



**WITEKLAB**  
TRENCHIP



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**YOUR CONTECH  
INNOVATION PARTNER**





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## WITEKLAB TRENCHIP

Underground trench and  
pipeline location and  
information system





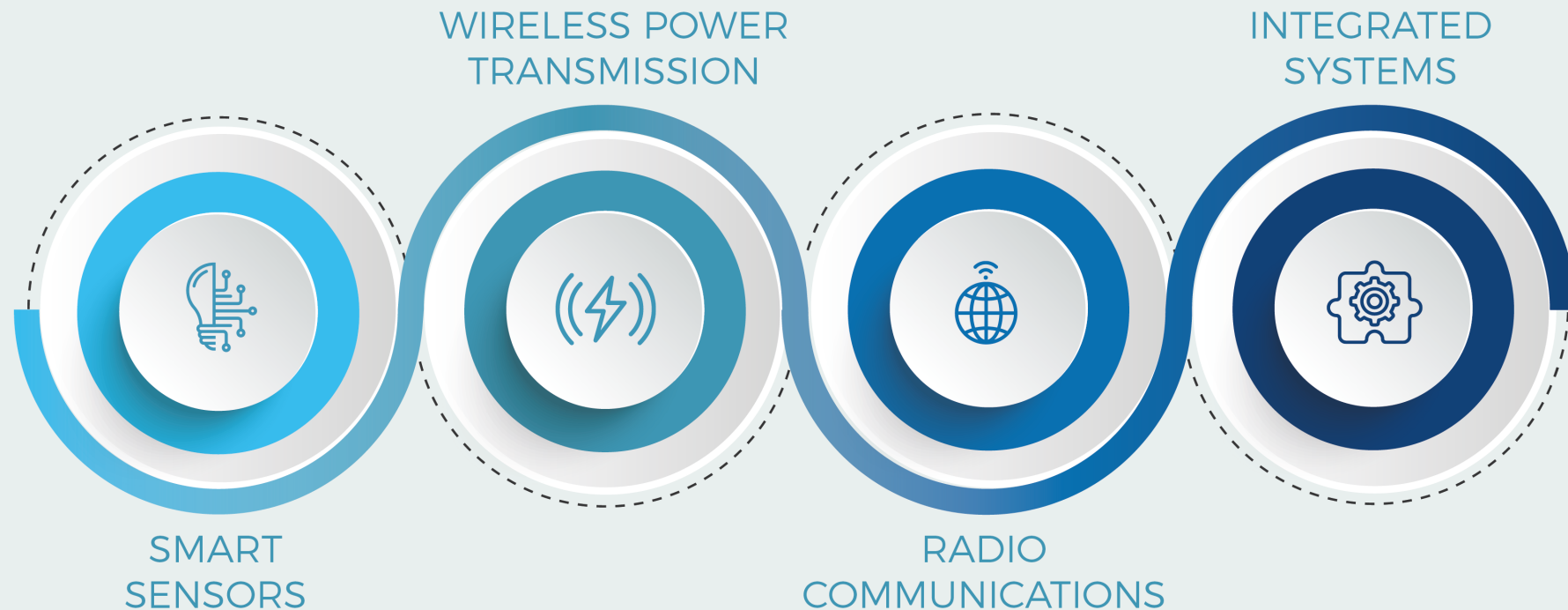
IoT SOLUTIONS FOR THE CONSTRUCTION AND MAINTENANCE  
OF INFRASTRUCTURES AND FACILITIES



**Witeklab develops its own technological solutions in the fields of telecommunications, electronics and integrated computer systems with the aim of turning knowledge and daily innovation into solutions that simplify and make easier industrial, work and service processes.**



