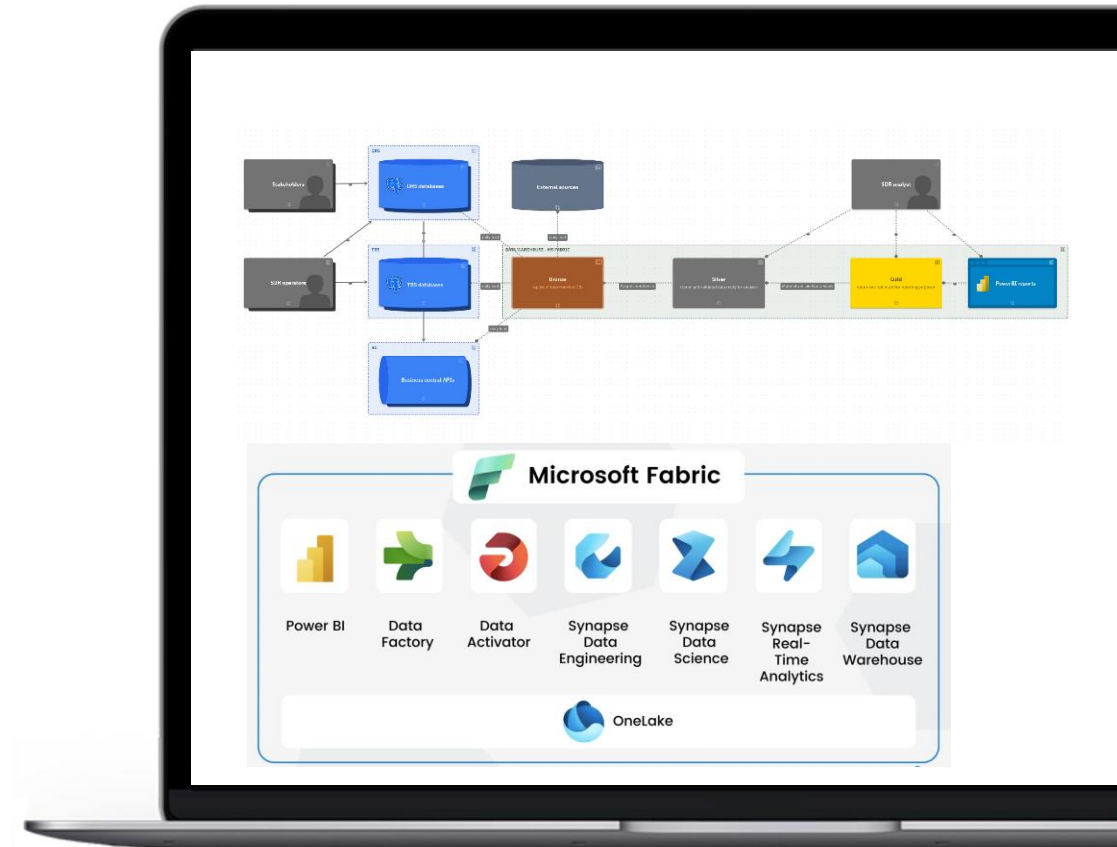


System reliability risk

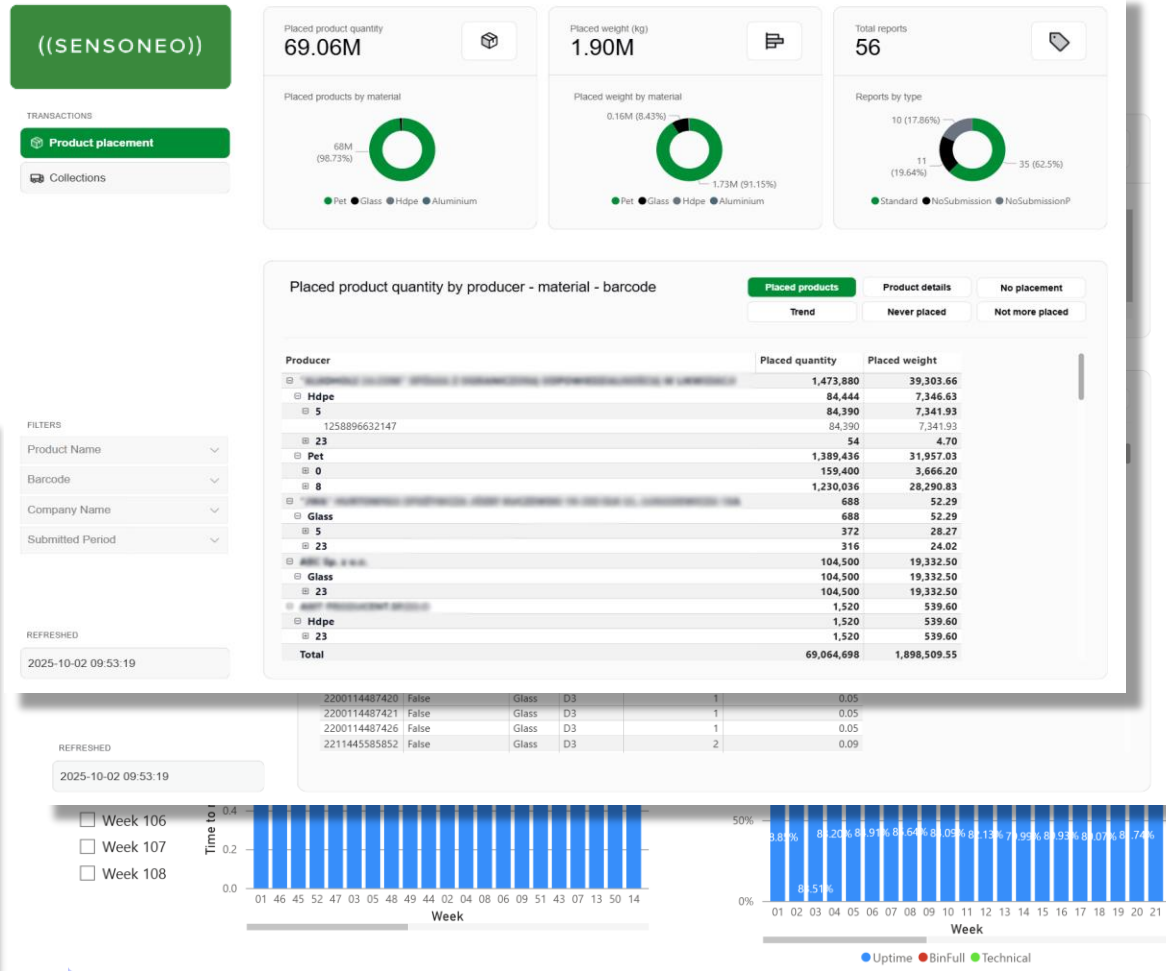
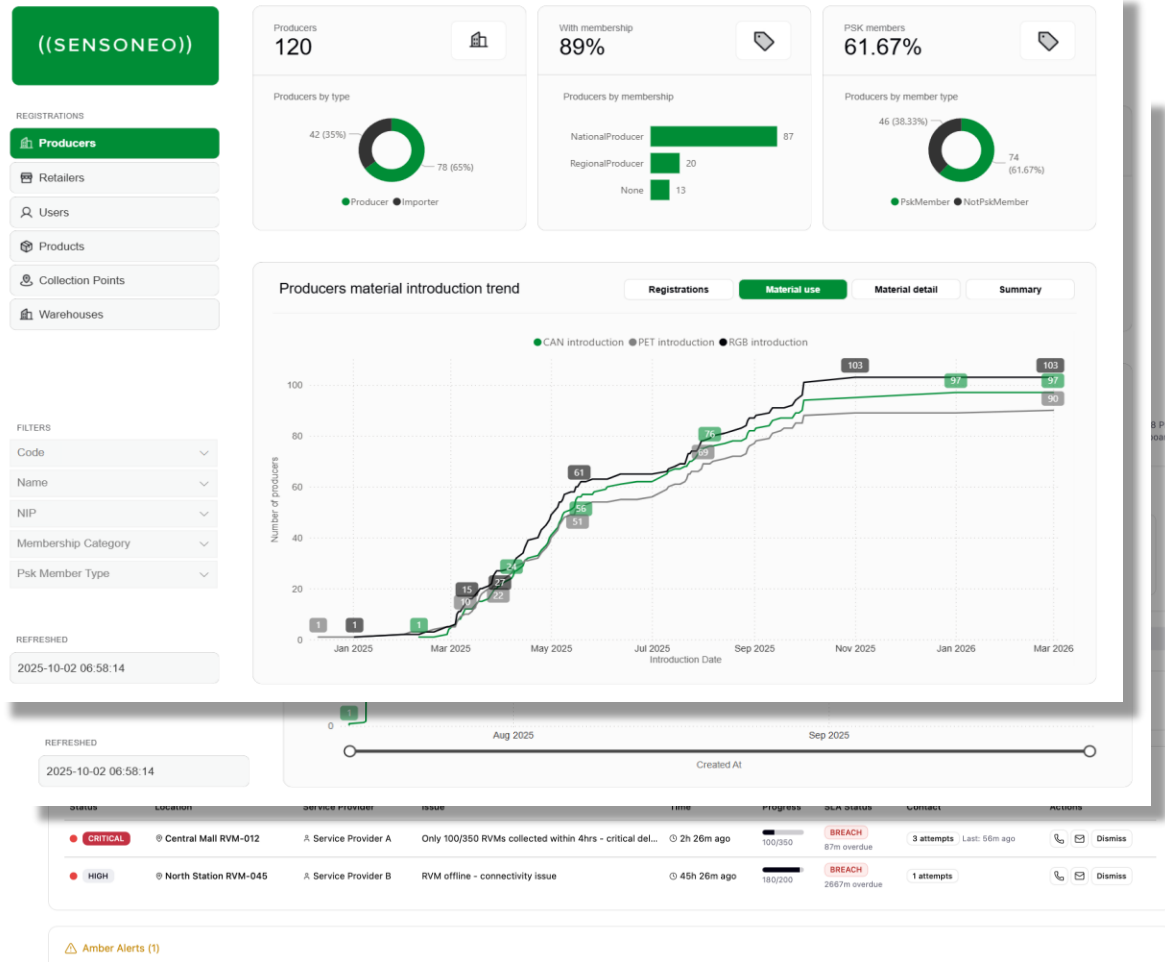
Fraud prevention is essential for maintaining the economic viability and public credibility of any Deposit Return System

