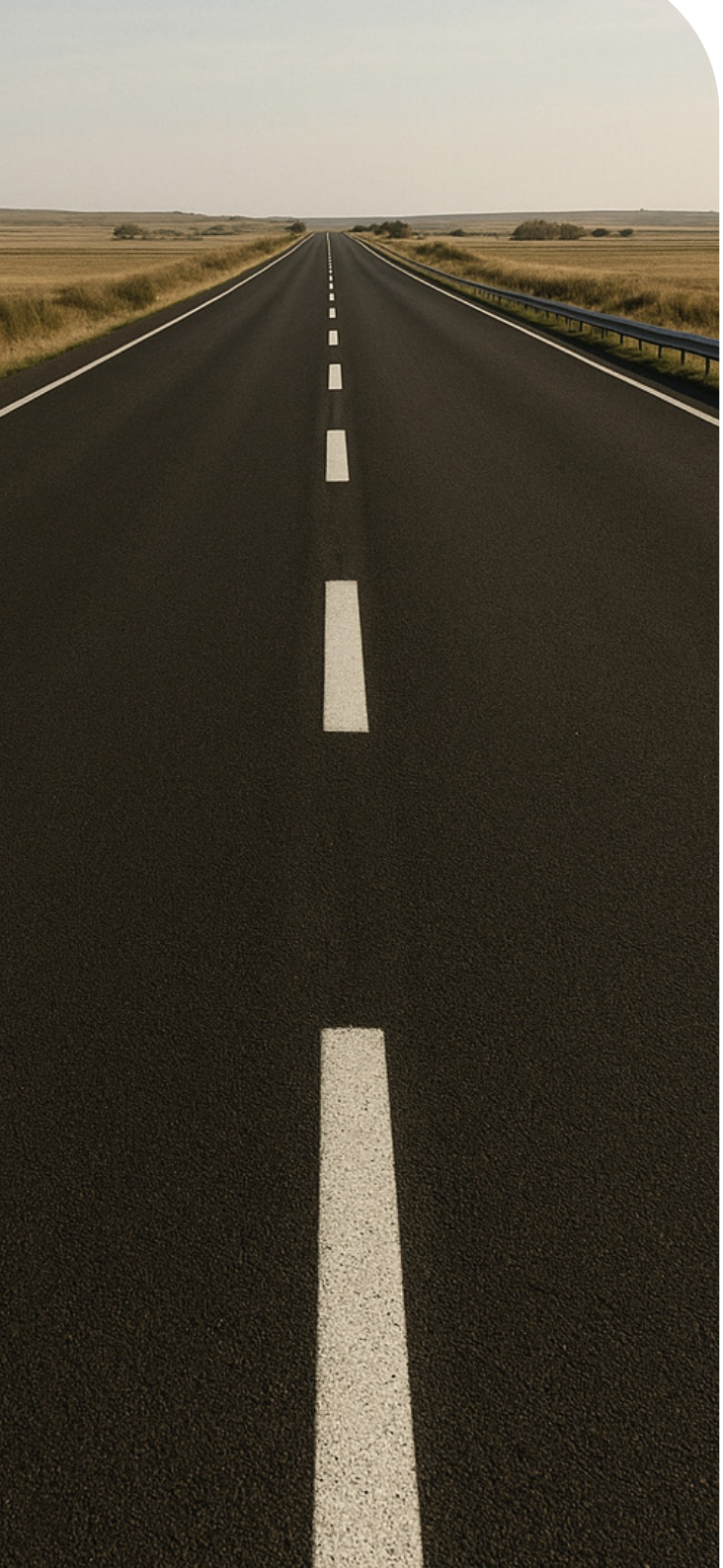
AISICO
for a safer life

ARES
assessment road equipment system



MONITOR ROADS, SAVE LIVES.

ARES
assessment road equipment system

ARES - Assessment Road Equipment System, is an innovative system that allows for the analytical assessment and determination of the actual performance of restraint devices along road networks, through surveys using high-performance vehicles, artificial intelligence models, machine learning algorithms, and performance decay curves.

Essential support for managing bodies. An objective criterion that classifies the activities necessary for the technical control of road efficiency, based on their importance or urgency, and defines a priority index for interventions in the context of optimising available resources.

Through ARES and its specific WebApp, it is possible to equip oneself with a system for the integrated management of restraint systems capable of identifying real critical issues and assessing the priorities of interventions, based on the maintenance status of the device, the characteristics of the support and the surrounding conditions, ensuring the overall safety of the infrastructure and minimising resources and costs.

ALL IN ONE.

Supports the managing body in the management, maintenance and technical control of the efficiency of roads and related appurtenances.

