Action plan City of Antwerp

Anne Brijs
City of Antwerp
Waste Policy Coordinator

Waste Management Intelligent Systems and Policies
WINPOL Final Conference
25 May 2022
Action 1: Image recognition for waste reporting
Description

Image recognition for waste reporting: what is it?
- Existing Antwerp City App for notifications from citizens
- New feature: upload a photo
- AI recognizes location, time and **type of waste**

Improved processes:
- Facilitate the process for citizens to make a notification
- Reduce response time between notification and clean up
- Enhance separate waste collection

Action 1: Image recognition for waste reporting
# Implementation

<table>
<thead>
<tr>
<th>Action</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development AI tool</td>
<td>✓</td>
</tr>
<tr>
<td>Database creation, model training (13 types of waste)</td>
<td>✓</td>
</tr>
<tr>
<td>Tested with small project group (70 pers)</td>
<td>✓</td>
</tr>
<tr>
<td>Testing with all Antwerp Staff (9,000 pers)</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Further database increase (from 13 to 30 types of waste)</td>
<td>Prepare in 2022</td>
</tr>
<tr>
<td>Public testing</td>
<td>End of 2022</td>
</tr>
</tbody>
</table>

**Action 1: Image recognition for waste reporting**
Implementation

Database creation and model training
- 2017-2019: 45,866 notifications
- 75% of notifications is about 6 types of waste
  - Electronic devices
  - Shopping bag with waste
  - Furniture
  - Large bag with waste
  - Small hazardous waste
  - Construction waste
- Manual work, data augmentation (change side, colors, lights in existing pictures), advanced data labeling, manipulate background of pictures

Action 1: Image recognition for waste reporting
Implementation

Action 1: Image recognition for waste reporting
Resources needed

City council → Multi-Annual Plan
50K EUR for software development

Real total cost is higher (internal technical staff costs etc)

Action 1: Image recognition for waste reporting
Evidence of success

Action 1: Image recognition for waste reporting
Evidence of success

13 types of waste in AI database = 64% recognition

Action 1: Image recognition for waste reporting
Lessons learned

Main focus was on **AI development**

Time and capacity for **testing** was underestimated

For future projects with an AI, **more time and capacity will be provided for testing**

**Action 1: Image recognition for waste reporting**
Action 2: Info app for UWC (underground waste containers)
Description

Info app for UWC: what is it?
- Existing Antwerp City App for UWC-accounts of citizens
- Several new features:
  - Consult personal balance for waste deposits
  - Make deposit to top up balance
  - Find nearest available UWC
  - Personal historic overview of deposits in UWC
  - Block/activate UWC-card
  - Improved communication about UWC

Improved process:
- Enhanced user-friendliness, faster access to features
- More self-service and thus more efficient use of employees

Action 2: Info app for UWC (underground waste containers)
## Implementation

### Analysis of needed software development

- ✓

### Implementation in www.antwerpen.be

- Make online deposit to top up balance
  - ✓

- Consult personal balance for waste deposits
  - ✓

- Activate UWC-card
  - ✓

- Find nearest available UWC
  - Issues

- Personal historic overview of deposits in UWC
  - End of 2022

- Block UWC-card
  - Q3 2022

### Develop API between app and www.antwerpen.be

- 2023 onwards

---

**Action 2: Info app for UWC (underground waste containers)**
Implementation

Delays
- For new online customer zones: decided to work with specialised UX-analyst instead of regular analysts
- This created a delay of several months
- However: online environment will be more user-friendly from the start

Issue with displaying nearest UWC
- First a map needs to be developed by another business unit of the City of Antwerp
- Only then this feature can be implemented

Action 2: Info app for UWC (underground waste containers)
Resources needed

City council → Multi-Annual Plan
50K EUR for software development

Real total cost is higher (internal technical staff costs etc)

Action 2: Info app for UWC (underground waste containers)
Evidence of success

Thousands of users now top up their balance online

Action 2: Info app for UWC (underground waste containers)
Lessons learned

It is better to **invest in the process**
Even if that means a delay
In order to **maximise the results**

Action 2: Info app for UWC (underground waste containers)
Thank you for your attention

Anne Brijs
anne.brijs@antwerpen.be

www.interregeurope.eu/winpol