



**((SENSONEO))**

**Manage waste smarter**



((SENSONEO))

**Tomáš Vincze**  
Waste Collection Management –  
divízny riaditeľ

## Asset Management

Sensoneo Platform

Smart Bin Tags & Stickers

WatchDog

Citizen App



## Waste Monitoring

Sensoneo Platform

Smart Sensors

Smart Analytics

Citizen App



## Route Planning

Sensoneo Platform

WatchDog

Collection Efficiency Analysis

Driver App



## Industry Specific Solutions

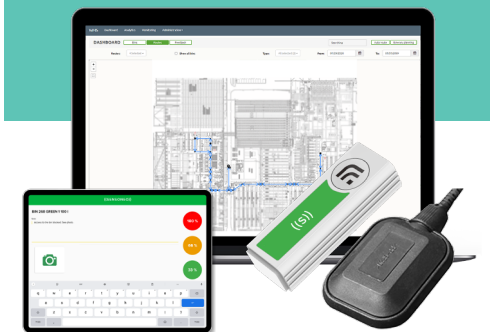
Manhole Monitoring

Waste Logistics in

Manufacturing

EPR Data Management

Take-back System



64 KRAJÍN

360 PROJEKTOV

40+ CERTIFIKOVANÝCH PARTNEROV



 asekol	 telelink INFRA SERVICES	 Qlik	 Brunata	 Microsoft	 vodafone	 T-Mobile	 LÝSIR
 VEOLIA	 inotechnologywi	 nowire	 Meva	 emcom	 ZENNER CONNECT	 twilio	 OPERÁTOR ICT

# Klíčové výzvy

v odpadovém hospodářství

1

**NEDOSTATOČNÁ EFEKTIVNOST**

2

**NEDOSTATOČNÁ TRANSPARENTNOST**

3

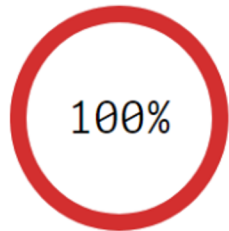
**NEDOSTATOČNÁ FÉROVOST**

# KVALITA DÁT



## 25 % záznamov je neúplných

ALL DATA



Number of routes  
1,331

Number of pickups

51,147

Number of offloads

2,040

Distance (km)

168,382

Time (hours)

8,346

APPLY FILTERS TO DATA:

FILTERS SHOW ONLY ROUTES WITH COMPLETE DATA SETS AND

APPLY ALL FILTERS

REMOVE FILTERS

A...

B.

C.

D...

E.

IDENTIFIED DISCREPANCIES

326

A. With missing weighing tickets (tours)  
228

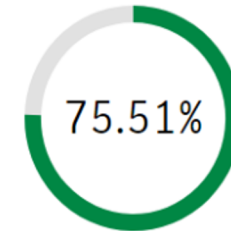
B. With no assigned bins (tours)  
78

C. Unfinished routes / no motor hours (tours)  
78

D. With overflowing vehicle (tours)  
10

E. With overflowing bins (tours)  
10

CORRECT DATA



Number of routes  
1,005

Number of pickups

39,365

Number of offloads

1,572

Distance (km)

123,610

Time (hours)

6,375

# KAPACITA



## Zvážate poloprázdne koše a zvozové autá sa vracajú poloprázdne

Number of routes

1,005

Number of offloads

1,572

MTH (motor hours)

6,375

Distance (KM)

123,610

Apply all filters

Remove filters

A.

B.

C...

D...

E.

Vehicle fill level

59%

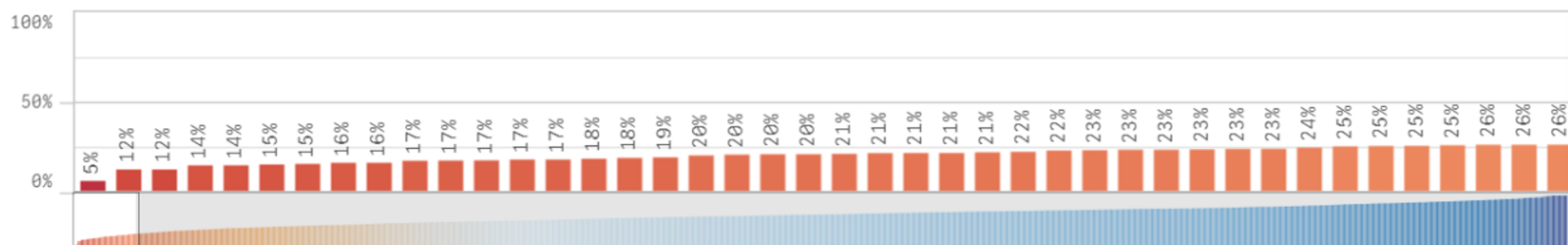
MIN %

5%

MAX %

100%

Average vehicle capacity use (%) per route (koef. 1m3 = 360kg)



