

INNOVATIONS FOR ROAD SAFETY

Monday 20 October 2003 (1.30 – 5.00 p.m.)

SESSION AGENDA & INTRODUCTORY REPORT

Session Agenda

General Introduction

Mr. Hans-Joachim VOLLPRACHT
(Session Coordinator, member of PIARC C13 Committee/GERMANY)

PART 1: Illustration of how innovations in road engineering in different areas can contribute to the improvement of road safety

1. Introduction

Ms. Ginny CLARKE (PIARC ST3 Coordinator/UK)

2. Road equipment and Safety

Mr. Jacque BOUSSUGE
(IRF, Association des Sociétés Françaises d'Autoroutes et d'Ouvrages à Péage/FRANCE)

3. Pavements and Safety

Mr. Bill HEATHER (IRF, Associated Asphalt/UK)

4. Geometry and Design of Road Infrastructure

Mr. Rob N. GEDDES (IRF, Consulting Scott Wilson Kirkpatrick & Co. Ltd./ZIMBABWE)

5. Computer Visualization

Prof. Ralf ROOS (Technical University of Karlsruhe/GERMANY)

6. 3-D Computer Visualization

Mr. Xavier BAUMELOU (COFIROUTE/FRANCE)

PART 2: Behaviour of road users and improvement of road infrastructures

1. Introduction

Ms. Ginny CLARKE (PIARC ST3 Coordinator/UK)

2. The White Paper of IRF

Mr. Wim WESTERHUIS (IRF/SWITZERLAND)

3. Human Factors in Road System Design

Mr. Hans-Joachim VOLLPRACHT (Member of PIARC C13 Committee/GERMANY)

4. Panel Discussion

Moderator: Ms. Ginny CLARKE (PIARC ST3 Coordinator/UK)

Panel: Session's speakers

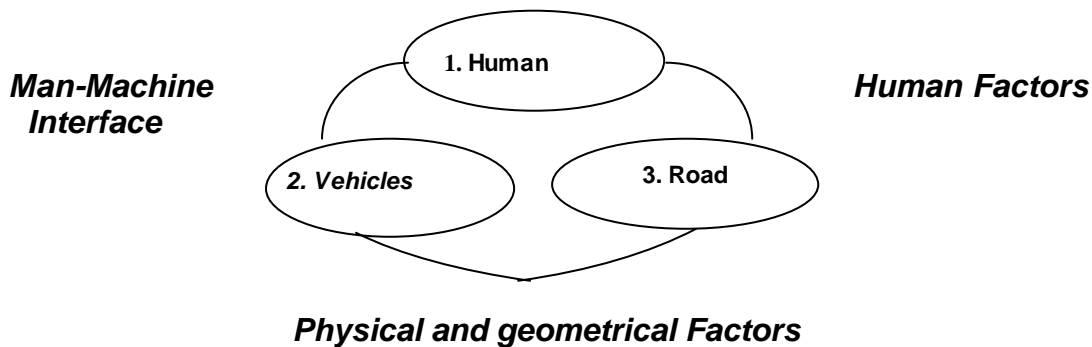
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This session is organized by PIARC and the IRF (International Road Federation). Improvement to road safety is a major concern for all the stake-holders, which prompts innovations in the different areas of road design, construction and operation.

The first part of this session will be devoted to a series of presentations illustrating a number of innovations which took place over the recent years in different areas; these presentations will highlight the contribution to the improvement to road safety.

However, increasing road safety requires paying consideration to the subsystems: human, road and vehicles, which can't be analysed separately but through their interactions.



Hence the second part of the session will concentrate on the interfaces between these sub-system in order to investigate how innovations to road infrastructures should be best combined with our understanding of the drivers behaviour.

The session will be chaired by Ms Ginny Clarke, Coordinator of Strategic Theme 3 of PIARC.

Part I. Illustration of how innovations in road engineering in different areas can contribute to the improvement of road safety

This part is not intended to make an exhaustive review of the recent innovations introduced over the recent years but to provide an illustration of progress. A series of presentations will cover different areas of interest to developed or developing countries.

