

SMART ROAD SAFETY EQUIPMENT TO PREVENT RUN OFF ACCIDENTS



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01

The problem

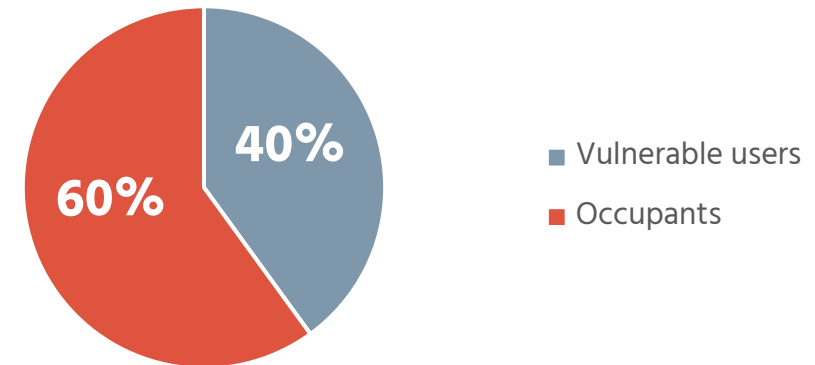
Current problems

IN TERMS OF STATISTICS AND CONTEXT (SPAIN)

TYPE OF ACCIDENT	NUMBER OF DECEASED
Exit from the road	486
Frontal collision	225
Side collision	136
Back and multiple collision	117
Pedestrian hit-over	109
Others	72
Total	1,145

TYPE OF ROAD	DECEASED IN 2023
Conventional Roads	849
High Capacity Roads	296

OCCUPANTS VS. VULNERABLE USERS



56,607



14,555
Victims WITH
safety barrier

Off road
accidents
2017 - 2021

DECEASED
4.2%
610

SEVERELY INJURED
9.6%
1,392

LOW INJURED
86.2%
12,553

Source: Estudio de Salidas de Vía y la importancia de los Sistemas de Contención para la reducción de la siniestralidad, mortalidad y lesividad en entornos urbanos y periurbanos con impacto en usuarios vulnerables, Universidad de Valencia y Metalesa.

