

Smart shopping in Ghent (B E)

Managing crowds? It's never easy. But thanks to CrowdScan you'll become more efficient at it. Our accurate, real-time, privacy by design and unique sensor technology provides you with all the data, analytics and insights you need. Get organised, get Crowdscan.



What does the city wants?

During the COVID-19 pandemic, the city of Ghent was the first Belgium city to adopt crowdscan's technology to monitor the safe shopping in their city center and this in a very specific region (Langemunt and Veldstraat).

The following goals were established:

- Which region/store are more attractive than others (**hotspots**)?
- **Visualize real-time** crowd data of the **specific regions**.
- Detailed trends and insights to **respond faster** and **better** to **incidents** and make the fight to against **COVID-19** easier.

"We were searching for a non-intrusive technology to count our visitors in our shopping streets in Ghent. Due to the covid pandemic this need only increased. Crowdscan made it possible for us to monitor our shoppers on a real-time base. They proved their value as if they were our eyes on the streets."

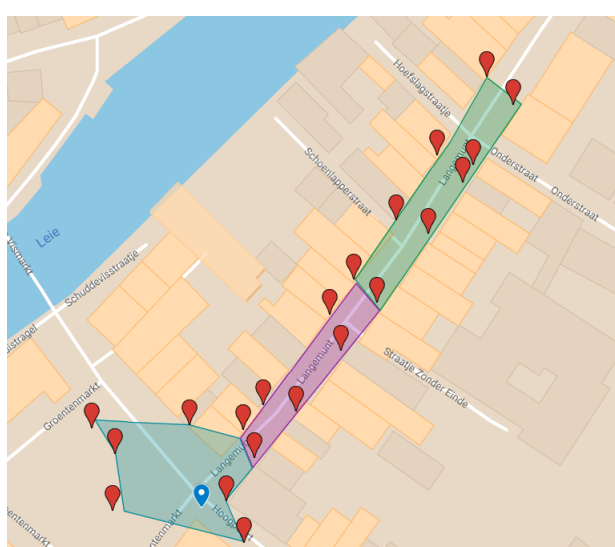
Sofie Bracke, Deputy Mayor of **Ghent** for Economy and Digitalization



How it works

Our proposed measurement methodology does not make use of cameras, Wi-Fi or Bluetooth and operates in all-weather conditions in which the influence of the physical presence of human individuals or animals on radio frequency (RF) signals in the environment is used to derive crowd size information.

We transmit **radio waves** in different directions **through the crowd** and use this in an advanced analytical model to accurately measure the number of people in a certain area. The hardware part consists of wireless nodes that will be deployed in a specific environment at approximately waist height. Additionally, these nodes are connected to a gateway. Each node is **battery powered** and can transmit and receive **sub 1-GHz wireless signals**. Because the data is processed in **real-time**, crowd estimations are updated every **10 seconds** in a graphical dashboard which can be integrated with other systems from customers or partners.

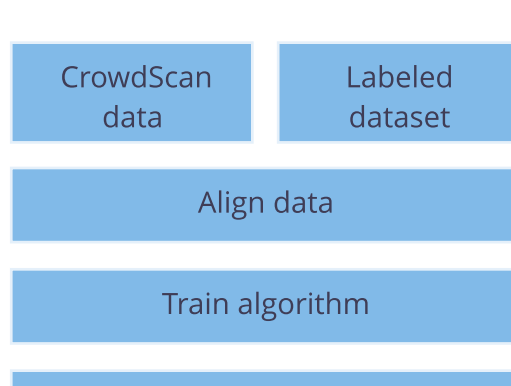


Subregions

It is possible to divide the full environments into subregions and perform crowd estimates within each subregion. This enables the detection – and in a later stage, prediction – of crowd flows, which is highly useful information in the context of crowd management solutions. We deployed **21 wireless sensors** in the city of Ghent and divided the environment into **3 different regions**.

