urbiotica

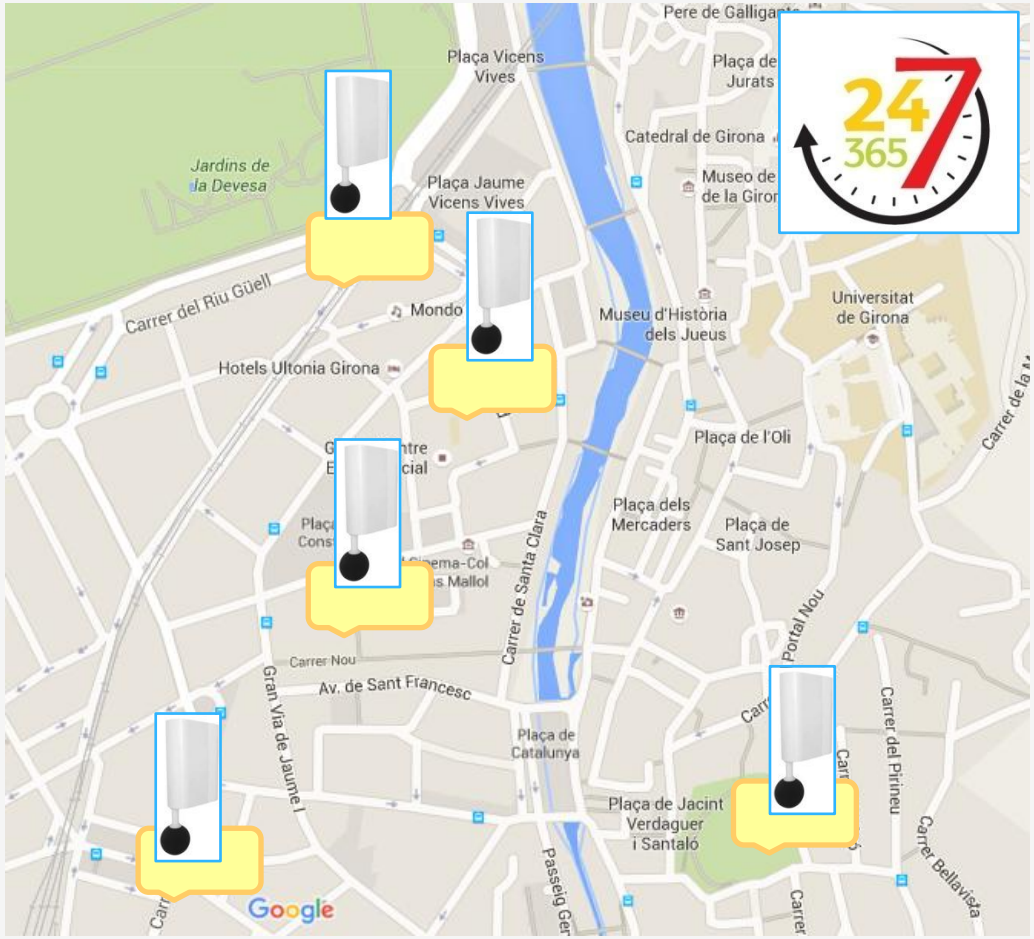
Noise monitoring solution

Continuous noise monitoring system

CONTINUOUS NOISE MONITORING SYSTEM

Continuous noise monitoring system

Noise monitoring network
based on a wireless sensor network



Real time continuous monitoring of the most noisy areas in the city

U-Admin Control Center

Visoracustic

Web applications for noise pollution management

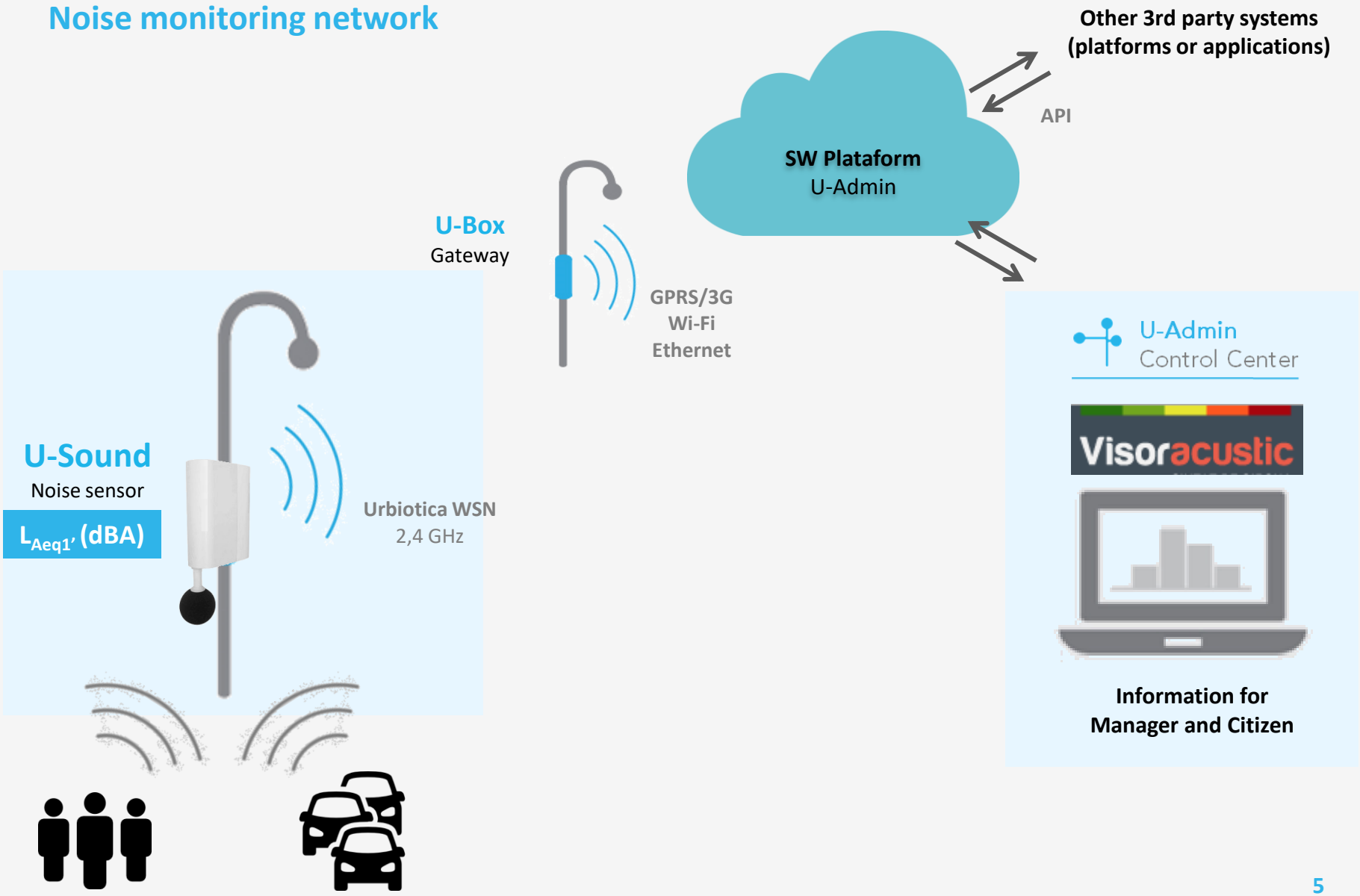
One new tool for noise pollution management

Low-cost and permanent **noise control system**
Complementary to traditional monitoring equipment

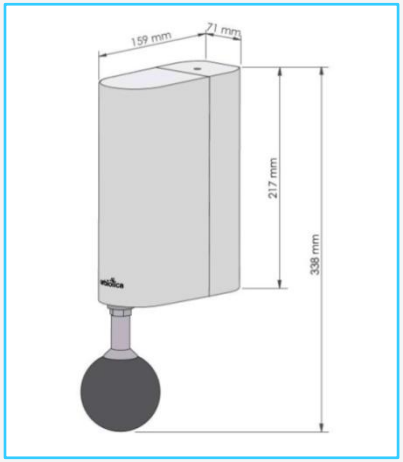
- **Noise** exposure **evaluation**
- **Quantify** the **results** of the **action plans**