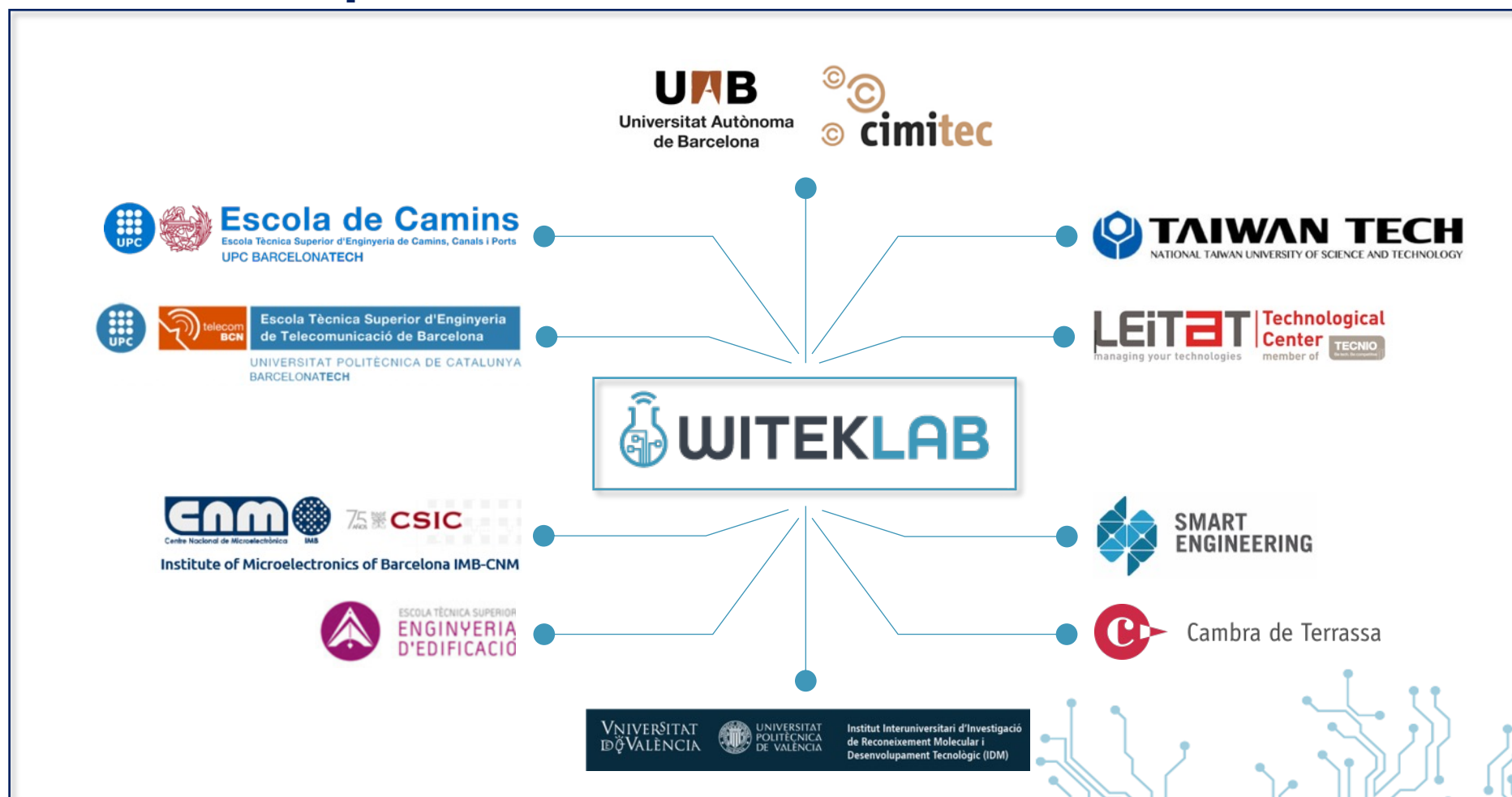
## R,D&i IN CONSTRUCTION AND MANAGEMENT OF INFRASTRUCTURES AND FACILITIES

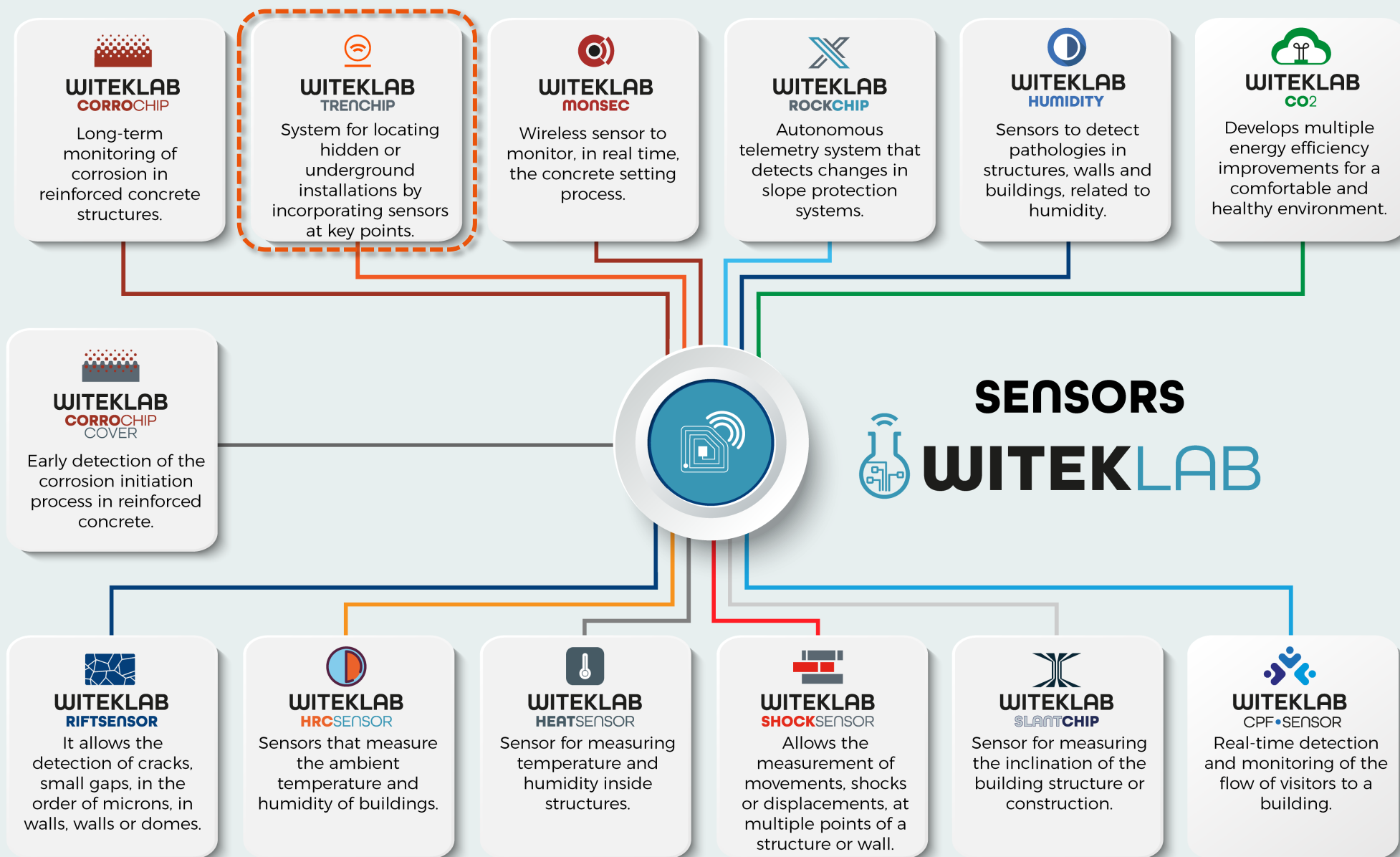


The application of sensor technology and wireless data transmission, together with the processing and presentation of data through the cloud, offer great advantages for the sectors of private construction, civil works and infrastructure and facilities management.



# Technology partners







# SENSORS IN INFRASTRUCTURES

## CORROCHIP

The most efficient solution for long-term corrosion monitoring in reinforced concrete structures.



## TRENCHIP

System that allows to locate hidden or underground facilities incorporating sensors at key points.



## MONSEC

Wireless sensor to control, in real time, the concrete setting process in construction projects.



## ROCKCHIP

Autonomous telemetry system that detects changes in slope protection and landslide protection systems.





# PROBLEMS IN ACTIONS WITH TRENCHES





## WITEKLAB TRENCHIP

The solution for underground  
asset management

Trenchip is a complete system for  
marking, accurately locating and recording  
information about specific points in  
trenches and underground pipelines.



