

Editorial

Dear reader

Although it has already frequently been mentioned in many speeches and articles it is still necessary and also worth repeating that great efforts are still urgently required to reach the objective of halving the number of fatalities in EU15 from over 40,000 to 20,000 in 2010.



With the just started EU-project RiPCORD-iSEREST we aim to contribute to this ambitious objective by improving road infrastructure.

We are convinced that road infrastructure related safety measures offer a large potential that could be exploited for a significant reduction of road accidents and their consequences. Researchers and practitioners in the member states of the European Union have made great efforts to improve traffic safety in this field. Many of these approaches have already led to a significant reduction in accidents and fatalities in several states.

In this project we want to bring together researchers and practitioners from different countries. The objective is to collect and to evaluate these approaches in order to make them accessible throughout Europe and to develop tools for further improvements in traffic safety.

With this first edition of the RiPCORD-iSEREST newsletter we aim to inform researchers, experts and decision makers working in the field of road infrastructure and road infrastructure related road safety measures. The newsletter will in future be published continuously to keep you up to date with the ongoing progress of our work in RiPCORD-iSEREST and to provide you with valuable information for your work.

R. Weber

RiPCORD-iSEREST

Considering the fact that most casualties occur on single carriageway rural roads, RiPCORD-iSEREST will focus on road infrastructure measures for the network of rural roads. The main objective is to develop best practice guidelines and tools for improving road infrastructure safety. Particular attention will be paid to secondary rural roads. Although a large proportion of fatalities in rural areas occur on secondary rural roads, they got much less attention regarding safety interventions than primary rural roads. Still, design guidelines for these types of roads rarely exist within Europe. As a result a vast number of these roads is not appropriate to modern road traffic.

Developing best practice guidelines asks for special attention on current research results for

- Road Safety Impact Assessment Tools and Accident Prediction Models
- Road Design and Road Safety Audits
- Road Safety Inspection, Black Spot Management and Safety Analysis of Road Networks

In the development of a Safety Information System and a Safety Handbook for secondary rural roads, a road user behaviour model and a Safety Performance Function have to be taken into consideration.

For this challenge the project combines a team of 17 partners from 14 nations all over Europe covering scientific organisations, road safety institutes, universities, road authorities and private companies (see last page).

Road Safety Impact Assessment

In order to estimate the impact of new road infrastructure measures, so far different road safety impact assessment tools and models (RIA) have been developed and are still subject of study. But these tools are not common, yet.

A comparison of different models and tools regarding applicability, quality and availability of data will be worked out in order to support a better understanding of underlying traffic and transport patterns which influence road safety.

Different approaches will be analysed and compared in order to get the best spreading of existing tools and models. In different countries pilots will be performed, whose results will be compared with the current practice. Regarding priorities of users, possible indicators of a safety impact assessment tool will be evaluated to define optimal tools for cost-effective planning and designing under the given circumstances.



The RiPCORD-iSEREST team at the Kick-Off meeting at BAST

Road Design and Road Environment

One prerequisite for safe traffic is that the road design is in accordance with the function of the road. To achieve that road users choose their traffic behaviour in accordance with the given situation, the design of the road must be self-explaining.

As a second prerequisite, the road and the roadside environment must be designed in such a way that mistakes of the drivers do not lead to serious accidents (forgiving roadside environment). To support these efforts best practice guidelines on road classification and the design of self-explaining roads will be formulated.

Road Safety Audit

To work out best practice guidelines on Road Safety Audit (RSA) and the necessary qualification for auditors RiPCORD-iSEREST will provide information for countries which intend to establish RSA procedures. This will include all organisational aspects like audit steps, audit tools and qualification and training of auditors. To support the implementation of road safety audits important elements from successful examples of RSA implementation will be described in detail.

Safety Inspection

The aim of Road Safety Inspection is to ensure that existing road networks (including roadsides) are maintained on a best level from a traffic safety point of view. In contrast to Road Safety Audits (analysing potential safety risks of new projects) and Black Spot Management (based on accident analysis) the main idea of Road Safety Inspection is a periodical supervision of the existing road network.

First approaches of this new method to increase the traffic safety can be found in some countries. Within RiPCORD-iSEREST the experiences of such approaches will be examined and compared. Furthermore an implementation plan for the realisation and the financing of Road Safety Inspections in Europe will be elaborated.

Black Spot Management and Safety Analysis of Road Networks

To develop best practice guidelines on Black Spot Management and guidelines on Safety Analysis of Road Networks is another research objective of RiPCORD-iSEREST.