Our Lessons in Fraud Prevention

- 1 Immediate Intervention:** Real-time alerts enabling rapid investigation and response
- 2 Pattern Recognition:** Automatic detection of suspicious activities and return patterns (ML & AI powered)
- 3 Data-Driven Auditing:** Proactive fraud detection through sophisticated analytics
- 4 Secure Digital Marking:** Advanced digital watermarks or that prevent counterfeiting
- 5 Digitalization as a Shield:** Centralized real-time IT systems with unique container serialization

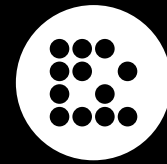


((S)) Advanced Analytics & Services



Smart DRS

Simpler, affordable, more secure and AI-powered Deposit Return System



**Smart
DRS**



ZÁKAZ VSTUPU
TU NEZABÍJEJTE VÝSTUP

Challenges of standard RVM based systems

Beverage Producers



- Industry fee
- Production cost
- Clean material availability
- Tethered caps

DRS Operators



- High investment in counting centers
- Fraud
- Unprecise data

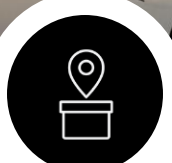
Understanding the repetitive challenges of traditional DRS, built on experience, skills, and know-how from implementing DRS IT systems in 9 countries worldwide.

Consumers



- Uncompressed container
- Air storing and transporting
- Long queues

Collection Point



- High investment in RVMs
- Limited space for RVMs
- Fault ratio of RVMs
- Employees' overload
- Customer satisfaction





Unique Container ID



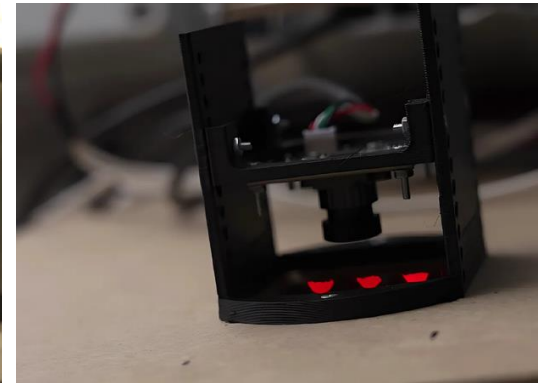
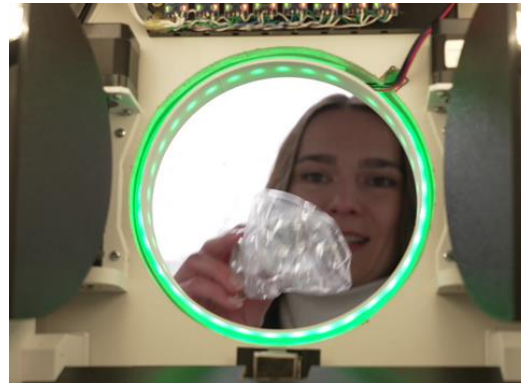
Bottle vs Consumer