- **Improve control** in noisy and problematic areas
- **Anticipate citizen demands**
- Assess the compliance with what is established in the Acoustic Map
- Make **information available to citizens** *(optional)*

How does the system work?

Noise monitoring network



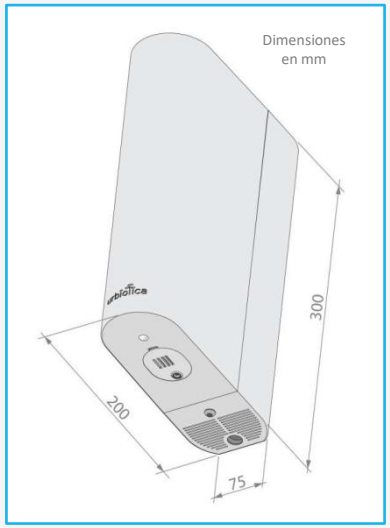
The sensor: U-Sound



- Measure the **equivalent continuous sound level of 1 minute (**A, C and Z weighting)
- **Range of detection** from **40dB(A) to 114dB(A)**
  - Resolution: 0,1 dB
  - Accuracy: equivalent to a **Class II sound level meter** according to **IEC 61672**
- **Lifetime of 12 years** with minimal maintenance
- In-situ calibration
- Power supply**:** street lighting or **solar panels**
- Communication: **Urbiotica's WSN**

