

APSE – Annual seminar - DERRY  
Managing demand and innovation in  
Antwerp's municipal services

Luc De Rooms – City of Antwerpen – 08/09/2016



# Innovation? The new hype?

- Innovative (waste) management
- Best practise
- Disruptive ...
- Cradle to cradle
- Circular...
- Smart cities
- IoT (Internet of Things)
- ...

Lets keep in mind !

**The best waste is no waste at all**

- (so) the best collection is no collection at all
- (so) the best recycling is no recycling

Inventing to invent is not inventive.

1996

## OMSLAGVERHAAL

# AFVALPREVENTIE ZORGT VOOR SPEKTAKULAIRE DALING AFVALBERG. KRIJGT DILBEEK NAVOLGING ELDERS IN VLAANDEREN?



Vanaf 1 januari '96 zijn alle Vlaamse gemeenten verplicht hun huisvuil selectief in te zamelen. Papier, karton, glas en groente- of tuinafval dienen voortaan netjes gescheiden gehouden en apart ingezameld. Een en ander mag dan al reeds jaren aangekondigd zijn en nu met de beste bedoeling worden uitgevoerd, in heel wat gemeenten betekent die selectieve inzameling een organisatorische chaos. Die bovendien voorbijgaat aan dé oplossing om onze afvalberg in te perken: met zijn allen ervoor zorgen dat er gewoon minder afval wordt geproduceerd. Dat een doorgedreven afvalpreventie enorme resultaten oplevert, bewijst de Vlaams-Brabantse gemeente Dilbeek. Daar slaagde men erin om met een degelijk uitgewerkt preventieplan de berg huishoudelijk afval met maar liefst 70% te doen slinken. Cijfers die Fost Plus én zelfs OVAM deden duizelen...



## 1992 - 1996: Dilbeek

- Spectacular decrease of residual (mixte) waste collected
- Focus on prevention first, then sorting (and collectioning)
- 4 years preparation (local government, environmental organisation, citizens)

# The city and the people

It is not (only) because the city has not enough public bins, Big Belly's... that people litter

It is (mostly) because people don't behave

But bins are helpful,  
surely when they are emptied... on time



Shopping street Antwerp  
Saturday 6pm  
shops closing

## 2005 Antwerp: Best practises

- Uniformed **bins** (3000) “Pillar” – model Antwerp
- Compacting Bins (**Big Belly’s**)
- **Underground** containers Kliko-Eurobins
  - access control
  - two volumes
  - Column = model Antwerp
  - **Sensors** ENEVO, route planning



# (public) bins – Antwerp before 2005



It doesn't has to be **high tech** always

By standardisation the bins in the city:

- Less collection needed, less fuel, CO<sup>2</sup>
- Less labourcost
- a better service (one model – one supplier)
- Much more capacity

Expensive in buying but last already over 10 years!

# Harmonized Bin “Pillar” (100 litre)

Designed in and for Antwerp

- Closed upside (rain)
- No flat surface (deposits)
- No bars, ... (hanging sacs)
- Small inlet (no household waste)
- Anti graffiti layer
- Anti sticker (bubbles)
- Ash tree



## It can be **too** much **high tech**

- 20 bins got a “jukebox” cover
- Throwing garbage = trash tunes (“you’re simply the best”, “hit me baby one more time”, ...)
- Lighting by evening

### **Nice, fun, ambiance...**

- But ... looking for those funny bins, they were always full, less use of other bins...
- Expensive ! (not possible for 3000 bins)



# Trash tunes and lightning

Everybody wants to  
use these

but when full, music  
keeps on going till  
battery gives up

Even after emptying it  
doesn't work anymore:  
intervention needed

[http://www.nieuwsblad.be/cnt/dmf20160519\\_02296969](http://www.nieuwsblad.be/cnt/dmf20160519_02296969)

# Good tech

- Leads to better service for citizen
- Better logistic, less cost on the long end
- Needs investment but gives R.O.I.
  - less controls, less trucks, less fuel, less CO<sup>2</sup>
- Less complaints, better image for the city



6 BIG BELLY'S | Schepen Philip Heylen gooit een plastic fles in de Big Belly. - Klaas De Scheerder

## BIG BELLY

on the right !