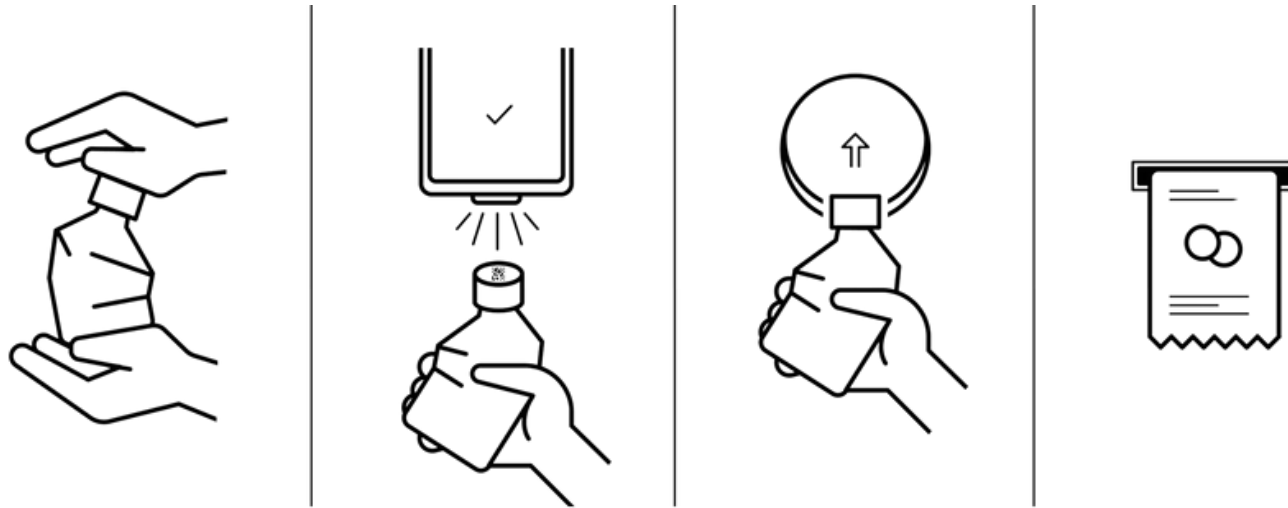
Smart Gate



AI Camera



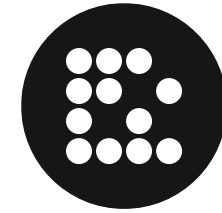
The evolution of how we return bottles and cans



smartdrs.com

How it works?

3 pillars of Smart DRS



Smart
Collection Point

Unique
Container ID

Smart
Production Line



How it works?

