bettair®

Mapping Air Quality

Interreg Sudoe

NanoSen-AQM

Final Event – Round Table
30th of June 2021

Francisco Ramirez
Chief Scientific Officer
framirez@bettaircities.com

https://bettaircities.com

IMPACT BUSINESS 2020 2021 AWARDED BY SHIP2B

The Bettair® platform

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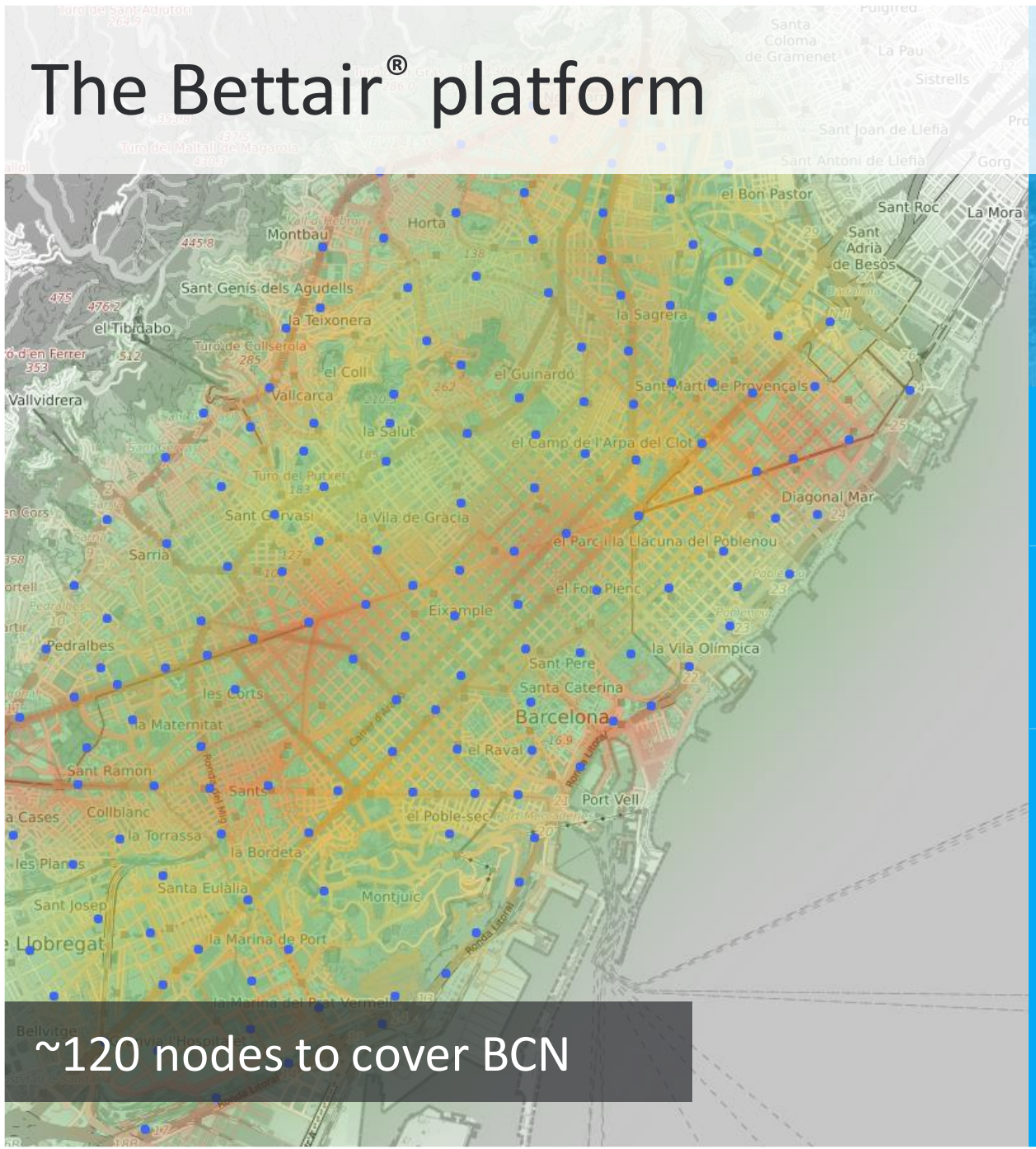
Mapping Air Quality