02

**PLUG&META[®],
the solution**



43.5%

Of track exits are considered to be avoidable with smart road infrastructure



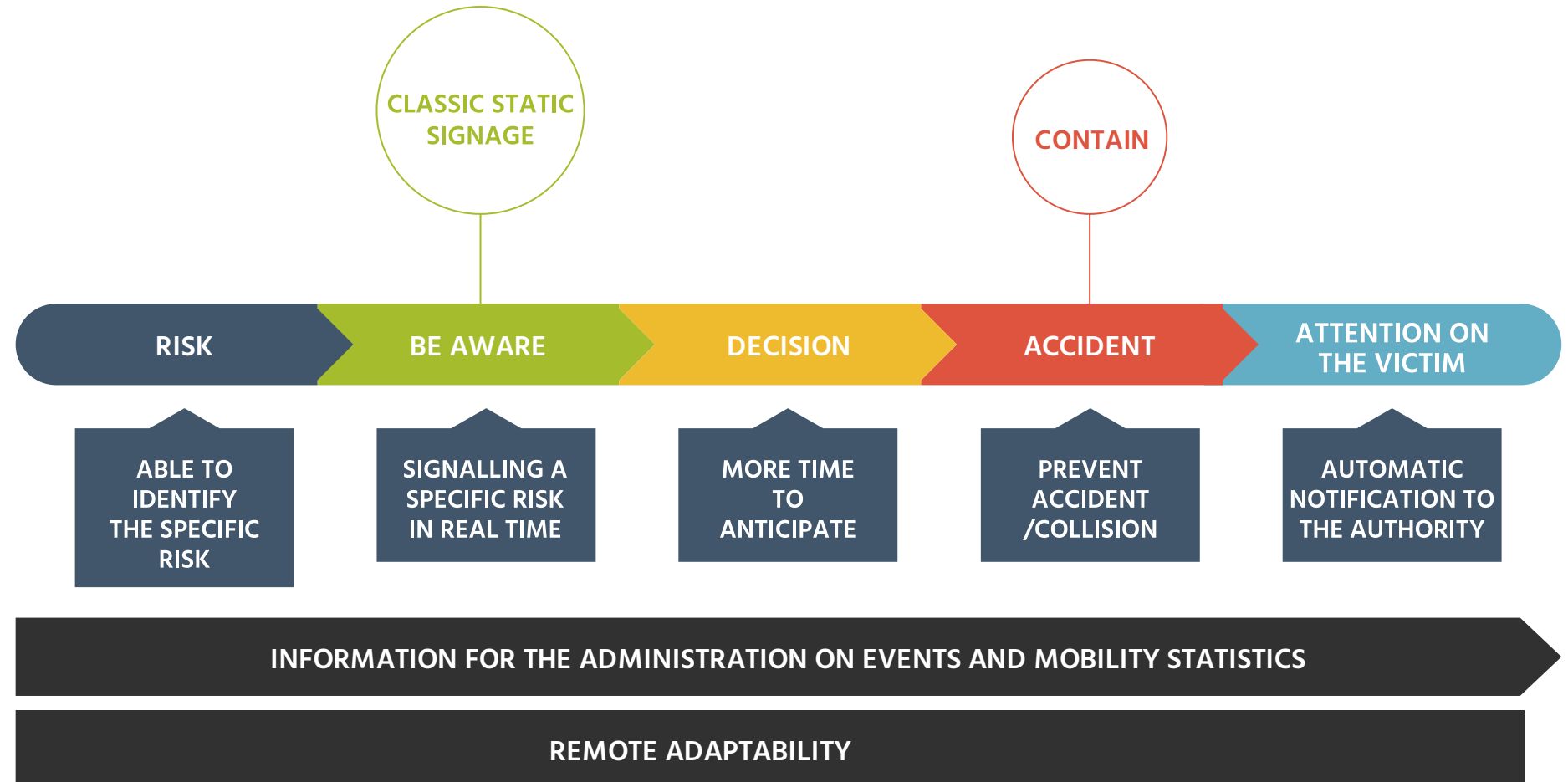
100%

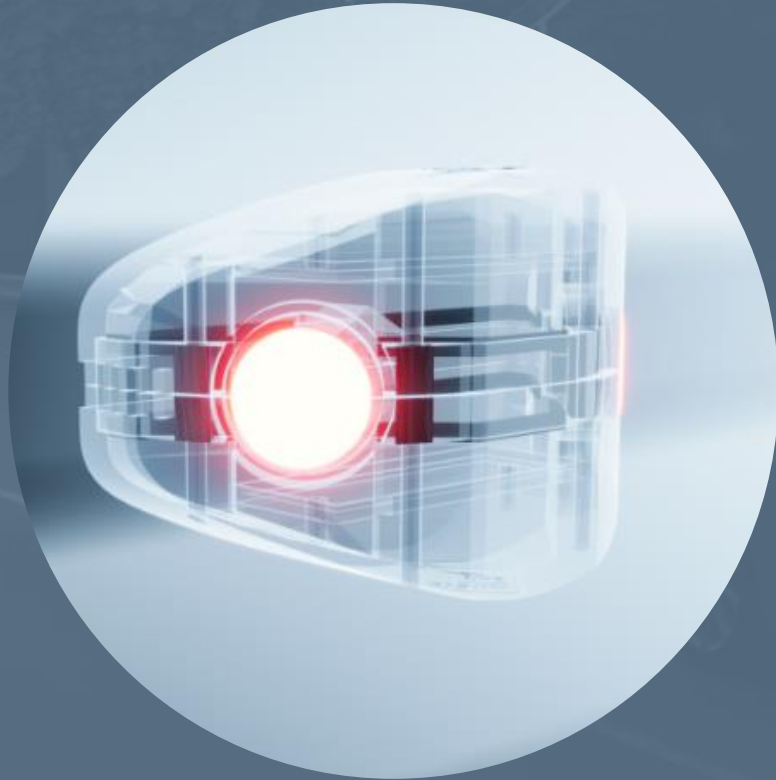
Of the events on the road that can be foreseen, alerting road users and **preventing accidents**