Bin fill level

44%

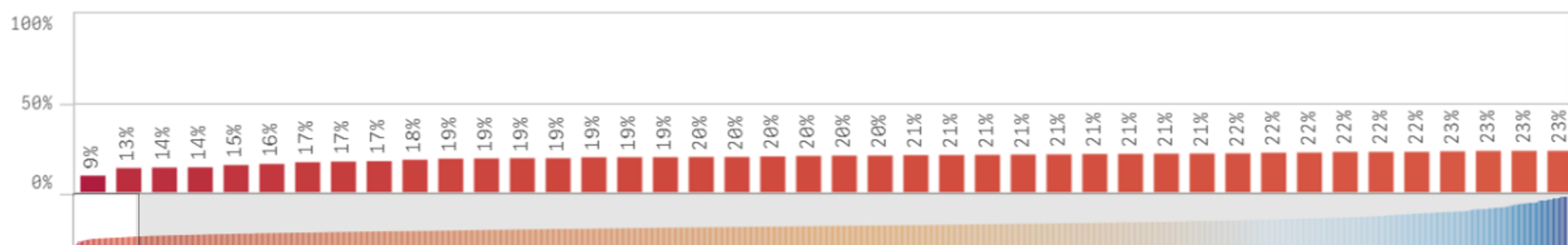
MIN %

9.11%

MAX %

99.80%

Average bin fill level (%) per route



Average

3.47

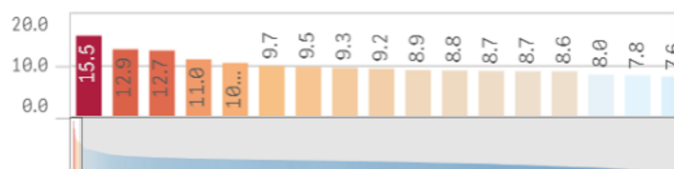
MAX

15.53

MIN

0.29

Distance driven per bin



Average

48.58

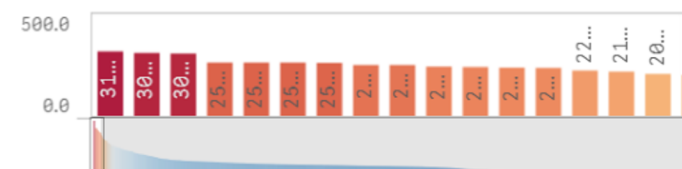
MAX

312.58

MIN

2.43

Distance driven per cubic meter



Počet podľa ko.....	#
Totals	1005
paper	547

# VYŤAŽENOST VOZIDLA



Z 23 tisíc pracovních hodin len 6 tisíc hodin strávených na cestách

Number of Vehicles

19

All Hours Available

24,160

Plan fulfillment (hours)

87.7 %

Work Load

43 %

FILTER VŠETKO

VYMAZAT FILTER



## Does fleet stand idle on the parking lot? How much time do vehicles spent in the field?

Overview of fleet use (hours) - availability vs. actual fleet use (%)



## Vehicle availability (workdays)

Total time available (fleet and crew) for collection. Sum of workdays in the reported period



Planned hours  
9,520 Mth

Workdays  
151

Collection days  
151

Used hours  
8,346 Mth

Workdays  
126

Collection days  
145

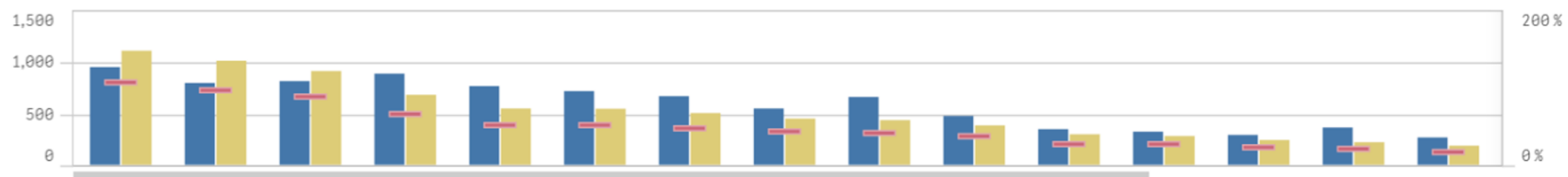
## Actual vehicle use (workdays and kilometers)

Time spent in the field (workdays) according to weight tickets compared to kilometers driven.