- 140 litres
- Compacting up to 8 x = 1120 litres
- Indicates when full (Clean-software)

- ✔ **Reduces Litter**
- ✔ **Provides Invaluable Operations Data**
- ✔ **Increases Recycling**
- ✔ **Conserves Fuel**
- ✔ **Handles 5 Times as Much Waste**

- ✔ **Eliminates Waste Overflow**
- ✔ **Frees Up Labor**
- ✔ **Lowers Tipping Fees**
- ✔ **Keeps Out the Pests**
- ✔ **Enhances & Modernizes Core Services**



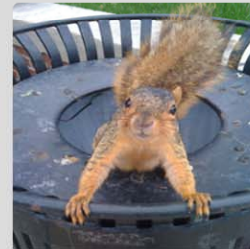
## Providing a Solution to Age Old Operational Challenges



**Recycling  
That Works**



**Resource  
Optimization**



**Keeping Out the  
Critters**



**Sustainability  
Spotlight**



# Underground system The future!! ~~Door to door~~



Big savings + more service  
(always can get rid of waste)



# The Antwerp – column



Designed for Antwerp



Undergrounds: 5000 litres – 5m<sup>3</sup>



# Emptying





# Emptying



# Easy... A child can do



1

Scan uw sorteerpasje.



2

Scan nogmaals uw sorteerpasje.



3

De klep gaat automatisch open.



4

Stort uw afval.



5

Sluit de klep.



## Access control sensors/ smart routes

- Registering - Managing

### **Big Brother?**

- Privacy! (Citizens)

- Sensors/ smart routes ENEVO

### **Big Brother?**

- WE know our job! (Drivers)



# Looking for correct data For optimised collection

- Purpose: only empty at a fill level +80%
- **2013**: presentation + **15** potential suppliers
- Enevo was “one of the others”: user-friendly small package - promising but not convincing
- Transvision: technically the market leader; rather complex and much too expensive





# Pilots, Kafka...

- Trying a pilot with Transvision!
- Budget of 22 million euro: could not liberate money for pilot in (new) software
- Propositions were declined (read boycotted)
- Kafka was everywhere
  - *Though he wasn't on the pay list of the city a lot of colleagues admired and even imitated him*



## ... and Enevo

- ENEVO - **clear reset**: what about a free pilot?
- Companies and “free of charges”: red alert!
- Total free? No commitment?
- Exactly!!



# Put it on paper anyway (please)

2014

- IF negative pilot: take all back, no charges
- Start: modest! 12 sensors
- Pilot was convincing: **GO** for a tender
  - *Some colleagues lost their faith in Kafka and started pretending they invented the sensors...*



## Small tender (100 sensors)

- 6 companies interested
  - *(ESE; Eurobins-Kliko - Transvision; Janssens - Smart-Bins; Plastic Omnium – Sulo; Enevo-TWS; Siemens,...)*
- 4 selected for integrated test
  - *6 weeks, 5 sensors, web-based application, forecast*
- Enevo won – started in spring 2015 with installation



# Rolling out

## January 2016:

- *order for **300 more** sensors*
- *and a sensor in every **new** container (1500 next years) (5000 in 2025)*

## February 2016:

- *Testing sensors in **10 bins***

## September 2016:

- *150 sensors in bins*
- *automatic route planning Smart Routes*



# Enevo strong!

- Filling level degree are correct
  - *discovered different measures of underground containers*
- Easy to install
- Fill degree 60% is not equal 60%: prediction when emptying is needed (Forecast)
- Adjustment hour by hour by actual fill degree



# Enevo strong!

- Communication is good
  - *Contract with different providers – use the strongest signal*
- Service and response
- User friendliness software
- Total cost is total cost
  - *Since 2013: no euro more than agreed*
  - *Even had no question about*
  - *Quite new!*



