

Título	UPGRADING OF ROADS AND MOTORWAYS
Acronym	REHABCAR
Call	MICINN
Duration	2010-2013
Partners and collaborators	Dragados, Geocisa, Iridium, Asfaltos Augusta, CTT-Stronghold, Torroja Ingeniería, Cartif, Unican, UPC, CSIC-CISDEM
Specialty	Transport – Pavements – Roads; Civil works structures - Bridges
Application to work sites	<ul style="list-style-type: none"> ▪ Topographic layout or roads. Applied in the rehabilitation of a road in the Baixo Alentejo (Portugal) ▪ Test stretches with geotextile in the access to Asfaltos Augusta asphalt plant in El Ordal (Barcelona) ▪ Inspection of structures in two Iridium highway concessions, Highway of the Vineyard and a stretch of the A-2 highway between Calatayud and Medinaceli

PROJECT OBJECTIVE

The aim of the project is the development of technologies for the upgrading of roads and highways, seeking the transformation of existing pavements and structures in economically sustainable and high quality infrastructures, going beyond a simple corrective maintenance.

DESCRIPTION

The Project is divided into three research lines:

- **Design of a road upgrading:** development of a semi-automatic system for the measurement of transverse profiles of a road using 3D laser scanning technology.



Figure 1 Three-dimensional scanning of an existing road

- **Pavement reinforcement:** Work is concentrated in three fundamental lines:
 - Deterioration models of semi rigid pavements.
 - Reinforcement with geotextiles.
 - Asphalt mixes resistant to reflection cracking and fatigue.

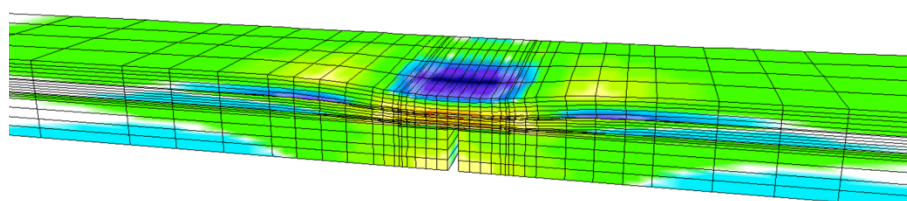




Figure 2 a) Deterioration models of semi rigid pavements. b) Reinforcement with geotextiles. c) Asphalt mixes resistant to reflection cracking and fatigue.

- **Bridge upgrading:** this research line has focused in bridge reparation.
 - Structural damage indicators.
 - Measurement of structural redundancy.
 - Deterioration model.
 - Tool for design of bridge upgrading.
 - replacement of bearings
 - strengthening/widening
 - enlargement and displacement of piers.



Figure 3 Bridge upgrading.

ACHIEVED RESULTS

The project is in its final stage of development in which, having advanced and achieved satisfactory results in the research lines above mentioned:

- the project is delivering a topographical quality 3D real scanning system
- knowledge has been gained in pavement reinforcement and deterioration models of fatigue and reflection cracking
- a prioritization methodology for structures upgrading is under way