

# TELENET TINX: SMART CITIES PLATFORM

05 May 2020

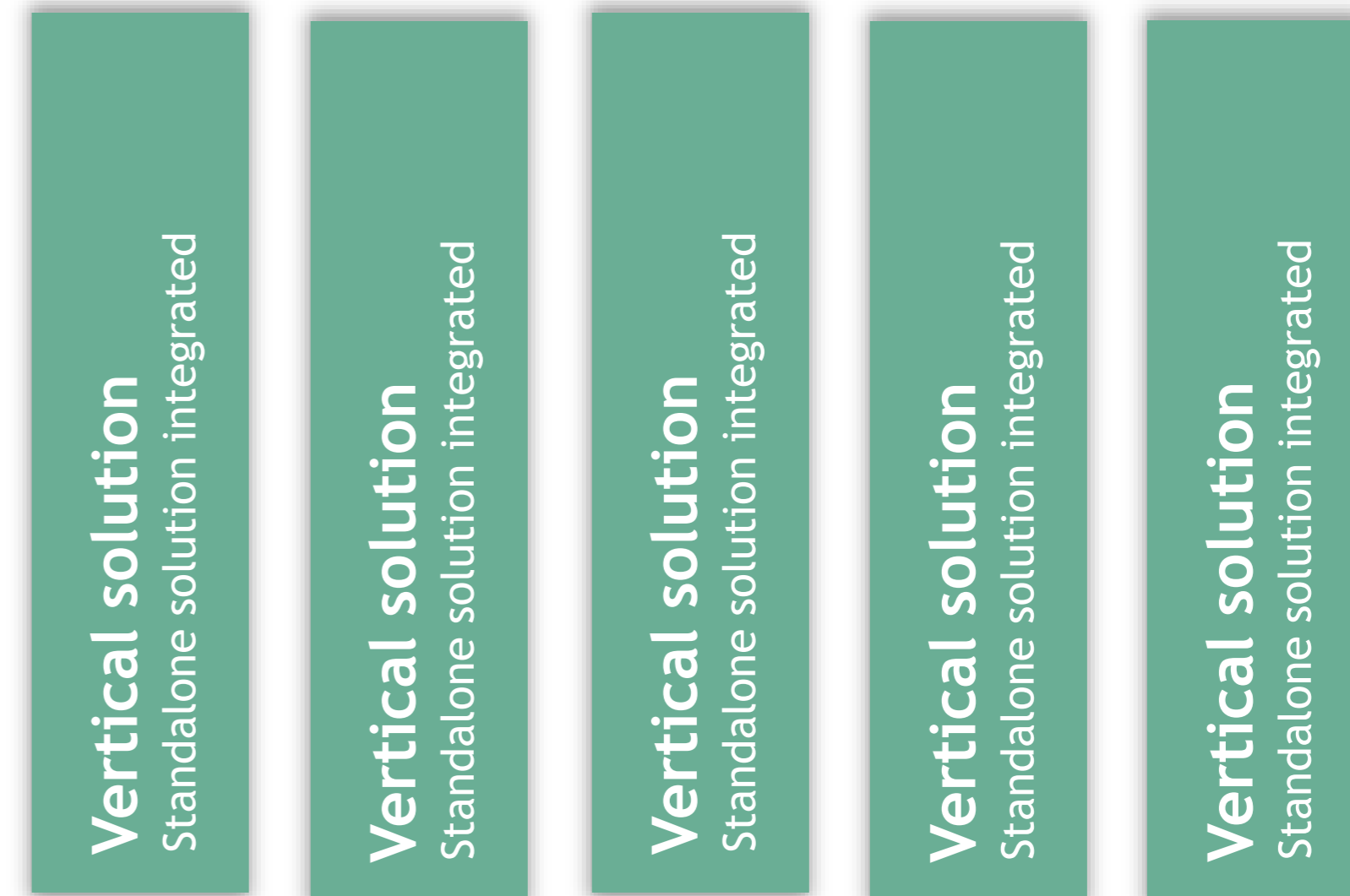




# Smart Cities: vertical model



- Vendor locking
- No standardization
- No Data ownership
- Limits innovation





# Smart Cities: Horizontal model

- Effective digitalization
- Drives standardization
- Minimized lock-in
- Future proof
- Data ownership





# Platform's key differentiators

## Cost Optimization

By optimizing the running costs of our solution we optimize the total cost of It and we therefore bring cost benefits to our customers.