1. Geometry and design of road infrastructures

- Road safety on very low traffic roads undeveloped rural areas, by R.N. Geddes (IRF, Scott Wilson Africa Limited), *see abstract at the end*
- Increased safety resulting from spatial road alignment optimised by computer visualisation, by Prof. Ralf Roos (*Universität Karlsruhe, Germany*)

2. Road equipment

- Road equipment including electronic traffic guidance, by J. Boussuge (IRF, *Association des Sociétés françaises d'Autoroutes*)

3. Pavements

- Pavements and safety, by B. Heather (IRF, *Associated Asphalt*)

Part II. Behaviour of road users and improvement of road infrastructures

The panel discussion will be introduced by a short address from Ms Ginny Clarke, and by two presentations to set the scene:

- the IRF White Paper, by Mr. Wim Westerhuis (General Director, IRF)
- Human Factors in Road System Design, by Mr H.-J. Vollpracht (PIARC, C13), *see abstract at the end.*

The panel discussion chaired by Ms Ginny Clarke will gather together the different presenters together with a representative from the Automobile Industry and of a few other stake-holders. The audience will be invited to contribute to the discussion.

The discussion will in particular address the question: ***“Must we change Road Users Behaviour or/and adapt the transport system to their nature?”***

Abstracts of contributions

Road Safety on very Low Traffic Roads in Undeveloped Rural Areas

R. N. Geddes – Scott Wilson Africa Limited (Zimbabwe)

P. A. Greening – TRL (U.-K.)

Rural roads in developing areas often carry very little motorised traffic. Justification for capital investments and maintenance of these roads is based more on social and economic benefits to local communities than savings in vehicle operating costs. Construction costs are reduced by accepting lower standards for the horizontal and vertical alignment and reducing the width of the road. These measures result in lower maintenance costs, but may have a significant impact on the safety of road users.

Inter-vehicle collisions are rare despite short sight distances because traffic volumes are low and most vehicles travel slowly. But conflicts between motorized vehicles and non-motorized road users are more frequent due to the larger number of pedestrians and cyclists.

The traditional approach to reducing the road safety risk to pedestrians and cyclists focuses on either integration or separation. Integration includes making provision for pedestrians and cyclists in the roadway, traffic calming, pedestrian crossings etc. Separation seeks to remove them from the roadway through the construction of pedestrian walkways etc. But on very low traffic access roads it is assumed that reduced vehicle speeds due to reduced geometric standards will enable pedestrians and cyclists to use the road safely without segregation.

The purpose of the paper is to explore the issues and assumptions around road safety on very low traffic roads, identify areas where gaps in existing knowledge exist, and suggest areas for further research.

Increased safety resulting from spatial road alignment optimised by computer visualisation

Prof. Dr. Ing. Ralf Roos - Technical University of Karlsruhe

An important reason for driving errors is the misjudgement of road users concerning the real course of the road. This misjudgement results from the overlapping of elements of the horizontal and vertical alignment which can be due to an unfavourable spatial road alignment and thus to negative effects on the drivers behaviour and to the road safety.

The consequences of an unfavourable spatial alignment are often insufficient visibility conditions (e.g. partial road disappearance from driver's view, sight distortion, insufficient recognisability of curves ahead); up to now a design engineer couldn't identify these not even by computer-aided alignment. Now, with the assistance of a newly developed software by the University Karlsruhe (TH), perspectives from the driver's viewpoint along a road are calculated, evaluated automatically according to quantitative visibility-criteria and represented in a compact form, permitting the design engineer to immediately detect insufficiencies in visibility.

This newly developed system is very important in practice and will assist to evaluate spatial road alignment quantitatively and to optimise the road alignment from the user's viewpoint. Furthermore in the future this system shall be used as a test software for road safety audits and for a safety judgement of existing unsafe roads (road sections with an accumulation of accidents).

Human Factors in Road System Design

Mr. Hans-Joachim Vollpracht – PIARC C13

It is well known that Human Factors have an enormous influence on the safe handling of technical systems. In many technical subjects like household appliances, ships, air crafts and in the world of production, special design standards are developed to prevent human errors. But in the road transport system the knowledge of the Human Factors is scarce. Meanwhile the C 13 Work Group B has analysed about 470 experimental studies about patterns of perception, information processing and other mental processes which all have an impact on drivers behaviour (more information about the work of C13 Group B can be found in the Activity Report of C13). The presentation will give first advices how to adapt the design of the road system to the nature of the users. A decisive amount of lives could be prevented world wide if road transport authorities and road administrators would have better knowledge of road users behaviour.