



PLUG&META[®], the technology that transforms roads and equipment into connected and smart





This document presents the disruptive and worldwide innovative project that METALESA has developed and that is deploying in the city of Elche (Alicante-Spain).

METALESA and Elche's City Council present this initiative to the "Urban Road Safety Award" category of the European "Excellence in Road Safety Awards".

Active road safety for infrastructures

- 1 Introducing METALESA
- 2 The need: current passive road safety is not enough
- 3 PLUG&META®, the technology to achieve Smart Equipment and Smart Roads
- 4 Bimillenari Bridge Project, the first bridge ever with active road safety

Introducing METALESA

01





METALESA is a family owned company that competes in the sector of equipment for transport and mobility infrastructures.



+100

Employees



+532

Projects



17 M€

Sales 2022



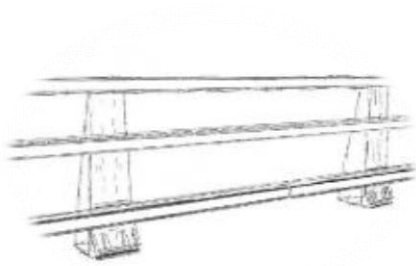
Sustainable



Innovative

METALESA main business units are road Safety, Mobility & Smart City and Acoustics. We cover the whole lifecycle of product, from design to manufacture and installation.

All main big construction companies are among our clients, with projects in more than 40 countries in Europe, Africa and Latam.



BRIDGE PARAPETS & EQUIPMENT FOR BRIDGES AND ROADS

BRIDGE PARAPET META13 - H2/W2

BRIDGE PARAPET META16 – H3/W3

TRANSITION BETWEEN META13
AND CONCRETE BARRIER

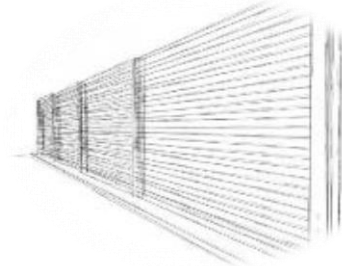
TRANSITION BETWEEN META16
AND CONCRETE BARRIER

URBAN PARAPET

OTHER GUARDRAILS

CORNISES

CRASH CUSHIONS AND TERMINALS



NOISE BARRIERS

STEEL OR ALUMINUM
METALIC

METALIC WITH GREEN
MESH

METHACRILATE

ANIMAL PASSAGE

ANTI-BIRD COLLISION

WALL CLADDING

NOISE ISOLATION IN
INDUSTRIAL FACILITIES



RAILINGS & FENCES

STEEL RAILINGS

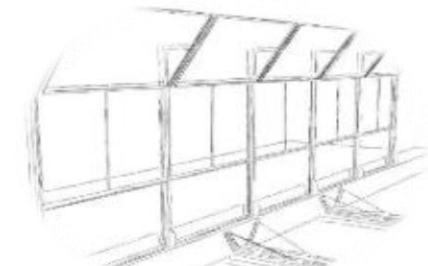
STAINLESS STEEL RAILINGS

METALIC FENCES

VANDAL-PROOF FENCES

METAL SIDING FENCES

ENCLOSURE FOR
INDUSTRIAL FACILITIES



RAILWAY AND TUNNEL EQUIPEMENT

ADIF HANDRAILS AND
FENCES

HANDRAILS AND VANDAL-
PROOF FENCES FOR TRAIN
STATIONS

CATENARY PROTECTION

OTHER METALIC SOLUTIONS

10.700 m²
Noise Barriers
(France)



4.868 m
Bridge Parapet
(Croatia)



5.500 m
Bridge Parapet
(Portugal)



3.520 m
Bridge Parapet
(Gambia)



**The need: current
passive road
safety is not
enough**

02

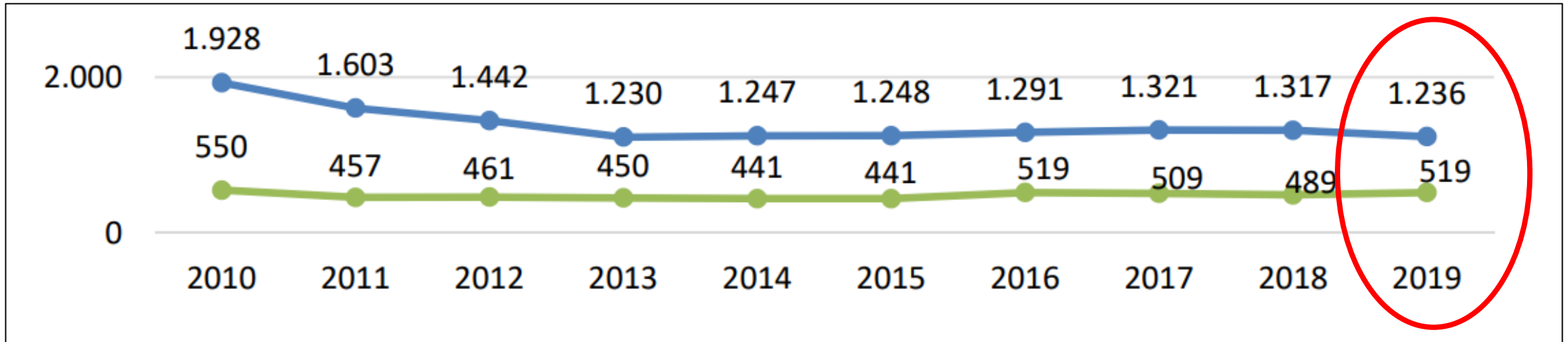


According to World Health Organization, approximately 1,3 million people die each year as a result of road traffic crashes, which has been defined this as a yearly pandemic situation.