How does it look





How

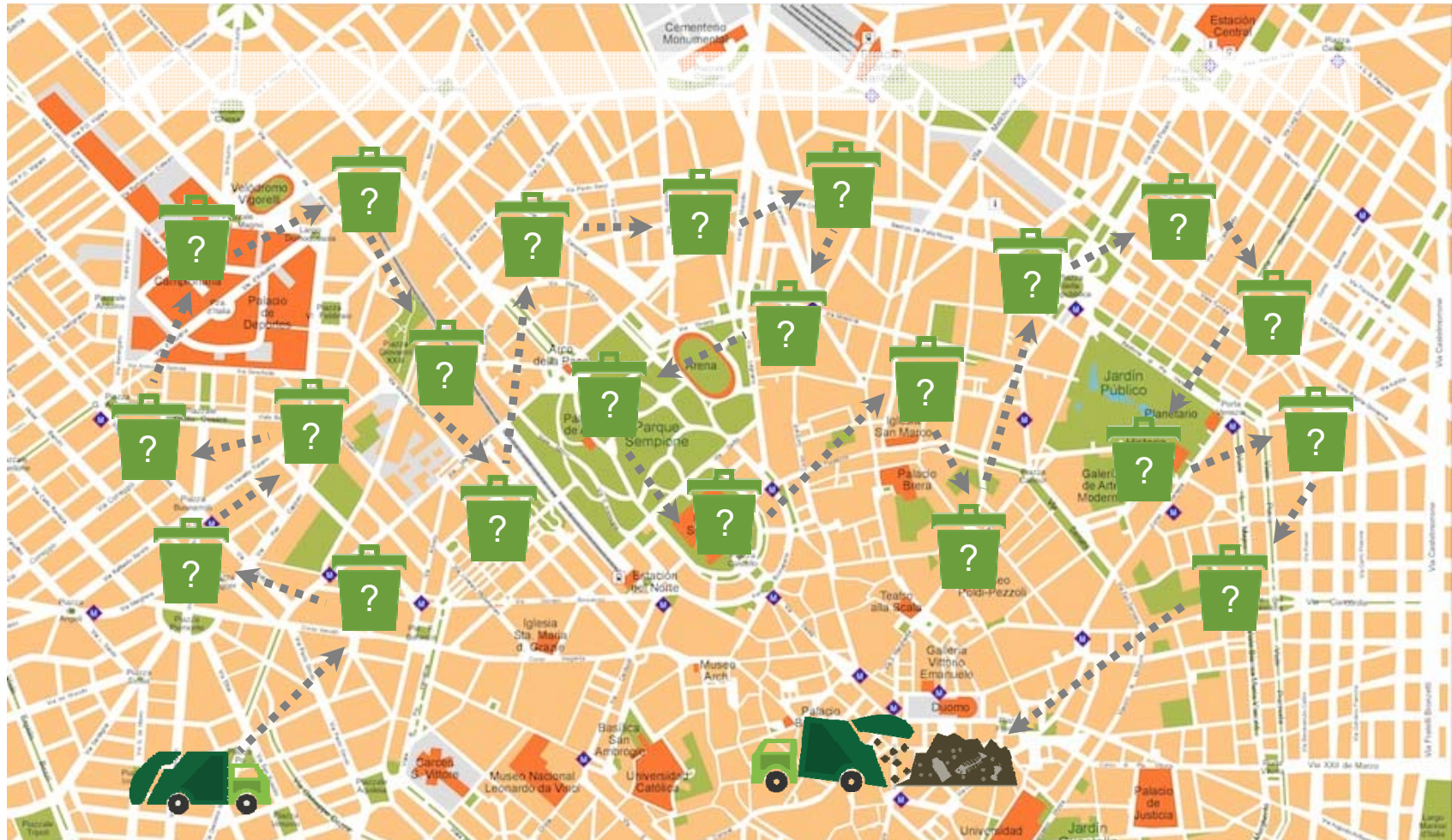


Testing ENEVO sensors in public bins

for public bins

for containers





FROM: Static routes and schedules –  
Driving “blindly” from bin to bin





TO: Accurate Data driven dynamic routes  
 - Effective & efficient collection

# Software

Plaatsen 377 + PLAATS TOEVOEGEN

Sorteer op Datum wanneer vol FILTER

Zoeken

104	Molenbergstraat 10, Antwerpen	98%	-1	dagen
071	Jan Denucéstraat 11, Antwerpen	91%	0	dagen
144	Gebroeders De Wachterstraat 21, Antwerpen	95%	0	dagen
051	Adolf Menystraat - Urbain Reniersstraat, Antwerpen	93%	0	dagen
072	Jan Denucéstraat 11, Antwerpen	88%	0	dagen
177	Zuidervelodroom, Antwerpen	92%	0	dagen
133	Twee Netenstraat 6, Antwerpen	80%	0	dagen
316			1	

vo.com/home



# Software









The screenshot displays a web application interface for managing locations. The main section, titled 'Plaatsen' (Locations), shows a list of 43 out of 377 locations. Each entry includes a location ID, address, a circular progress indicator, and a count of items. A '+ PLAATS TOEVOEGEN' (Add Location) button is visible at the top right of the list. A search bar labeled 'Zoeken' is positioned above a map view. The map shows a street view of a residential area with labels like 'indrecht', 'Hobokense Polder', and 'Schroelhaan'. A 'FILTER' panel is open on the right, allowing users to refine their search. The filter panel includes sections for 'Vol Binnen' (Selected: 1), 'Inhoudsmaat' (Selected: 1), and 'Gebied' (Area). The 'Vol Binnen' section has buttons for '24 uur' and '72 uur'. The 'Inhoudsmaat' section has buttons for 'PMD', 