## Solutions reusability

The developed components can be reused across the platform.

## NFRs

We ensure the non-functional requirements as availability, scalability, reliability and performance

## Agile Architecture

Our architecture is fully agile and therefore can support constant changes to quickly answer to customer needs.

## EU Compliance

The platform is developed with respect to the standards and recommendations for European cities.

## Security by design

Using Azure infrastructure and managed services allow us to have a secure platform by design.

## Technology agnostic

The platform is not imposing developers to use a specific technology or protocol when developing new services.

## Heterogenous Data

Our data ingestion layer can handle any data with high volume & variability



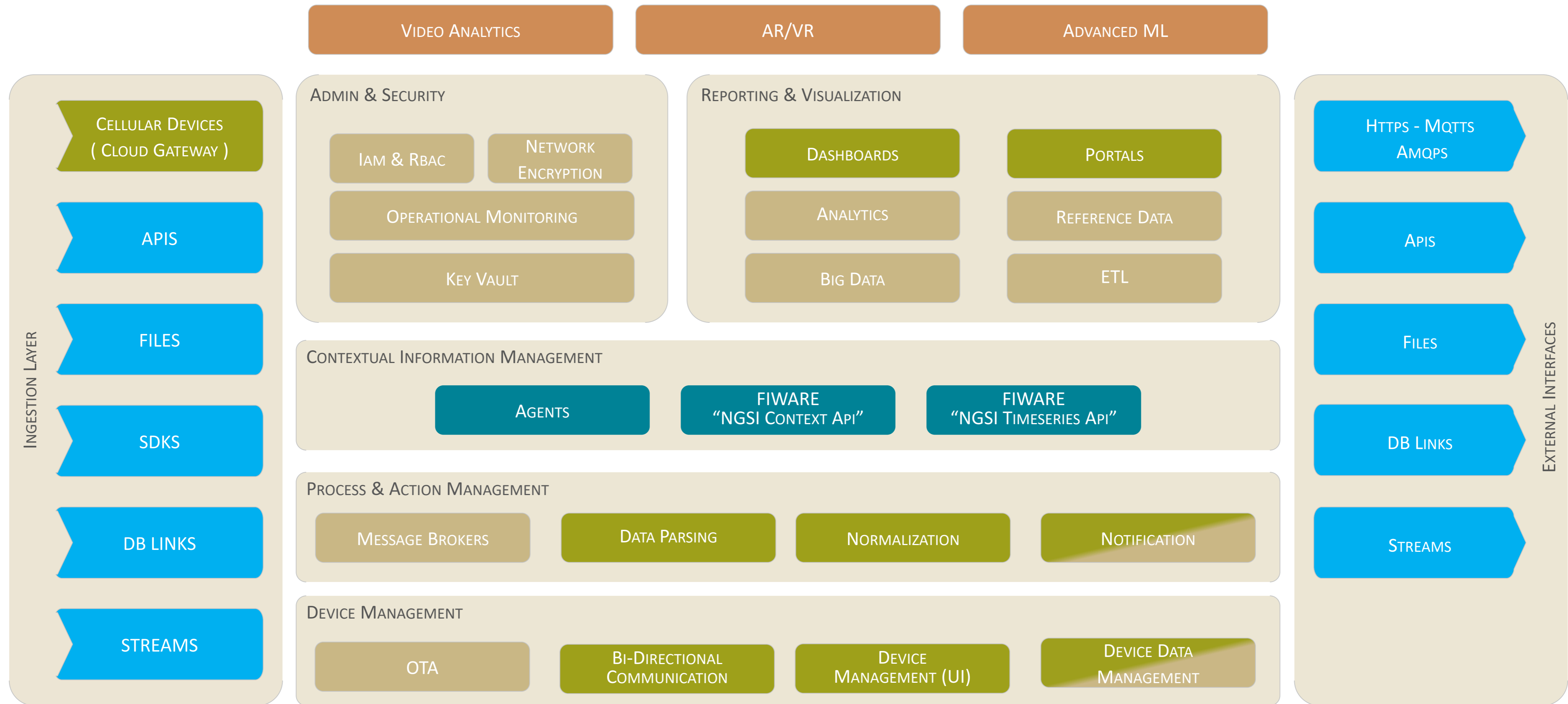


# Standards & guidelines





# Reference Architecture



**Legends** → Azure Components FIWARE Components Add-on Services/Components Developed Components External Components



# Platform Tiers



## 1 Tier 1\*

- 1000 API Calls/s
- 25.000.000 Ingress stream/month
- 50.000.000 messages/month
- Limited devices (400.000 msg/day)
- 256 Go hot storage (Retention Policy)

## 2 Tier 2\*

- 2000 API Calls/s
- 50.000.000 Ingress stream/month
- 100.000.000 messages/month
- Limited devices (800.000 msg/day)
- 512 Go hot storage (Retention Policy)

## 3 Tier 3\*

- 3000 API Calls/s
- 100.000.000 Ingress stream/month
- 150.000.000 messages/month
- Unlimited devices (1.200.000 msg/day)
- Cloud to device
- 1024 Go hot storage (Retention Policy)

The limitations of the defined tiers are subject to future changes since the platform is still improving.