Transform new or existing infrastructures to be smart and connected

Classic and passive equipment

Active Road Safety





**ADAPTABILITY
POWERFUL
PATENTED**



MODULARITY

A SINGLE DEVICE that
INTEGRATES the
management of all current
and future scenarios

Technical information

PLUG&META® is a worldwide unique technology, patented and entirely developed by Metalesa.

It is an **Active Road Safety innovation** that is changing the equipment paradigm.

ADVANTAGES

- It allows new or existing infrastructures to be transformed into smart and connected infrastructures. Easily integrated into new or existing equipment.
- It is 100% autonomous and has an energy self-consumption solution.
- Integrates in a single device the prevention and signaling of possible accidents in the face of numerous risk factors.
- Provides the infrastructure manager with real-time data and statistics for safer mobility management.

TECHNICAL SPECIFICATIONS OF THE SMART SENSOR

Electrical characteristics

Voltage	24 -48 V DC
Intensity	350 mA
Power consumption	1 – 7 W

ISO 9001

UNE-EN 50102

IEC 60598, IEC 62031, IEC 60529, IEC 61000, IEC 61547, IEC 61437



Environmental conditions

IP rating	65
IK rating	08
Material composition (body)	Alu-PA66-PMMA
Operating temperature	-20° C to 80° C
Relative humidity (non-condensing)	80%



Examples of risk detectable in real time

- Crashes against the equipment
- Problematic time zone
- Limited or reduced visibility
- Risk of ice on the carriageway
- Strong gusts of winds
- Presence of cyclists, pedestrian or animals on the road
- Excessive speeds
- Nearby traffic jams
- Roadworks
- Tight or dangerous bends
- Coordination with traffic lights
- Many more...



**24x7 functionality
NON STOP**

Benefits for the mobility

Accident Reduction

Barriers equipped with PLUG&META help to reduce the number of accidents by means of signaling and preventive visual alerts in case of potential or existing risk scenarios.

Collecting valuable data for mobility

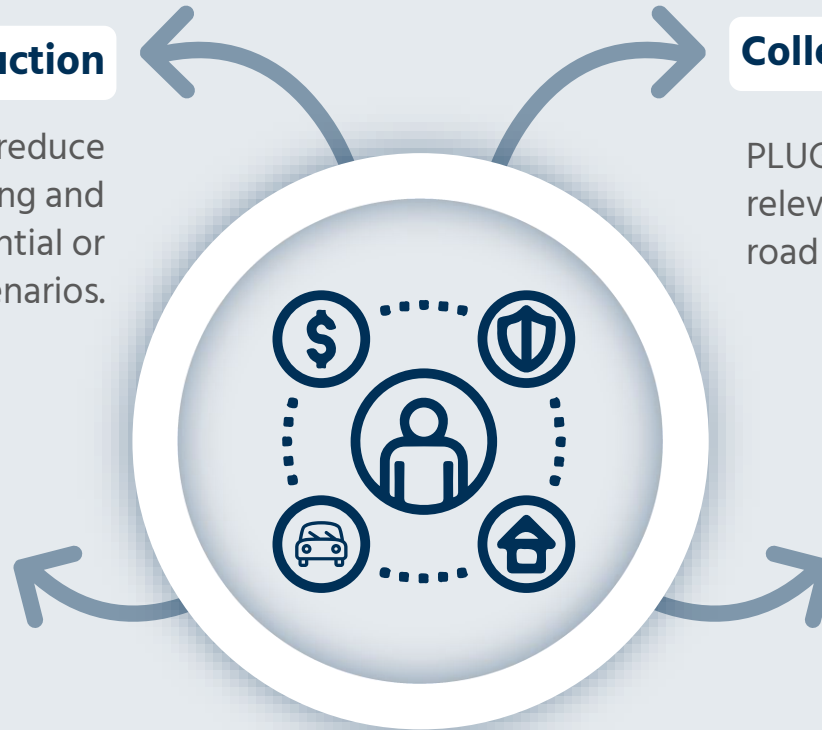
PLUG&META devices collect statistical data relevant to mobility and proper decision making for road administrators.