'Carton', 'Glass', 'Clear Glass', 'Mixed', 'Bio', 'Paper', and 'Colored Glass'. The 'Gebied' section lists various neighborhoods such as 'Amelincx-ABC', 'Amelincx-Noord', 'Amelincx-West', 'Berkenrode', 'Coster/Eilshot', 'Dam', 'Draaiboom', 'Duinstraat', 'Eilandje', 'Fonteinstraat', 'Groeningerplein', 'Halewijn', 'IGLO', 'Kielpark', 'Kronenburg', 'Krugerpark', 'Militair Hospitaal', 'Montevideo', 'Nieuw Zuid', 'Opvangcentrum Linkeroever', 'Regatta', 'Rozemaai', 'Silvertop', 'Sint-Andries', 'Sint-Jan', 'Studentenbuurt', 'Stuivenberg', 'Ter Wilgen', 'Valaar', 'Venneborg', 'Vinkenvelden', and 'Zuiderveldroom'. A 'WISSEN' (Reset) button is present at the end of each filter section.


ID	Address	Progress	Count
071	Jan Denucéstraat 11, Antwerpen	91%	0
051	Adolf Menystraat - Urbain Reniersstraat, Antwerpen	93%	0
072	Jan Denucéstraat 11, Antwerpen	88%	0
316	Jan Frans van de Gaerstraat, Antwerpen	68%	1
321	Jan de Vos Lei 49-53, Antwerpen	79%	1
271	Hospitaalplein, Antwerpen	85%	1
202	Duinstraat 93, Antwerpen	81%	1
034			1

# Software

**Plaatsen** 43 van 377 [+ PLAATS TOEVOEGEN](#)

Sorteer op [Zoeken](#) Datum wanneer vol [FILTER \(2\)](#)

<b>071</b> Jan Denucéstraat 11, Antwerpen	 <b>0</b> 91% dagen
<b>051</b> Adolf Menystraat - Urbain Reniersstraat, Antwerpen	 <b>0</b> 93% dagen
<b>072</b> Jan Denucéstraat 11, Antwerpen	 <b>0</b> 88% dagen
<b>316</b> Jan Frans van de Gaerstraat, Antwerpen	 <b>1</b> 68% dagen
<b>321</b> Jan de Vos Lei 49-53, Antwerpen	 <b>1</b> 79% dagen
<b>271</b> Hospitaalplein, Antwerpen	 <b>1</b> 85% dagen
<b>202</b> Duinstraat 93, Antwerpen	 <b>1</b> 81% dagen
<b>034</b>	 <b>1</b>



