

**Tyre and Road Surface
Optimisation for Skid
Resistance and Further Effects**



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List of Abbreviations

Abbreviation	Meaning
BRRC	Belgian Road Research Centre
CEDR	Conference of European Directors of Roads
CEN	European Committee for Standardization
CVIS	Cooperative Vehicle-Infrastructure Systems (FP6 Project)
ECCREDI	European Council for Construction Research, Development and Innovation
ELLPAG	European Long-Life Pavement Group
ERTICO	European Road Transport Telematics Implementation Coordination Org.
ERTRAC	European Road Transport Research Advisory Council
FEHRL	The Forum of European National Highway Research Laboratories
HeavyRoute	Intelligent Route Guidance for Heavy Vehicles (FP6 Project)
HERMES	Harmonisation of European Routine and research Measuring Equipment for Skid Resistance (FEHRL Project)
HGV	Heavy Goods Vehicle
INTRO	Intelligent Roads (FP6 Project)
IPG	Noise Innovation Programme – in the Netherlands
ISO	International Standards Organisation
ITS	Intelligent Transport Systems
LCPC	Laboratoire Central des Ponts et Chaussées
NR2C	New Road Construction Concepts (FP6 Project)
SERRP	Strategic European Road Research Programme
SILVIA	Sustainable Road Surfaces for Traffic Noise (FP5 Project)
SIMBA	Strengthening road transport research cooperation between Europe and emerging international markets (FP6 Project)
SPENS	Sustainable Pavements for European New Member States (FP6 Project)
SURF	Symposium on Pavement Surface Characteristics
TRA	European Road Transport Research Arena
TRB	Transportation Research Board
VTI	Swedish National Road and Transport Research Institute
WP	Work package



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Executive Summary

Road surfaces play a major role in road safety. This knowledge varies across the EU. In some EU countries where the importance of skidding resistance has been recognised there has been a rise in traffic safety records. The TYROSAFE project has the ambition to raise awareness and share knowledge of the importance and contribution of skidding resistance, suggest harmonised systems of comparing skidding resistance as well as identify interdependencies of skidding resistance with other important characteristics of road surfaces.

This document describes the various activities that will be used to disseminate results obtained in the TYROSAFE project not only during the 24 month duration of the project but also after the end date – 30th June 2010. The strategy will be regularly assessed during the course of the project to check its effectiveness.

The guidelines of this dissemination are based on the following principles:

- dissemination is basically “knowledge sharing” and bi-directional,
- liaisons with industrial, research and standardisation communities,
- developing a website which contains both a public part and a private part to be used only by the project partners,
- regular workshops and seminars, organised as parts of appropriate international or regional events in the area of road infrastructure,
- involving an expert group having an advisory and consulting role within the project,
- establishing a close collaboration with other projects e.g. through FEHRL's Strategic European Road Research Programme (SERRP) cluster,
- producing regular newsletters,
- publishing project results in relevant scientific journals.

This dissemination strategy will be updated during the project duration, in order to achieve the widest dissemination and awareness raising actions both within the communities of users targeted by the project and, more generally, towards the external environment.

1 Background

The TYROSAFE project is a Coordination and Support Action (CSA) in the Seventh EU Framework Programme and aims at coordinating and preparing for European harmonisation and optimisation of the assessment and management of essential tyre/road interaction parameters to increase safety and support the greening of European road transport. This work will be performed in the following six work packages:

- WP1: Policies of EU countries for skid resistance / rolling resistance / noise emissions
- WP2: Harmonisation of skid-resistance test methods and choice of reference surfaces
- WP3: Road surfaces properties – skid resistance / rolling resistance / noise emissions
- WP4: Environmental effects and impact of climatic change – skid resistance / rolling resistance / noise emissions
- WP5: Dissemination and raising awareness
- WP6: Management

Road safety is and will remain one of the most important issues facing the countries of the European Union. More than 40,000 people died in road traffic accidents in the EU in 2007. This coupled with more than 1,7 million injuries, some severely, and the economic damages estimated at around €200 billion shows how serious the issue has become. The European Commission has set an ambitious goal of halving the number of traffic deaths in the EU by the end of the year 2010 (European Road Safety Charter, 2008).