# Data Visualization: Air quality observed

Stad Mechelen > Stad Mechelen Air Quality Observed

Last 2 days



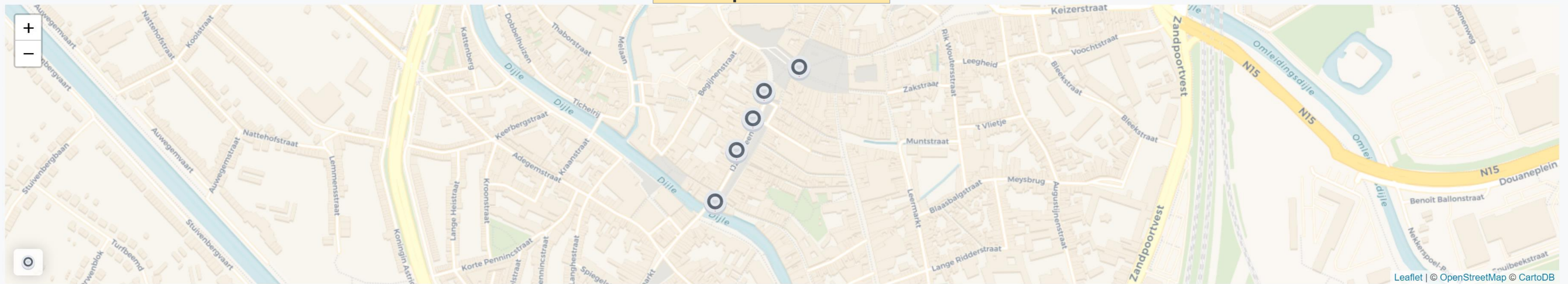
2020-04-27  
15:58:12  
Europe/Brussels



▼ Air Quality Monitoring

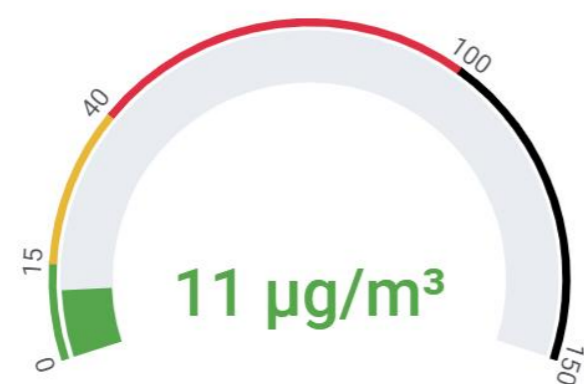
## Geospatial data

⌚ Last 24 hours