~120 nodes to cover BCN

Air Quality Mapping for cities
with a large-scale deployment of **accurate** devices
without maintenance

High-resolution air quality maps

Hardware, Software and APP

Outstanding accuracy for Air Pollution

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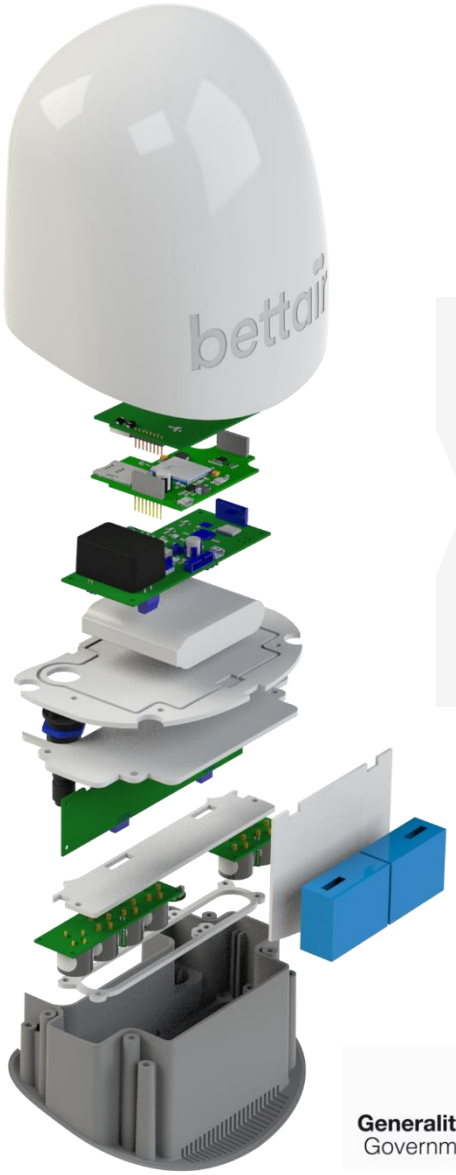
Mapping Air Quality

- Temperature
- Atmospheric Pressure
- Relative Humidity
- NO, NO_2, O_3, CO, SO_2, H_2S, NH_3, CO_2, PM_1, $PM_{2.5}$, PM_{10}



Machine Learning Techniques

High correlation ($r \geq 0.90$) for 18 months without human intervention

Generalitat de Catalunya
Government of Catalonia

Thanks to *Generalitat of Catalonia* we have access to all traditional monitoring stations of all cities in Catalonia (essential for our accurate and robust *Machine Learning* models).

