

POLIS

CITIES AND REGIONS FOR TRANSPORT INNOVATION

ANNUAL
CONFERENCE

2022

30 November
1 December, 2022
Brussels, Belgium



#POLIS2022

Traffic signage and road surface: a lightweight approach of digitizing the physical infrastructure for maintenance and updated Open Data

3B session

Wednesday, 30 November from 16.45 to 18.15

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How are the cities monitored today?



Manual inspections,
workers dependant

—
Not objective results



Priorisation of
main streets

—
Secondary streets
left behind



Lack of
evidences

—
Doubts in
responsibility



No inspection to
control the city
O&M contractors

—
Lack of control by
DoT



Limited budgets
based on
historical data

—
Low Budget
Efficiency



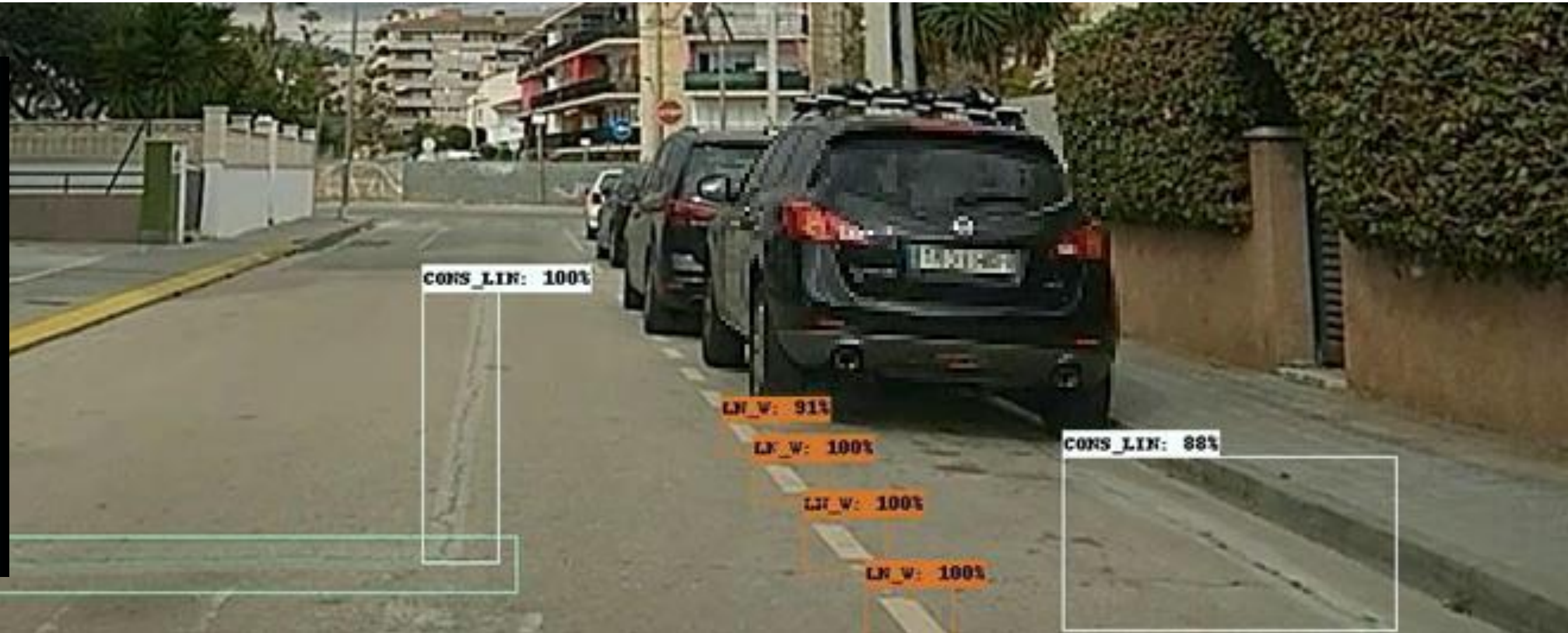


Solution for urban monitoring

Automatic detection
of elements,
classification and
analysis

Geolocated

100% in-home technology



IoT