Smart Collection Point

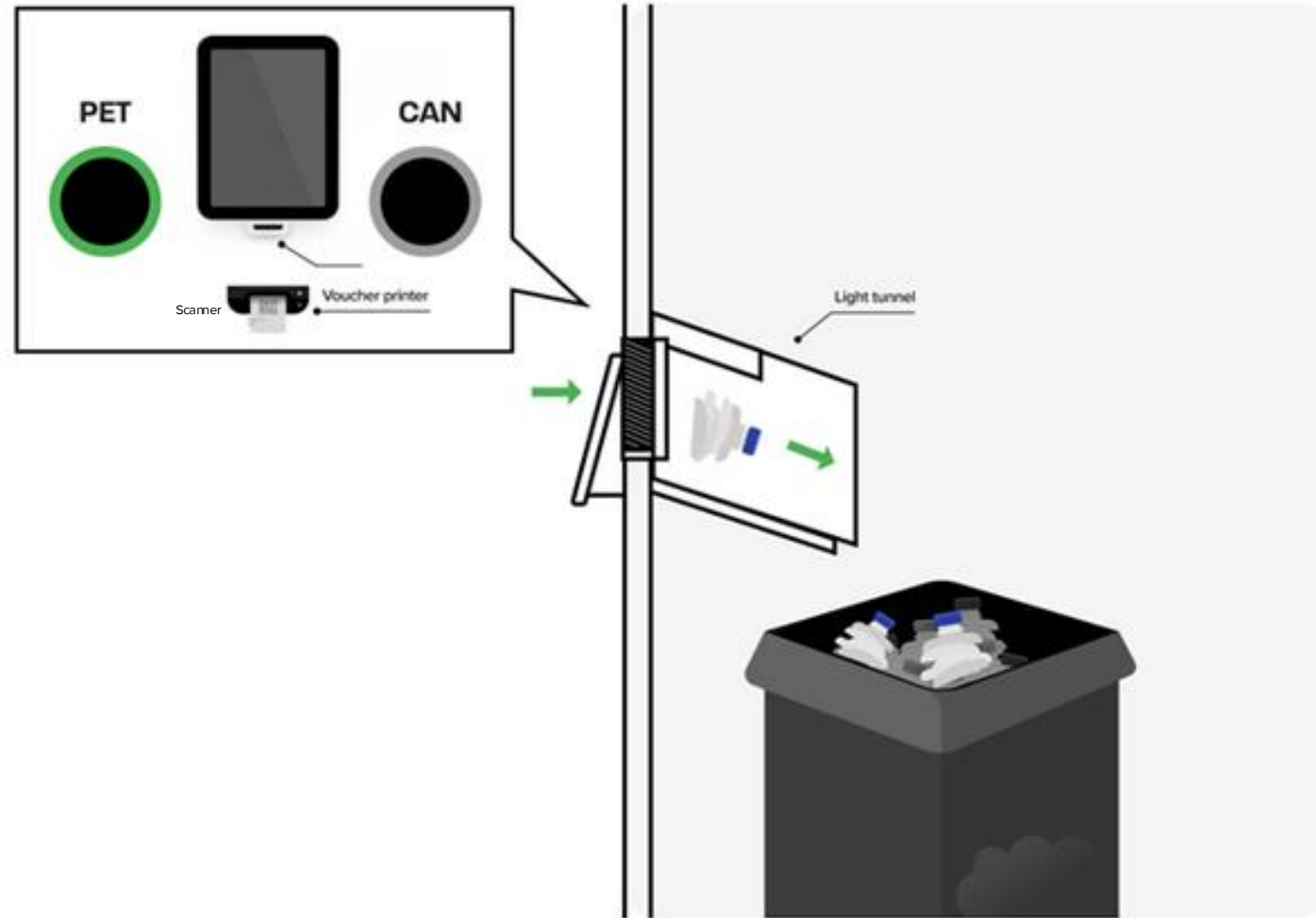
drink
squeeze
scan
return
repeat



Drink
Squeeze
Scan at home
Return in batch
