

3<sup>ο</sup> ΔΙΕΘΝΕΣ ΣΥΝΕΔΡΙΟ  
ΑΣΦΑΛΤΙΚΑ ΜΙΓΜΑΤΑ ΚΑΙ ΟΔΟΣΤΡΩΜΑΤΑ  
Θεσσαλονίκη, 21-22 Νοεμβρίου 2002

## **DEVELOPMENT OF AN EXPERT SYSTEM FOR PAVEMENT MANAGEMENT**

**G. Panos**

Graduate student, University of Patras, Greece

**A. P. Chassiakos**

Assistant Professor, University of Patras, Greece

**D. D. Theodorakopoulos \***

Associate Professor, University of Patras, Greece

**P. Vagiotas**

Civil engineer, Highway Maintenance Administration, Western Greece District

\* University of Patras, Department of Civil Engineering, 26500, Patras, Greece  
d.d.theod@upatras.gr

*ABSTRACT*

Pavement management is a complex problem due to its size, the number and the diversity of the involved parameters, and the difficulty in determining the interrelationships among them. In this study, an expert system is developed to provide decision support to maintenance agencies regarding the selection of appropriate maintenance actions for the road network. The proposed system consists of two modules, one for setting maintenance priorities and another for determining alternative applicable treatments. The first module is used to prioritize road sections according to maintenance needs considering a number of parameters (e.g., distress type, extent and severity, expected condition deterioration rate, road functional classification and traffic loads, environmental conditions, etc) along with their relative weights. The second module investigates all applicable treatments considering the specific distresses and other characteristics. The possible treatments are sorted according to their effectiveness – cost ratio (effectiveness refers to the expected duration until another treatment will be necessary). Resource allocation is done following the priority list and by selection of the most cost-effective treatment in each case.

*KEY WORDS:* management, maintenance, pavement, expert system