# Disadvantages of current systems

Fragmentation of information on installations and visual marking leads to:

↓

Difficulties in coordinating works and maintenance.

↓

Risk of damage to coexisting installations.

↓

Risk of accidents for operators.

↓

Increased likelihood of prolonging the effect on the public highway.

↓

Impact on people's mobility.


↓

Impact on economic activities.




# Information problems in public works

In the public works sub-sector, very traditional information systems are used.



Information on underground or hidden installations is often fragmented (exact location, technical information, administrative information, etc.).



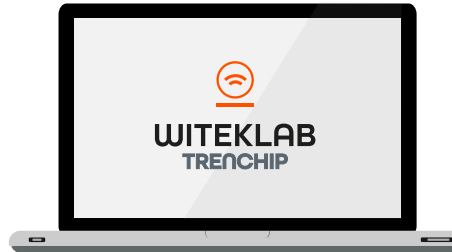
There is no homogeneous system for marking or registering underground installations. The existing ones are visual and only fulfil their function after the trenches have been opened.

# Key points of the Trenchip

Marking of trenches and pipelines with long-lasting passive sensors. Precise location with own reader device.



Integration with a very high precision Geographic Information System to locate the marked points on the map and to visualise layouts.



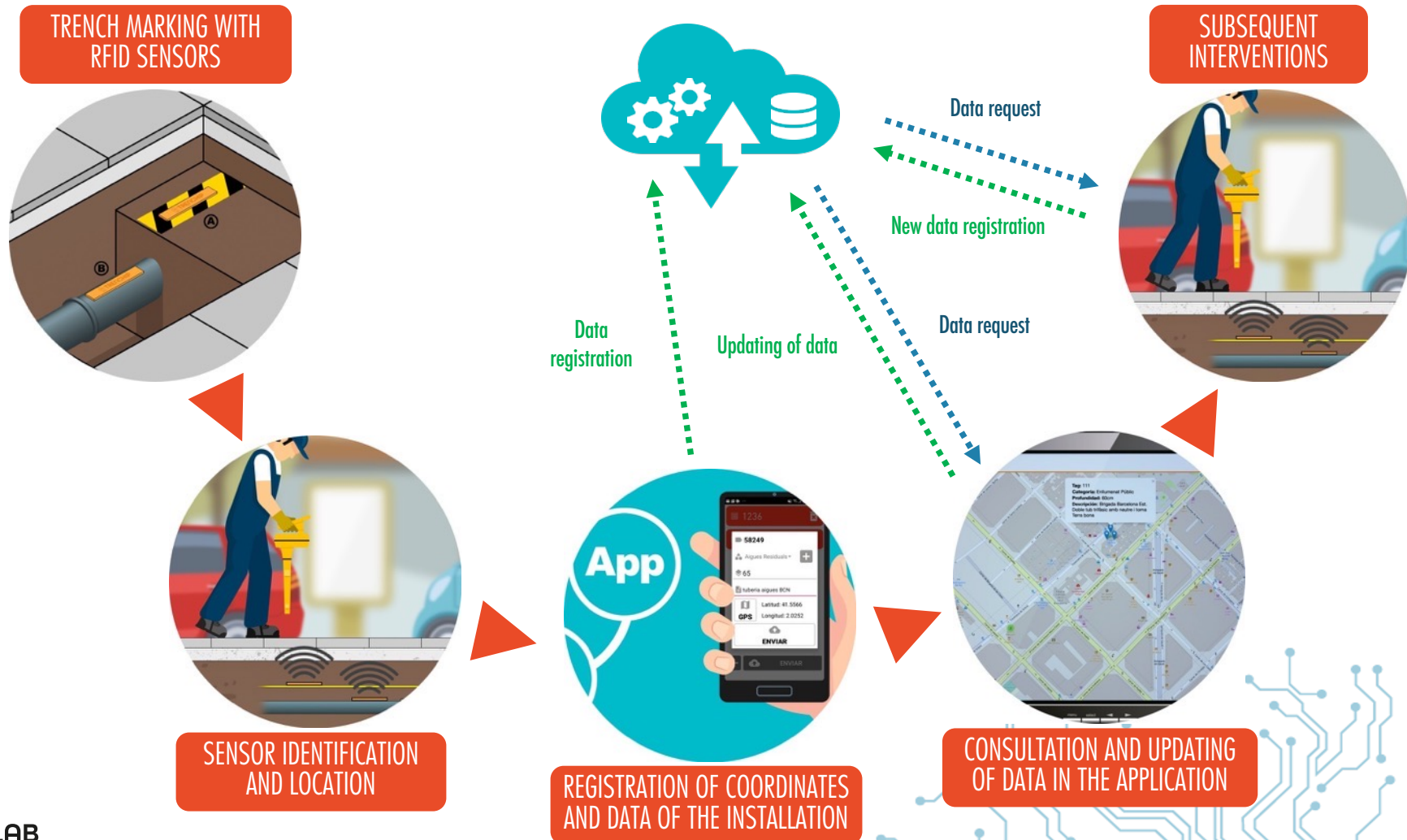
Data processing and storage in the cloud.  
Historical record of the marked installation.  
Available 24/7.