Repeat

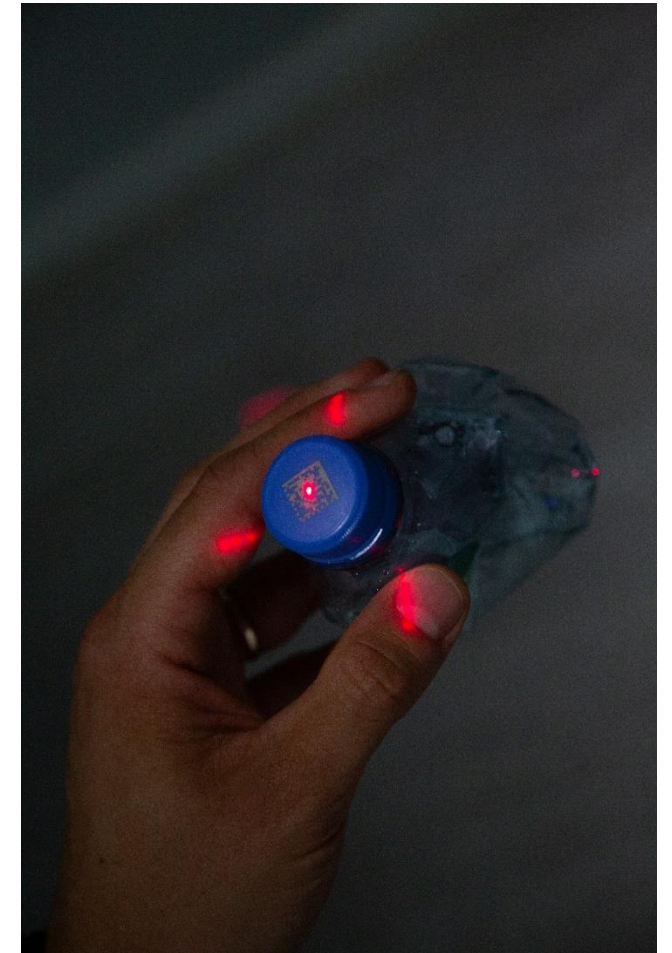
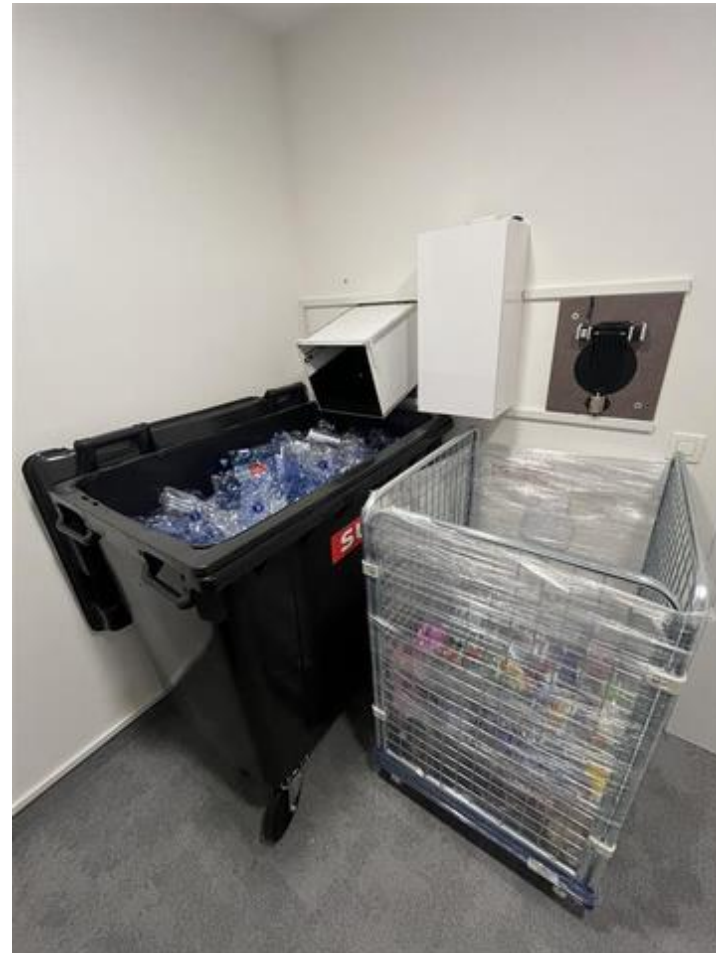
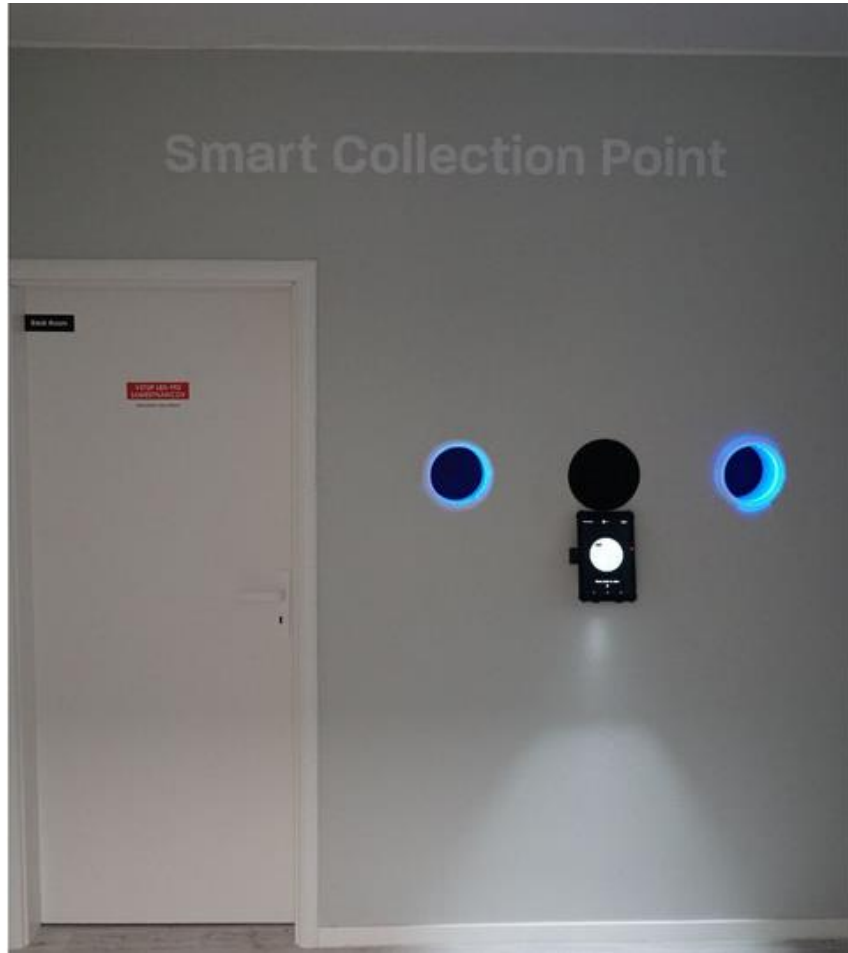