Of all the factors contributing to road safety, the condition of the road surface has often not received the attention that it deserves. A lot has been and is being done in improving the technology of tyres and braking systems. But at any time an accident occurs (or nearly does) one of the major underlying factors is the condition of the road. This awareness varies widely across the EU. In countries where the importance of skid resistance has been recognised for quite some time, e.g. the UK, a significant drop has been noticed on roads where skidding resistance policies are applied. Quite a lot of research has been done in EU countries showing that with high value of skidding resistance the safety of roads can be improved and the number of accidents reduced. However, the EU countries use different systems to measure skid resistance on their roads and they also have very different approaches to the required level of skid resistance as indicator for safety on the roads. There have been attempts made in the past to harmonise skid resistance and to compare skid resistance values measured with different devices. These attempts have not been fully successful because of the lack of coordination between the different EU countries and between the different stakeholders (Annex 1 – TYROSAFE project, 2008).

Another important issue that needs to be addressed is the effects of skid resistance on other important characteristics of the road surface. Improving the tyre and road surface to increase skid resistance which will lead to improved safety might have negative effects such as increased rolling resistance and noise emissions. Nowadays, where environmental questions

like noise, air quality and consumption of energy are becoming more and more important, any consideration of the safety benefits of improved skid resistance needs to focus on rolling resistance and noise emissions as well. Currently the properties of road surfaces and tyres are not optimised to balance all of these effects. Rather, road engineers or tyre manufacturers concentrate on one or two separate aspects. Knowledge of how these effects interact with each other is very limited. Therefore, optimisation of tyres or road surfaces for one main effect could lead to negative impacts on the other properties.

The TYROSAFE project plans to address these issues by:

- Raising public awareness of the importance and contribution of skidding resistance for improving road safety and minimising environmental effects.
- Recommending a harmonised system of comparing skidding resistance within EU member states.
- Recommending road surface and tyres optimisations towards low rolling resistance (reduced CO₂ production) and noise emission.

2 Dissemination target groups

The target of these dissemination activities, as specified in the Annex 1 of the TYROSAFE project, is the road research community in a broad sense, and more specifically:

- The stakeholder reference group.
- The industry:
 - the tyre industry
 - the infrastructure construction industry (provision of skidding resistant surfaces,
 - the vehicle industry (vehicle manufacturers and their suppliers, including braking systems, control systems, active safety),
 - the legal industry
- Research providers: research centres and laboratories, universities.
- infrastructure managers: national road administrations, local and regional authorities.
- institutions/ policy-makers: local and national administrations and governments, European institutions, international organizations users/consumers (e.g. CEDR/ERA-NET Road, CEN, ISO).
- ITS community.

The stakeholder reference group will consist of a relatively small number of persons representing organisations relevant to the project. The task of this group will be to provide valuable information, opinions and feedback to the project. This group will be suitably and regularly briefed, as they are then likely to promote the activities of the TYROSAFE project at meetings and events.

With harmonised levels of required safety on European roads the industry will be able to serve a wider market with their products. This calls for a close interaction with the different

areas of safety engaged industries as mentioned above. The interaction with the infrastructure construction and the tyre industries will be very important, as it is essential to encourage them to construct roads with a safe design as well as to develop safe tyres that can take advantage of the improved properties of the roads.

The issue of standardisation will also be addressed in the project. This will be done by studying national standards and policies of different EU and neighbouring countries and providing recommendation for a common European policy on skid resistance, rolling resistance and noise emissions. It also aims at developing a road map towards the final harmonisation of skid resistance test methods and reference surfaces based on research work. A close working relation is therefore planned with institutions, researchers, policy makers and organisations like CEN.