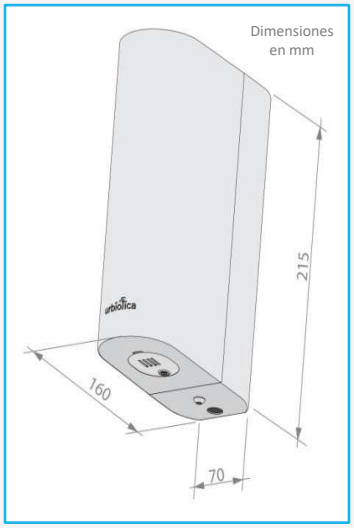
Communication devices: U-Box and U-Flag

U-Box (Gateway)



- Network concentrator
- Up to 40 U-Sound devices
- Conexion: 3G/GPRS, Wi-Fi and Ethernet
- 24 hour power supply
- Maximum distance to U-Sound/U-Flag: 100 meters

U-Flag (Repeater)



- Network repeater
- Power supply: street lighting or solar panels
- 4 days of battery autonomy
- Maximum distance to U-Sound/U-Box: 100 meters

Information generated by the system

Basic KPI's

$L_{Aeq,1'}$ $L_{Ceq,1'}$ $L_{Zeq,1'}$

$L_{Aeq,10'}$

$L_{Aeq,1h}$

Equivalent continuous sound level A, C and Z weighting
Average of all noise levels variations given in a period of time T

KPI's for outdoor noise measurement

L_{den}	Day-evening-night noise indicator
L_n	Night-time noise indicator
L_d	Day-noise indicator
L_e	Evening-noise indicator

Statistical KPI's

$L_{A90,T}$	Background noise level
$L_{A10,T}$	Maximum level detected
$L_{A50,T}$	Average level