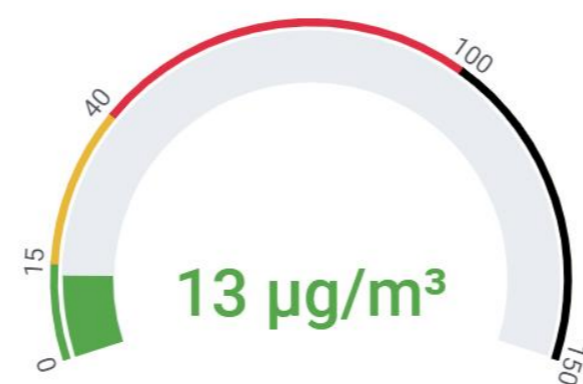
## Daily averaged data

⌚ Last 24 hours



## Daily averaged data

⌚ Last 24 hours



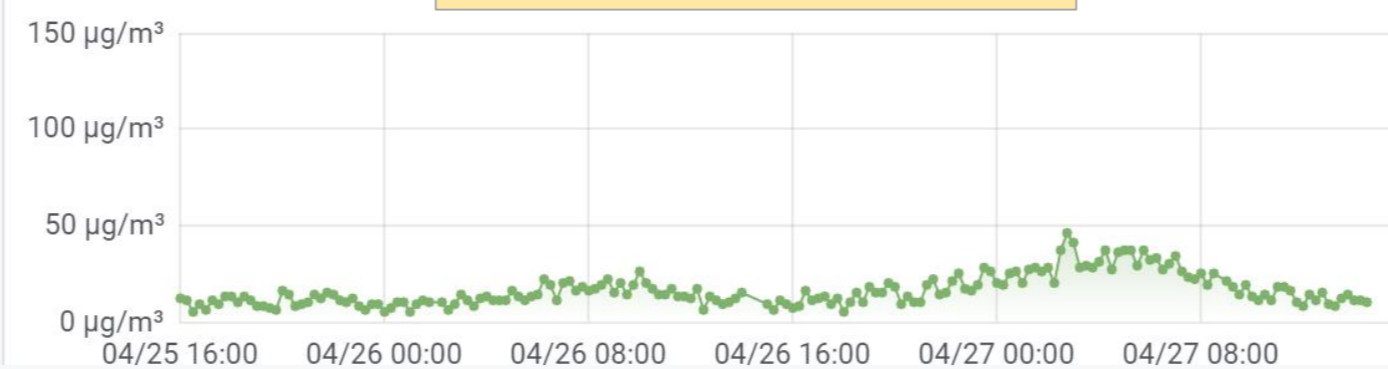
## Daily averaged data



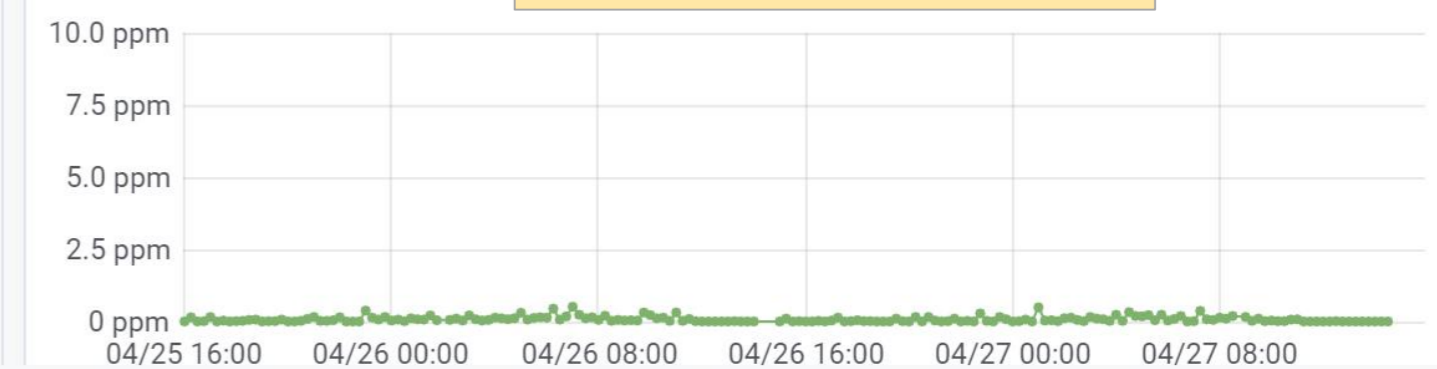
## Historical data



## Historical data



## Historical data





# Data Visualization: Traffic