3 TYROSAFE impact

The impacts TYROSAFE will have on road infrastructure are as follows (Omasits, 2008 & Annex 1– TYROSAFE project, 2008):

- Recommendations for common European policies and approaches concerning the tyre/road interaction effects (skid resistance, rolling resistance, noise emission),
- Improving safety:
 - Reduction of accidents due to safer, comparable roads (better skid resistance)
 - Safer roads allow for increased mobility
 - Comparable road behaviour on European Roads decreases the level of human error
- The greening of Surface Transport
 - Recommendations for optimising road surfaces and tyres towards low rolling resistance (reduced CO₂ production) and noise emission.

At present different standards and policies exist in EU member states for skid resistance, rolling resistance and noise measurements. These approaches vary considerably across the EU. TYROSAFE plans to review these different approaches. This will pave the way for the harmonisation of skid resistance policies, measurements and related road maintenance and in the long run to common European standards for establishing comparable roads with similar safety behaviour. Having comparable roads with similar safety behaviour across Europe will help minimise the level of human error.

The impact TYROSAFE will have on improving safety cannot be overemphasised. The conditions of roads play a very important role during an accident. Increasing the level of skid resistance, as suggested by TYROSAFE, will lead to a significant decrease in the number of accidents on European roads.

The TYROSAFE project will also have an impact on the greening of surface transport in Europe. This will be done by proposing a European approach to the optimisation of road surfaces and tyres which will lead to a reduction in CO₂ and noise emission.

4 The key dissemination and implementation activities

The key dissemination and implementation activities of the project will include:

- **Workshops.** Organisation of workshops to get feedback from stakeholders and to present the results of the project.
- **Contact with Stakeholders Reference Group.** Dissemination of the results of the project in the different industries represented by members of the group
- **Preparation of papers.** Preparation of papers for international conferences, articles for national journals, newsletters for end users and network.
- **Clustering with other projects.** Link with different research projects as part of the FEHRL Strategic European Road Research Programme (SERRP).
- **Internet site.** Creation and maintenance of the public website.
- **Dissemination materials.** Development of materials for use in national follow-up presentations of project progress and results.

4.1 Workshops

A number of workshops and expert group meetings are planned during the duration of the project.

The first workshops will be held in October 2008 in Slovenia. They will coincide with the “6th Symposium on pavement surface characteristics” (SURF) in Portorož in Slovenia in October 2008. The SURF will be organised by PIARC. The objective of the SURF is to share and discuss experiences about how to improve quality through effective management of road infrastructure assets, in accordance with user expectations and manager requests.

SURF will constitute an important international event as individuals and representatives from the road and communication infrastructure providers, the automotive and tyre production industry, research providers, national and regional government and road authorities are expected to attend. The first TYROSAFE workshop during the SURF symposium is planned within the framework of WP1 – Policies of EU countries for skid resistance/rolling resistance/noise emission and the second organised by WP2 – Harmonisation of skid-resistance test methods and choice of reference surfaces. These workshops will be organized to get critical feedback from researchers and key stakeholders that are involved in the skid resistance, rolling resistance and noise emissions research area.

The results of the first WP1 workshop will be presented in the deliverable D06 (“report on policies and standards of all EU countries concerning skid resistance, rolling resistance and noise emissions”) whilst the second WP1 workshop, to be held in 2009, will lead to recommendations for future harmonised EU policies concerning skid resistance, rolling resistance and noise emissions.

WP2 plans to organise two workshops. The first, as mentioned above, in conjunction with the SURF symposium and the second, scheduled for spring 2009. The main aims of these workshops are to provide the necessary input to make the best choice between possible different alternatives of skid resistance test methods and reference surfaces as well as to increase the acceptance of the chosen future harmonised test method approach.

WP3 will start its activities in month 6 and will organise two workshops during the course of the project. The first workshop will be held in 2009 where stakeholders are expected to provide expertise and experiences concerning the parameters influencing skid resistance, rolling resistance and noise emissions. The second workshop scheduled for 2010 aims to present the interdependencies matrices to the experts and to identify the demands of future research in the European countries.