Reduced maintenance costs

Thanks to the prevention of run-off-the-road accidents and collisions with guardrails, the costs of maintenance and replacement of the guardrails borne by the public administration are considerably reduced.

Protection for the most vulnerable users

In areas where there are vulnerable users (such as personal mobility vehicles, cyclists, pedestrians, etc.) it can alert their position to protect them from other vehicles on the road.



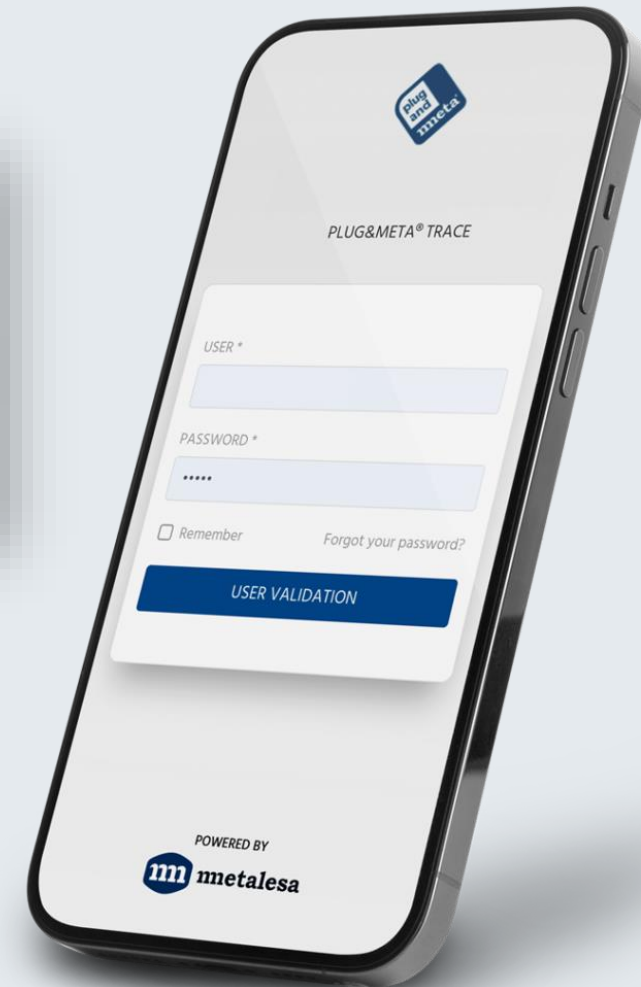
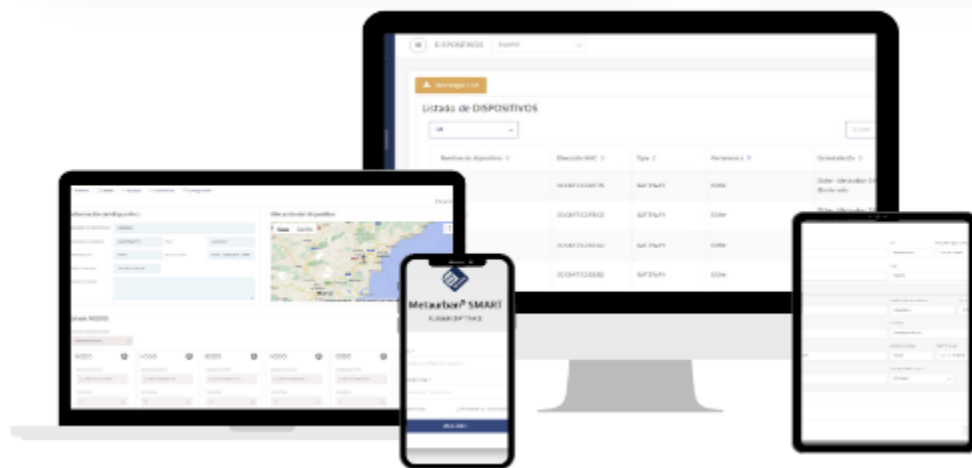
Management platform