1 person dies in
traffic accidents
worldwide each
24 seconds



Road fatalities data contradicts the general thought that accidents happen on roads. They certainly do, but not only, almost a 30% of casualties happen in towns.



Mortality between vulnerable users might get worse

“Urban accident rate might cause up to 5.500 deaths in Spanish cities by 2030, around 30-50% rise from today”

Source: Fundación Línea Directa – “New urban road safety. Accident rate in the new mobility culture

A number of different factors contribute to these tragic figures.



*Poor
infrastructures*



Lack of awareness



*Insufficient lanes
segregation*

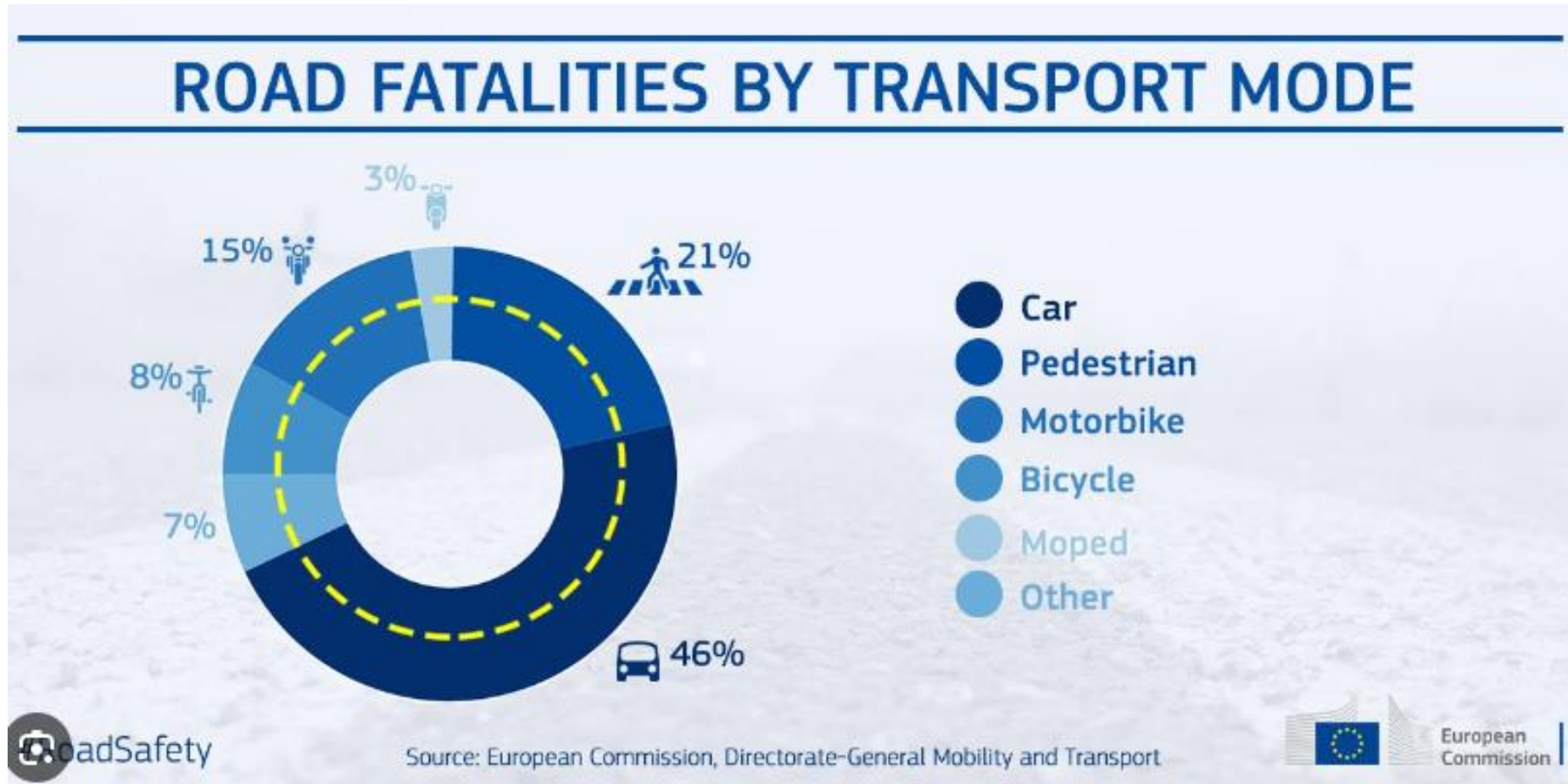


*Absence of common
urban regulation*

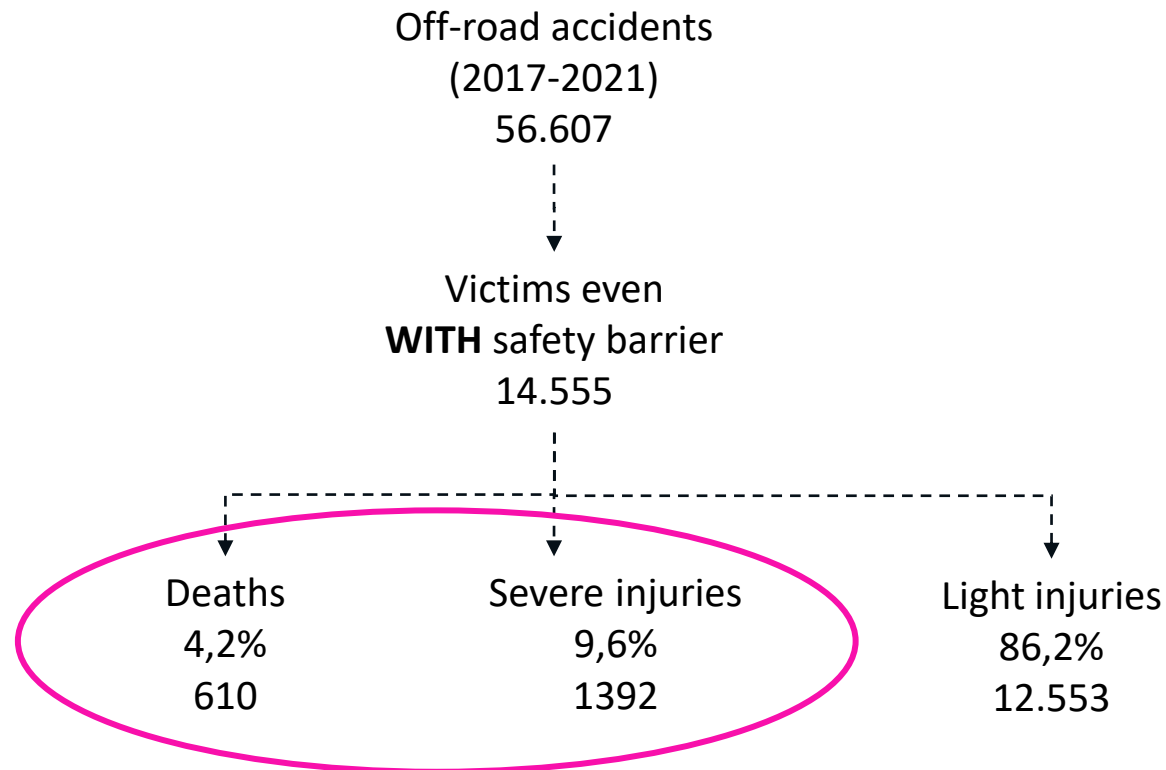
*Massive adoption of new
mobility methods*



The EU's long-term goal is to move as close as possible to zero fatalities in road transport by 2050 ("Vision Zero")

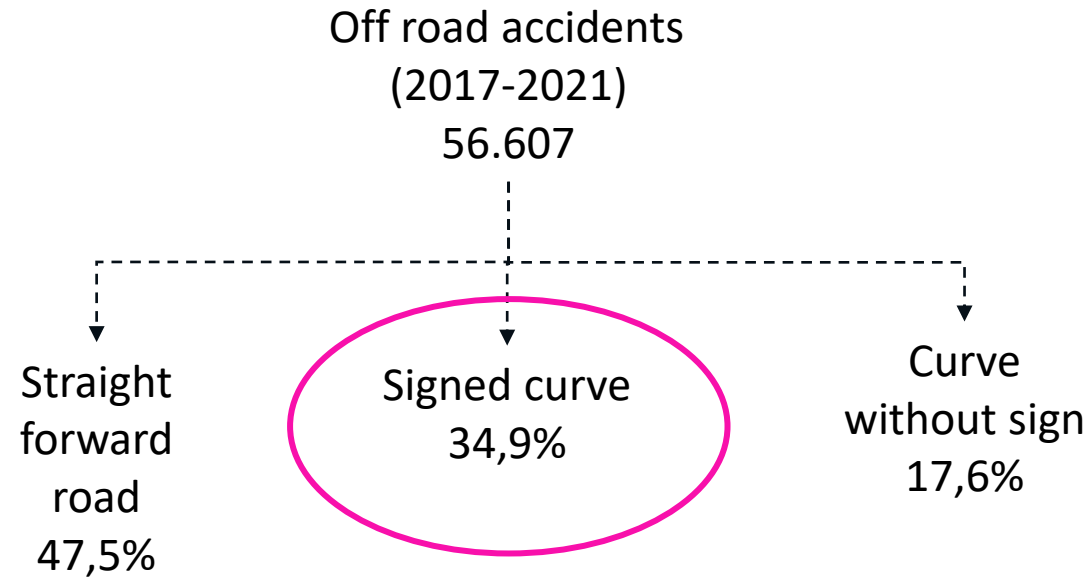


Traditional passive solutions do help, but still are not enough. 14% of victims in off-road accidents resulted either death or seriously injured despite the existence of a VRS. It is needed a step forward to avoid accidents.