Geolocated detection,
classification and

characterization of elements



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Computer Vision

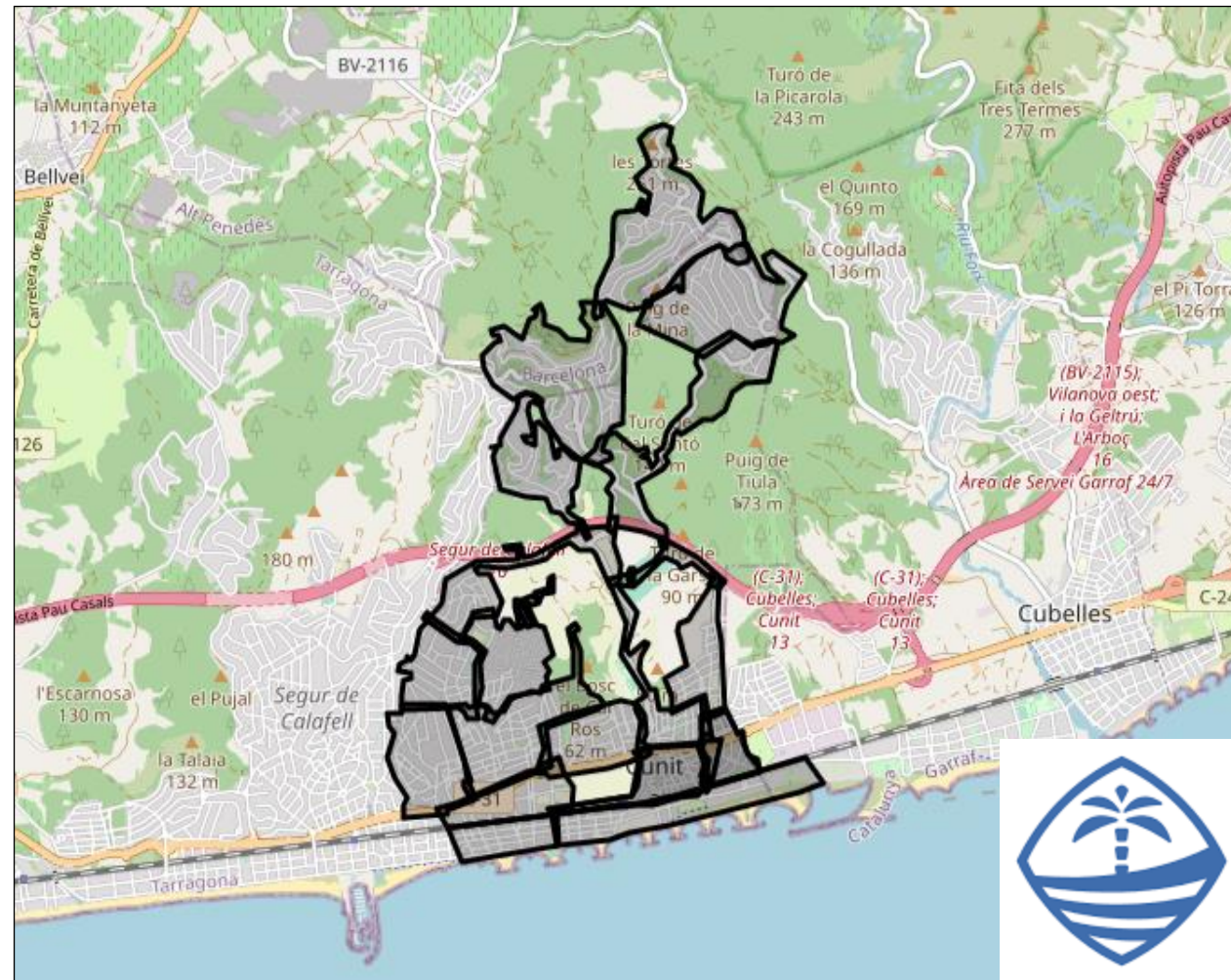
Geolocated Video
analyzed using Deep
Learning based detection
and classification

Cloud & Edge Analysis

Analysis based in the
knowledge of our clients.



Basic data of Cunit



9.74 km² of surface

14.000 inhabitants in winter

150 km of linear sections in street and roads

Local authority responsible of maintenance:
Regidoria de Noves Tecnologies, Informació i
Transparencia

Previous situation: No staff dedicated to circulating to detect incidents or damages. Detection via complaints from neighbors and reports from police officers during their patrols. A member of the municipal police has the mission of controlling the state of the signs and the state of the roads, as well as the report and proposal for improvements in terms of mobility.