## Overview: Availability and actual fleet use (workdays and %)

Total fleet availability compared to actual time fleet spent in the field.



Licence plate	Q	%	Mth	KM
<b>Totals</b>		<b>68 %</b>	<b>13281...</b>	<b>163644.27</b>
VH 00004		13...	1376.36	20488.59
VH 00002		12...	1298.36	11490.78
VH 00018		11...	1166.32	31401.84



# ÚSPORY

## Kol'ko môžete ušetriť?



### BIN FILL LEVEL

NOW

# 44%

Optimal

# 80%

Potential cost savings

# 45%

### COSTS PER ROUTE

Total cost  
**\$310,211.11**

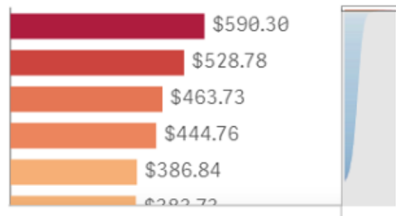
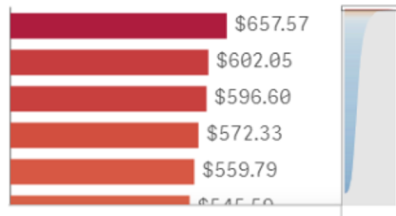
Average costs per route  
**\$191.37**

Total cost  
**\$174,035.13**

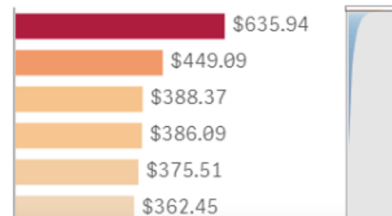
Average cost per route  
**\$107.36**

Overall cost savings  
**\$139,712.77**

Cost savings per route  
**\$86.19**



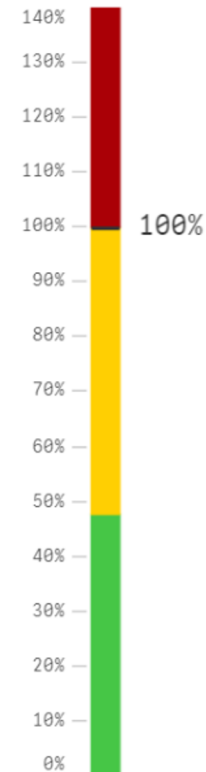
### COSTS PER TONNE



U...