Source: "Study on off road accidents and the importance of vehicle restraint Systems to reduce accident rate, mortality and severity of injuries both in urban and road environments", University of Valencia and METALESA

35% of victims in off-road accidents happened in signed curves. Traditional vertical signs do help, but they are not as effective as adaptative light signs. Quality better than quantity.



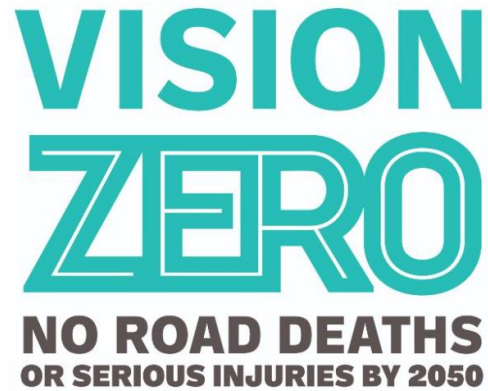
Source: "Study on off road accidents and the importance of vehicle restraint Systems to reduce accident rate, mortality and severity of injuries both in urban and road environments", University of Valencia and METALESA

PLUG&META®,
the technology to
achieve Smart
Equipment and
Smart Roads

03



According to the EU's SAFE SYSTEM definition...



A **SAFE SYSTEM** must include...

*...a traffic management model based on real time information and communication to the user, **continuing with the development and deployment of Smart equipment and Systems.***

METALESA has already developed a technology that “makes de infrastructure talk” and provides active road safety.