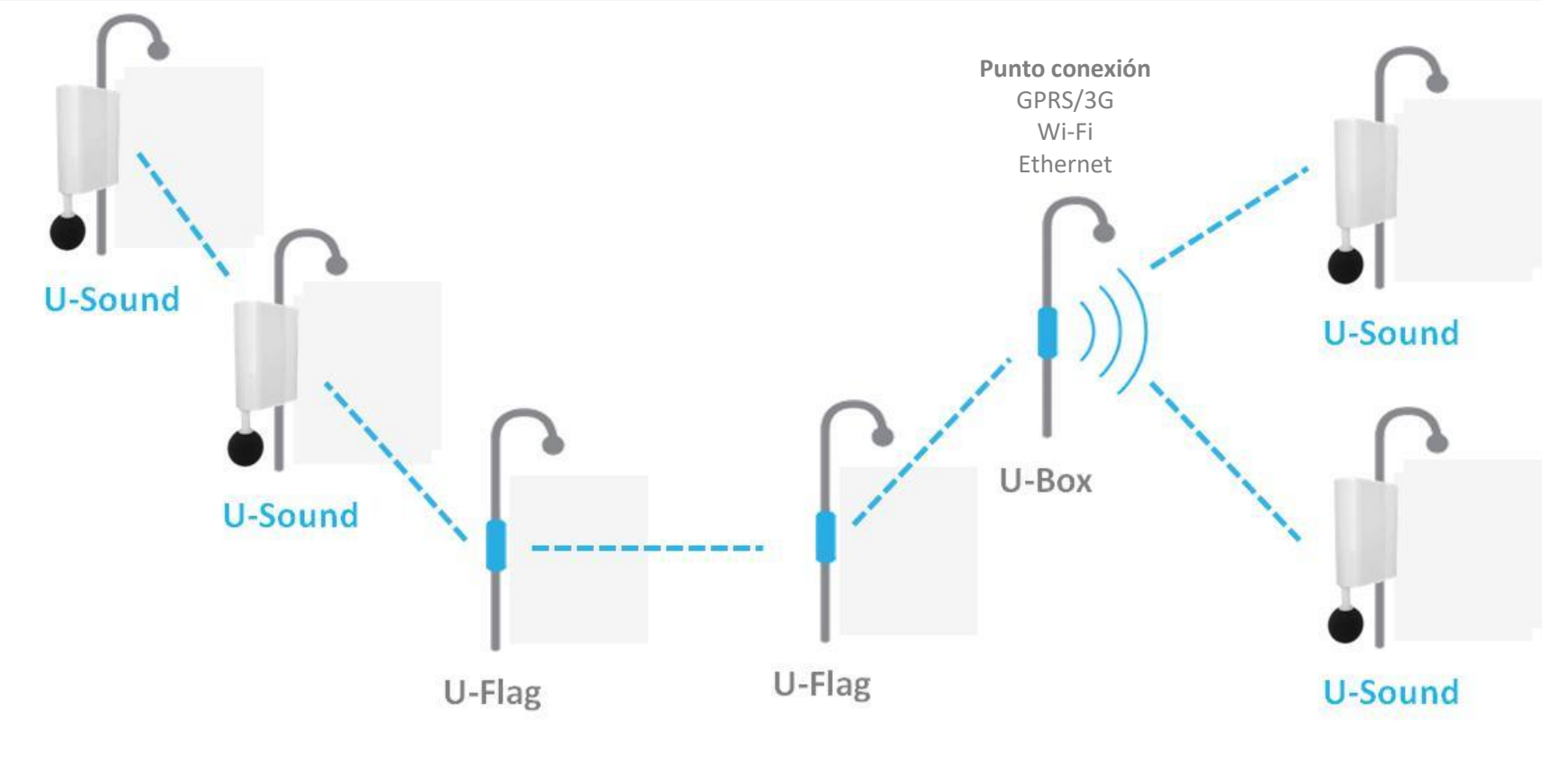
Alerts

Email notification when threshold are exceeded

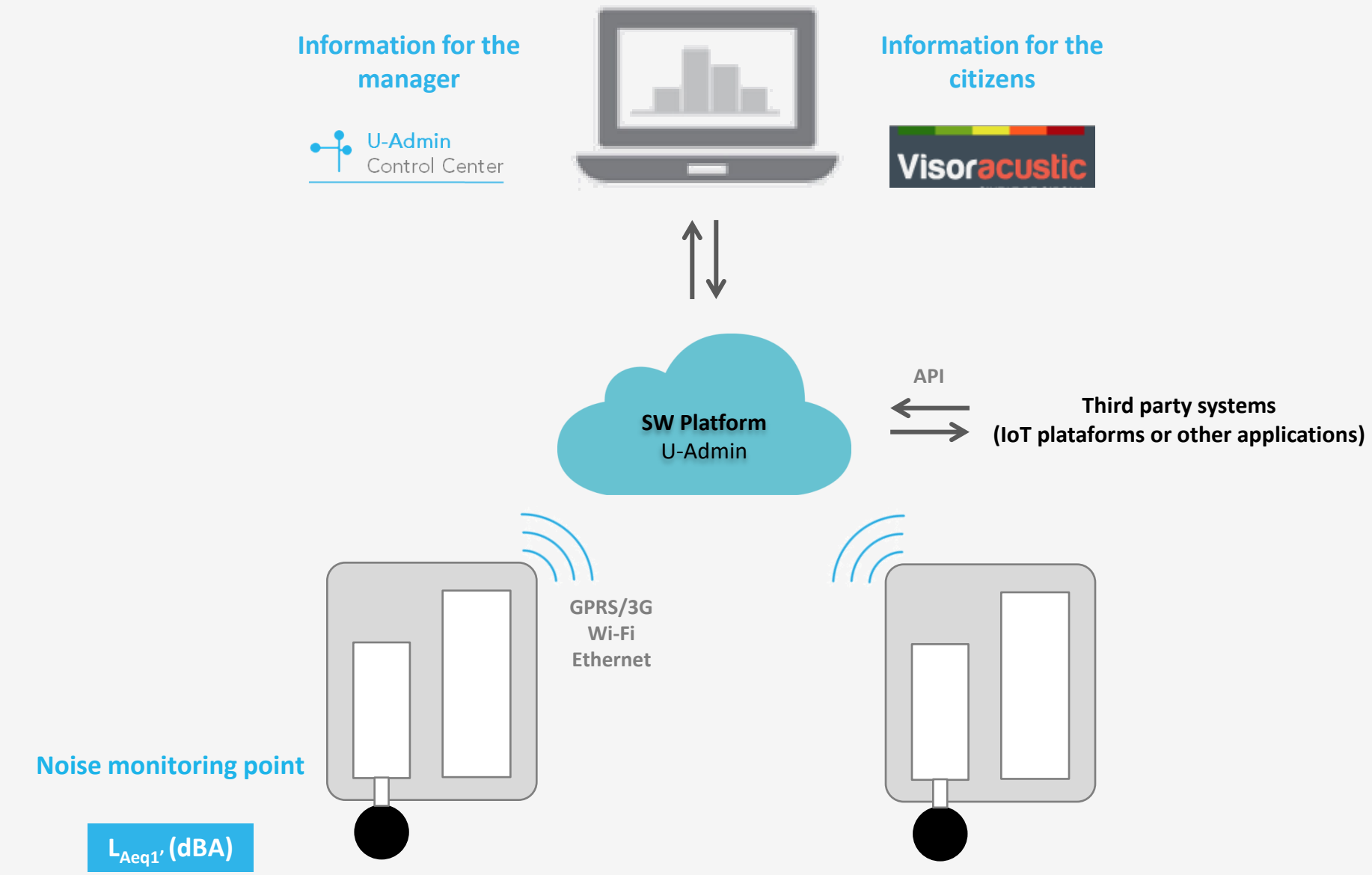
- Threshold configuration: noise and time
- Configurable for each moment of the day

Monitoring points nearby

The components of the Urbiotica network form local wireless networks in order to monitor noise at several nearby points using a single Internet access point.



Monitoring isolated points



Monitoring isolated points

The noise monitoring point

- Installation bracket for street lamp or facade
- **12 year lifetime** with minimal maintenance
- Power supply: 24 hours of electrical supply
- Includes electrical protections
- Components can be installed up to 100 meters apart. In this case the U-Sound sensor can be connected to the public lighting supply network.

The **U-Sound sensor** measures the **equivalent continuous sound level** in 1 minute (A, C and Z weighting).