flow observed



Stad Mechelen > Stad Mechelen Traffic Flow Observed

Last 7 days UTC

Singoo DeviceID TrafficFlowObserved:503a0087-0341-4477-befa-31fce43c4ad2

Camera ID TrafficFlowObserved:45286



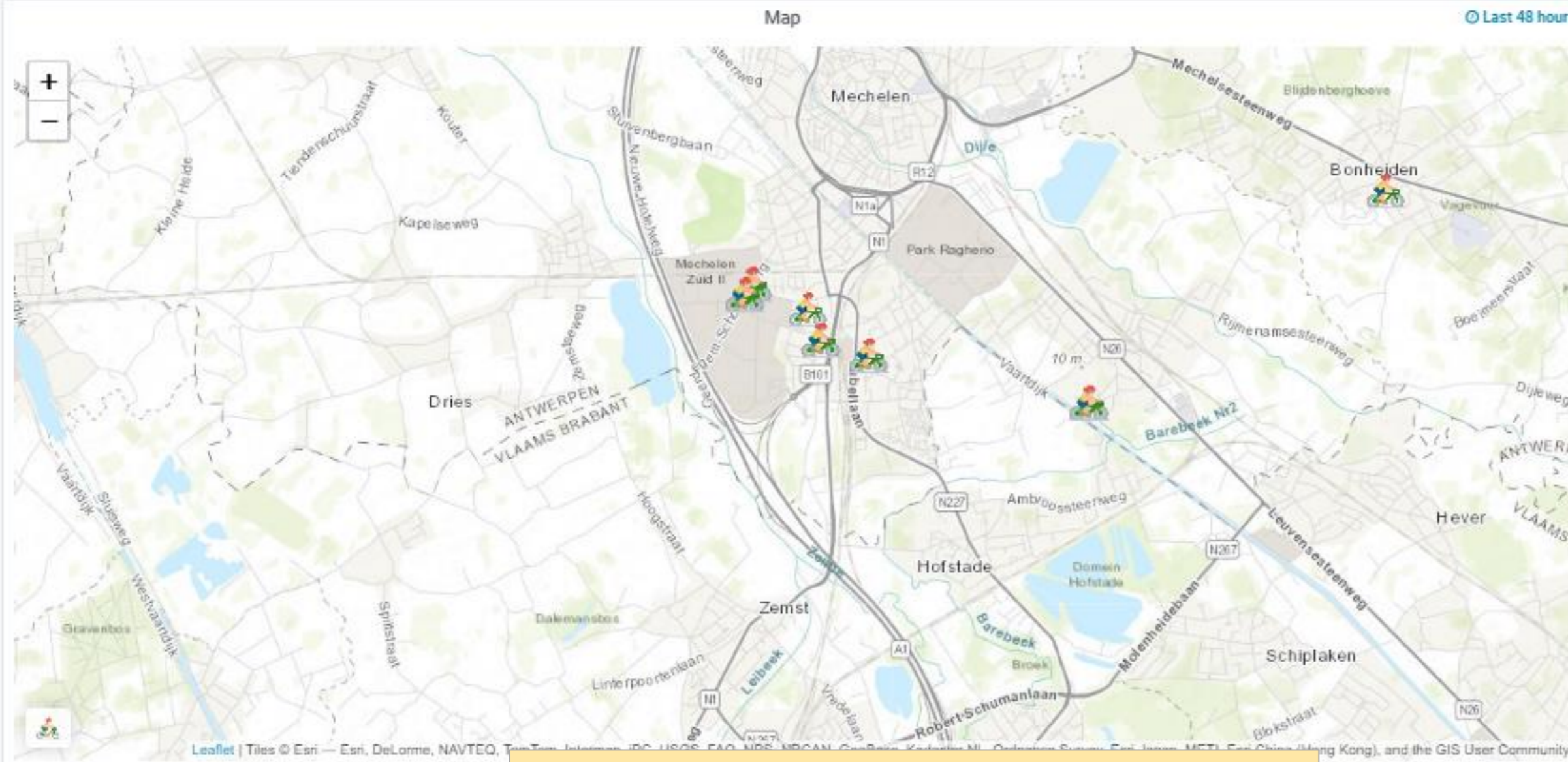
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Europe/Brussels



