CITY RAIN

HELLO!

WE ARE

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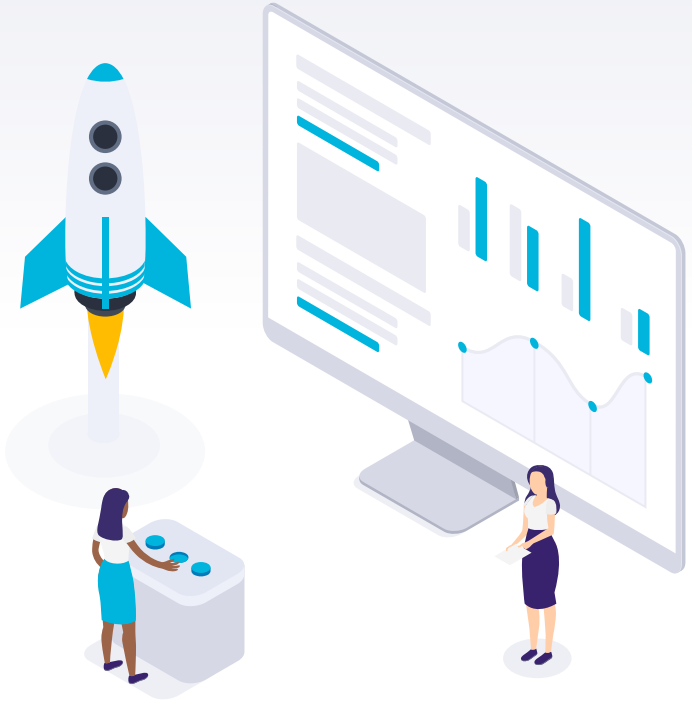
THE CHALLENGE

Improve the air quality and monetarize contamination evolution



“Air pollution causes in Barcelona 351 premature deaths in 2018”

Agència de Salut Pública de Barcelona

“4,2 million deaths every year as a result of exposure to ambient (outdoor) air pollution”

OMS

4,277,391

Premature deaths each year.

BIG CONCEPT

Reduce the particles suspended in the air by collecting them on the ground emulating the rain.

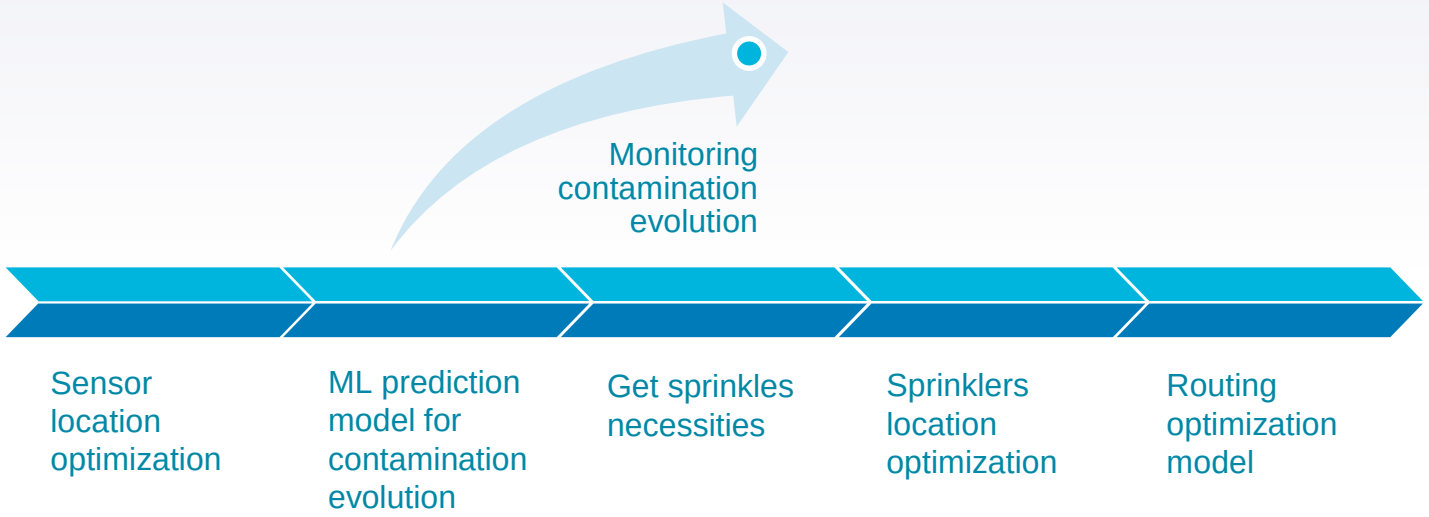
HOW?