Touch panel with industrial AI
enabled computer



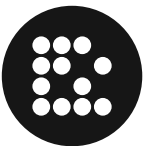
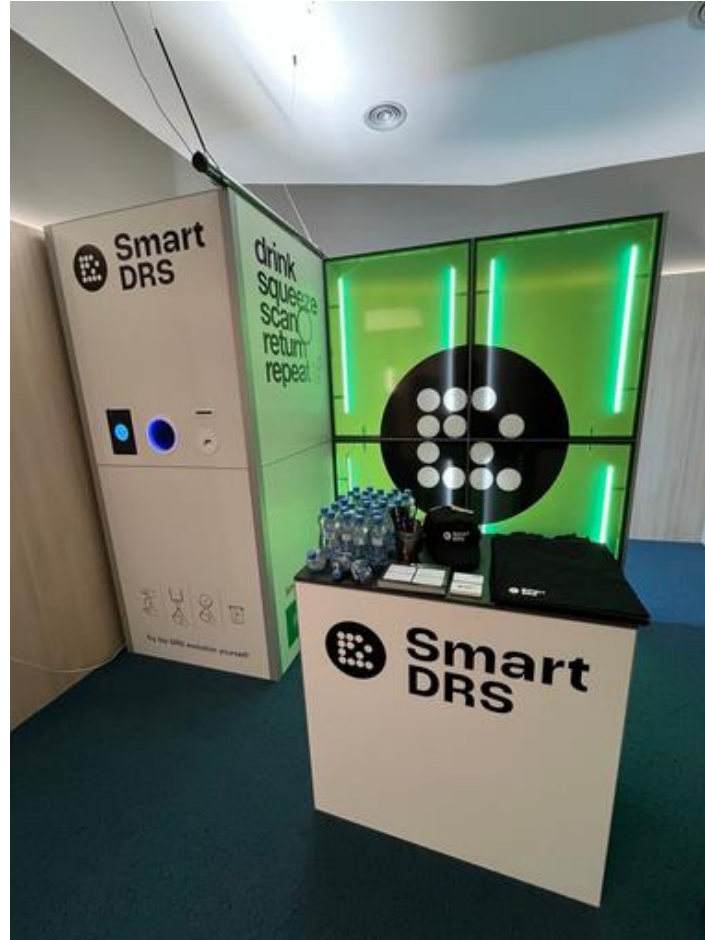
Smart Collection Point

Wall type



Smart Collection Point

Standalone

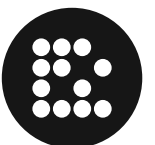
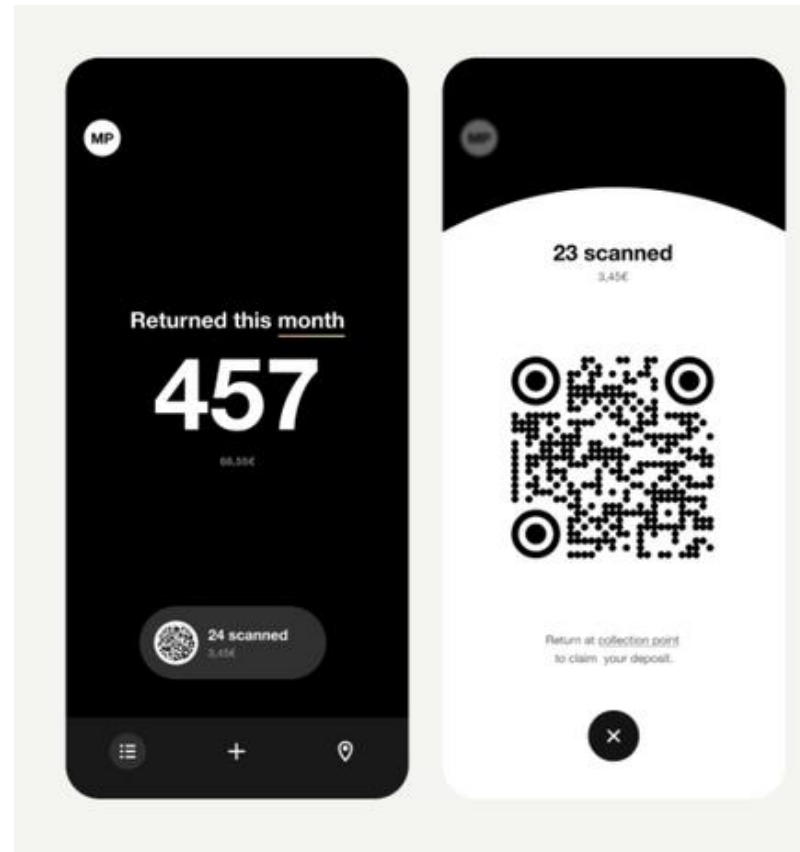