Measurement range from **40dB (A) to 114dB (A):**

- Resolution : 0,1 dB
- Accuracy: equivalent to a **Class II sound meter** according to **IEC 61672**.

On-site calibration.

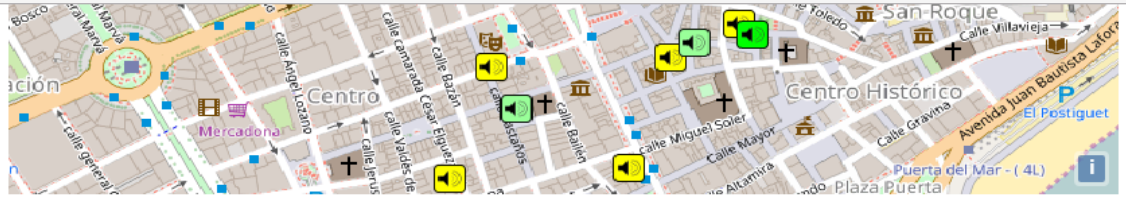
The **U-Box concentrator** sends to the platform the information measured by the sensors through Internet (3G/GPRS, Wi-Fi, Ethernet).

SOFTWARE APPLICATIONS

Web APP for the manager: U-Admin Control Center

U-Admin Control Center

U-Admin Control Center is the management tool that allows access to real-time data, analyze and export the system data.



4.18

Tª 35 Temperature (ºC)
10:24:58 25/07/2017

Last week Real Time Data

N-001 Plaza de las Flores-Mercado Central

Private access: user and password

Real-time information

Assess noise evolution

Web APP for the manager: U-Admin Control Center

The calendar shows the noise level in each period of the day: day, evening and night, for an easy assessment of compliance.

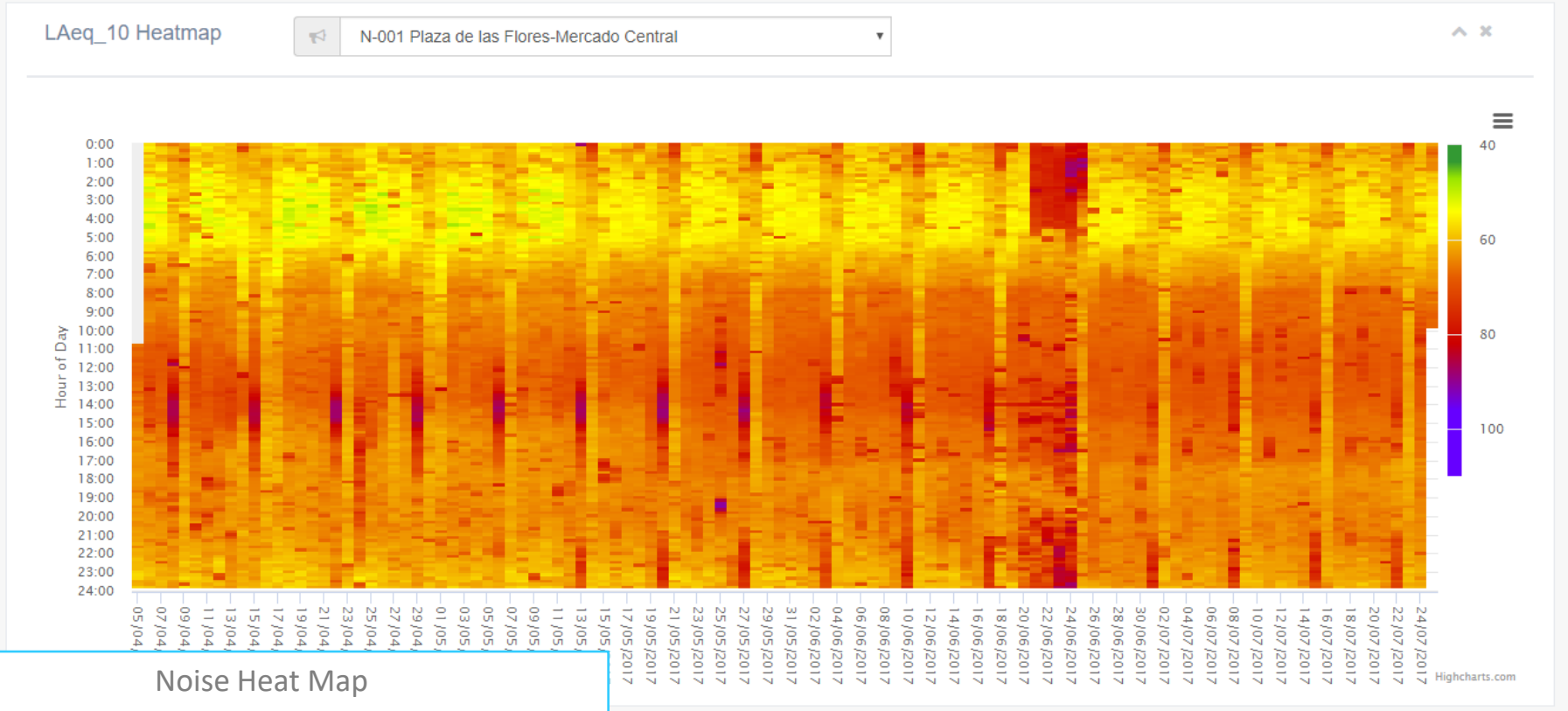
Display indicators

Ld, Le, Ln and Lden

in calendar format

Web APP for the manager: U-Admin Control Center

The Heatmap allows you to easily detect the loudest moments in hours or days of the week.