- Laser sensor installation
- Sprinkler installation
- Town hall cleaning service

WHY?

- Low cost
- Scalability
- Demand accuracy
- Not dependant of other systems, but compatible with climatic stations

PROJECT DEVELOPMENT



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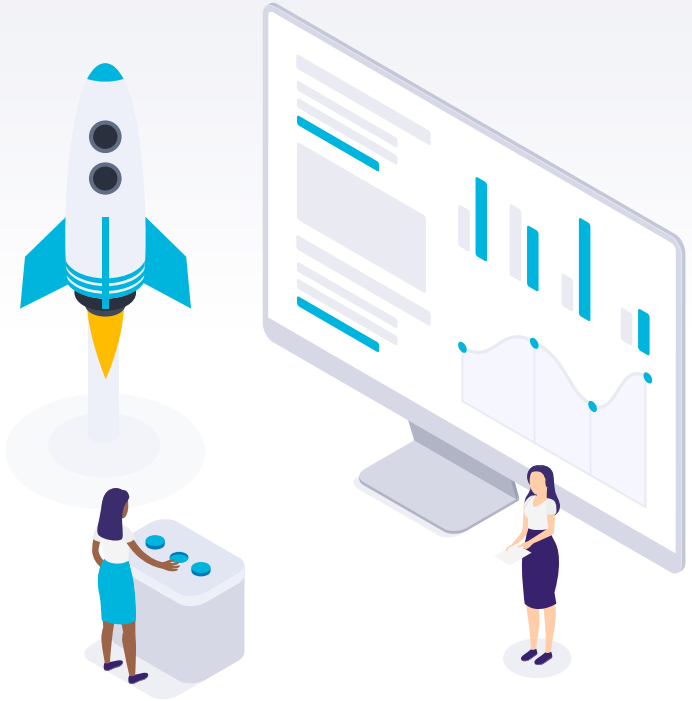
TECHNICAL IMPLEMENTATION

Optimization



Sensor Location

Objective Function

$$\min \sum_{i \in CS} l_i$$

$$\sum_{i \in S} l_i * a_l \geq A$$

$$\forall (i,j) \in P, X_i + X_j \leq 1$$

Sprinkler Location

Objective Function

$$\forall Z_i \in L$$

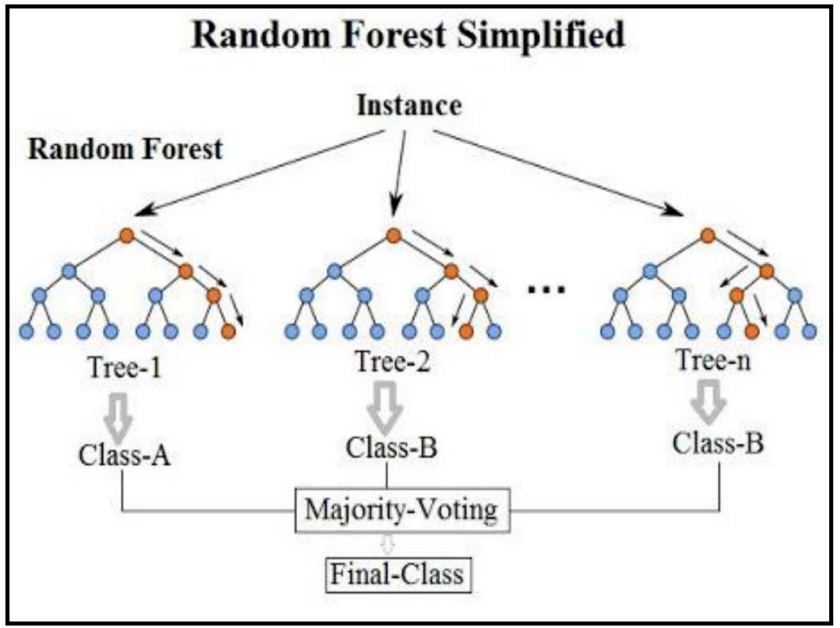
$$\min \sum_{i \in L} \sum_{j \in Z_i} k_{i_j}$$

$$\sum_{j \in L} \sum_{i \in Z_i} s_i * a_i \geq a_j * Z_i$$

$$\forall (i,j) \in S, X_i + X_j \leq 1$$

Machine Learning

- sulfur dioxide (SO2).
- nitrogen dioxide (NO2).
- PM10.
- PM2.5
- carbon monoxide (CO),
- ozone(O3)



3,7 km2

Area to cover

31 sensors

Installed

30.000 €

Total success scalability

Desktop project