Visualization and Analysis

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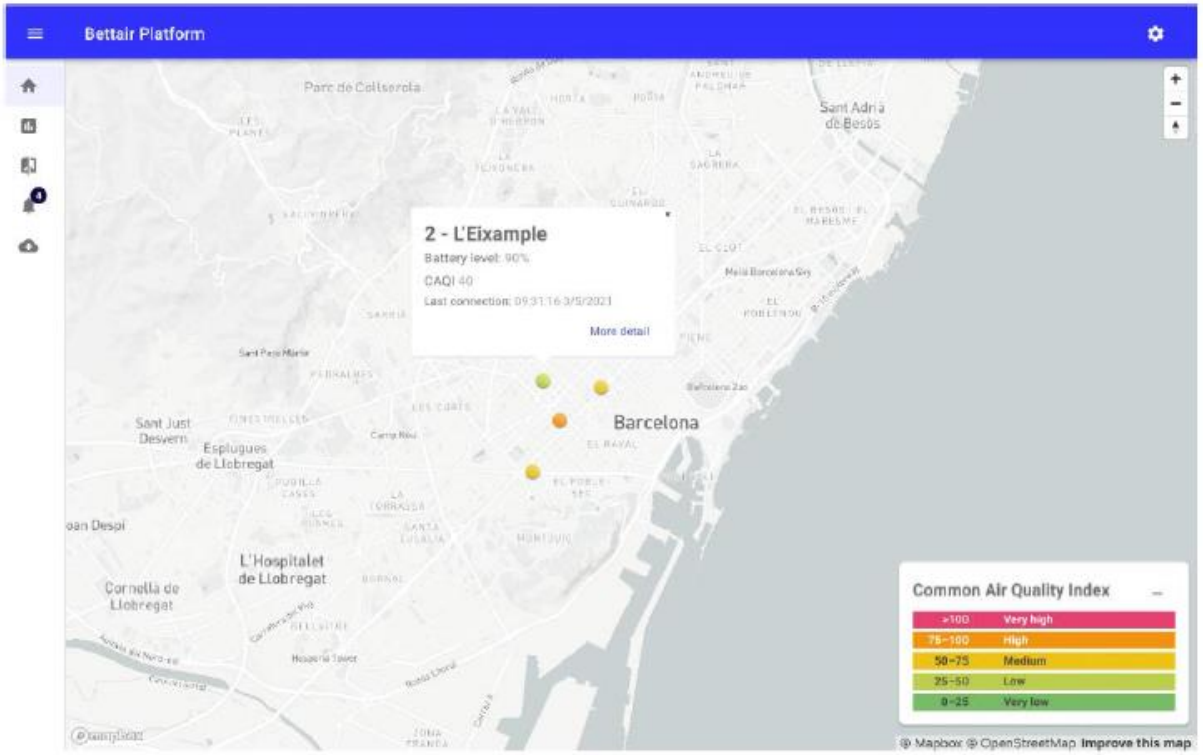