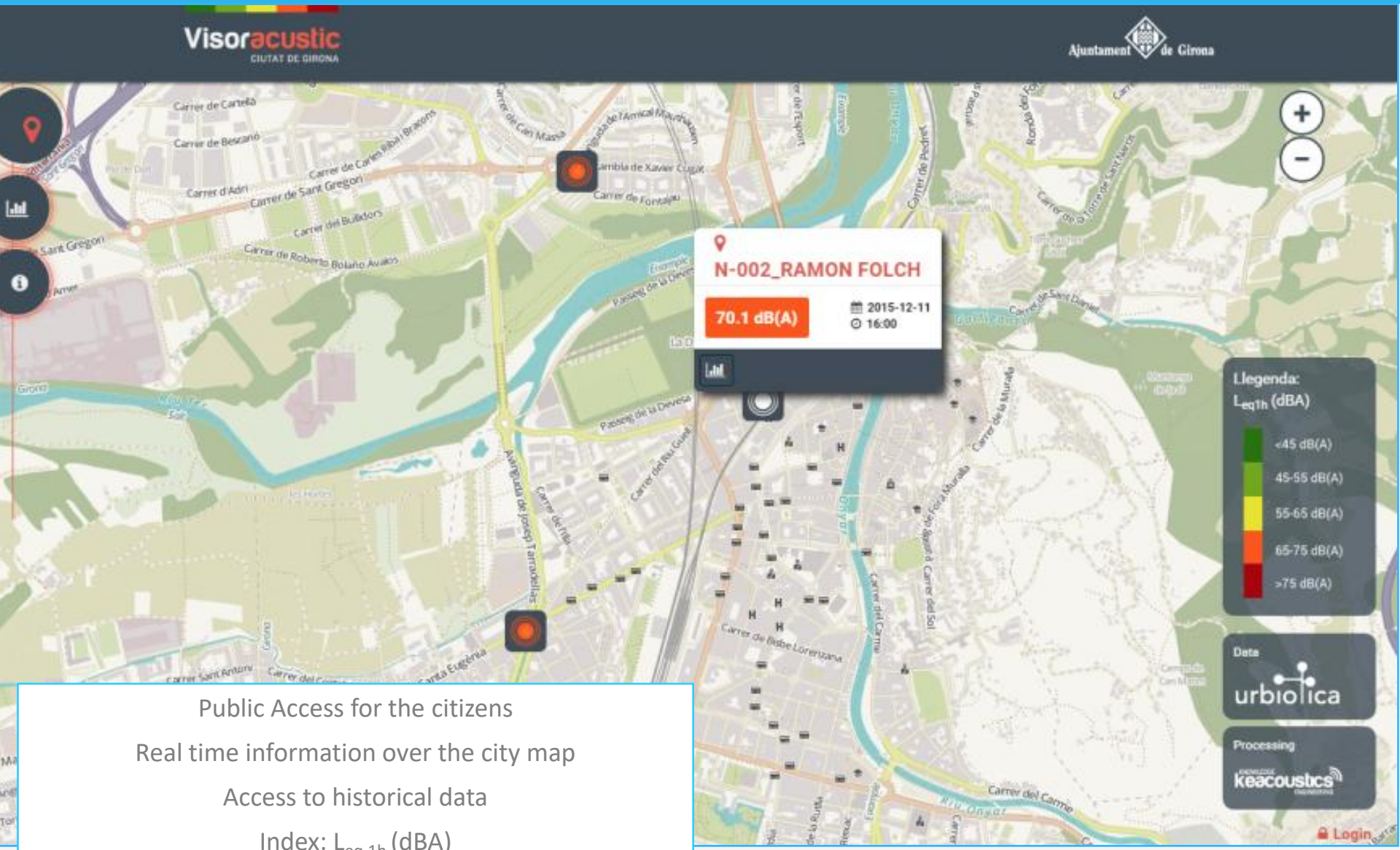
Noise Heat Map

Download acoustic indicators in CSV format

Compare two or more measurement points in the same period of time

Compare two different time periods for a measurement point

Web APP for the citizens: VisorAcustic



Public Access for the citizens

Real time information over the city map

Access to historical data

Index: $L_{eq,1h}$ (dBA)

