

ERASER

Evaluations to Realise a common Approach to Self-Explaining European Roads

a research project of the
cross-border funded joint research programme
“ENR SRO1 – Safety at the Heart of Road Design”

1) Introduction

“Safety at the Heart of Road Design” is a trans-national joint research programme that was initiated by “ERA-NET ROAD – Coordination and Implementation of Road Research in Europe” (ENR), a Coordination Action in the 6th Framework Programme of the EC. The funding partners of this cross-border funded Joint Research Programme are the National Road Administrations (NRA) of Austria, Belgium, Finland, Hungary, Germany, Ireland, Netherlands, Norway, Slovenia, Sweden and United Kingdom.

2) Project Description

This project deals with the Comparison and Implementation of approaches of self-explaining roads. It mainly aims to bridge the gap between fundamental knowledge concerning self-explaining roads and the practical, hands-on knowledge that road authorities require to make their roads safer by applying the concept of self-explaining roads. The starting point is the relevant fundamental knowledge that exists on different approaches to self-explaining roads, which will be compared and evaluated.

Subsequently, this project illustrates two feasible steps towards a useful checklist road authorities in different European countries can use, which will enhance transnational benefits. These steps will be piloted in different European countries, so as to advance towards a common European approach to self-explaining roads. The first step focuses on ascertaining road users' ability to recognise specific categories of roads and understand their context. In the second step, these results will be implemented in the development of a decision support tool for road authorities. This tool will essentially be a checklist road authorities can use to determine the extent to which their roads are self-explaining, but also contains information concerning design elements that can help to make roads more self-explaining. As road authorities are the target group, they will be actively involved throughout this project, quite specifically in assessing the feasibility of the pilots we propose and they will also play a significant role in the dissemination process.

3) Expected Results

In over 90% of all crashes human error is a major contributory factor. Therefore, human behaviour has a central position in every successful road safety policy. Two of the world's most successful strategies, Vision Zero in Sweden and Sustainable Safety in The Netherlands, therefore use a safe systems approach. They acknowledge that human behaviour is not only determined by human characteristics (age, experience, attitude etc.) but also to a large extent by the environment, especially road design. Decades of research have made clear that, since expectations play an important role in anticipation of events, it is important that road design is in line with the expectations of road users. The so-called Self-Explaining Road (SER) is a traffic environment which elicits safe behaviour simply by its design. To define which behaviour is safe, the approach to SER's starts with a functional classification of roads. Typical classes are flow, distributor and access roads. These classes must be distinctive. This implies they must be designed in such a way that road users know which behaviour is expected of them (speed, overtaking, etc.) and what to expect from other

road users (vulnerable road users, agriculture vehicles, etc.). Of course, the appropriate road features (median, roadside, intersections) must also ensure that the intended behaviour is safe and not exceeding human tolerance limits. The Vision Zero concept of safe speeds, for instance, states that a head-on collision of two cars at 70 km/h will not lead to fatalities. In general, more homogeneous (speed, mass, direction) traffic allows for higher speeds. Where vulnerable road users and motor vehicles meet, only low speeds are safe (30 km/h), whereas on motorways (guard rails, grade separated intersections etc.) speeds of more than 100 km/h can still be safe. It is within these prerequisites that the level of self-explainingness is assessed. Ultimately, road users' classifications of the road and their consequent behaviour determine whether a road is self-explaining.

A way to translate fundamental knowledge to practically applicable knowledge, which can help to improve road safety by helping road authorities make well-grounded decisions, will be found out. The results of a state-of-the-art literature study will feed into two pilots.

Elaborating on previous research, the first pilot aims to develop a common methodology in which the level of self-explainingness of European roads can be easily determined. The approach involves familiar laboratory photo-experiments in different European countries, but will additionally include field studies where the actual effect (behaviour) is video-filmed and analysed. The results will provide input for the second pilot. The second pilot aims to create a feasible (i.e. user-friendly, valid, reliable) checklist tailored to European road authorities. The checklist will allow them to assess the self-explaining value of their roads and the possibilities to improve them. The checklist will also indicate the expected effects on speed of (intended) measures. The results of the first pilot will help to determine the effect of 'self-explaining features' on, for instance, speed, to make first order impact assessments that will allow for a cost-benefit analysis.

The results and improved insight can be used trans-national. The project contributes to find the most effective and efficient solutions, thus eliminating major development risks and enabling the introduction of common solutions within the shortest possible time frames. Thus every country adopting the methodology and tools proposed in this project will be able to become an active contributor to improve road safety within Europe.

4) Project Facts

Duration:	01/01/2010 – 31/12/2011
Budget:	EUR 287.280,00
Coordinator:	Rob Eenink, SWOV Institute for Road Safety Research, The Netherlands e-mail: rob.eenink@swov.nl , tel: +31 70 317 33 75
Partners:	Dirk Ebersbach, Dresden University of Technology (TUD), Germany Alexander Fördös, Kuratorium für Verkehrssicherheit (KfV), Austria Suzanne Charman, Transport Research Laboratory (TRL), United Kingdom Ase Svensson, Lund University, Department of Technology and Society, Sweden