



Sustainable Surface Transport  
SIXTH FRAMEWORK PROGRAMME



**rankers**  
ranking for european road safety

RANKING FOR EUROPEAN ROAD SAFETY  
SPECIFIC TARGETED RESEARCH OR INNOVATION PROJECT

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## 1. Introduction

This report presents a brief summary of the RANKERS Conference, that was held on June 27<sup>th</sup> 2007 in Budapest within the Road Safety Engineering EU – Hungary Seminar co-organised between the European Road Federation and the European Commission Technical Assistant Information Exchange Unit (TAIEX).

The conference had the objective to present to road infrastructure industry, research community and road administrations their latest results at that date. Moreover, the discussions held at the end of the presentations helped RANKERS partners to introduce some new views into our activities, mainly for the Road Safety Index.

The main topics that were presented from the RANKERS consortium were as follows:

- The Road Safety Index.
- The Catalogue of Recommendations.
- The Human Factor experiments methodology and preliminary results.
- The Infrastructure field tests on road geometry influence on traffic accidents.

## 2. Conference agenda

The conference consisted on a set of presentations followed by enough time for discussion at the end of the session (see Figure 1).

SEMINAR AGENDA 27 June 2007		SEMINAR AGENDA 28 June 2007	
<p style="text-align: center;"><i>Chair: Mr Hugh Rees</i> Former Head of Unit in the Directorate General for Transport &amp; Energy European Commission</p>			
09:00	Registrations	09:00	<ul style="list-style-type: none"> <li>□ EUROAUDITS Results Ms Elena de la Peña, AEC</li> <li>□ Behaviour-setting roads Mr Brendan Halleman, Director of Operations, ERF - IRF BPC Ms Berta Vizcarra-Mir, Head of Office, ERF – IRF BPC</li> </ul>
09:30	<ul style="list-style-type: none"> <li>□ Welcome and Opening Remarks Mr Balazs Feismann, State Secretary for Infrastructure, Ministry of Economy and Transport, Republic of Hungary</li> </ul>	10:45	<ul style="list-style-type: none"> <li>□ RANKERS Workshop Mr Robert Thomson, University of Chalmers Ms Maria Alonso, CIDAUT Mr José Miguel Perandones, CIDAUT</li> <li>□ Financing of Road Maintenance Mr Tom Antonissen, Director of Policy and Institutional Affairs, ERF – IRF BPC</li> </ul>
10:00	<ul style="list-style-type: none"> <li>□ Safe road management policies: <ul style="list-style-type: none"> <li>○ European framework and policy context Mr José Papi, Secretary General, ERF – IRF BPC</li> <li>○ The national context Ms Júlia Halmos, Safety Advisor, State Secretariat for Infrastructure, Ministry of Economy and Transport, Republic of Hungary</li> </ul> </li> </ul>	14:30	<ul style="list-style-type: none"> <li>□ Technical site visit ‘Ring Road in Budapest – M0-M3’ (East Section)</li> </ul>
11:30	<ul style="list-style-type: none"> <li>□ Legal requirements: <ul style="list-style-type: none"> <li>○ Tunnel safety Directive</li> <li>○ Safe infrastructure Management Directive Mr Tom Antonissen, Director of Policy and Institutional Affairs, ERF – IRF BPC</li> </ul> </li> </ul>		
14:00	<p style="text-align: center;"><i>Session Chair: Ms Monica Correggia, Tubosider</i></p> <ul style="list-style-type: none"> <li>□ Passive Safety <ul style="list-style-type: none"> <li>○ EN1317 application handbook Mr Joseph Marra, ARCELOR</li> <li>○ Good Practices in Passive Road Safety Mr Tony Everitt, Hill &amp; Smith</li> <li>○ Current Issues with EN1317 Mr Norman Van Oudtshoorn, Volkmann &amp; Rossbach</li> </ul> </li> </ul>		
15:30	<ul style="list-style-type: none"> <li>□ Active Safety <ul style="list-style-type: none"> <li>○ Road Markings Mr Jean Lalo, SOMARO</li> <li>○ Vertical Signing Mr Rik Nuyttens, 3M Europe</li> <li>○ ITS Mr Brendan Halleman, Director of Operations, ERF - IRF BPC Mr Francesco Falco, Communications Officer, ERF – IRF BPC</li> </ul> </li> </ul>		

**Figure 1 Seminar and Conference agenda**

- WP2 – Road Infrastructure field tests: Robert Thomson (CHALMERS) presented the field test performed within the Infrastructure Group in WP2. He focused on the preliminary results of the relationship between different road design parameters like radius of curvature and superelevation with the accident rate. Some of
- WP2 – Human Factor experiments: María Alonso (CIDAUT) focused her presentation on the two experiments carried out within the WP2 Human Factor Group. One of them consisted on the realisation of an experiment with an instrumented vehicle in order to test the influence of the radius of curvature on human behaviour. The other one was focused on the roads vertical signs, and the perception of the different drivers regardless the standards that define their content, location, size or colour.
- The Road Safety Index and the Catalogue of Recommendations: José Miguel Perandones (CIDAUT) presented the structure and objectives of WP4, the work package producing the main results of the project. He explained the methodology to be used to estimate cost – benefit ratios, in order to produce the Catalogue of Recommendations. Then, he also presented the objectives of the Road Safety Index and the approach that the consortium was following during the third year of the project in order to provide this innovative result.