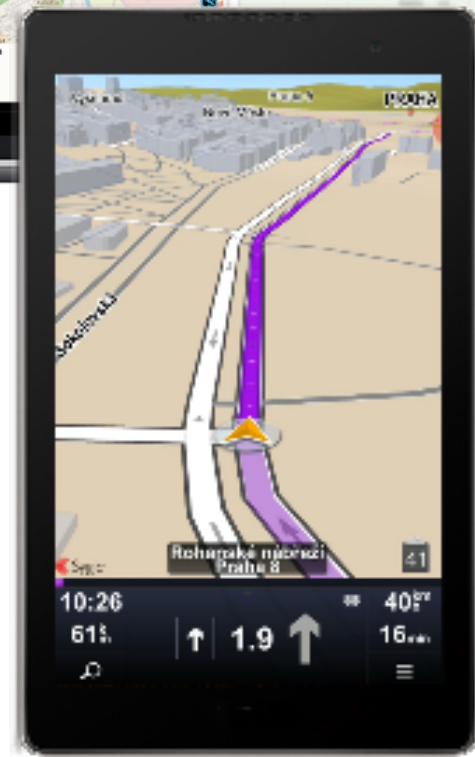
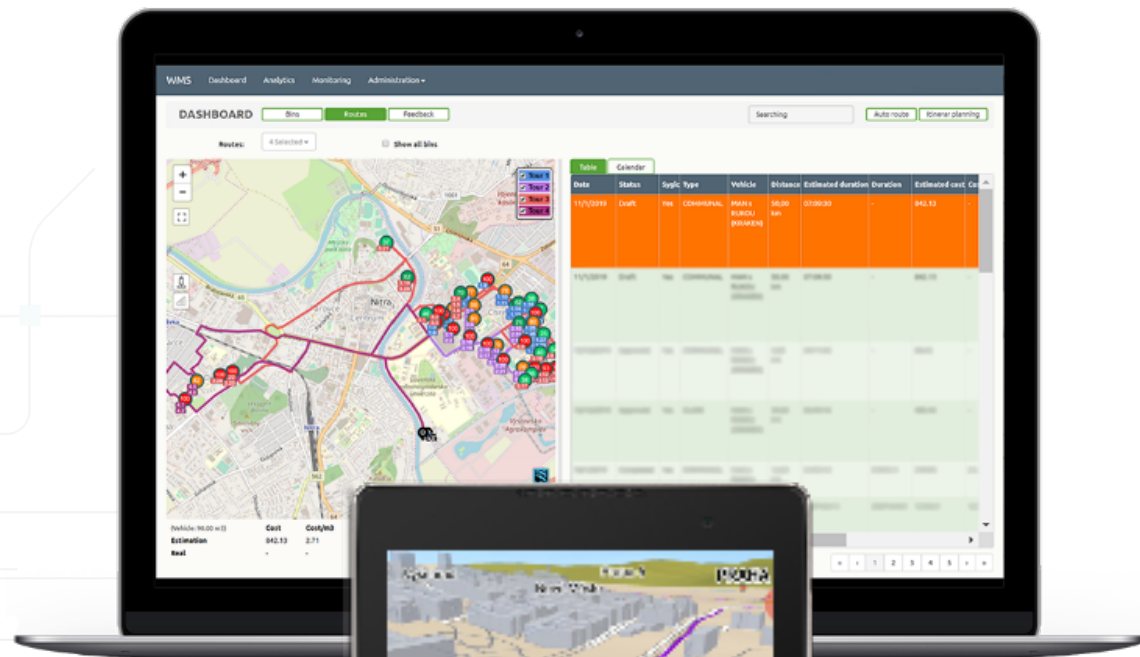
C...

### NAPLNENIE NÁDOB (PRIEMER)



**AKO  
ZVÝŠIŤ  
EFEKTÍVNOSŤ**





800 Sensoneo senzorov



01

-20 % nákladov na zvoz odpadu

02

-30 % času potrebného na zber  
1 tony materiálu

03

Jednoduché riadenie skladových  
zásob

04

Konkurenčná výhoda

**ROI  
7  
MESIACOV**

An aerial photograph of a city street. A yellow garbage truck is positioned in the center, moving from left to right. Its rear-mounted compactor is open, and it is dumping a load of white plastic waste into a row of five dark grey trash bins. A worker in a high-visibility vest is visible near the truck. To the left of the truck, a white car is parked in a designated space. The street is paved with cobblestones, and there are green plants and a sidewalk on the right side. A large green question mark is overlaid on the right side of the image.