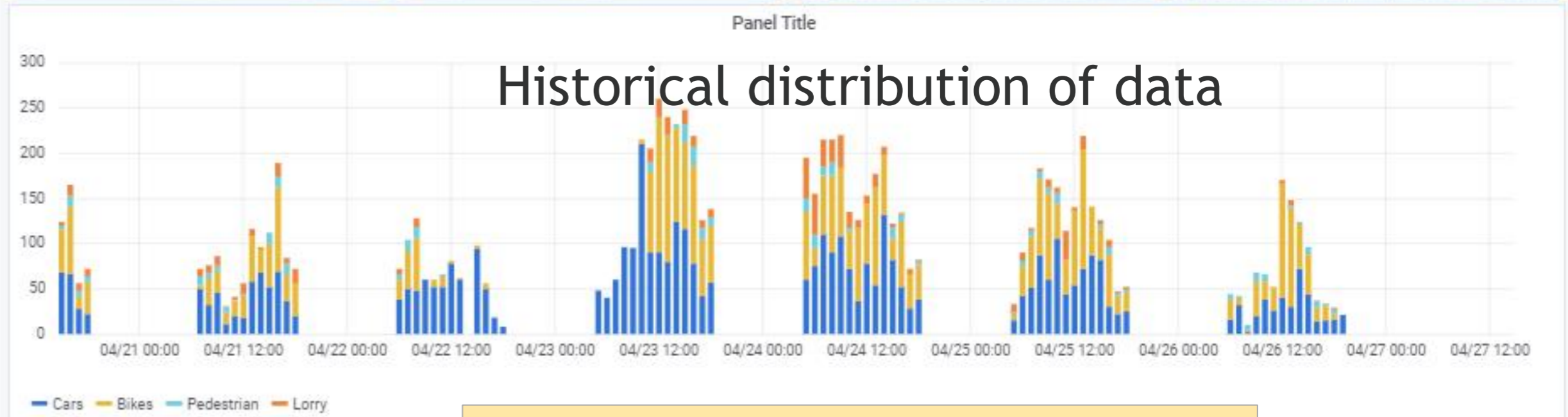
## Geospatial representation

## Real-time information

Telraam Traffic Flow



## Historical distribution of data



## Real time distribution

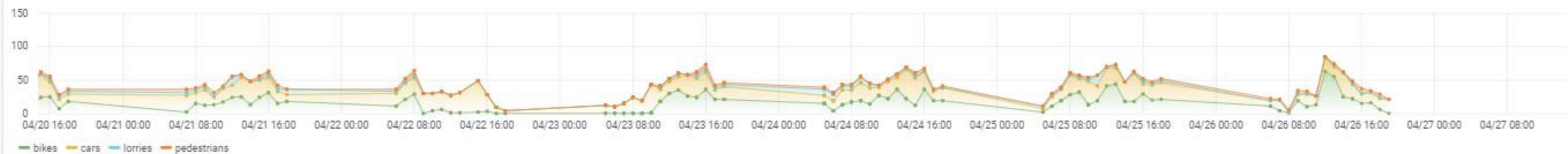
## Historical data

Traffic flow

Traffic flow



	current	percentage
Bikes	0	0%
Cars	21	100%
Lorries	0	0%