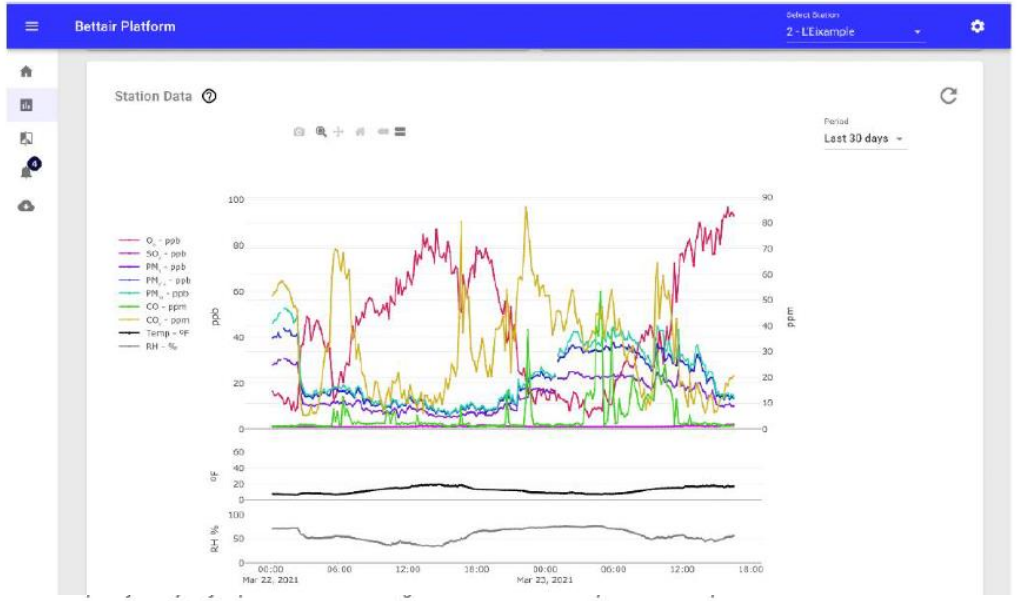

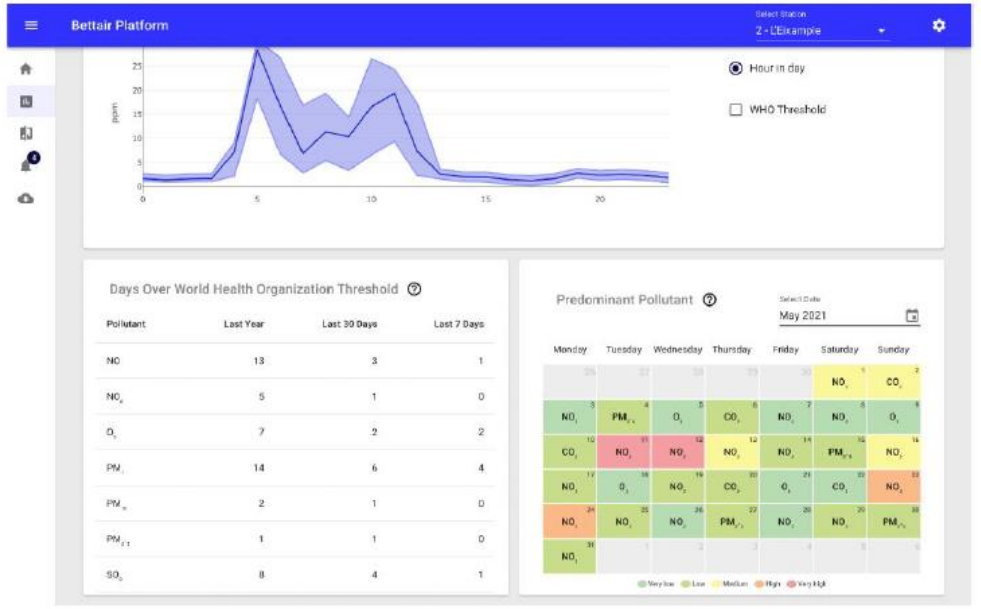

Value Proposition

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Mapping Air Quality

For cities

- Mitigate air pollution
- Identify unknown sources of pollution
- Potential revenue generation through fines
- Assess the impact of environmental actions
- Reduce the pollution costs
- Categorize zones per air quality

For citizens

- Better quality of life
- More available information
- The cleanest route
- More awareness about air pollution problems

For scientists

- Studies related to modelling, toxicology, and epidemiology
- Gaps in information about pollution and its effects on health
- Compare and identify the best urban topologies

The bettair® Projects

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Several Colocation Tests

Evaluation of technology in different urban environments in Europe.

H2020 – Fast Track Innovation - MappingAir

Bettair Node Industrialization and Dispersion with Numerical Models

Grant No 878799

H2020 - FF4EuroHPC - iBAM

High Resolution Dispersion Models by deep-faking HPC simulations

Grant No 951745 – Ex 1012

NEOTEC CDTI - IAAIRMAP

Product Quality Control

Short-term GIS-based Forecast

Grant No 951745

H2020 Innovation Action

Toxic Air Pollution Sensing Nodes for Citizen Science

SOCIOBEE - Green Deal Call (Negotiation)

Collocation tests

Generalitat de Catalunya

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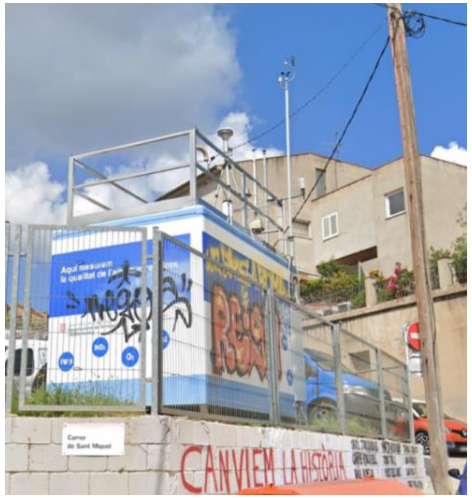
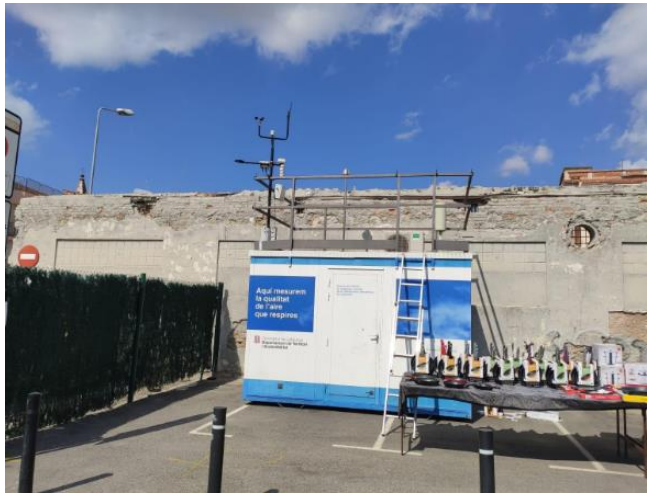
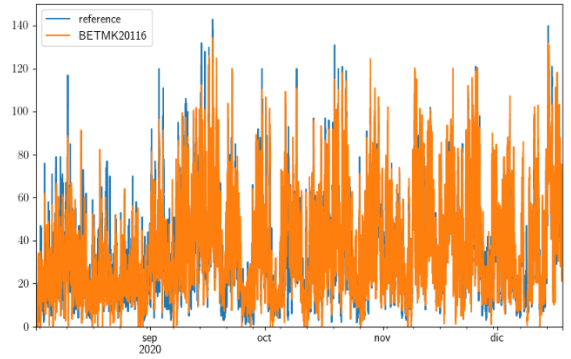
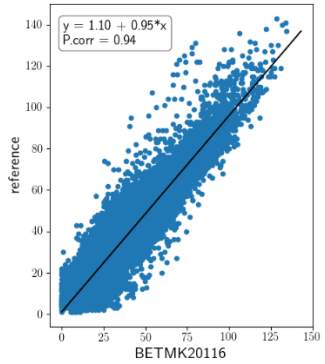