PLUG&META® TRACE

The most optimized and intuitive management platform for your SMART equipment.

API integrable

Manage your SMART equipment autonomously from your own management platform.





Real-time monitoring while ensuring the security of your data in the cloud



Configure the functions of your SMART products with access to statistics



Receive notifications of events breakdowns



Open solution through **API** for integration to any management platform



We offer you everything you may need to personalize your preferences, monitor your alarms and take action in the event of breakdowns



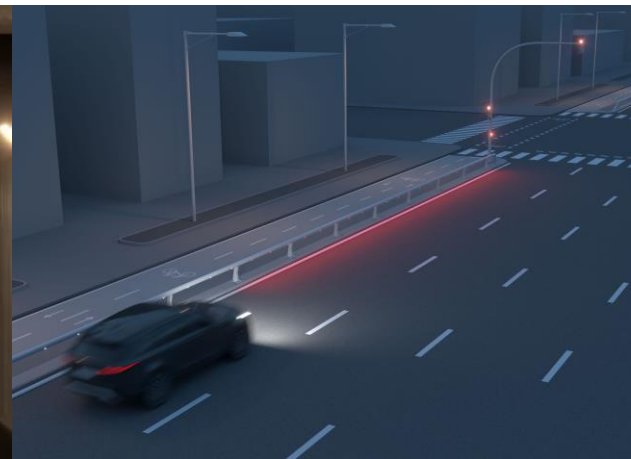
Contract the service that best fits your needs

Real-time warning options

The system activates integrated signaling in equipment and regulates:

- Color
- Light intensity
- Illumination mode (fixed / various flashing / burst)
- Switch-on time after hazard/event
- Direction and length of ignition from hazard/event detection point
- Coordination with vertical sign with LEDs or variable vertical panel

100%
AUTONOMOUSLY



PLUG&META TRACE

⚠

AVISO DE ACCIDENTE
EN SU ATENUADOR SMART

GESTIONAR

Real-time impact notification

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)

C4DD57BB140E

Solution selected by the Ministry of Transport, Mobility and Urban Agenda

Challenge 9: Advanced road safety management



GOBIERNO DE ESPAÑA



MINISTERIO DE TRANSPORTES, MOVILIDAD Y AGENDA URBANA


CPi

_Consulta Preliminar al Mercado

Reto 9. Gestión avanzada de la seguridad vial

9.3 Nuevos elementos de seguridad vial

<p>propuestas_</p> <ul style="list-style-type: none"> </> Empleo de pintura fotoluminiscente en entornos viarios específicos <li style="background-color: #d9e1f2; padding: 2px;"></> Sistemas de contención inteligentes </> Recrecido <i>in situ</i> de barreras tipo New Jersey 	<p>procedimientos_</p> <ul style="list-style-type: none"> </> CPTI (abierto): obra * </> Modificación de contrato: obra o servicio <p><small>* bajo excepcionalidad normativa</small></p>	<p>fases_</p> <ul style="list-style-type: none"> f1_ Proyecto demostrativo f2_ Evaluación y análisis f3_ Adaptación normativa (si procede) f4_ Despliegue (si procede)
<p>plazo aprox_</p> <p style="text-align: center;">≈ 6 – 9 meses</p> <p>presupuesto aprox_</p>	<p>interés_</p> <p style="text-align: center;">alto </p> <p>implementación_</p> <p style="text-align: center;">corto plazo </p>	