A workshop will be organised by WP4 in autumn 2009. This workshop aims to get feedback from experts on the various potential environmental influences associated with harmonisation and optimisation of skid resistance. The workshop will also address the influence of other factors identified in the other work packages.

A final workshop is planned at the end of the project to present the project's conclusion. This will be organised in cooperation with the stakeholders and used to disseminate the results of the project to end-users.

4.2 Contact with Stakeholder Reference Group

The Stakeholder Reference Group SRG is an important part of the dissemination strategy of the TYROSAFE project. It will be made up of representatives of organisations relevant to the project. The SRG will meet once in 6 months and will give advice, opinion and valuable information to the project. As the group will consist of members from such industries as the tyre and automobile industries as well as from road administrations and research providers, it will also support the dissemination of the concepts and results of the project in the groups they represent. The objectives of this group and its activities are described in an internal report of the TYROSAFE project (Haider, 2008).

4.3 Presentations and preparation of papers

In order to stimulate knowledge sharing, the TYROSAFE consortium will engage in making presentations at seminars and international conferences as well as submitting publications in scientific and technical conferences. Some of the events suitable for such knowledge sharing include:

- SURF 2008 – 6th symposium on pavement surface characteristics, 20 – 22 October, Protoroz, Slovenia
- Seminar “Evaluation of pavement surface characteristics”, 20 November 2008, Guimaraes, Portugal
- TRB 88th Annual Meeting, 11 – 15 January 2009, Washington, USA
- Tyre Technology Expo Conference 2009, 17 – 19 February 2009, Hamburg Messe, Germany
- 3rd Transportation Research Arena TRA 2010, 7 – 10 June 2010, Brussels, Belgium

4.4 Clustering with other projects

To achieve the aim of the project the TYROSAFE consortium is aware of the need to establish links with different research projects. For this reason the project has been made part of the FEHRL Strategic European Road Research Programme (SERRP) cluster with an objective of increasing the synergies of a portfolio of projects with road authorities and industrial requirements.

This cluster has been carefully developed to provide the maximum co-ordination between appropriate projects, research activities and national policies so to exploit the synergies, identify the gaps and maximise the dissemination. The cluster is based around a core group of relevant European and national research programmes as shown below.