Web and mobile applications for registration, consultation and updating of data linked to the marked points.



# Trenchip, a complete solution





## WITEKLAB TRENCHIP

Trenchip is a commercial development based on the project *"Detection and identification of pipes and trenches using RFID technology in the UHF band (DETECT-TUBE)"*, carried out jointly with the Metamaterials Research Centre for Innovation in Electronic and Communication Technologies (CIMITEC) of the Autonomous University of Barcelona (UAB).



*Technology awarded at Galileo Masters  
Catalonia 2020*

*Winning project in the Galileo satellite category  
at the Galileo Masters Catalonia Challenge 2020.*

## Localisation with 100% accuracy

The GNSS receiver of the Trenchip reader, developed by Witeklab, combines the signals from the European Galileo system and the other fleets of positioning satellites currently in operation and terrestrial receivers with coverage in most territories, obtaining a higher accuracy than other systems, guaranteeing precise sensor detection.

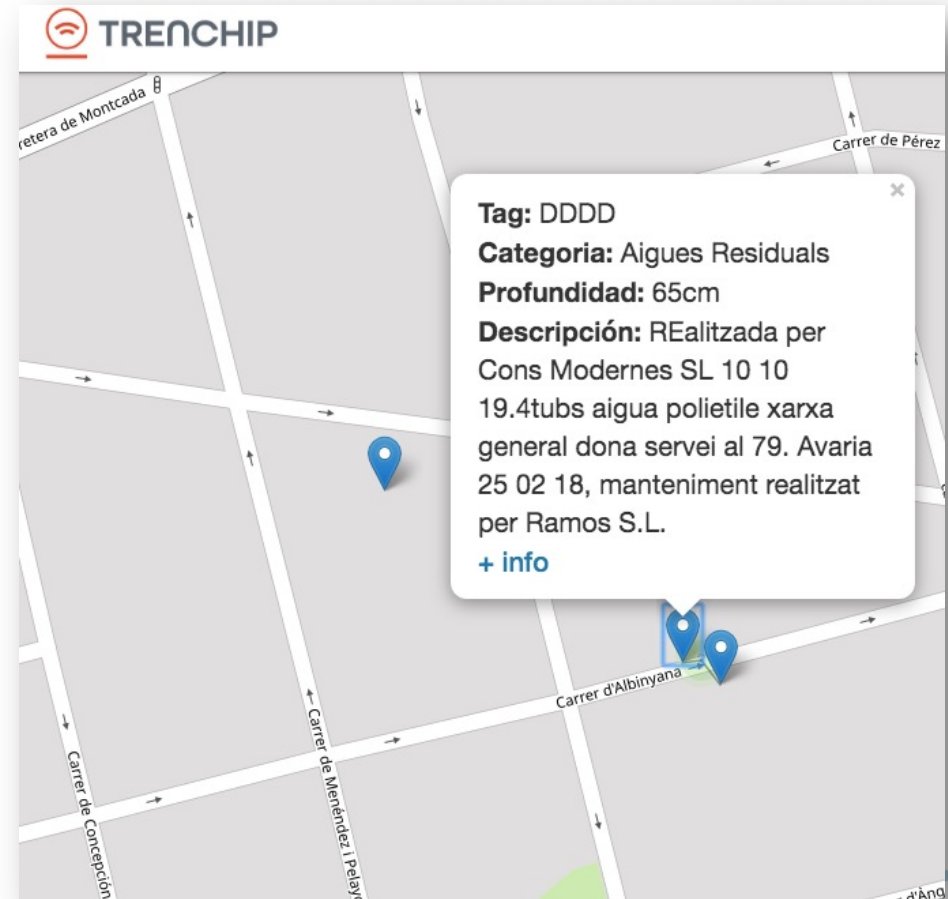




# Registration of information in Trenchip

In Trenchip you can register all the information and documentation you think necessary:

- ✓ Photograph of the installation.
- ✓ Nature of the installation.
- ✓ Date of first installation.
- ✓ Technical characteristics.
- ✓ Owner.
- ✓ Contractor.
- ✓ Nearby installations, effects, connections.
- ✓ Inspections...





