AISICO
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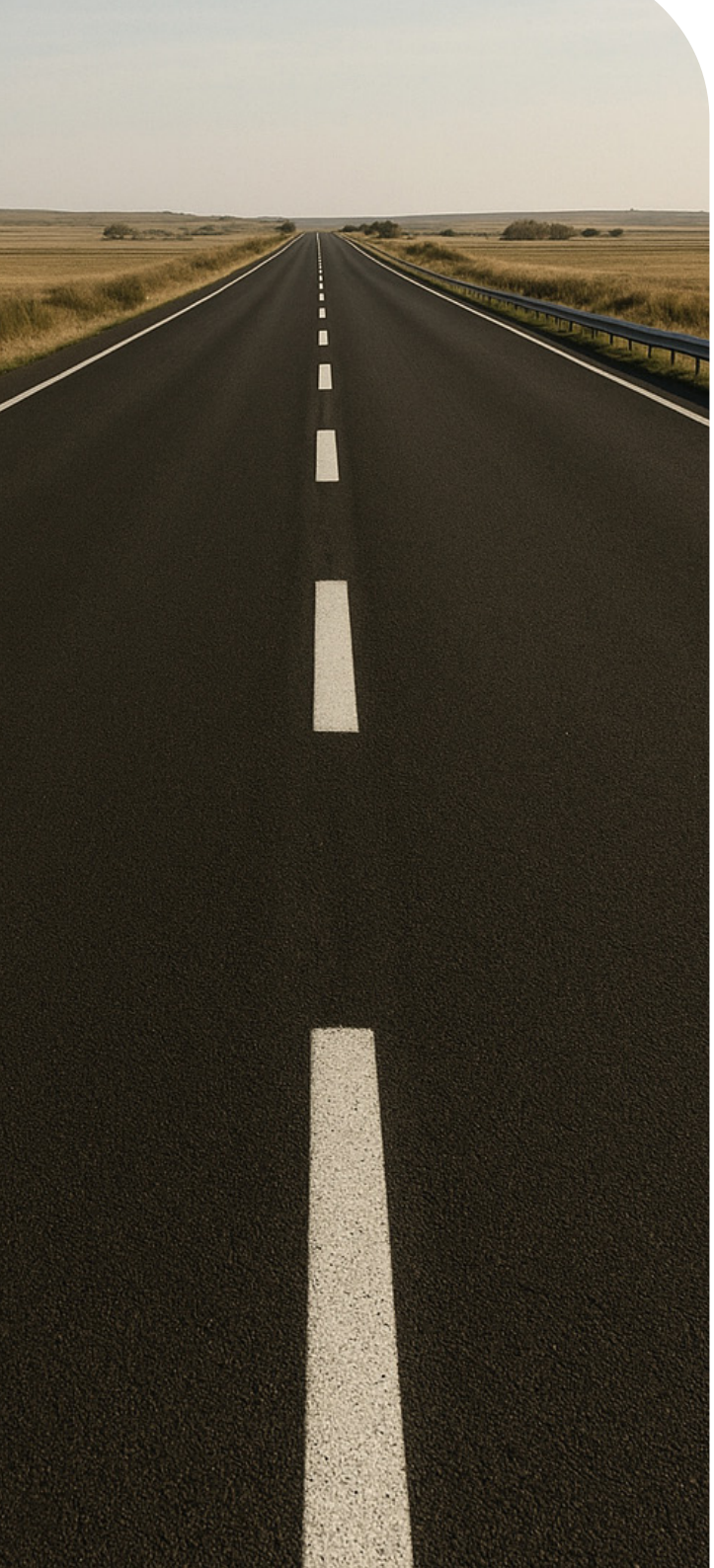
ARES
assessment road equipment system



MONITORING ROADS.
SAVING LIVES.

ARES - ***Assessment Road Equipment System*** is an innovative system developed by AISICO that allows for the analytical assessment and determination of the actual performance of restraint devices along road networks. The system is based on surveys carried out with high-performance vehicles, the use of Artificial Intelligence models, Machine Learning algorithms and performance decay curves.

ARES provides essential support for managing bodies. It provides an objective criterion for classifying the activities necessary for the technical control of road infrastructure efficiency, according to their importance or urgency, and allows for the definition of a priority index for interventions in the context of optimising available resources.

Through ARES and its WebApp, it is possible to equip oneself with a system for the integrated management of restraint systems. The system is able to identify real critical issues and assess the priorities of interventions based on the maintenance status of the devices, the characteristics of the support and the surrounding conditions, helping to ensure the overall safety of the infrastructure and minimise resources and costs.