# AKO ZVÝŠIŤ TRANSPARENTNOSŤ A FÉROVOSŤ



# MONITOROVANIE ZBERU ODPADU





**Všetko  
v jednom  
zariadení**

**FLEET  
MANAGEMENT**

**TRUCK  
TRACKING**

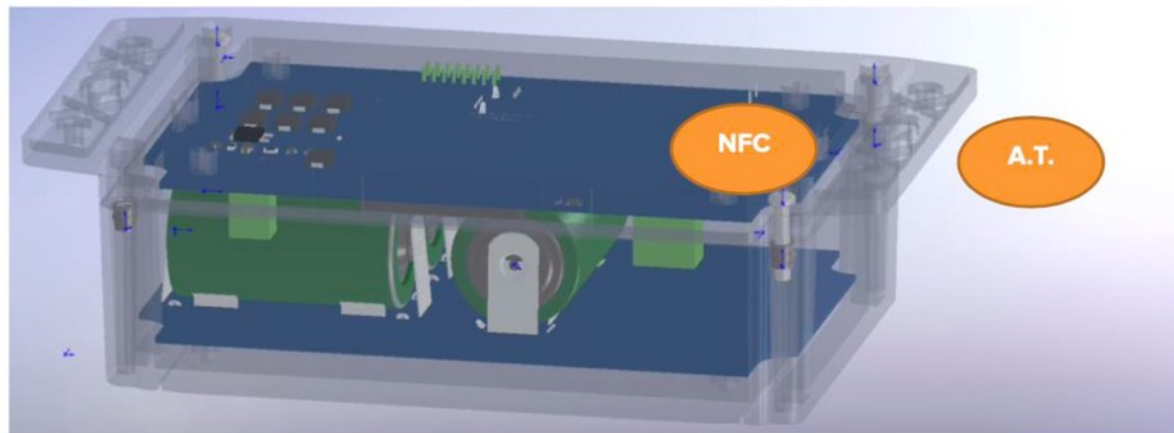
**AUTOMATIC  
SERVICE  
VERIFICATION**

**Automatická digitalizácia**

**Žiadne ručné čítačky  
Žiadna ručná manipulácia  
Žiadne chyby spôsobené  
ľudským faktorom**

**Presné a spoľahlivé údaje**





# BIN ACCESS MANAGEMENT

- Riadenie prístupu k zberným nádobám

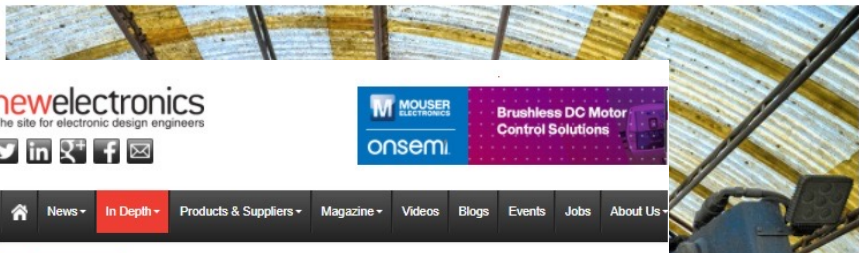


WIRTSCHAFT & MÄRKTE WISSENSCHAFT & TECHNIK

## WatchDog: Tool zur automatisierten Digitalisierung der Abfallabfuhr

Sensoneo hat das Tool WatchDog vorgestellt, das alle während der Abfallabfuhr durchgeführten Vorgänge genau und automatisch erfassen soll.

29.03.2021



newelectronics  
The site for electronic design engineers

onsemi Mouser Electronics  
Brushless DC Motor Control Solutions

Home Technology Article

Smarter, if not smart cities 15 June 2021

Bratislava, the capitol of Slovakia, is working with Sensoneo on a large-scale smart waste programme, for example. The project aims to optimise the routes of waste collection trucks reducing their mileage and emissions and saving money on fuel costs.

Commenting City spokesperson Katarína Rajčanová said, "For the citizens of Bratislava, this would mean cleaner public spaces and more efficient waste collection services."

The project requires the installation of 1753 Sensoneo sensors to monitor all containers of glass waste and underground bins across the city which will monitor their fill levels to make sure they are not being emptied unnecessarily. Sensoneo's WatchDog device, which combines an RFID reader, GNSS satellite location tracking and a communications module, will be deployed on all waste collection vehicles to digitalise the waste collection process, automatically verify pick-ups and optimise routes.



Novinka

## Bratislava bude mať konečne smart odpadové nádoby! Čo to znamená?



Števo Porubský  
17. mája 2021, 10:21  
Eco, FOTO, VIDEO

Slovenské Sensoneo, mesto Bratislava a spoločnosť OLO spustili projekt zameraný na digitalizáciu a zefektívnenie zvozu odpadu. Inak povedané, Bratislava bude mať smart odpadové hospodárstvo. Sensoneo ale využívajú vo viacerých mestách a obciach na Slovensku, zatiaľ iba v testovacej fáze či čiastočne.

# RECYCLING magazin

Trends, Analyses, Opinions and Facts for the Recycling Industry

## Sensoneo announces monitoring device for waste collection truck

Sensoneo has introduced its new solution designed to manage and resolve some of the biggest waste-related challenges – a lack of efficiency and transparency.