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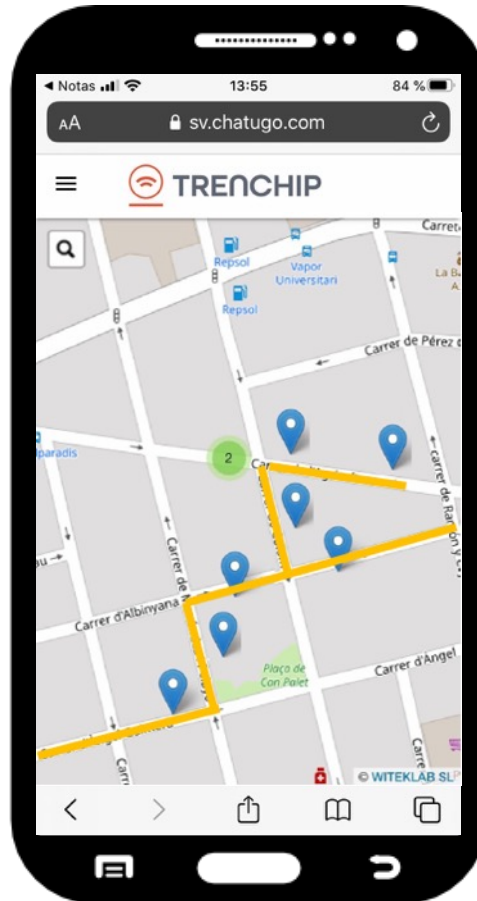
## Information management on the web platform

Allows access to the database of all registered Trenchip sensors.

Uses geolocation data to generate a map with the distribution of registered sensors. This function allows to recognise tracks

The data linked to each sensor can be consulted and modified from the application and from the map.

# Data query with the mobile app



INFORMATION ON MARKED POINTS

VISUALISATION OF INSTALLATION  
LAYOUTS

PERSONALISATION ACCORDING TO  
TYPE, COMPANY,...





# Data query with the mobile app (II)



PHOTOGRAPH OF THE EXACT  
LOCATION OF THE INSTALLATION

SENDING AND DOWNLOADING  
OF THE DETAILED INFORMATION  
OF THE EXACT LOCATION OF THE  
INSTALLATION



# Trenchip materials



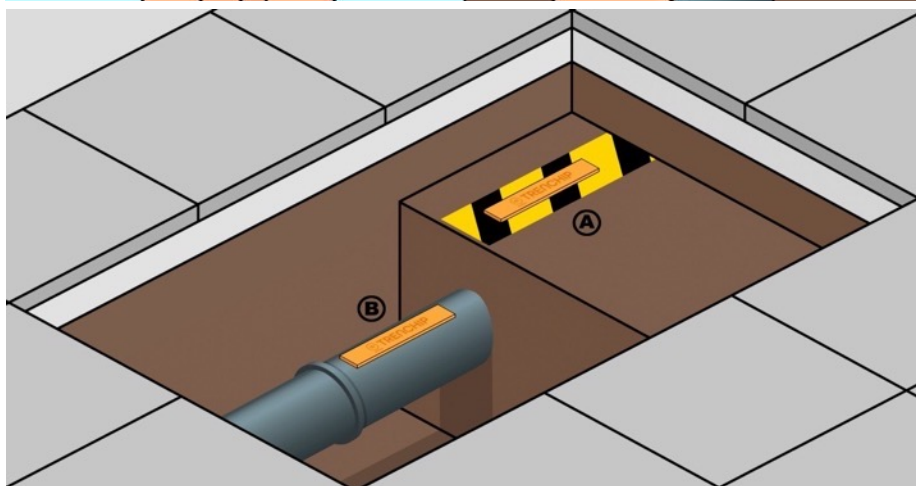
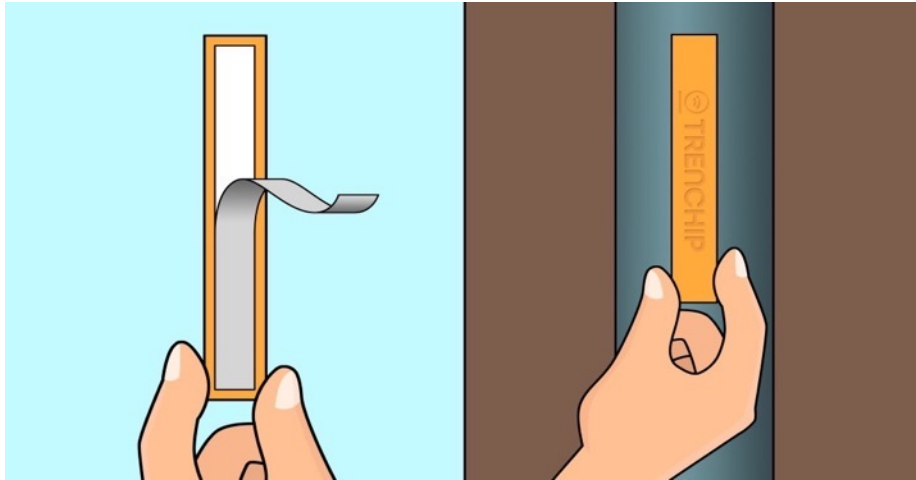