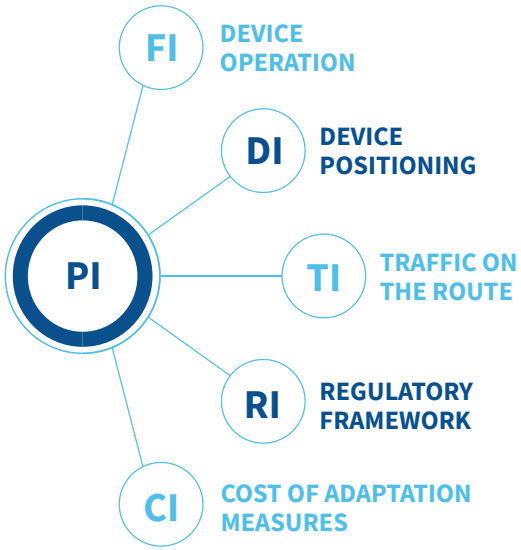
Allows the collection and storage of all detailed information on road equipment, in particular restraint systems.

Provides managers of any road infrastructure with a detailed overview of the technical and performance characteristics of safety devices.

Ensures proper maintenance planning by defining the priority of the adjustments needed to restore the efficiency of the restraint systems on the network.

Optimises resources and intervenes in a targeted manner only where it is actually necessary, contributing to improving infrastructure safety.

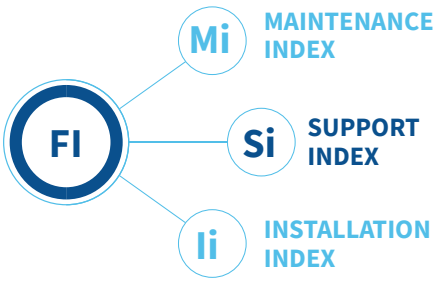
Checks the progress of road equipment maintenance, displaying the progress of the work in both tabular and graphical form on support maps via the dedicated web platform.



INTERVENTION PRIORITIES

The objective of ARES is to **determine a priority index for safety barrier adjustment interventions**, based on the intrinsic characteristics of the device, its maintenance status, the characteristics of the support and the surrounding conditions, which characterise the Functioning Index.

The Functioning Index (FI), by assessing the containment capacity of the device, determines the need for maintenance work. For all devices whose Functioning Index is below a predefined acceptability value, adaptation work must be planned.



For all sections requiring adaptation measures, the priority of intervention is defined taking into account additional parameters such as the location of the device, its destination, traffic, regulatory context and cost.

To assess each of these characteristics, specific “ancillary indices” (purpose, traffic, regulatory and cost) were used, correlated with each other according to coefficients that appropriately weigh their relative influence.

HIGH-PERFORMANCE SURVEYING

Surveying carried out using a high-performance vehicle makes it possible to define homogeneous sections and identify and record road restraint systems.
SURVEY the current state of restraint systems.
ASSESS the geometric conditions of the support.
UNDERSTAND the boundary conditions of each system.

IN-SITU SURVEY

In-situ testing allows the mechanical characterisation of supports in order to determine the behaviour of safety devices. Through dynamic testing, it is possible to determine the characteristics of the ground and its interaction with the device's upright at the moment of impact. By performing pull-out tests, it is possible to determine the characteristics of the concrete support for barriers installed on engineering structures.

Following the survey and in situ tests that allow the calculation of primary and secondary indices, a proprietary algorithm evaluates their relative importance, allowing the assessment of intervention priority according to the formula below:

$$PI = \alpha \cdot FI + \beta \cdot DI + \Upsilon \cdot TI + \delta \cdot RI + \varepsilon \cdot CI$$

WEBAPP

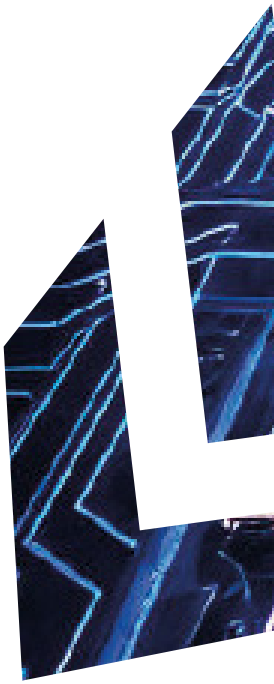
The ARES WebApp allows you to manage all the information derived from the Census, dividing the entire network into homogeneous sections characterised by the same type of barrier and support. The Manager can query the map or table below and view in detail all the data relating to the selected homogeneous section. It is possible to automatically calculate the indices and generate a complete map (Mapbox GLJS Map Loads for Web) on which the value for each device in the homogeneous section can be viewed.

The WebApp allows the operator to enter the adjustments necessary to make road restraint systems compliant and the relative cost of each adjustment. The cost index takes into account the fact that, for the same expenditure, it is preferable to intervene on longer, uniform sections of road, considering the greater probability that these may be involved in accidents.

Using a database containing the main adjustments and their unit prices, the operator can draw up a list of adjustments to be carried out within the WebApp, with the option of specifying the quantities for each adjustment; following this activity, the PI can be recalculated.

For each homogeneous section, it is possible to export an Excel file containing a metric calculation with all the chosen adaptation measures. The results obtained using the ARES method allow the manager to carry out preliminary assessments of the measures based on the budget available.

To find out more about ARES scan the QR-code.



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SAFER ON THE ROAD,
SAFER IN LIFE.

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