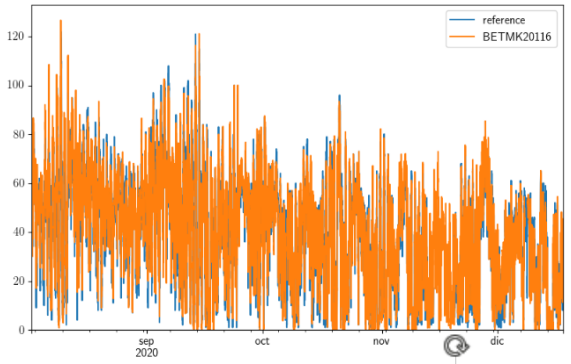


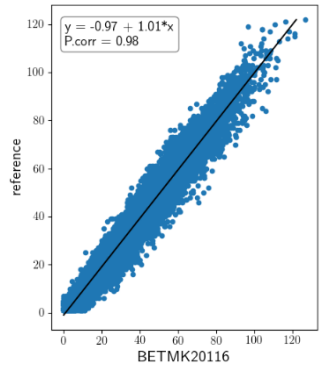
NO2



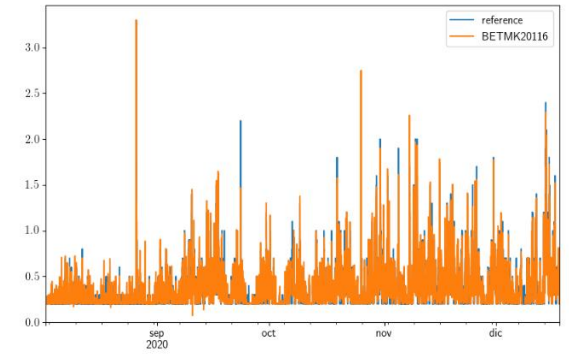


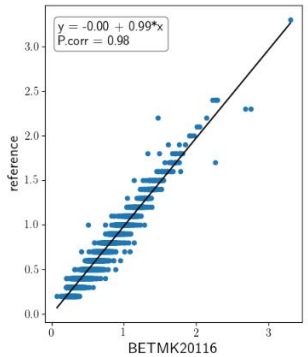
O3





CO





Collocation tests

Diputació Barcelona

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- RMSE (µg/m³):

Sensor id	PM2.5	PM10
A_1	12.3	15.0
A_2	11.3	14.4
A_3	10.6	12.7
B_1	7.4	9.1
B_2	12.4	14.9
B_3	9.0	10.8
C_1	2.0	4.4
C_2	2.0	4.4
C_3	2.0	4.4

- Correlation:

Sensor id	PM2.5	PM10
A_1	0.96	0.89
A_2	0.97	0.89
A_3	0.96	0.89
B_1	0.97	0.90
B_2	0.97	0.89
B_3	0.97	0.89
C_1	0.98	0.89
C_2	0.98	0.90
C_3	0.98	0.90

d-nota

Alcalá de Henares (Background)