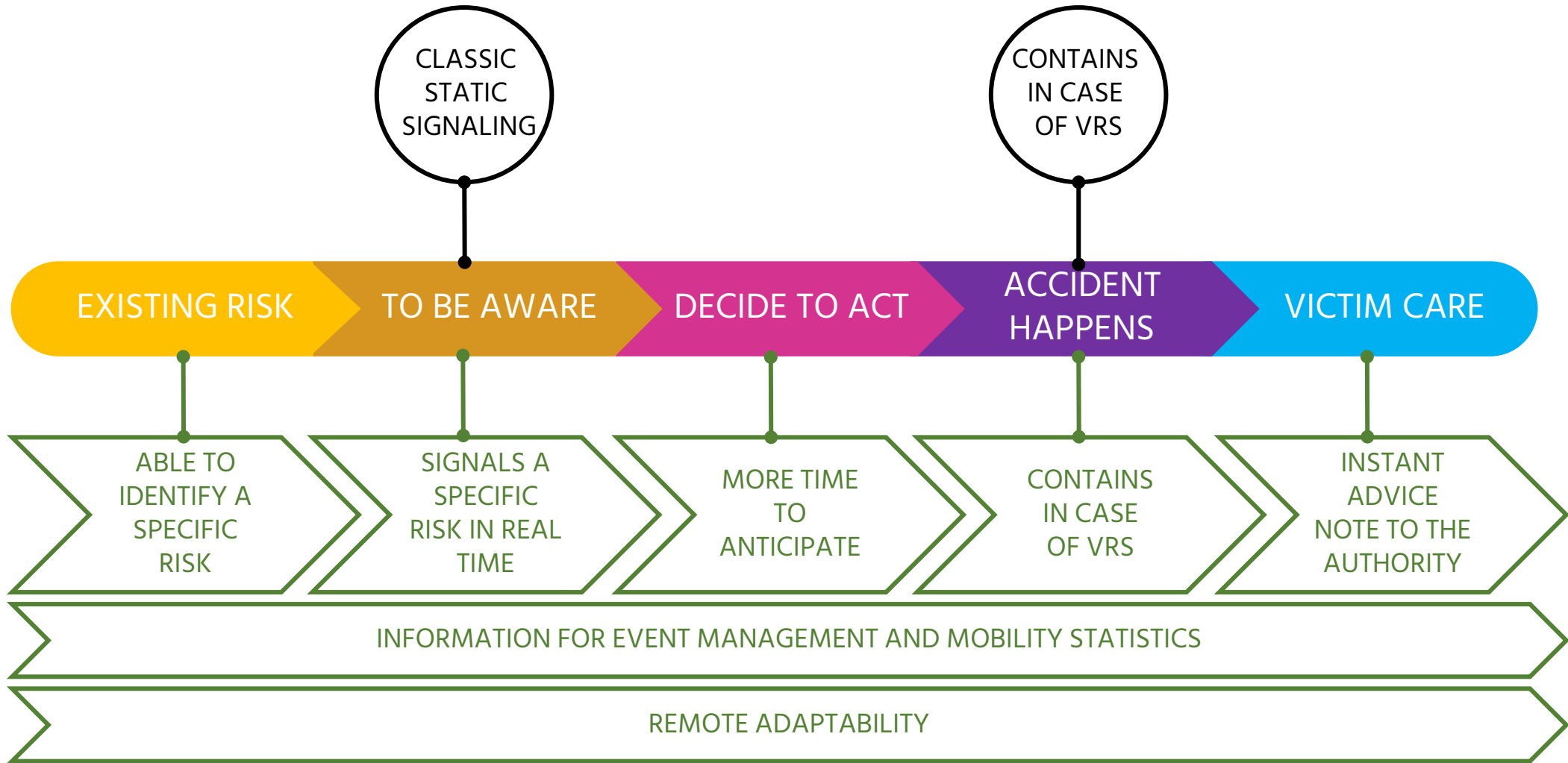




PASSIVE EQUIPMENTS
(work as isolated silos)

Until Today
Today onwards

ACTIVE ROAD SAFETY
(Transform new or existing infrastructures into smart and connected ones by a chain of actions that help prevent accidents plus data story. All remote managed)





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EQUIPMENTS
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Until Today

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**ACTIVE
ROAD SAFETY**
(Transform new or existing infrastructures into smart and connected ones by a chain of actions that help prevent accidents plus data story. All remote managed)

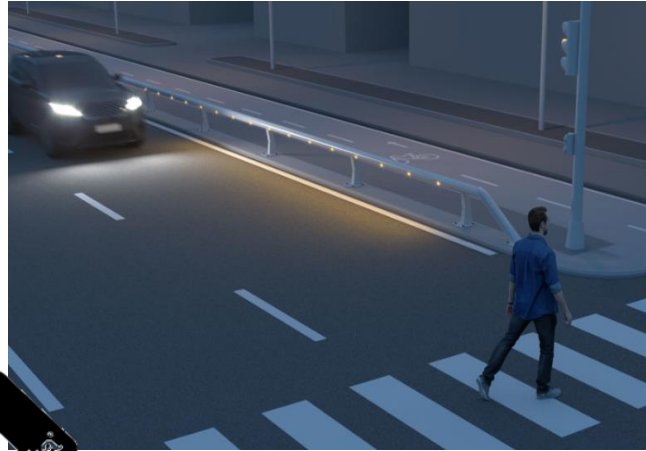


REAL TIME RISK DETECTION

- Time slot
- Limited visibiliy
- Possible Frost
- Wind gusts
- Bicycle rider or pedestrian in the road
- Excessive speed
- Retention
- Road Works
- Car breakdowns or other obstacles in the road
- ...

**ADAPTATIVE, VARIABLE
AND LIGHT SIGNALLING
TO WARN USER**

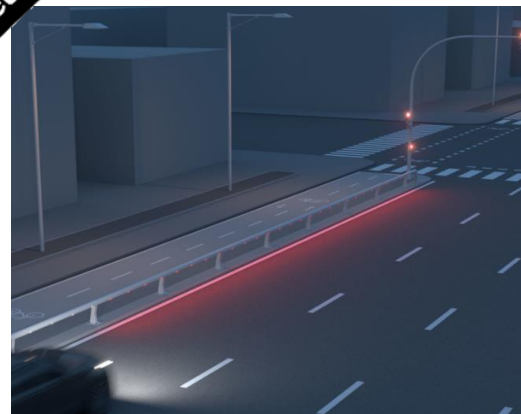
**NOTICE TO
INFRASTRUCTURE
MANAGER**



Examples of risk detection

- Problematic time slot
- Bad visibility
- Possible frost
- Wind gusts
- Presence of vulnerable users on the road (pedestrians, cyclist, other PMV, ...)
- Excessive speed
- Close traffic jam
- Ongoing Works on the road
- Breakdowns and obstacles on the road
- Coordination with traffic light
- ...