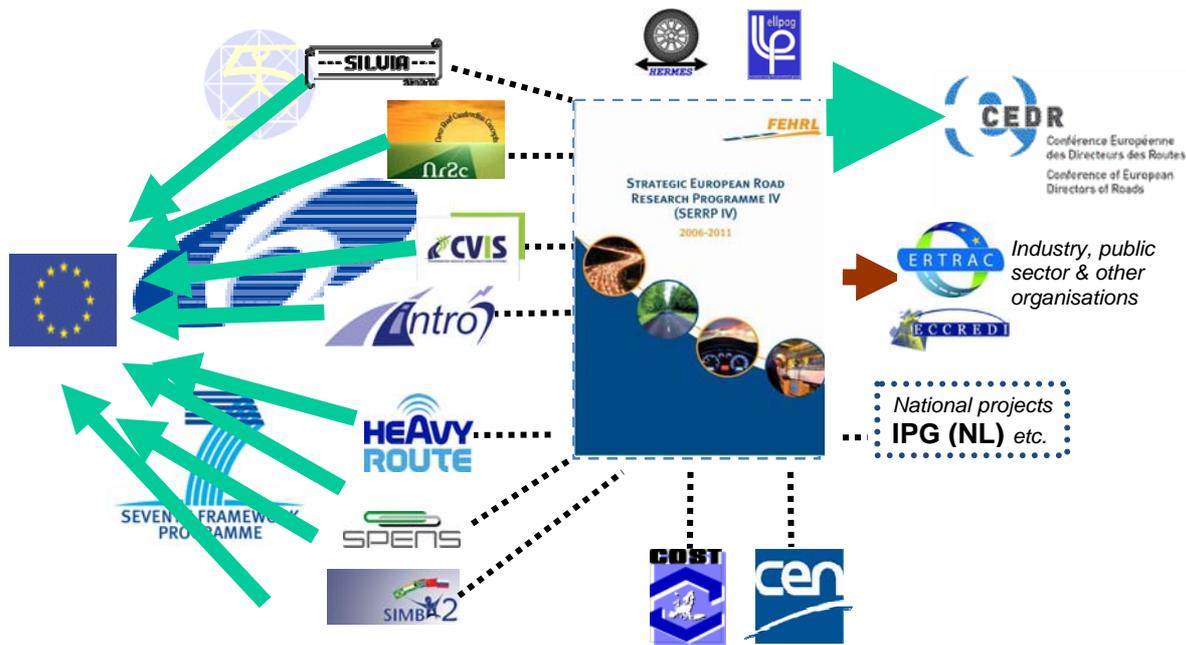


Figure 1: FEHRL SERRP cluster

The TYROSAFE project will be supported by a critical mass of related road infrastructure research projects to allow meaningful co-ordination. The clustering includes projects concerned with road safety issues, environment and sustainability issues, infrastructure management, training and more.

This core group consists of such projects as;

- SILVIA - an FP5 project (2002-2005) led by BRRC in Belgium. This involved researching issues concerned with low-noise road surfaces including their safety and the use of novel materials.
- NR2C (New Road Construction Concepts) – an FP6 project (2003-2007) led by LCPC
- INTRO (Intelligent Roads) - An FP6 project (2005-2008) led by VTI, using existing in-situ sensor technology and extended floating car data, real time data fusion to improve capacity and safety of road networks.
- CVIS – An FP6 project (2006-2010) led by ERTICO on Cooperative solutions including applications for commercial vehicles
- HEAVYROUTE – An FP7 project (2006-2009) led by VTI on route guidance for HGV
- SPENS – An FP7 project (2006-2009) led by ZAG on sustainable pavements
- SIMBA2 – An FP7 project (2008-2009) led by ERTICO on road transport research cooperation between Europe and emerging international markets
- IPG – A 55M€ project (2006-2008) in the Netherlands concerned with the development of innovative technologies for the reduction of road traffic noise

- HERMES - FEHRL project (2000-2006) with the aim to evaluate a common scale that could be used to compare skid resistance values measured with different devices

In addition to these initiatives, close liaison will be established with the relevant EC research activities.

4.5 Website

The TYROSAFE website (<http://tyrosafe.fehrl.org>) has been developed.

It will be one of the most important tools for disseminating the outcome of the project. It will be regularly updated with information for different audiences.

It has the following purposes:

- present the project and its structure;
- list the partners of the project;
- introduce the objectives, documents and deliverables;
- make available electronically public documents and publications;
- inform about relevant events;
- offer a contact point;
- provide the link to the partners-protected-area, which provides further internal documents.

Detailed information about the website can be found in the Deliverable D01 (Groot & Haider, 2008).

4.6 TYROSAFE presentation materials

The project logo (Figure 2), leaflet (Figure 3) and poster (Figure 4), together with newsletter (Figure 5) and Video (Figure 6) aim at informing the public in general and end-users in particular about the existence and aims of the TYROSAFE project.

The TYROSAFE logo was designed by a graphics designer and accepted at the Kick-off meeting. It shows the image of a tyre on a road emphasizing the interaction between them.