Pedestrians	0	0%





# Data Visualization: Traffic flow observed

Stad Mechelen > Stad Mechelen Traffic Flow Observed -



Singco DeviceID TrafficFlowObserved:503a0087-0341-4477-befa-31fce43c4ad2

Camera ID TrafficFlowObserved:45286



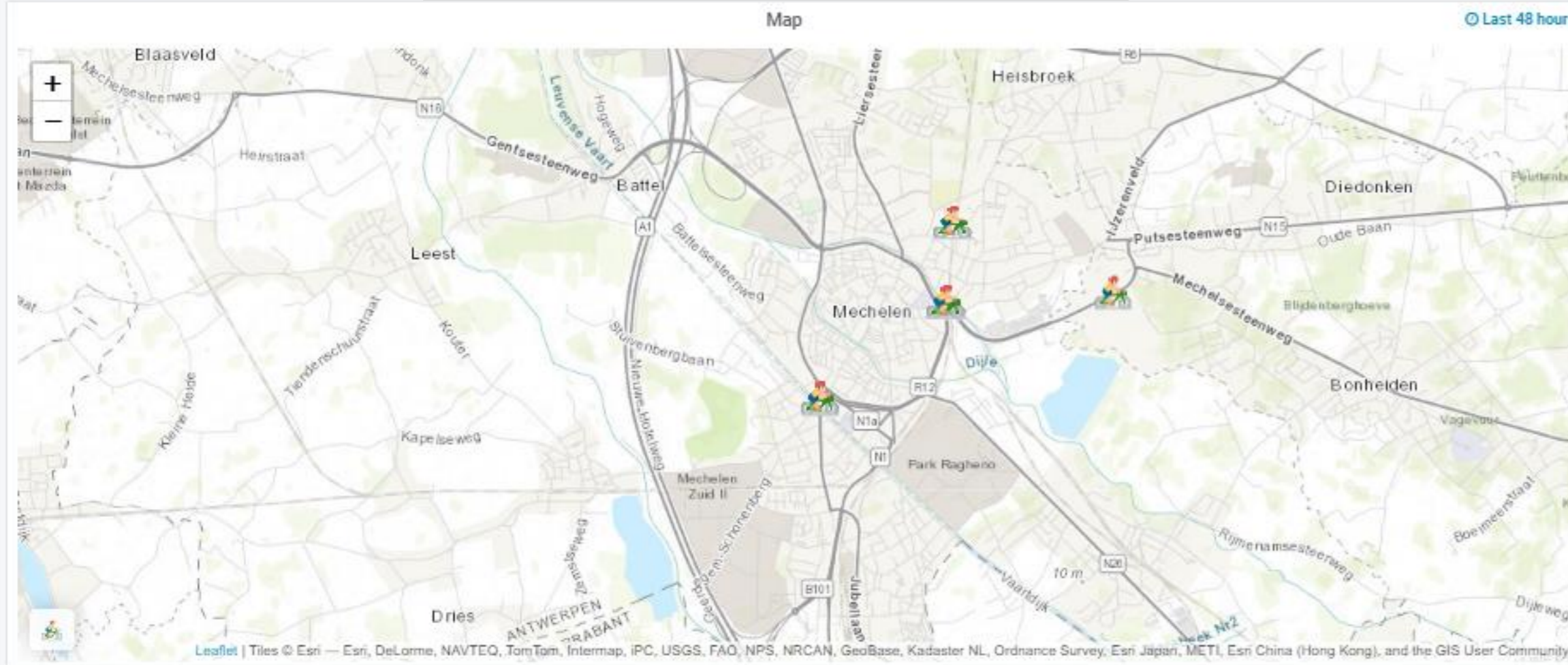
2020-04-27  
16:45:28  
Europe/Brussels



Telraam Traffic Flow (5 panels)