Google Kaartgegevens 1 km Gebruiksvoorwaarden Een kaartfout rapporteren

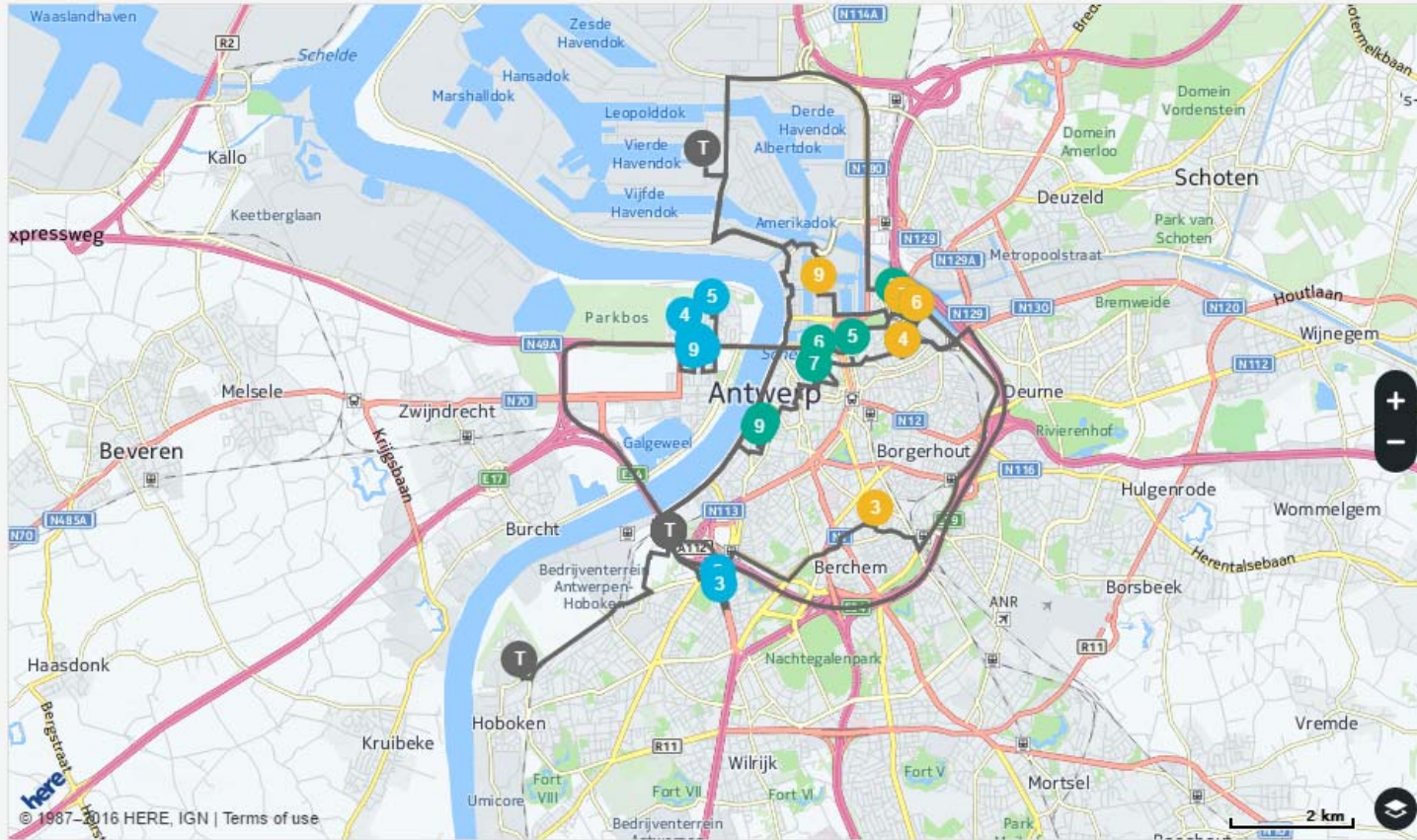


Live kaart 3 plannen vandaag

Bio 1-CHB-526

Mixed 1-CHB-526

Paper 929-BKZ







Live kaart 3 plannen vandaag



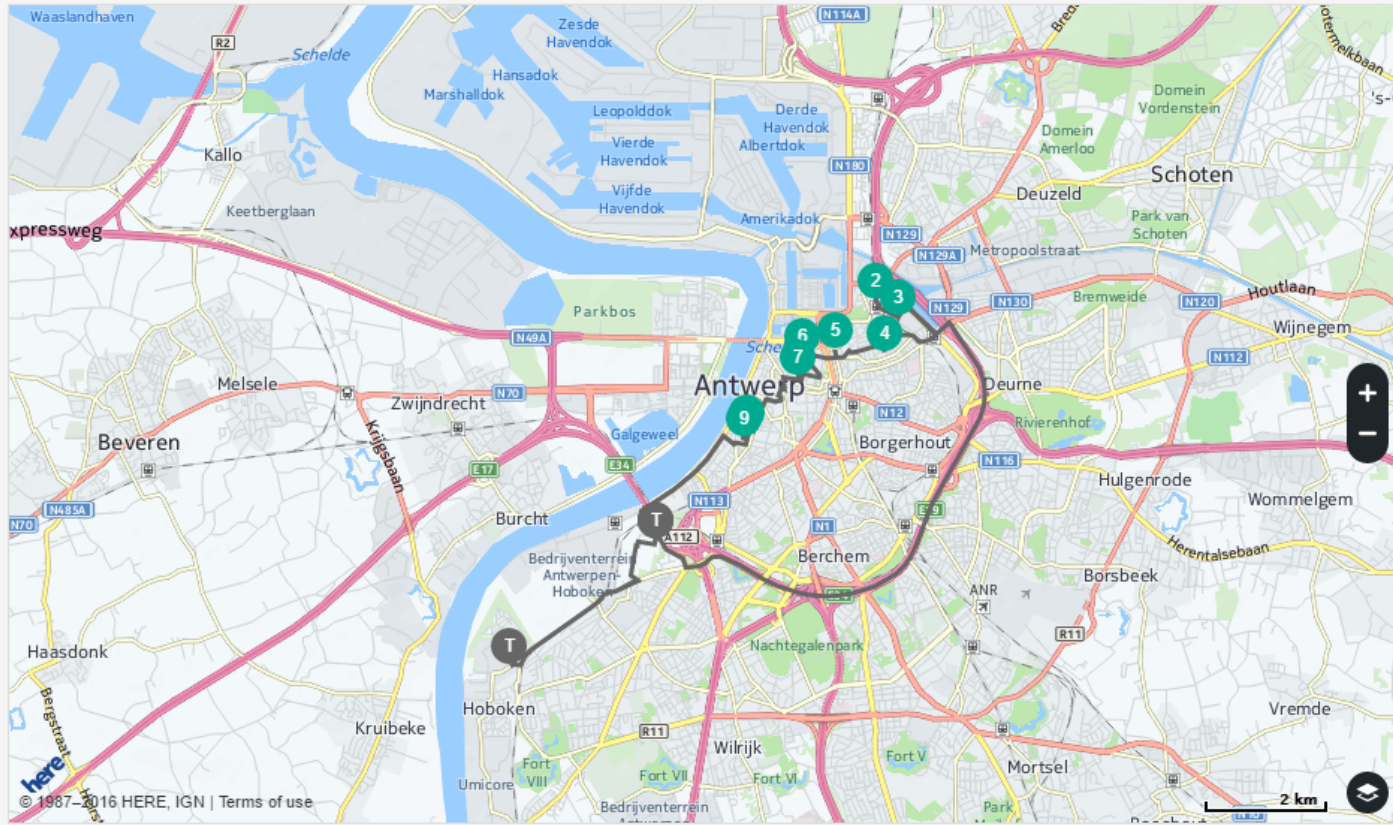
Bio 1-CHB-526



Mixed 1-CHB-526



Paper 929-BKZ







5. **215 - Sint-Jan**  
Sint-Jansplein - Van de Wervestraat, Antwerpen



6. **235 - Studentenbuurt**  
Paardenmarkt 34, Antwerpen



7. **107 - Studentenbuurt**  
Gratiekapelstraat 9, Antwerpen



8. **98 - Sint-Andries**  
Prekerstraat 18, Antwerpen



9. **87 - Sint-Andries**  