The current approaches in Europe concerning Black Spot Management and Safety Analysis

of Road Networks are characterised by a lack of standardised definitions and elements of analysis. Most of these definitions are deficient from a theoretical point of view. An important objective of RiPCORD-iSEREST is to develop standardised methods for the identification and analysis of black spots based on statistical accident theory, removing the deficiencies of many current definitions of black spots.

As far as Safety Analysis of Road Networks is concerned, there is a similar lack of a standardised approach. The work will seek to develop a common understanding about improving the methodology of Safety Analysis of Road Networks.

Future Aspects

Developing best practice tools and guidelines concerning road infrastructure safety RiPCORD-iSEREST has also to consider and to incorporate relevant telematic applications, such as Driver Information Systems or Advanced Driver Assistant Systems (ADAS). Special attention will be paid to telematic applications or road side telematic elements aiming the support or substitution of road infrastructure measures. Possible influence of these new elements on the implementation plans will be considered. Considering previous research initiatives (i.e. ADVISORS, TRAVELGUIDE and IN SAFETY) recommendations and priorities for necessary standardisation and certification activities will be mentioned.

Road User Behaviour Model

Effective road design safety policy must target the human, the vehicle and the road infrastructure environment as well as the interactions between them. Therefore a model is needed to understand road user behaviour, in particular driver behaviour. Previous driver behaviour models have been related to the interaction between the driver and the car. Road side influences are mostly handled as intervening variables.

To develop a comprehensive Road User Behaviour Model it is necessary to re-examine and synthesize existing theories and models dealing with road user behaviour, human errors and accidents, and to prove the transferability of parts of these models to the aims of RiPCORD-iSEREST.

Relevant human factors on road safety have to be extracted, described and classified with their degree of influence and frequency contributing to accidents. Relevant interdependencies among parameters within each factor and between factors must be calculated in order to formulate a road user behaviour model which can be applied to secondary rural roads as well as on different driver groups or road situations.

Additionally, a framework of rules from the behaviourism point of view will support the further efforts in developing recommendations for safety improvement measures on secondary rural roads.



Structure of RiPCORD-iSEREST

Safety Information Expert System

The Safety Information Expert System will be based on an inventory of best practice in road safety improvement gathered from all EU-member states and international countries. Special focus will be set on information about secondary road safety which is merely qualitative in nature and fit an expert system..

The Expert System is intended to be used as a base of decision making within a safety orientated management system. It will be designed as a free-accessible data-base for road authorities, safety auditors and safety inspections.

Safety Performance Functions

Safety Performance Functions are a new instrument for analysis and evaluation of secondary road safety. The model will combine road safety and road design as well as psychological research. It will identify the relevant influences (and interactions) of road design and driver behaviour on road safety. The new Safety Performance Functions can be used for safety forecasting, but above all they constitute effective tools for road design ex ante, because they allow to individualise structural lacks from the safety point of view.

Joining the results of the Safety Information Expert System and the Road User Behaviour Model will give important input for a systematic theoretical and empirical investigation of the relevant scopes (e.g. problems of perception/reception; cognitive problems, decision problems and response problems). The analysis will give answers to questions like:

- Which parameters of road infrastructure are relevant for road safety?
- How can their effect be estimated from empirical evidence?
- How can their safety relevant relationships be described?

Based on this approach a systematic analysis of variables of vehicle movement determined basically by the parameters of the road geometry, traffic and the roadway environment will be carried out. This will e.g. Consider:

- The influence of roadway geometry on vehicle tracking (lateral placement);
- Speed and acceleration or deceleration related influences of road and environment on road safety, and
- Speed variance on longer road stretches.

GIS-based Decision Support Safety Tool

To stimulate a safety oriented management of (secondary) road infrastructure a practical management tool will be developed to assist road managers and other decision-makers on a regional level to determine road safety problems, to select appropriate safety intervention measures and to develop different scenarios. It also provides the opportunity to predict the road-safety-level and cost-effectiveness of current road-projects. The outcome can be compared with the targets set by the regional or national policy-makers. Alternative scenarios to improve road-safety can be developed and the results in

terms of accident-reduction, cost-effectiveness (per road-category) and total cost can be compared to the results of current policy.