24X7 – NO
NEED TO
REST



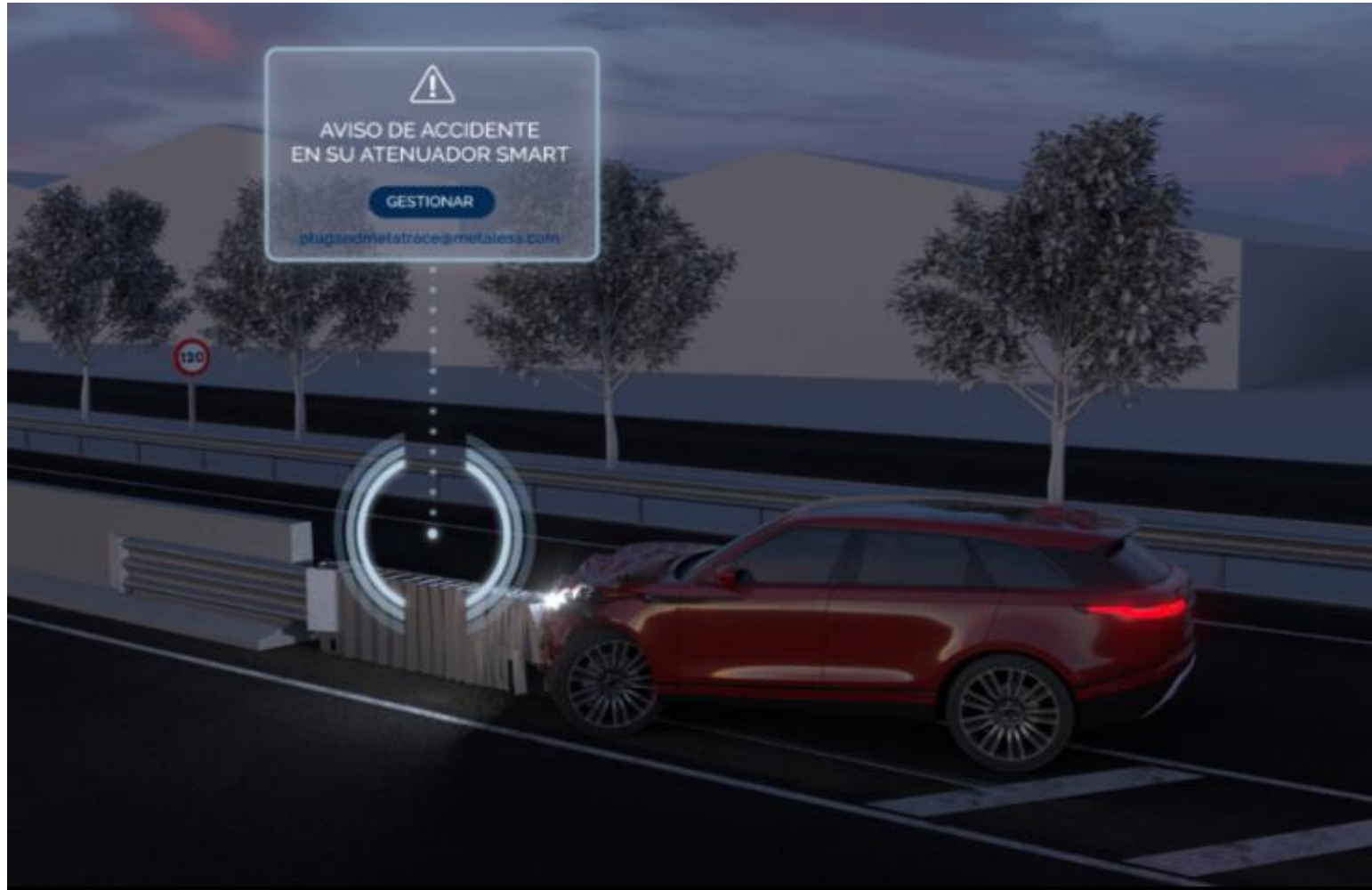
With any detected risk, 100% autonomously and real time, the system equipped with PLUG&META® technology turns on its LED signalling system. Anything can be configured remotely:

- Colour
- Light intensity
- Light mode (fix / types of flicker / burst)
- Time of activation after risk/event
- Direction and length of activation

+

- Coordination with adaptative variable panel with LED

Much more effective –
maximizing awareness
**PREVENTS
ACCIDENTS**



Ver en navegador

PLUG&META[®] TRACE

Metaurban[®] SMART

Atención

Su Metaurban[®] SMART ha detectado un posible accidente en su municipio. Disponemos de los siguientes datos en nuestra plataforma PLUG&META[®] Trace:

Municipio
Amsterdam

Dirección

Tramo
STAND

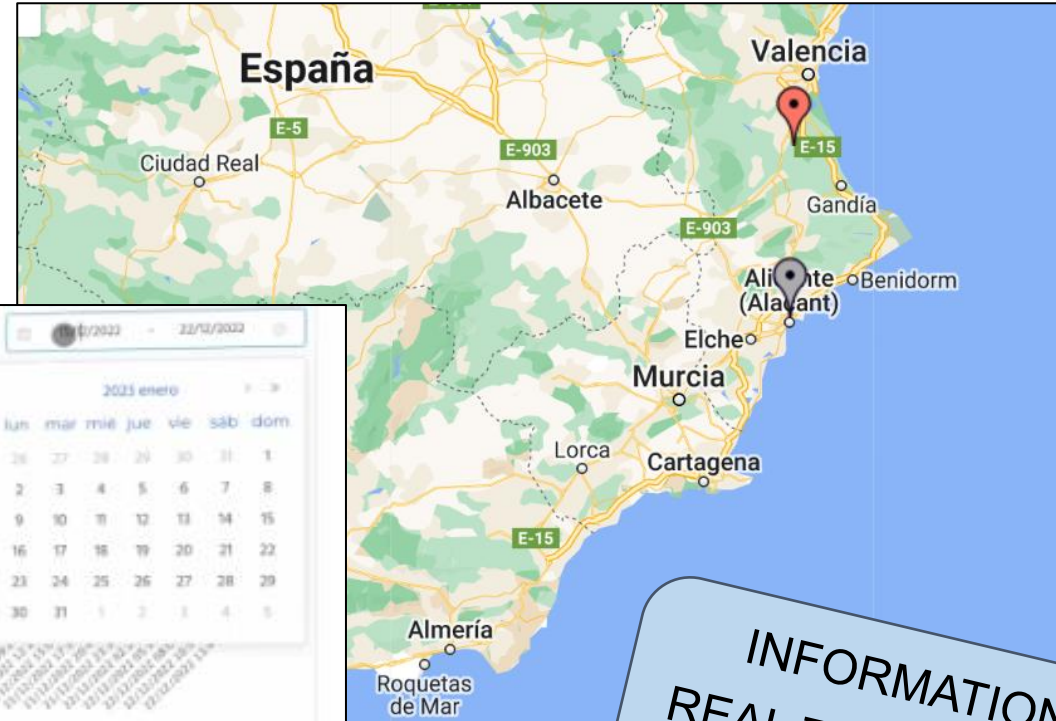
Coordenadas
52.2, 4.53

Dispositivo de comunicación (IMAC)
C4DD57B8140E

Immediate authority notification in the event of crash against system

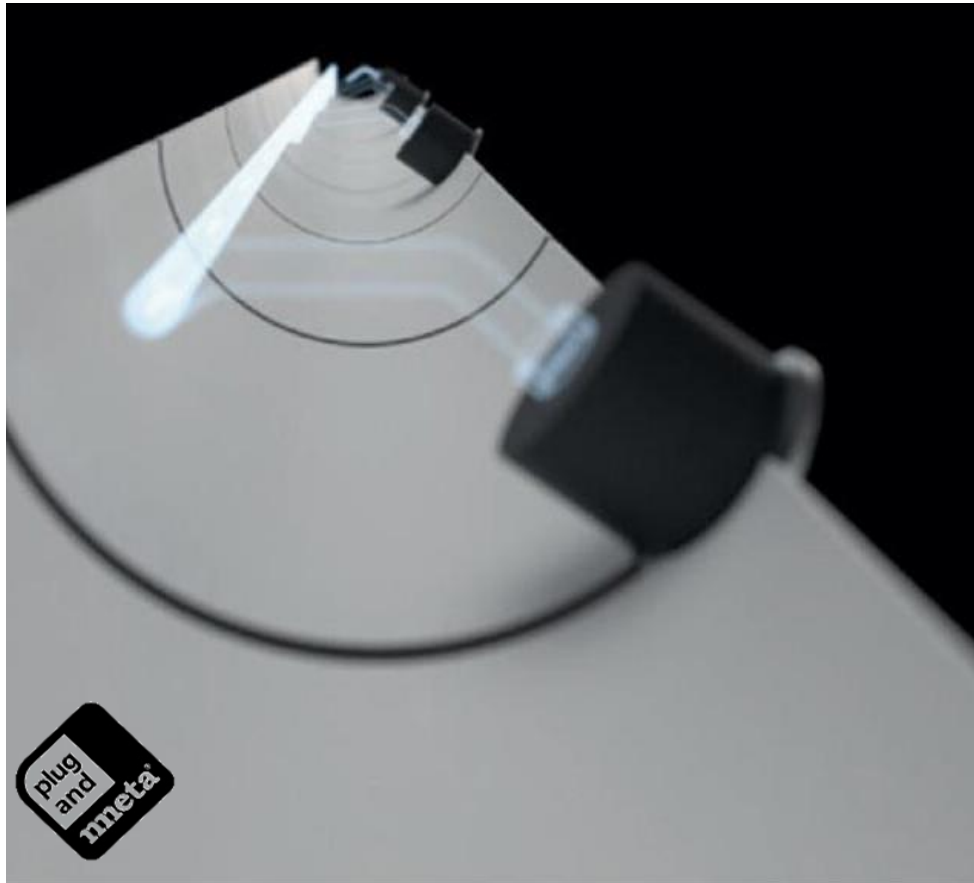
The solution includes an easy and intuitive web management platform, PLUG&META[®] TRACE.

Access to all data provide authorities with endless possibilities to better manage new mobility trends.



INFORMATION
REAL TIME ALERTS,
WARNINGS, DATA
AND STATISTICS





PATENTED



UNIQUE DEVICE that
INTEGRATES the
management of all these
current features...
... and future ones

MODULARITY
&
GREAT POTENTIAL
– SCALABILITY TO
NEW SCENARIOS

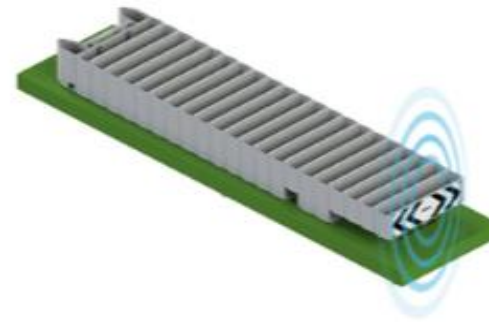
PLUG&META® technology is totally versatile. It can be integrated into any equipment, even current ones not manufactured by METALESA.