Signco Traffic Flow

## Geospatial representation



## Static information



Locatie naam: FTP 02  
Brusselsepoortstraat TOT

## Real time average



Bikes: 103 Bikes

## Basic Analytics

name

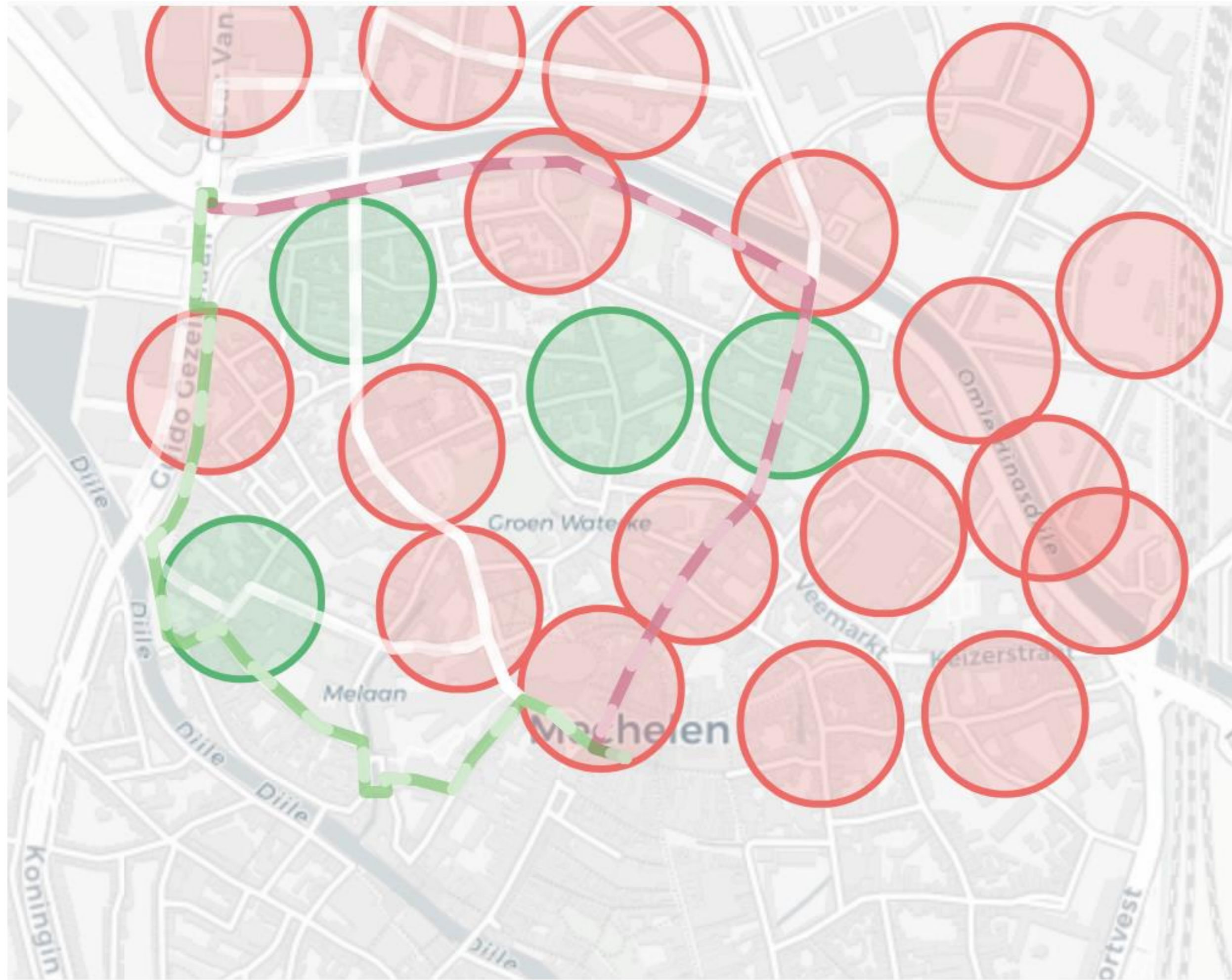
Bike_Youth	8.39 K
Bike_Moped	28.37 K
Bike_Extended	5.66 K
Bike_Children	1.93 K
Bike_Adult	338.38 K

## Historical data





# Horizontal solution



## Green Route

Advise citizens to take the less polluted route.

## **Information**

Distance: 1398

Quality of Air: 162.97264437689967/500

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