15.09.2021



Lesen Sie 3 Mon das RECYCLING



## Smart waste monitoring solution supports pay-as-you-throw models

News 25 Mar 2021 by SmartCitiesWorld news team

Sensoneo's WatchDog enables haulers to automatically track and record all actions made during the waste collection process and supports programmes to incentivise waste reduction.



Bin ID: 31e3mn2443878654  
Trash type: Bio-waste  
Eligible for pick-up: NO  
Status: UNPAID

Bin ID: 20c2df0210013889  
Bin type: 240 l  
Trash type: Residual waste  
Eligible for pick-up: YES  
Status: PAID  
Pick-up done: 04/March/2021 at 11:26 AM

WASTYPORTAL  
odpadovy-portal.sk

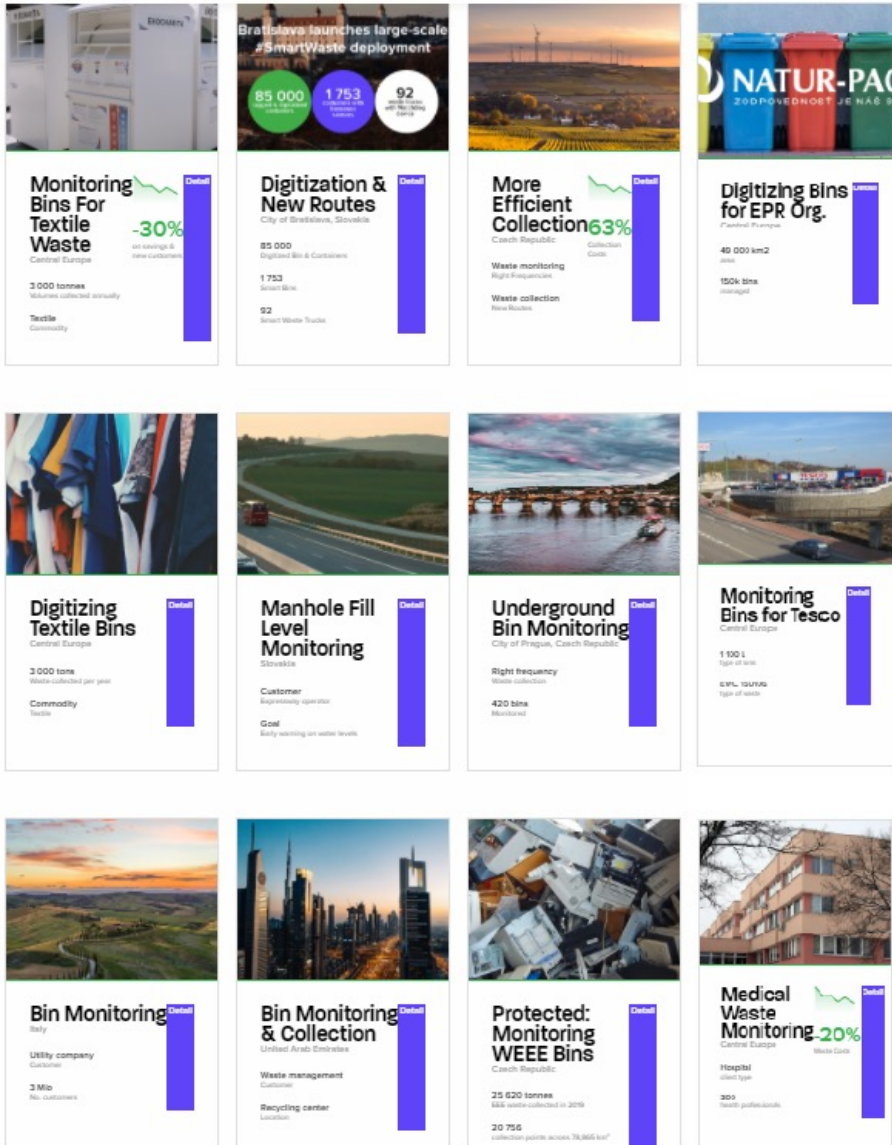
Hľadany výraz ...

Infoservis Legislatíva Adresár firiem Výkupne kovov

## Na trhu smart odpadových riešení je ďalšia technológia. Prichádza s ňou Sensoneo

Sensoneo ponúka nový nástroj WatchDog, ktorý umožňuje digitalizovať zvoz odpadu.





A aká je Vaša výzva?

**((SENSONEO))**

Manage waste smarter

**Make digital transition happen**