<https://mitma.es/carreterasinnova>

diapo_62

Smart containment protection systems

Winners of the PONLE FRENO - AXA Award FOR INNOVATION AND DEVELOPMENT IN ROAD SAFETY



Solution presented in front of the Spanish Senate

03

Studies and use cases

Elche project

Metaurban® SMART - PUENTE DEL BIMILENARIO

PREVIOUS CONTEXT

One of the main access roads to Elche.
The containment systems that were installed in it were outdated, it was necessary to alert users of the risks.

SOLUTION

The bridge's safety barriers were replaced and equipped with PLUG&META® technology. It was decided to integrate the PLUG&META® Trace platform via API.

SHORT-TERM RESULTS

Reduction of the average speed or pedestrians incidents
Alerts to the police force every time a collision with the guardrail occurs
Enough data for the authorities to create their safety reports and take action based on the data.

PUENTE DEL BIMILENARIO ELCHE



Valencia project

C80 P600 – SMART CRASH CUSHION

PREVIOUS CONTEXT

Several lanes converge in a tunnel with others that do not, so it was necessary to have a containment system that would also warn of the bifurcation of the road lanes.

SOLUTION

The multiplicity relies on PLUG&META® to signal the junction and alert the authorities in the event of a collision with the crash cushion.

SHORT-TERM RESULTS

Alerts and accidents at this hot spot have been reduced to zero.



Testimonials

MOBILITY COUNCILMAN OF THE ELCHE'S CITY COUNCIL:



"PLUG&META® technology allows us to know the level of traffic, if there is a mobility alert or if there has been an accident against the barrier. This data is useful for taking measures in terms of the area's mobility."

DIRECTOR OF THE VALENCIA TRAFFIC CONTROL ROOM:

"PLUG&META® technology brings versatility to existing systems and allows us to have data and statistics on mobility and traffic in certain conflictive areas where it was not possible before."