# Examples of Trenchip installations





# Quick and easy marking



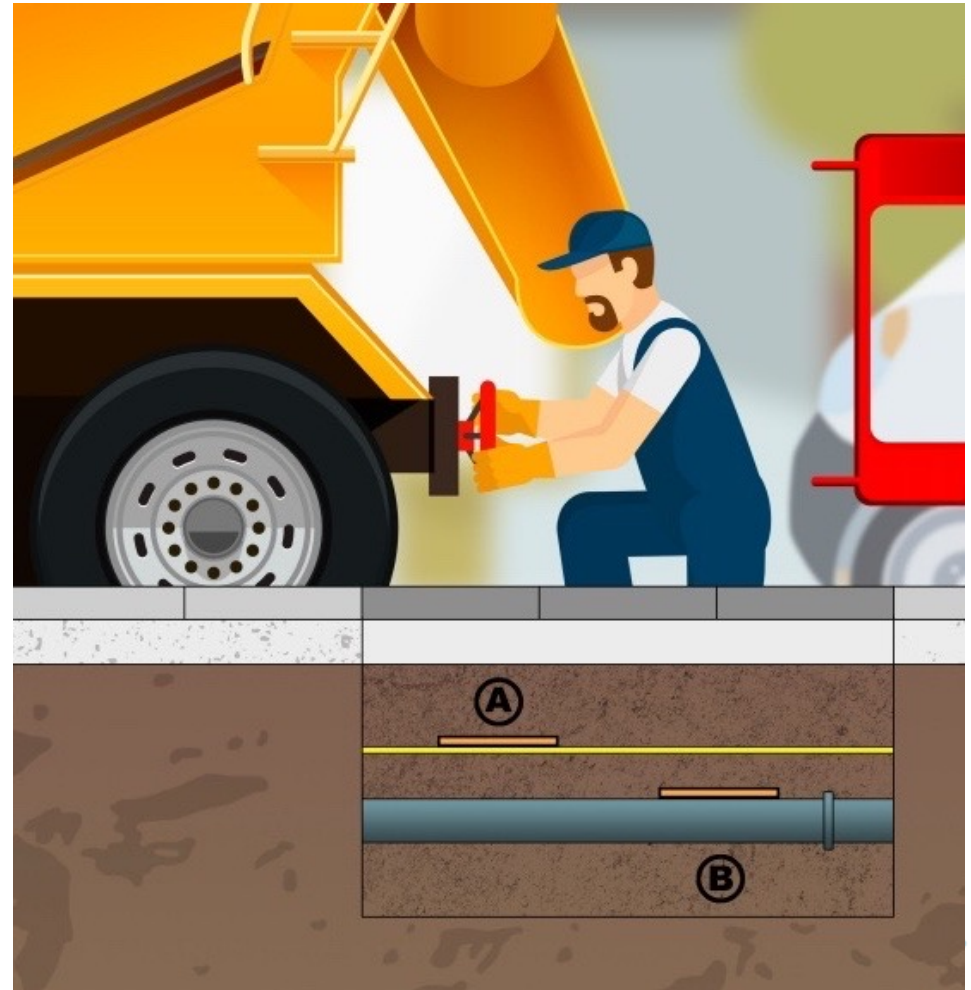
Easy to install sensor.

The case can be fixed to the pipe or to the marking tape with self-adhesive tape or glue. It can also be placed at the desired point in the trench without the need for fixing.

The sensor has a service life of more than 25 years.

# Completion of the trench

The trench is finished as planned and the TRENCHIP sensor is covered by the different layers of materials: brick, concrete, compacted earth, tar or any other type of coating.





# Unique identifier reading

Each TRENCHIP sensor has a unique identifier.

