SPACE- Speed Adaption Control by Self Explaining Roads

INSAFETY:
“A self-explaining road (SER) is a road designed and built in such a way as to induce adequate behaviour and thereby avoid driving error.”

The SER concept is of a traffic environment that elicits safe driving behaviour simply by its design.
It aims to do this by informing the driver what to expect and how to behave accordingly.
This behaviour may include:
• Choice of speed
• Choice of lateral position
• Expectation of the presence of other types of road user
• Expectation of the behaviour of other road users
• Expectation of changes in the road environment ahead

SPACE is particularly interested in identifying measures that lead to the adaption of speeds that are safe and appropriate to the conditions.
Space Consortium

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<th>Man month</th>
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<td>TRL</td>
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Project start 1 January 2010 end 31 December 2011

Budget 314 730 Euro
Personnel costs 275 630 Euro
Equipment cost 20 000 Euro (e.g. Simulator costs)
Other costs 19 100 Euro (Meetings)
Work flow

State of the art and expert reviews → Evaluation

Promising measures

Local Workshops
Simple evaluation method

Most promising measure

Driving simulator experiment
Advanced evaluation method

Final reporting
### Time plan and deliverables

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| M1  | Web site                        |
| M2  | State of the art review         |
| M3  | Vocabulary, terminology review  |
| M4  | Questionnaire                   |
| M5  | Scenario design                 |
| M6  | Expert workshop                 |
| M7  | Simulator experiment design     |
| M8  | Analysis of results             |
| D1  | State of the art, Self Explaining Road (SER) measures |
| D2  | Technical note: Methods to evaluate international SER measures |
| D3  | Technical note: Report from expert workshop |
| D4  | Report on simulator experiment  |
| D5  | Technical note: Comparison of methods |
| D6  | Final report SPACE              |
SPACE work plan

WP 1  State-of-the-art and review of experiences  TRL
WP 2  Selection of promising measures  KfV
WP 3  Stakeholder and expert workshop  BRRC
WP 4  Driving simulator studies  VTI
WP 5  Management, dissemination and exploitation VTI/FEHRL

For more information visit SPACE homepage
www.fehrl.org/space
Wp 3 Stakeholder and expert workshop

Develope and test a “simple” evaluation method

Input: Selected SER from WP 1-2 (5-10 SER)
5-6 workshops, questionnaires
• Realistic movies, pictures
• Scenarios on different locations (different countries) with similar situations

Output:
2 Selected SER that will be used in the next step, evaluation of SER using simulator studies
WP 4 Driving simulator studies VTI

Moving based driving simulator

- Cut-off passenger car cab
- Computerised vehicle model
- Large moving base system
- Vibration table
- PC-based visual system
- PC-based audio system
WP4 Objective

From SPACE Description of Work
“Identify and select the most promising measures in order to find the self explaining road that gives the correct signals to the driver that makes him/her to have correct expectations on the road and in the final end select optimal speed”

Aim
The aim is to quantify the impact of each tested solution (scenario) on driving behaviour.
Method

• Within subject design

• Balanced order for two different driver categories and sex
  • novice drivers
  • experienced drivers

• 30 participants (15 male & 15 female)

• Relative comparisons between different scenarios
Measures

Sampling frequency: up to 200 Hz

Speed (mean & sd)
Lateral position (mean & sd)
Steering wheel angle
Yaw
(More driving parameters are available)

Eye related measures from eye tracking system (Smart EYE)
Questionnaires

Before driving
Informed consent
Background
The drivers opinion about characteristics related to speed limits

After driving
Experience of the test
Acceptance related to the scenarios
Effectiveness related to the scenarios
Scenario

Based on the selection in WP3
Maximum 8 scenarios

No speed limit signs
No speedometer

10 minutes training + 45 minutes

Examples
Thank you

www.fehrl.org/space