Willem Lepelstraat 19, Antwerpen

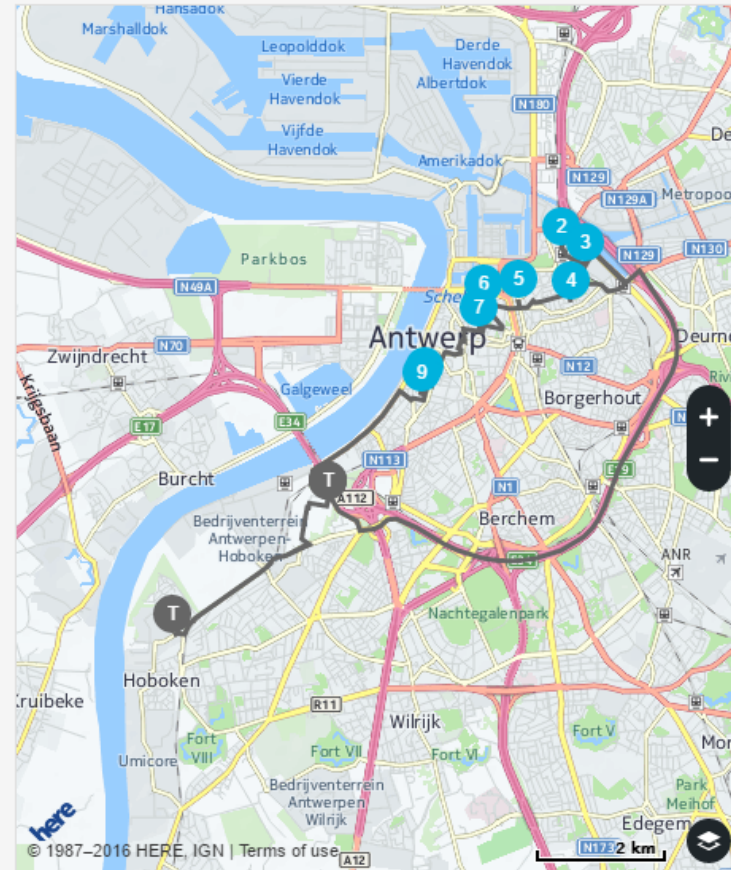


**VSS Exploitation**

**Break**

15 minuten

**AOPC**



# My opinion

- Actually ENEVO is (in Europe) market leader combining technical and user-friendliness.
- User-friendly: important for Antwerp
  - *Planners: no university degree; aren't nerds neither.*

*!! The Enevo-sensor:*

- *independent from our collection system*
- **Fit in any** container or collection-system: underground, upper ground, garbage-bins



# Enevo perfect?? No

- No. The company is growing fast and learning
  - *Adaptions for one client becomes less evident*
  - *Dynamic route planning was not so easy to install*
- The readers are self-learning: it takes time.
- It's obvious "not for free".
  - *It's a monthly cost, depending on terms/quantities.*



# Conclusion

- **Underground:**
  - *win 50% now*
  - *with Smart Plans up to 65 – 70% ?*
- **Bins:**
  - *data ++*
  - *balance investment/ effects to be confirmed*
- **Gains**
  - *Less vans, less drivers, less gasoline, less carbon dioxide*
  - *satisfaction citizens is going up...*
  - *by complete outroll: -500.000€/ year*



# Coordinates/ info

## Projectmanager

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