Demonstration

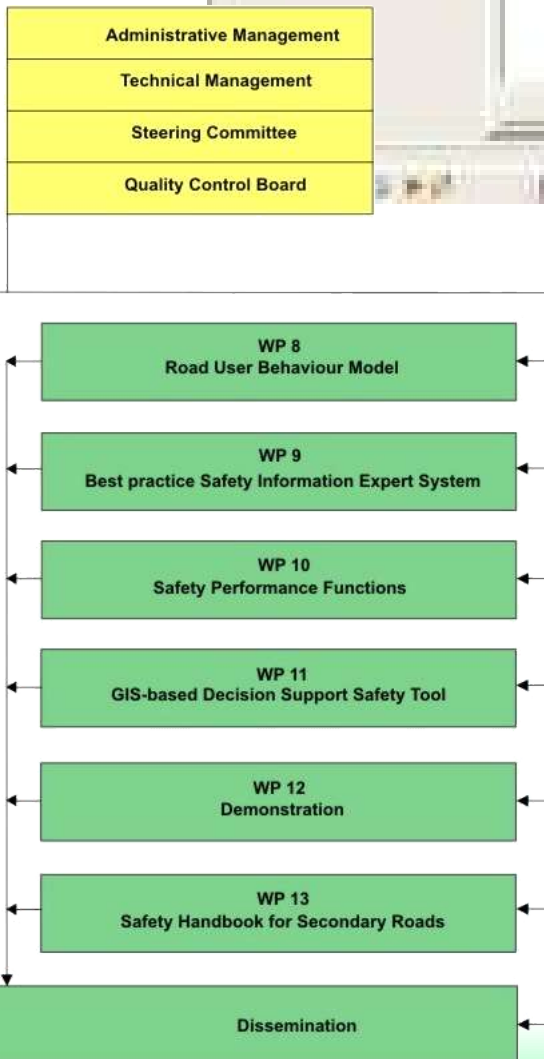
At last the developed intervention strategies and measures for safety improvement on secondary roads will be verified. Therefore RiPCORD-iSEREST will investigate the usefulness and practicability of the GIS-based Decision Support Safety Tool. The organisational and procedural constraints of working with the Decision Support Safety Tool will be identified, and the outcomes of the tool will be validated through an expert team. Further recommendations from the reviewers as well as from road authorities will be analysed to provide a high quality GIS-based Decision Support Safety Tool and handbook.

Safety Handbook for Secondary Roads

The Safety Handbook for Secondary Roads - applicable within all EU-member states - will be aiming at practitioners, who need safety advice and information for on site decisions as well as for road authorities and consultants, who prefer simplified and standardised recommendations on paper instead of computer generated solutions. The Safety Handbook for Secondary Roads will be relevant to the local, regional, national and EU level and will be targeted towards the achievement of a well functioning and safe secondary road system.

The main topics of the handbook will be the scope and objective of Secondary Road Safety Design and Management, the philosophy of Self Explaining Road and Forgiving Roadside Design, a feasible and practicable Secondary Road Categorisation as well as recommendations for Secondary Road Safety Design, Design Controls and Secondary Road Safety Management.

Furthermore, detailed and concrete methodological guidance for the implementation of a Safety Oriented Management System for Secondary Road Infrastructure will be provided. An integrated structural model applicable on EU, national and regional levels will be carried out. This involves also necessary guidance for Black Spot Management, Safety Inspection and Road Safety Audit.



Start of RiPCORD-iSEREST - Kick-Off in Bergisch Gladbach



Dr. Tamm from the DG TREN starting the RiPCORD-iSEREST project



Project co-ordinator Dr. Weber and Mr Matena introducing the general issues of the project

BASt	Federal Highway Research Institute - Germany Project Co-ordinator		
bfu	Swiss Council for Injury Prevention - Switzerland	LNEC	National Civil Engineering Laboratory - Portugal
CDV	Transport Research Centre - Czech Republic	PIAP	Industrial Research Institute for Automation & Measurements - Poland
D&O	Diepens & Okkema BV - Netherlands	POLIBA	Politecnico di Bari, Dipartimento di Vie e Trasporti - Italy
HIT	Hellenic Institute of Transport - Greece	SWOV	Institute for Road Safety Research - The Netherlands
ISBR	Belgium Road Safety Institute - Belgium	TGDH	Turkish General Directorate of Highways - Turkey
INECO	Ingeniería y Economía del Transporte, S.A. - Spain	TØI	Institute of Transport Economics - Norway
KTI	Institute for Transport Sciences - Hungary	TUD	Dresden University, Faculty of Transp. Sciences, Traffic and Transp. Psychology - Germany
KfV	Kuratorium für Verkehrssicherheit - Austria,	VTIV	German Insurance Institute for Traffic Engineering - Germany

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