Noise alerts for managers

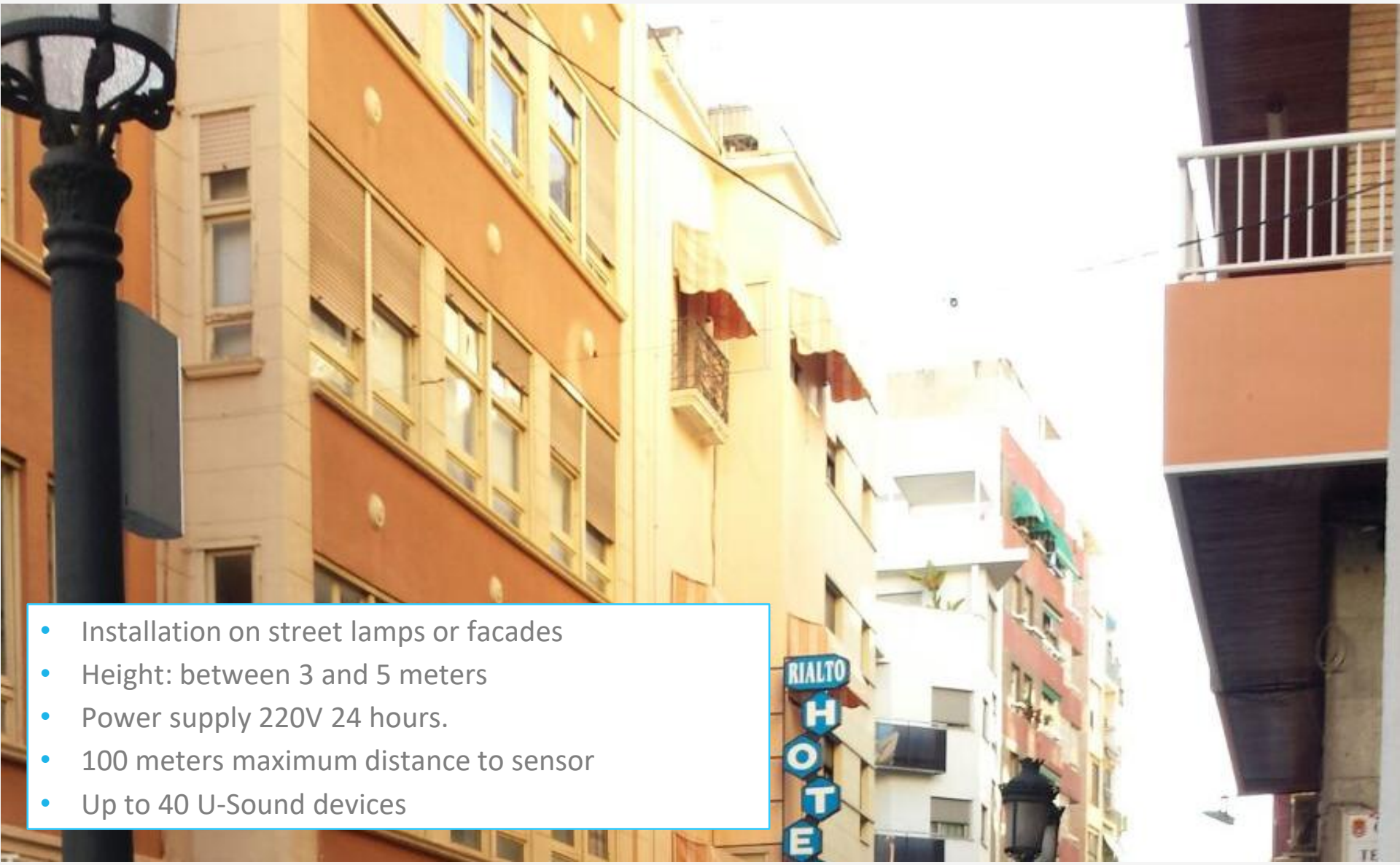
Visit Alicante's VisorAcustic:
http://visoracustic-alacant.urbiotica.net/VisorAcustic/