Smart Collection Point

Outdoor model (fully self-sufficient)



Bulk Collection via Mobile App



What are the benefits?

Allows return of
crushed bottles
& cans

50% faster
returns

Easier and
cheaper
maintenance

Standard waste
bins or cages limit
usage of bags

60% cheaper in purchase
50% cheaper in maintenance



How it works?

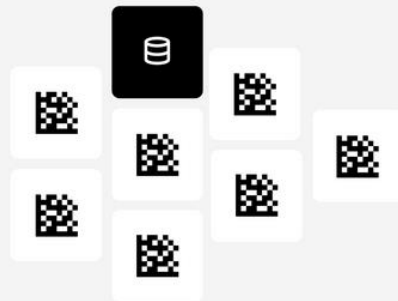
Unique Container ID

New for cap producer

Step 1
Production and Packaging

Get ID batch

Cap and lid producers electronically obtain large batches of random unique IDs from the **ID Authority**, settled and managed by **Producers** (Sensoneo can provide an on-premise system for ID management).



New for cap producer

Step 2
Production and Packaging

Laser or print the UIDs

Cap and lid producers produce the caps and lids with unique IDs in batches per **beverage producer order**.



How it works?
Smart Production Line

Production & Packaging

Step 3
Production and Packaging

Fill the drink
and close

Beverage producers produce the beverages as usual with the use of pre-printed caps and lids.



New for producer

Step 4
Production and Packaging

Read
the UIDs

An array of high-speed cameras reads the container's unique code during multipacking.



New for producer

Step 5
Production and Packaging

Multipacking

Every multi-package gets an internal producer logistics code, which links the batch of unique IDs in the packaging with it in the internal system (Sensoneo can provide an on-premise system for ID management)



New for producer

Step 6
Production and Packaging

Palletizing

Every pallet gets an internal producer logistics code, which links the batch of multi-package codes with it in the internal system (Sensoneo can provide an on-premise system for ID management).







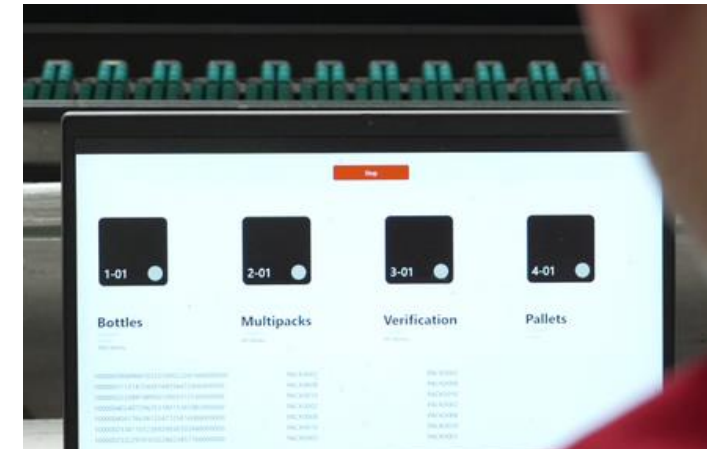
What are the benefits?

Traceability

Automatic volume
placements

Warehouse &
Distribution
optimization

NO NATIONAL
EANS



Proven in scale - Cooperation with largest beverage and cap/lid producers

Smart DRS Producers in 2 countries

Smart Collection Point

🕒 **2h** average set-up time
⚙️ **15m** average issue resolution time



Smart Production Line

🕒 **4.5h** average installation time with 3 workers



0%

fraud
No recorded system breaches

50%

faster return time
than RVMs

90%+

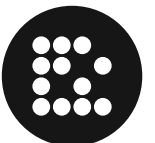
containers compressed
naturally by consumers

100%

positive feedback
in final UX reports

48TB

AI model learning data
from collection points





((SENSONEO))

Meet the Sensoneo team!

((S))

Thank you



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((SENSONEO))