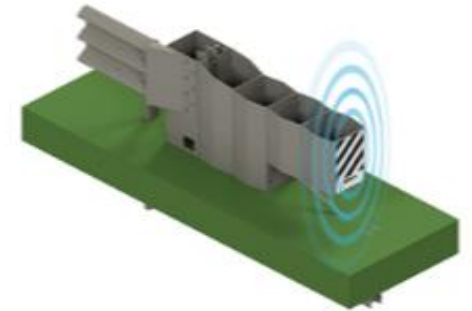
Metaurban® SMART



Revestimiento MGT® SMART



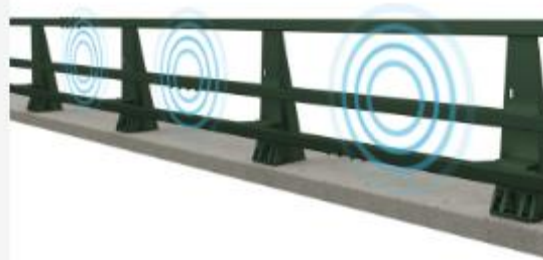
Atenuador de impacto SMART



Terminal SMART



Pretil metálico META13® SMART



Pretil metálico META16® SMART

UNIVERSALITY FOR ANY EQUIPMENT ON THE ROAD



PLUG&META[®] technology drives value in any kind of infrastructure. Active road safety has no limits.



GUARANTEED
CYBERSECURITY

OPEN SOLUTION -
API

ADAPTATIVE
ENERGY
CONSUMPTION –
PV GREEN ENERGY

MINIMUM
MAINTENANCE

VANDAL-PROOF
SOLUTION

COST vs VALUE

UNTIL TODAY

PASSIVE ROAD SAFETY

CONTAINS



TODAY ONWARDS

ACTIVE ROAD SAFETY



CONTAINS

+

PREVENTS

+

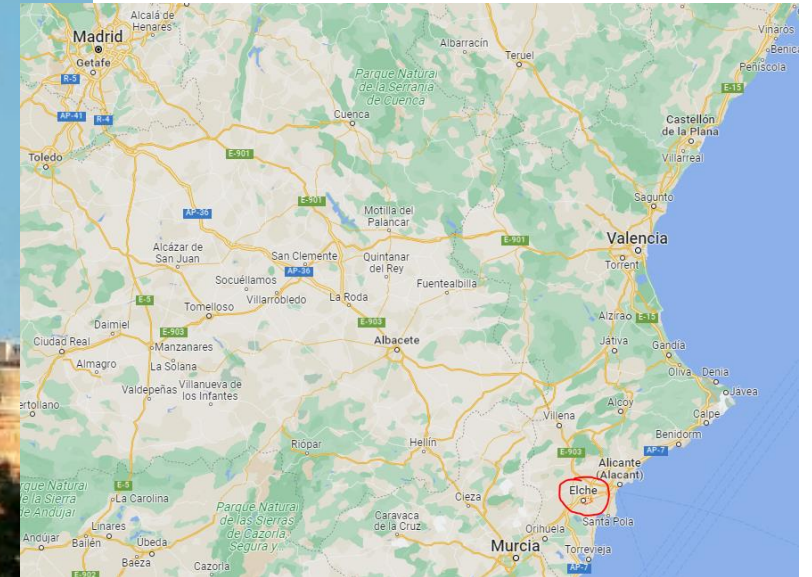
INFORMS

**Bimillenari Bridge
Project, the first
bridge ever with
Active Road Safety**

04



Elche is an historic city in the region of Alicante, Spain. It prides to have the largest palm grove in Europe.



The Bimillenari Bridge is an emblematic infrastructure of the city. Winner of an international award, it is critical for urban mobility.

The Elche City Council intends to apply new smart solutions to improve vehicle and vulnerable users safety, as well as monitor its operability real time in order to solve any incident as soon as possible.



Innovative solution – first barrier worldwide that provides active road safety

Metaurban[®] barrier



EN 1317

N1/W1/0,4m/A



PLUG&META[®] technology



The project will install over 900m of Metaurban[®] SMART urban barrier providing the bridge of active road safety, a pioneering initiative worldwide.



Functionalities deployed:

- In all the length of the bridge:
 1. automatic detection of vehicle crash against the barrier and real time notification to local authorities.
 2. configuration of certain time slots to automatically activate signalling and augment prevention, for example, rush hour.
 3. in winter, possible frost on the road and warn approaching vehicles.
 4. air quality detection (CO2 and NO2)
 5. manually and remotely activate any kind of light warning to communicate issues to the
- Around 50 meters before the new pedestrian crossing at one the extremes of the bridge
 1. automatic detection of approaching vehicles with excessive speed, and warn both drivers and pedestrians.
 2. new pedestrian crossing to improve mobility. Automatic detection of people or animals and warn approaching vehicles.
 3. warn users of the combination of both previous things happening at the same time.
- Full access to alerts and event statistics to better manage urban mobility
- Full and remote control of the scenarios and the signalling modes

From passive non-compliance barrier, to CE marked and active road safety parapet.





PLUG&META[®] Technology – the future of connected roads and smart equipment

