

SustIMS

SUSTAINABLE INFRASTRUCTURE
MANAGEMENT

AN INTELLIGENT SYSTEM FOR ROAD INFRASTRUCTURE MANAGEMENT

SustIMS is an innovative solution that enables, through one single system, the management of the main elements of any road infrastructure, promoting, above all, an optimization of resources.

Different from the traditional database systems, SustIMS not only integrates historic and real time information, but also predicts future performance of each element, recommending the best maintenance and rehabilitation strategies.

An integrate and user friendly system that supports the decision making process.



BACKOFFICE

Intelligent information platform that combines road infrastructure information from more than one source [inputs], producing decision supporting outputs based on advanced prevision models and optimization algorithms.

It offers a set of modules specifically designed for road infrastructures: **Pavements, Retaining Walls/Slopes, Bridges and Telematics Equipment.**

Other modules can be developed and added by request.

01 INFORMATION MANAGEMENT

- Inventory record;
- Infrastructure inspections – in loco gathering of data through mobile platform;
- Infrastructure online monitoring - real time retrieving information through wireless network sensors.

02 DEGRADATION/OPTIMIZATION MODULES

At any moment it is possible to access infrastructure information and evaluate their current conditions and intervention needs. The system is able to create degradation predictions and simulate optimized scenarios of preventive and/or corrective maintenance measures.

This simulation is based on the execution of pre-established parameters regarding the preservation and maintenance status and by considering time and cost variables.

Main Features:

- Intensity matrix computation supported on existing database;
- Performance curves;
- Scenarios simulation;
- Multi-objective optimization: Time and cost.

03 PLANNING TOOL

Provides a job schedule feature that helps to plan field inspections and technical team's assignment.



MOBILE PLATFORM

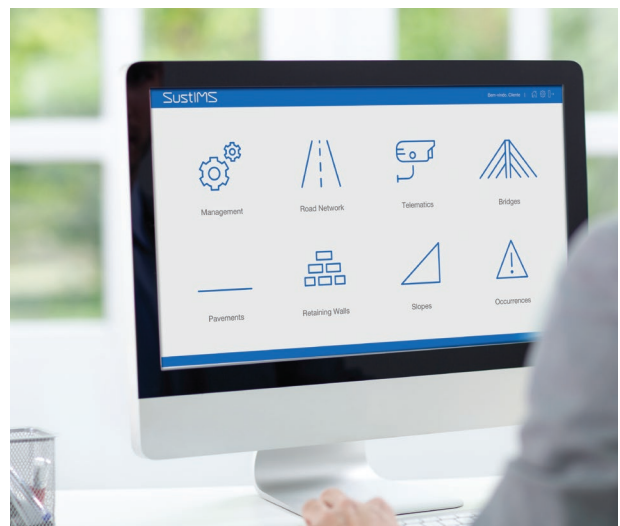
Mobile platform, developed for tablets, which supports infrastructure's inspection activities on the field.

Technical teams can quickly and easily execute a planned field inspection by filling a pre-defined checklist, and simultaneously register other occurrences detected on the infrastructure.

Main Features:

- Visual schematics adapted to the reality;
- Historical information;
- Pre-defined checklists;
- Association of multimedia elements [image, video & sound];
- Automatic geo-reference;
- Automatic synchronization with backoffice.

Time and resources optimization





ONLINE MONITORING

Monitoring system, installed in critical points of the infrastructure, reports its condition and detects and alerts incidents in real-time. This system is based on Wireless Sensors Networks [WSN], installed along the infrastructure on retaining walls/slopes and safety guardrails. It detects in real-time the occurrence of incidents and automatically spreads the information.

- *Safety guardrails* - detects vehicle-guardrails collisions, enabling a quicker help to victims and an immediate warning to other drivers through dynamic information panels.
- *Retaining Walls/Slopes* – monitoring devices enable a real time record of its condition, including occurrences such as sudden movements, with automatic geo-reference.



SustIMS's MAIN FEATURES

- **Integrated** – centralizes multiple sources of information, giving an accurate and up to date vision of the infrastructure, as well as a real time monitoring of critical elements;
- **Flexible** - Recommends intervention strategies adjusted to the specific needs of each infrastructure [different business models, quality levels, calculus methods, etc] and enables multi-variable scenarios analysis;
- **Scalable** – its flexible architecture enables the addition of new modules with minor development effort.

SustIMS's BENEFITS

- **Resources optimization** - Approaches road assets management from an economical and quality perspective, supporting the decision making process and reducing its life-cycle costs;
- **Decreases financial risk of road projects** - Predicts with more accuracy the need for future investments;
- **Increases operational efficiency** - Integrated management of resources and efficient prioritization of inspections and maintenance works;
- **Increases productivity** - A professional working tool that supports and simplifies road maintenance activities.

INTEGRATED, FLEXIBLE AND SCALABLE SOLUTION

Joint development by
Ascendi, Universidade do Minho and Universidade Nova de Lisboa.



UNIVERSIDADE
NOVA
DE LISBOA

For further information:
www.ascendi-group.com
sustims@ascendi.pt

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