R de Pearson	NO2	O3	NO	CO
BET2053 - ALCALÁ	0.91	0.97	0.89	0.86
BET2054 - ALCALÁ	0.90	0.96	0.89	0.86
BET2053 - BET2054	0.99	0.98	0.99	0.91

Pilots and Deployments - MappingAir

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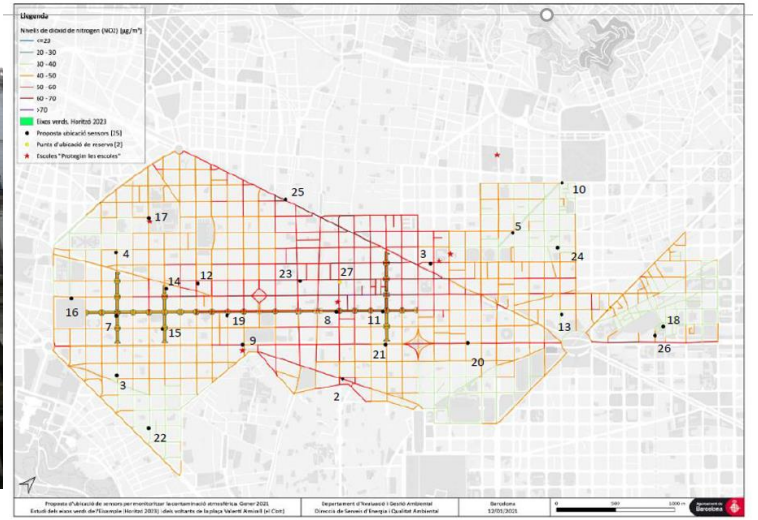
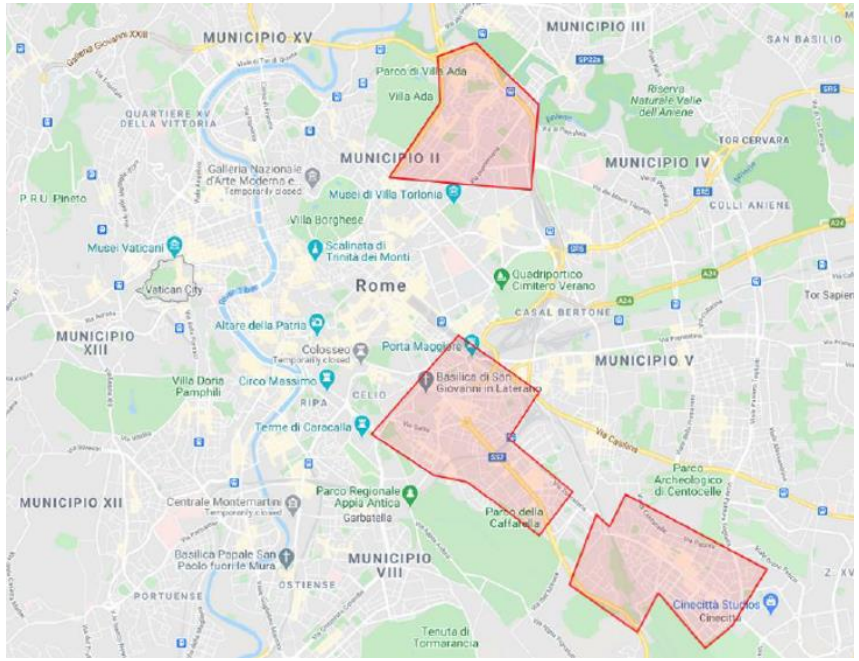
Barcelona Deployment – ASPB / IMI / ISGlobal



Roma– Roma Capitale / ACEA



Thank you!

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The **novelty** lies on:

- Electronics
- Mechanics
- Post-processing algorithm

For the first time, an **Internet-of-Things (IoT) platform** allows to **improve Air Quality in cities.**

The market interest, technology trust, and willingness to pay are supported by 27 letters of interest, and sales in 5 countries.

Francisco Ramirez
CSO and Partner
framirez@bettaircities.com