The solution

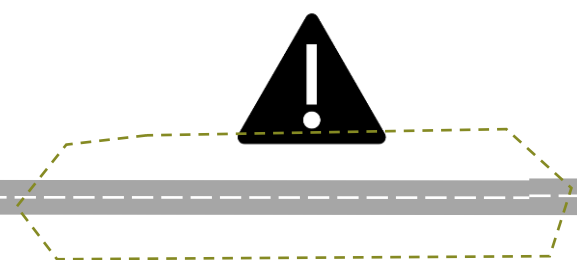
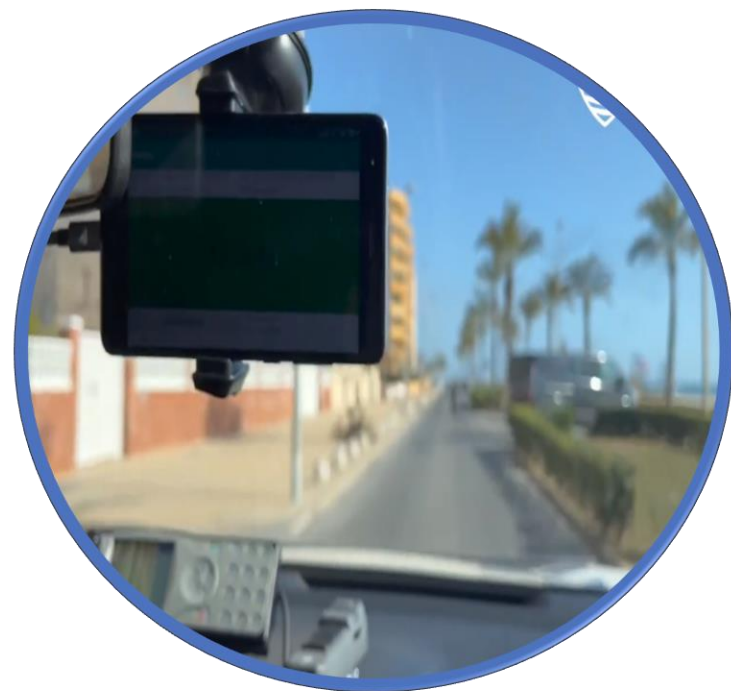
100% at home development



SW on board of 4 vehicles from police. Android devices.

Computer Vision SW and Data Analytics in the cloud for detection and classification

Web interface for the responsible in the city





Results for vertical signage



- Comprehensive, updated traffic sign inventory.
- Detection of every damaged traffic sign (degraded colours, graffiti, stickers...)
- Remote verification and digital evidence of the road works signage and its visibility.
- Frequent (daily/weekly) update and monitoring to detect changes, if desired

OPEN OPPORTUNITIES thanks to the solution:

- Publish in Open Data all the vertical signs.
- Control the spaces assigned through licenses for works, moving transport...





Results for horizontal signage



- Comprehensive, updated horizontal sign inventory.
- Detection of points where the paint has low visibility and/or incoherence
- Remote verification and digital evidence of the road works signage and its visibility.
- Frequent (daily/weekly) update and monitoring to detect changes, if desired

OPEN OPPORTUNITIES thanks to the solution:

- Publish in Open Data all the horizontal signs.
- Control the risky zones for vehicles with ADAS systems





Results for irregularities in the pavement



- Detection and inventory of all the damages in the road surface: cracks, potholes, sunken sewers, dips...
- Complete automated evaluation of the condition of the road surface in each stretch, enabling objective assessment for data-based decision-making.
- Detection of vandalism/damage (i.e., the removal of speed humps)

OPEN OPPORTUNITIES thanks to the solution:

- Objective data to take decision about next repairments
- Control the risky zones for vehicles with ADAS systems





The dashboard

Heat Map for both lane marks and irregularities in the pavement to detect:

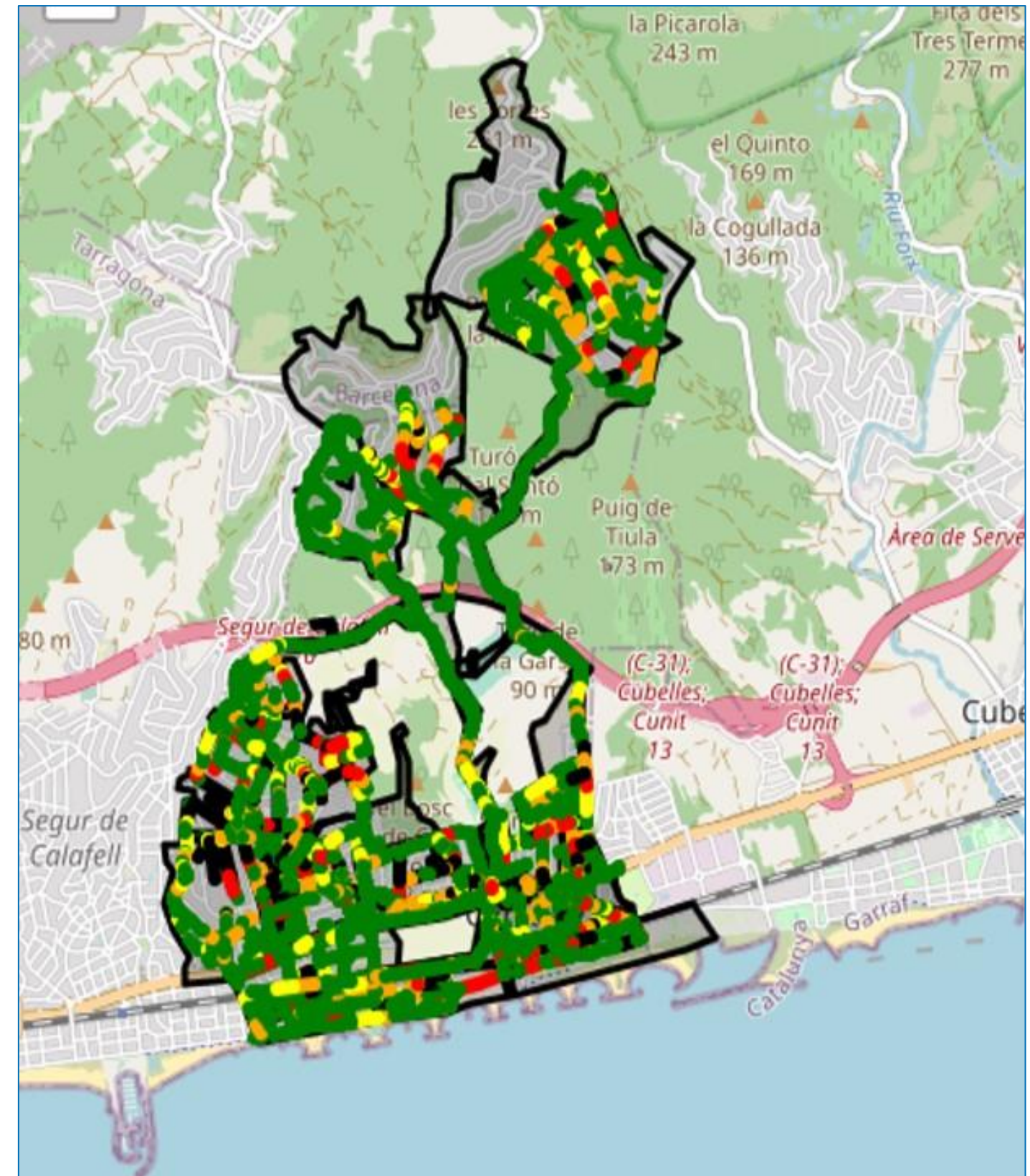
- Sections with low visibility of lane marking
- Sections with high density of irregularities
- Sections with high impact of irregularities inside the vehicle

Detailed inventory of:

- Vertical signs
- Horizontal signs
- Irregularities in the pavement

Videos with all the **evidences** recorded

Results can be collected by other platforms through an API.





Other services



- Control of work zones
- Inventory of safety barriers, analysis of risks and detection of defects in them
- Other measurements (distances, dimensions...) from the vehicles
- *Soon*: Inventory of lightning poles and detection of defects
- *Soon*: evaluator of streets for the adoption of Autonomous Vehicles level 4 and 5

OPEN OPPORTUNITIES thanks to the solution:

- Control and measure everything that you can see from a vehicle (including from bicycles)





Special Thanks to...



EIT Urban Mobility is supported by the EIT,
a body of the European Union



AJUNTAMENT
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Thank you for your attention!

Please, send your questions to:

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