Smart bridge parapets

APPLICATION ON THE PRODUCT

Equipment capable of detecting, alerting and preventing accidents

COLLISION WARNING

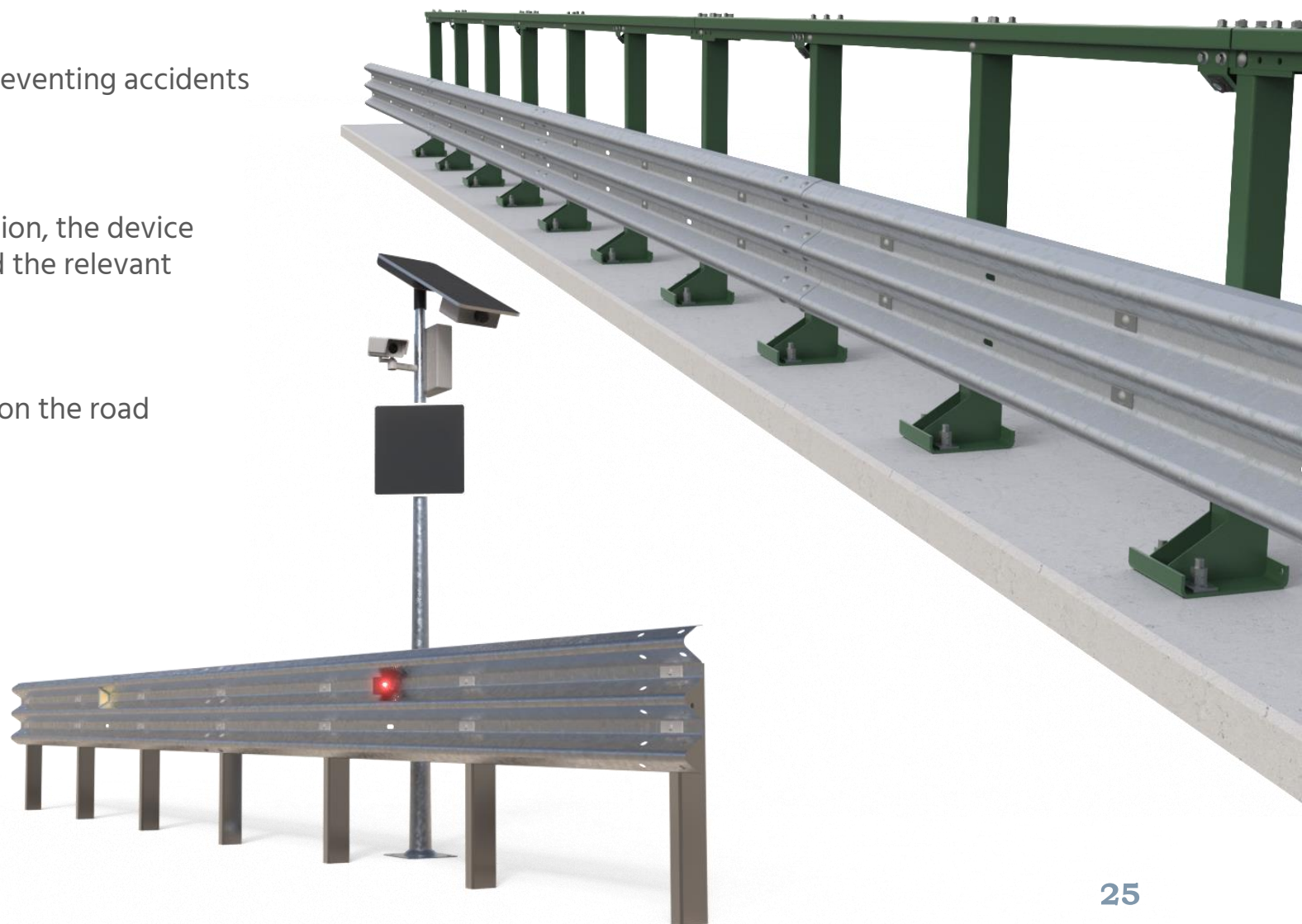
In the event of a collision with the crash cushion, the device sends a notification to the administration and the relevant authorities.