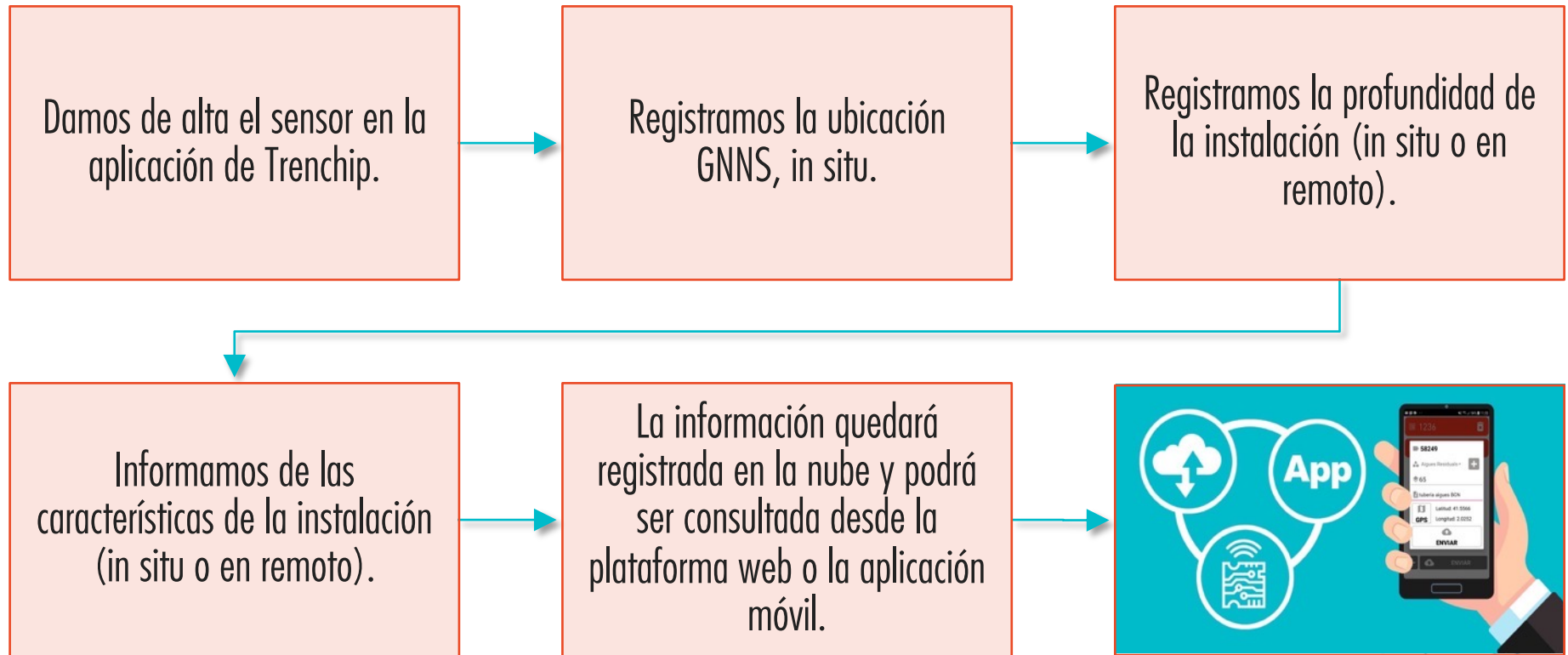
After installing the sensor, the first reading must be taken to obtain the identifier, which will be its reference during its useful life.

It is advisable to take a photograph of the installation at the moment of placing the sensor or before covering it.

The first reading can be taken just after closing the trench afterwards.

