Toolbox
A method to select maintenance candidates

a research project of the
cross-border funded joint research programme
"ENR2011 DESIGN – Rapid and durable Maintenance Method and Techniques"

1) Introduction

"ENR2011 DESIGN – Rapid and durable Maintenance Method and Techniques" is a trans-national joint research programme that was initiated by "ERA-NET ROAD II – Coordination and Implementation of Road Research in Europe" (ENR2), a Coordination Action in the 7th Framework Programme of the EC. The funding partners of this cross-border funded Joint Research Programme are the National Road Administrations (NRA) of Belgium, Germany, Denmark, Finland, France, Netherlands, Norway, Sweden, Slovenia and United Kingdom.

2) Project Facts

Duration:	20/10/2011 – 30/10/2013
Budget:	EUR 255.127
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3) Project Description

Maintenance of paved roads is carried out to preserve and improve the pavement and reduce the deterioration process. A treatment will make the pavement last for a certain time interval before next treatment is necessary. The time for which a treatment lasts can be related to many factors such as condition before treatment, selected treatment method, maintenance strategies (and changes in the strategy), technical quality, changes in traffic flow and budget levels.
Innovations brought by Toolbox will include *new functional triggers* that ensure that road user expectations are considered in the selection of maintenance candidates, which in turn form the basis for the selection of project/schemes/object lengths to be maintained. As a further benefit the functional triggers could be used as *benchmark indicators* for a European road condition demonstration.
Pavement managers' deal with complex decisions when identifying lengths of their networks in need of maintenance, and planning the appropriate maintenance treatments. Currently, they are heavily dependent on experience, even though many support systems exist, such as guidelines, monitoring and information systems. Decades of road network monitoring and follow up projects, such as LTPP (Long Term Pavement Performance), have generated a huge volume of empirical data on pavement condition, giving knowledge how this develops and affects road users, which can be made useful if

analysed in a structured and sound manner. To complement this information, several decades of research and development has accumulated a substantial volume of knowledge, models and tools. This can be used to assist in maintenance decisions, with an aim to assist in applying a strategy that delivers a sound road network with minimum cost. Even so, these support tools are not yet implemented to their full potential, and most tools do not address user expectations.
This project aims to advance the development and implementation of practical strategies and tools to assist road authorities in optimising the maintenance of their road networks, whilst addressing the key interests and expectations of road users.
Toolbox will develop a "concept for proper maintenance planning" to assure the selection of adequate maintenance works to make effective use of the maintenance budget, based on available road condition data, to give minimal negative effects on road users, safety for road workers and the environment. The main idea is to develop a tool for maintenance planning which allows selection of sections in need of maintenance based on not only cost and benefit analysis but also road users' expectations.
Toolbox will deliver a framework for tools that help road owners to decide how lengths should be identified for maintenance (using available condition data), balancing costs and road user expectations.

4) Expected Results

Main outcomes will include:

- An optimization tool that identifies maintenance candidates based on new functional triggers
- An optimization tool that suggests practical section lengths.
- Benchmark models for some functional effects
- International benchmark indicators of road function
- A demonstration that uses the developments made in this project to compare the new approach against traditional methods
- A discussion on maintenance strategies and choices of treatments with respect to Toolbox findings