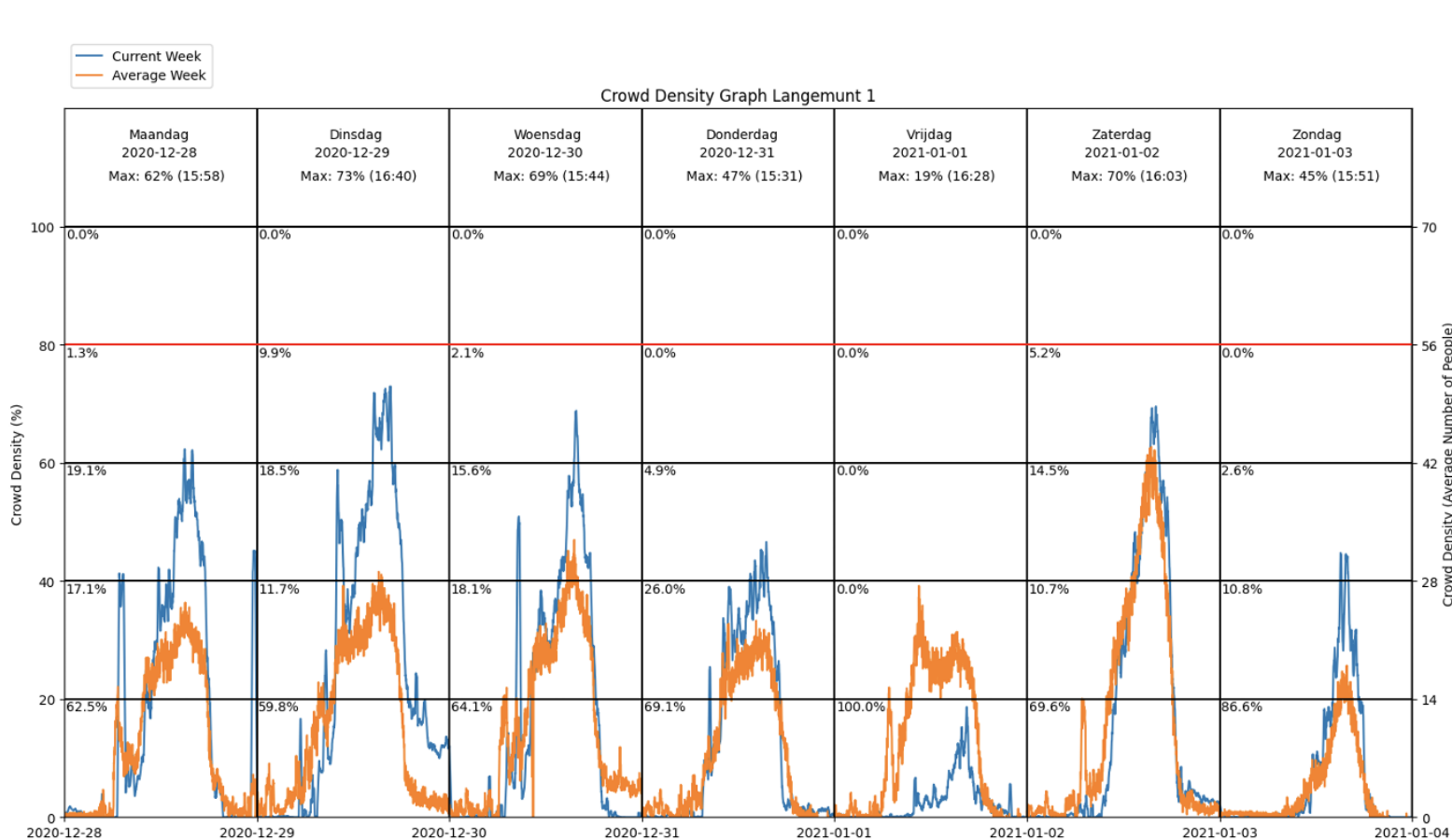
Evaluation process

To evaluate our technology, a dataset is created with **manually counted crowd sizes** from each environment to train our real-time algorithms and to evaluate new estimations. In order to continuously keep our estimations accurate, the real-time algorithm will be **retrained periodically**.



How did the city of Ghent benefit from our data?

To get a detailed overview of the long term impact on your high street, we compare different aggregated data windows upon a specific period in time. Below, the new years week (Blue) in the high street of Ghent is shown related to the long term trend from november till february (Orange). The differences between both graphs combined with other data sources allows a government to make better informed decisions.



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