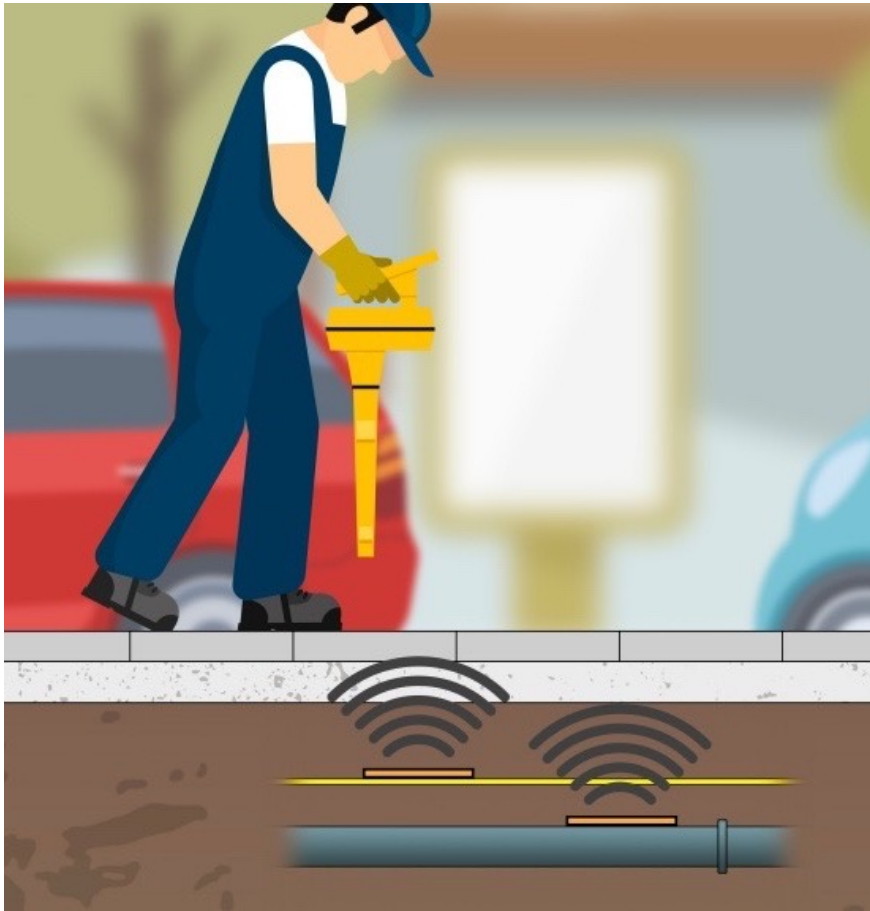


# Sensor registration





# Ex-post sensor location

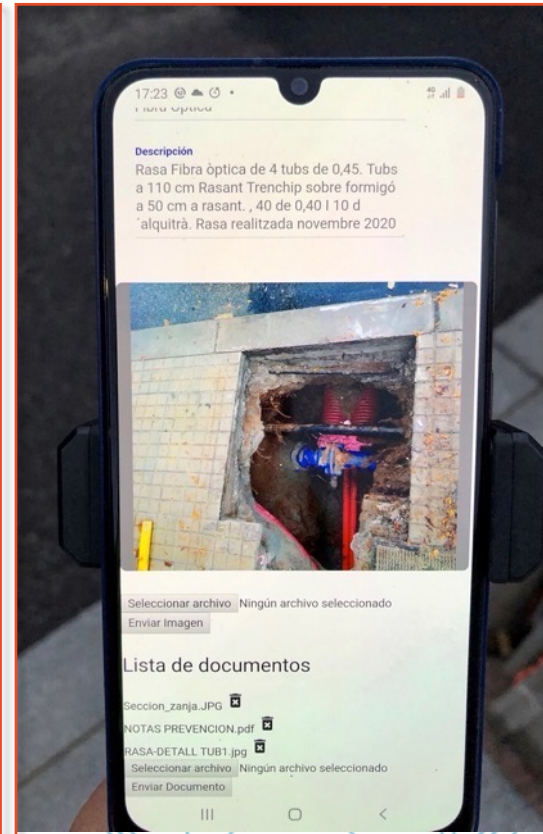
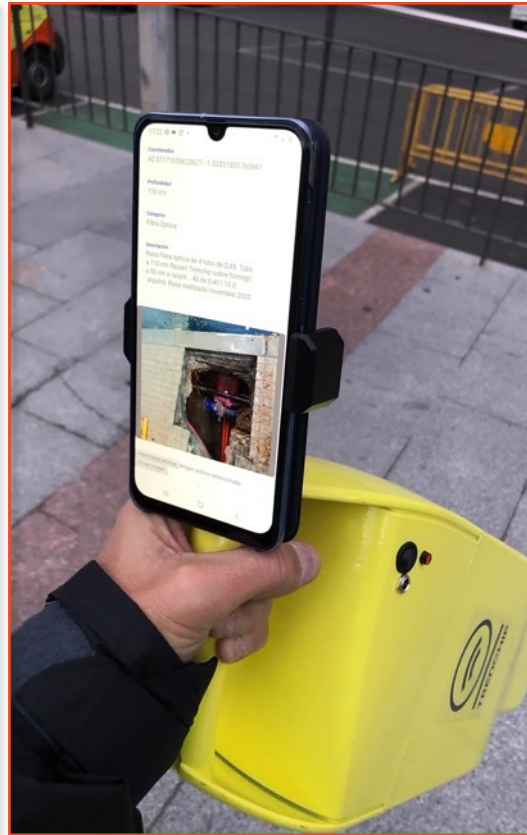


The use of RFID technology allows the precise location of the buried sensor with the TRENCHIP reader.

With the GIS information we have an approximate location of the location on the map.

The Trenchip sensor allows you to be 100% accurate, the position to make the intervention, avoiding possible accidents or extra ground openings.

# Trenchip reader and sensor detection with information display in the app





# Features of Trenchip



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- 1 Detection of the precise location of trenches.
- 2 Stores and processes all the data to be linked to each sensor.
- 3 Allows data modification.
- 4 Allows files to be added to the data.
- 5 The data can be consulted from any device at any time.
- 6 More than 25 years of durability, without batteries.

# Advantages of Trenchip

Fast and efficient management of underground and/or hidden assets.

Up-to-date information over the years.

Savings in time and costs in actions on installations.

Less risk for operators.

Less damage to installations.

Faster and more accurate interventions.

Easy to implement and manage.

Passive sensor without maintenance.



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# For all types of installations



## ANDORRA TELECOM

Fibre optic installation.



## AJUNTAMENT MATADEPERA

Low voltage maintenance works.



## RUBATEC

Maintenance work on public lighting in Barcelona.





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Underground trench  
and pipeline location  
and information  
system

**THE SOLUTION FOR ANYONE WHO NEEDS TO  
MANAGE AND/OR LOCATE FACILITIES OR  
OTHER TYPES OF HIDDEN ASSETS.**

### EFFICIENT AND EFFECTIVE

Trenchip is a high added value, low cost solution.

### INNOVATIVE

Trenchip is an innovative tool that solves the main current drawbacks in underground asset management.

### OPTIMISES MANAGEMENT

Trenchip facilitates, speeds up and saves costs in the management, maintenance and renovation of installations.

### CONTROL AND TRACEABILITY

Trenchip makes it easier for local authorities to control and trace actions on public roads related to underground installations...



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## BARCELONA

Chatu Tech S.L.  
C. Albinyana 109, 3<sup>a</sup>  
08223 Terrassa

## ANDORRA

Witeklab S.L.  
Residencial Les Biades 15  
Aixirivall  
AD600 Sant Julià de Lòria

[www.witeklab.com](http://www.witeklab.com)  
[www.corrochip.com](http://www.corrochip.com)  
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