ALL IN ONE

Supports the managing body in the handling, 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 improve 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.

360° SUPPORT

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. In summary, you can proceed to:

- **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 for the mechanical characterisation of supports in order to determine the behaviour of safety devices.

Dynamic testing is used to determine the characteristics of the ground and its interaction with the device's upright at the moment of impact. Pull-out testing, on the other hand, allows for the determination of the characteristics of concrete supports for barriers installed on engineering structures.

INTERVENTION PRIORITIES

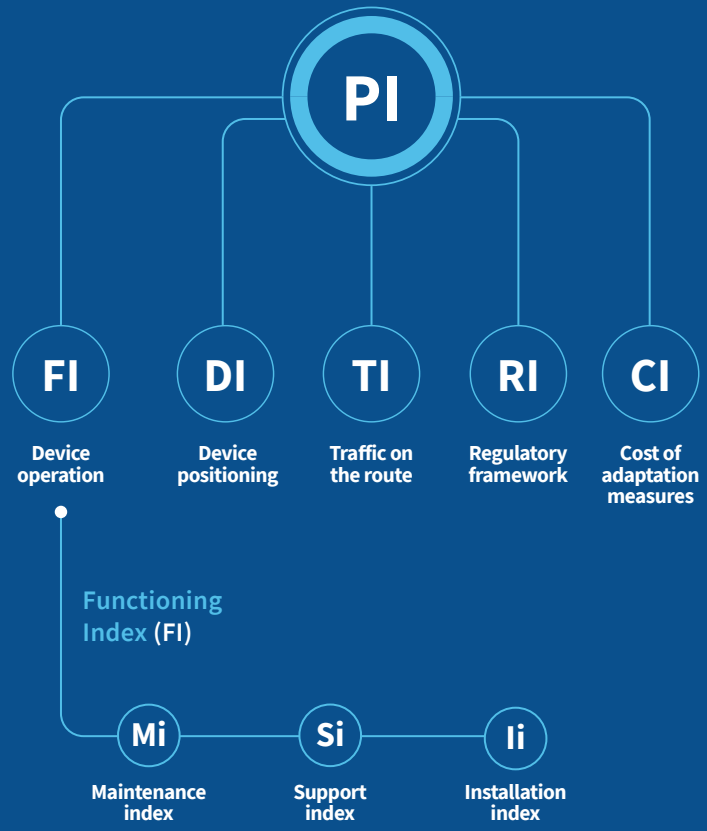
The objective of ARES is to determine a **priority index for safety barrier adaptation measures (PI)**, based on the intrinsic characteristics of the device, its state of maintenance, the characteristics of the support and the surrounding conditions, which characterise the Functioning Index.

The Functioning Index (FI), which assesses the containment capacity of the device, determines the need for maintenance work. For all devices whose Functioning Index is below a predefined acceptable value, adjustment work must be carried out.

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

To evaluate each of these characteristics, specific “accessory indices” were used, correlated with each other according to coefficients that appropriately weigh their relative influence.

Priority index for safety barrier adaptation measures (PI)



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:

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

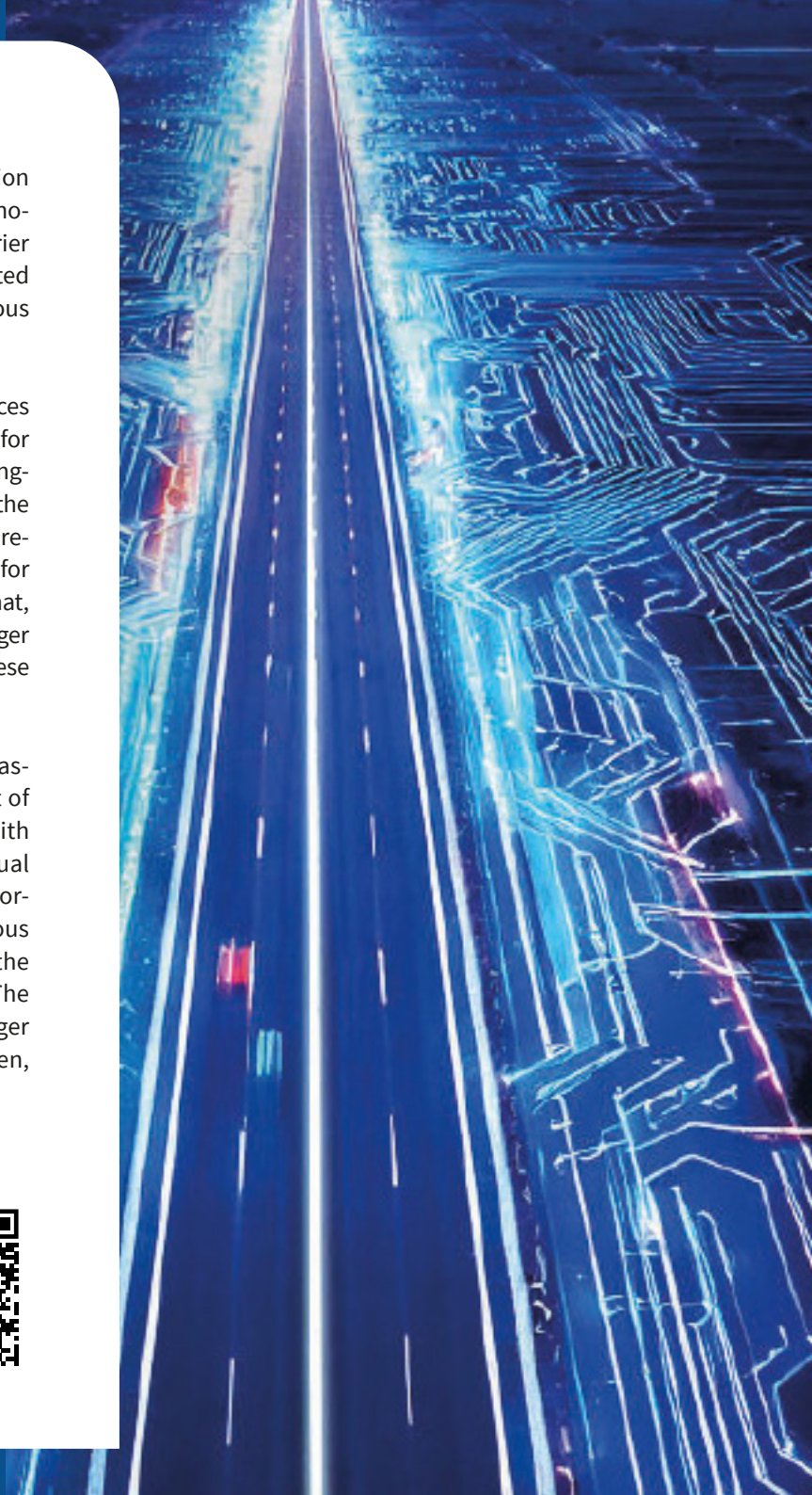
WEBAPP

The **ARES WebApp** can be used to manage all the information gathered from the survey, dividing the entire network into homogeneous sections characterised by the same type of barrier and support. The manager can query the map or associated table and view detailed data for the selected homogeneous section.

The platform allows you to automatically calculate the indices and generate a complete map (Mapbox GLJS Map Loads for Web), which displays the index value for each device belonging to the homogeneous section. The WebApp also allows the operator to enter the adjustments necessary to bring road restraint devices into compliance, indicating the relative cost for each operation. The cost index takes into account the fact that, for the same expenditure, it is preferable to intervene on longer homogeneous sections, given the greater probability that these sections will be involved in accidents.

Using a database that collects the main adaptation measures and their unit prices, the manager can draw up a list of activities to be carried out directly within the WebApp, with the option of specifying the quantities for each individual measure. Following this operation, the Intervention Priority (IP) can be recalculated. Finally, for each homogeneous section, it is possible to export an Excel file containing the metric calculation of the selected adaptation measures. The results obtained using the ARES method allow the manager to make preliminary assessments of the actions to be taken, based on the budget available.

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



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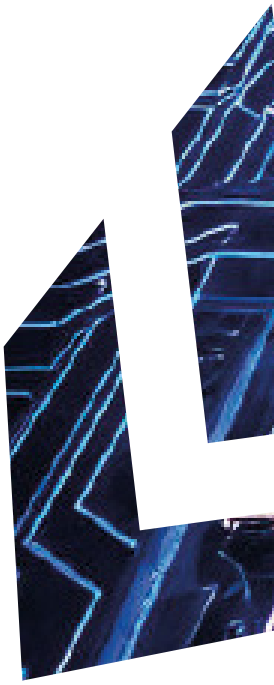

For over thirty years, AISICO has been committed to road safety, offering testing and verification services, both in the laboratory and on site, for transport infrastructure and street furniture, conformity certification, research and development projects, and training.

SAFER ON THE ROAD,
SAFER IN LIFE.

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