These interesting topics of discussion for the road community were disseminated also after this workshop through the inclusion of this workshop in one of the newsletter that ERF periodically delivers on road engineering design safety (see Figure 3 & Figure 3).

# Engineering Safer Roads

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## Roads that influence Behaviour-setting road design

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ANKERS, a 2005-2007 European Commission co-funded initiative, has investigated the role of road infrastructure on traffic to develop monitoring and countermeasure selection protocols to assist in road design and operations .

Within the framework of a recent ERF - IRF BPC Seminar on Safe Road Engineering held in Budapest (Hungary) on 28-29 June 2007, RANKERS keynote speakers José Miguel Peirandones, Dr. Robert Thomson, María Alonso and Brendan Halleman delivered a condensed overview on behaviour-setting road infrastructure.

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The RANKERS session focused on the often neglected aspect of how road infrastructure can positively or adversely effect the behaviour of the driver behind the wheel. For too many years road design has been undertaken without putting the driver at the centre stage, with the result that, frequently, motorists find themselves in difficult situations often leading to accidents and injury.

The Infrastructure parameter

As part of RANKERS, national accident data spanning 6 years have been collated with physical properties contained in road inventory databases as well as maintenance databases collected as part of regular pavement maintenance programs (Pavement Management System PMS). Accident data was matched to road locations with a 200 metre accuracy and then sorted into bins where accident dates among infrastructure characteristics could be compared.

Results of these analyses of accident rate and road configuration have been useful to confirm previous findings in the literature as well as contribute additional information. As expected,

accident rates increased with decreasing curve radii and also decreased with increasing posted speed limit. Of particular interest were the findings in one country where the risk of accidents in curves was higher for right hand curves than in left hand curves, even when superelevation would support vehicle cornering capabilities. In these conditions it was also noted that the type of accident changed as overtaking accidents increased in right hand curves.

Data collected in these studies have been used to develop criteria to identify critical road sections and suggest types of countermeasures suitable for the accident types involved. Interaction with Human Factors research is necessary to further understand the links between accident causation and road infrastructure elements.



The Human Factor

Most of the research studies point out that human error is implicated in most of the accidents, meaning for instance that at that particular moment which preceded the accident an alert driver would not have made that particular error. In some cases drivers in sub-optimal physical conditions (tired, inattentive, distracted...) are "pushed" to committing errors while at the wheel of a motor vehicle because the infrastructure lacks a basic degree of "self-explanation". In other words, the road does not follow a logic pattern, mainly because it was not planned and built with the end-user in mind.

Driving a motor vehicle is a very complex and attention draining task, with drivers needing to negotiate a number of different variables.

"Human error is implicated in most of the accidents... An alert driver would not have made that particular error"

Figure 2 Conference at Engineering Safer Roads newsletter (1).

## Safety at all Levels

### The Integrated Approach to Road Safety

Human beings, however, are fallible and naturally make mistakes in their daily operations, including the time when they are operating a motor vehicle.

Errors, incidents and accidents demonstrate the limits of drivers' adaptation to their task, and the factors responsible for that need to be analysed, understanding the reasons for such deviations, identifying the conditions in which they are most likely to appear and analysing the mechanisms that could explain their occurrence.

At the very first stage, this is usually constituted by an **operation mistake**, which is a first and wrong reaction to something which the driver has seen or experienced. Usually an operation mistake is corrected almost immediately by features of the vehicle or the driver himself, but when this does not occur then it might become a **driving mistake**, which, if not corrected, eventually leads to an **accident**. Statistics show that the proportion of the aforementioned three steps is 5,000:500:20.

The concept of self-explaining road design considers the driver's operation mistake as the first step in a chain of actions, eventually leading to an accident and tries to minimise the instances in which it occurs. This, in turn, will lead to a decline in the number of accidents.

**"With these complementary tools road operators will be able to assess the safety of their networks"**



Although different individuals can have opposite reactions, a set of common "features" was identified during tests conducted over stretches of Spanish roads by CIDAUT. These tests focused on the layout of the road and on the ability to detect and interpret vertical road signs, bringing to light the considerable effect which simple changes in the infrastructure and in roadside furniture can have in driver-behaviour.

An average model for human behaviour was easily identified during these tests and it will be included in the overall framework of the RANKERS project in order to better identify the influence of driver behaviour with regards to infrastructure safety and to propose appropriate measures to that would facilitate the decision making process of motorists.

**Next steps**

The next steps in the RANKERS project are to develop a comprehensive catalogue of scientifically researched road



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ERF is a signatory of  
The European Road  
Safety Charter

Director of Publication: José Papi - Editor: Francesco Falco

Figure 3 Conference at Engineering Safer Roads newsletter (2).

### 3. Conference presentations

All conference presentations can be found both at RANKERS public web site ([www.rankers-project.com](http://www.rankers-project.com)) and the EC Road Infrastructure Safety projects ([http://ec.europa.eu/transport/roadsafety/publications/projectfiles/rankers\\_en.htm](http://ec.europa.eu/transport/roadsafety/publications/projectfiles/rankers_en.htm)).