Figure 2: The TYROSAFE logo

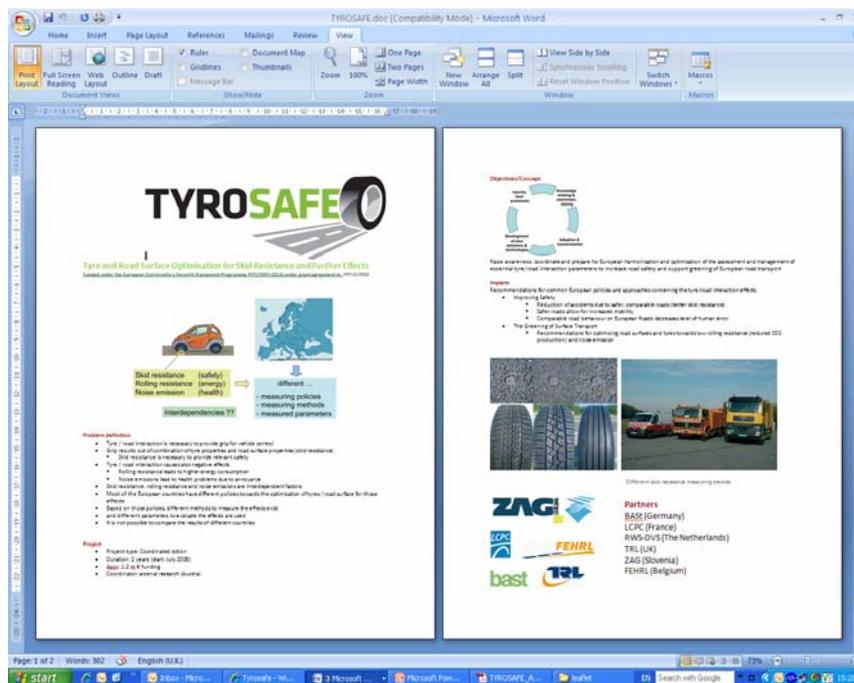


Figure 3: The TYROSAFE leaflet

The leaflet (draft) is a 2 x A4 page, three-folded, with a clear simple message which supports broad and general dissemination efforts.

The TYROSAFE poster was designed before the project started and was used at the 2nd Transport Research Arena 2008 in Ljubljana. There will be modifications made to this poster's content, which will then be presented at international and national events. The TYROSAFE poster will be used as a tool in engaging people and get one-to-one feedback.



Figure 4: The TYROSAFE poster

4.7 TYROSAFE Newsletter

The project consortium plans to publish Newsletters at least twice a year accessible through the public part of the website. The first newsletter, to announce the project, was published in September 2008. Newsletters (Figure 5) will contain up-to-date information about the progress of the project as well as information from research initiatives from other sources. These newsletters will also include interviews with experts from within the TYROSAFE project as well as opinions from external stakeholders.



Figure 5: The TYROSAFE newsletter

4.8 TYROSAFE Video

A vital tool for raising awareness of skidding resistance issues is the project video (Figure 6) that will be created towards the end of the project. It will, among others, highlight the role of skidding resistance on road safety in Europe.



Figure 6: The TYROSAFE Video

5 Conclusions

The TYROSAFE dissemination strategy has been developed based on the following activities:

- the consortium will disseminate but also receive valuable advice and opinion from stakeholders and experts (dissemination as “knowledge sharing”),
- communication with industrial, research and standardisation communities,
- developing a website containing both a public part and a private part to be used only by the project partners,
- regular workshops and seminars, organised as parts of appropriate international or regional events in the area of road infrastructure,
- establishing a close collaboration with appropriate existing projects e.g. through FEHRL’s Strategic European Road Research Programme (SERRP) cluster,
- producing regular newsletters,
- publishing project results in relevant scientific journals.

By closely following these guidelines the project consortium hopes to achieve the objectives of the project which include raising awareness of the importance and contribution of skidding resistance to safer roads.

The dissemination activities described in this document will be regularly assessed to determine their efficiency and rate of success. The project consortium as a whole is responsible for the implementation of the strategy described in this document. However, the individual role of all the partners in their respective countries cannot be over emphasised. The partners will have the task of disseminating the aims of the project - raise awareness, inform, engage and promote the TYROSAFE project locally to the stakeholders in their respective countries.

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