INSTALLATION
AND
ANNUAL CALIBRATION

U-Sound location characteristics

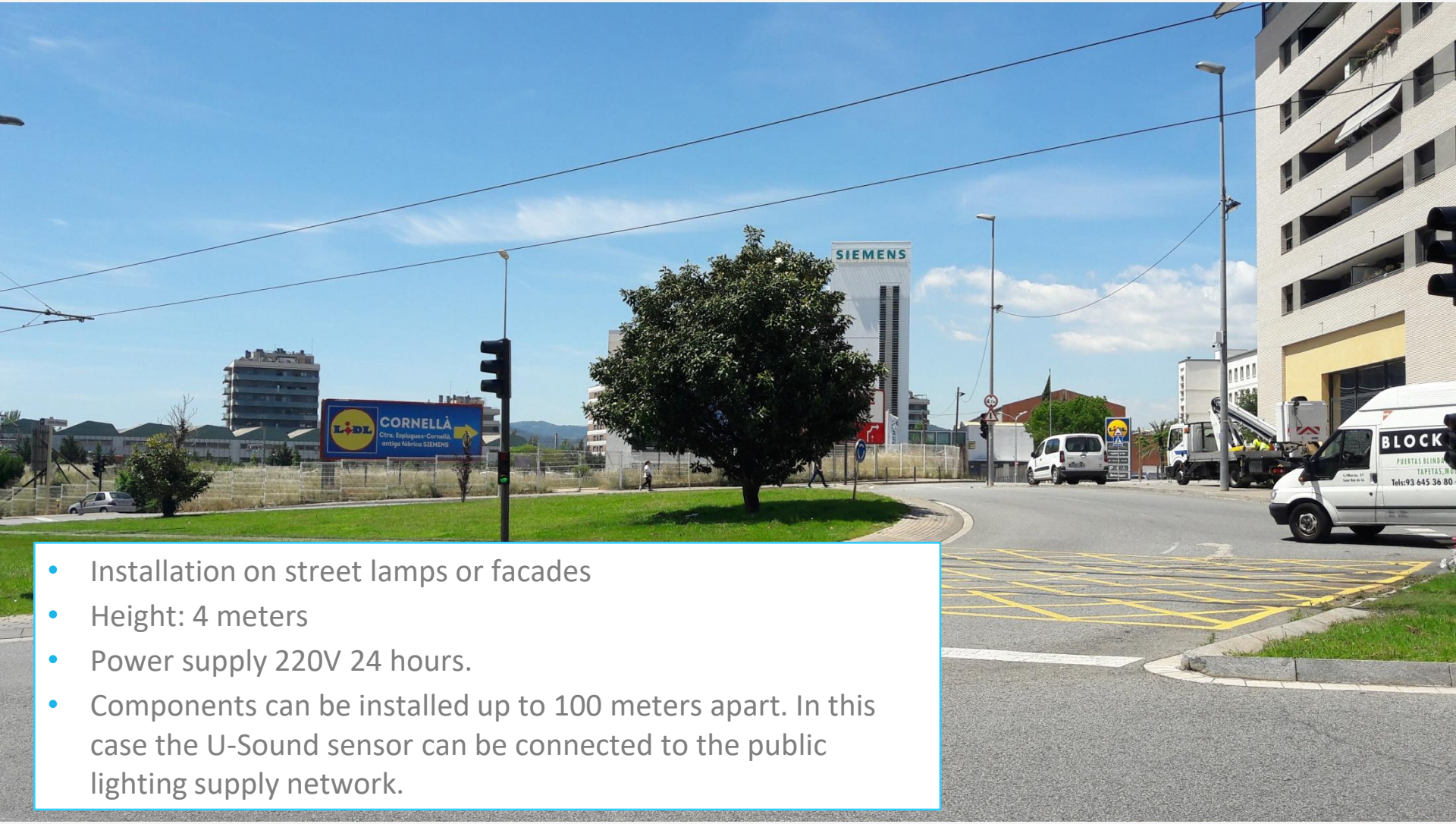
- Installation on street lamps or facades
- Height: 4 meters
- Power supply: 220V/Night or solar panel
- 100 meters maximum distance to concentrator/ repeater.

U-Box location characteristics



- Installation on street lamps or facades
- Height: between 3 and 5 meters
- Power supply 220V 24 hours.
- 100 meters maximum distance to sensor
- Up to 40 U-Sound devices

Isolated measurement point characteristics

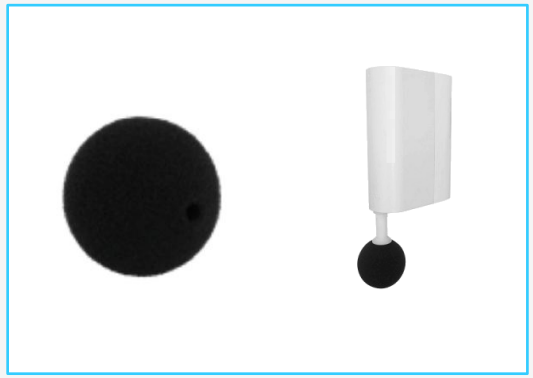


- Installation on street lamps or facades
- Height: 4 meters
- Power supply 220V 24 hours.
- Components can be installed up to 100 meters apart. In this case the U-Sound sensor can be connected to the public lighting supply network.

Preventive maintenance and annual calibration

Every year

- ✓ U-Sound in-situ calibration
- ✓ Tools:
  - ✓ U-Admin Tool
  - ✓ Calibrator of 94dB or 104dB noise level equivalent to 1kHz and 1/2 "
- ✓ Inspection of equipment and electrical connections



Every 5 years

- ✓ Windscreen replacement

URBIOTICA:
IOT PROVIDER

Urbiotica: IoT provider

Advantages of new IoT technology applied to the acoustic world

Continuous and autonomous measurement

Available information in the cloud

Flexible and integrated installation

12 years lifetime. Minimum maintenance

LowCost & accurate measurements

Communication resilience

Manager and Citizen

They trust in us!

Cities

Parking operators

Private companies

IT Integrators & Services


Smart City platforms

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