SIGNALLING RISK SCENARIOS

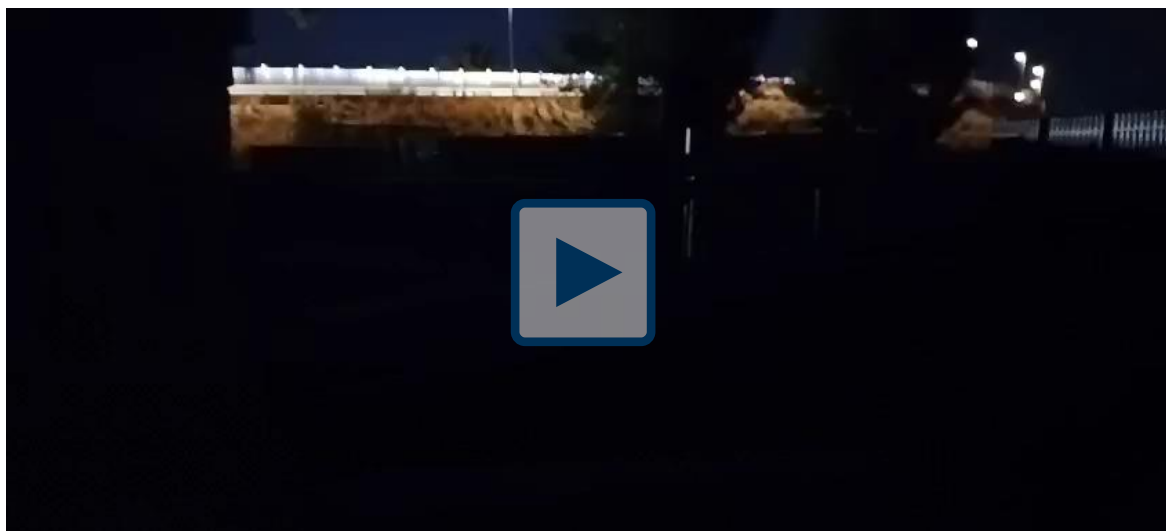
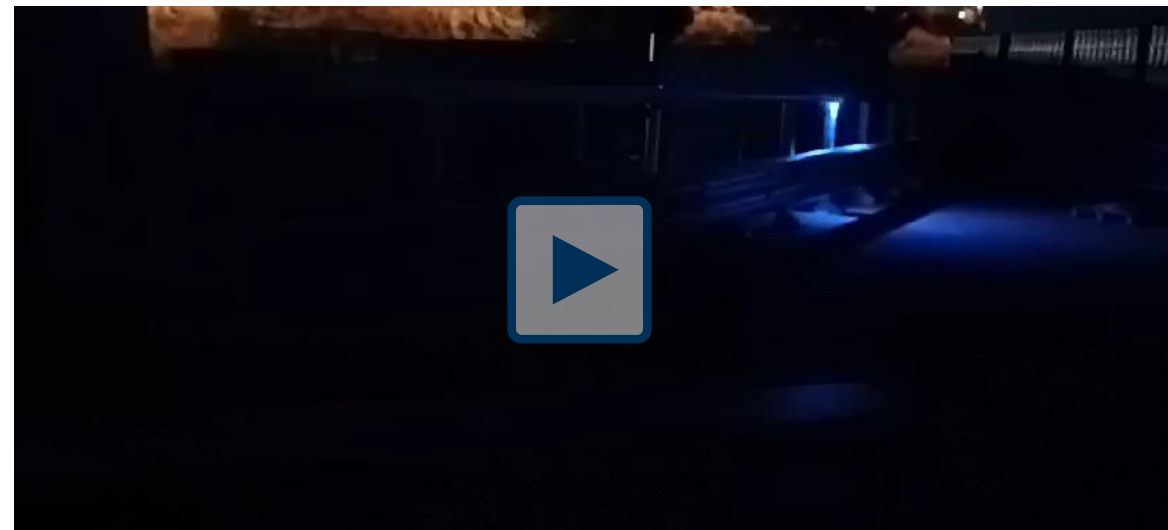
- Presence of cyclist, pedestrians or animals on the road
- Excessive speed
- Limited or reduced visibility
- Risk of ice on the carriageway
- Strong gusts of wind
- Roadworks
- Tight or dangerous bends

USEFUL DATA COLLECTION

Statistical data on alerts events



100% **CONFIGURABLE** AND **CUSTOMISABLE** SIGNALLING METHOD



**Road guardrail equipped with
PLUG&META[®] technology**

**Road guardrail equipped with
PLUG&META[®] technology**



04

**New business
models and
upcoming
developments**

New business models



MANAGEMENT PLATFORM

PLUG&META® TRACE

The most optimized and intuitive management platform for your SMART equipment.



ADDITIONAL SERVICES

Reporting & consultancy

Technical service

Maintenance / Repair

PLUG&META® allows companies to generate recurring income on new and existing projects.

Focusing on protecting vulnerable users



AI RISK RECOGNITION



**SOLAR POWER AND
WIRELESS TECHNOLOGY**



V2X / V2I



**MOTORCYCLE PROTECTION
DEVICE**

Thank you