vti

FINDING A BETTER WAY

www.fehrl.org/space

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ENR SRO1 Joint Meeting in Budapest 4 March 2010

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.

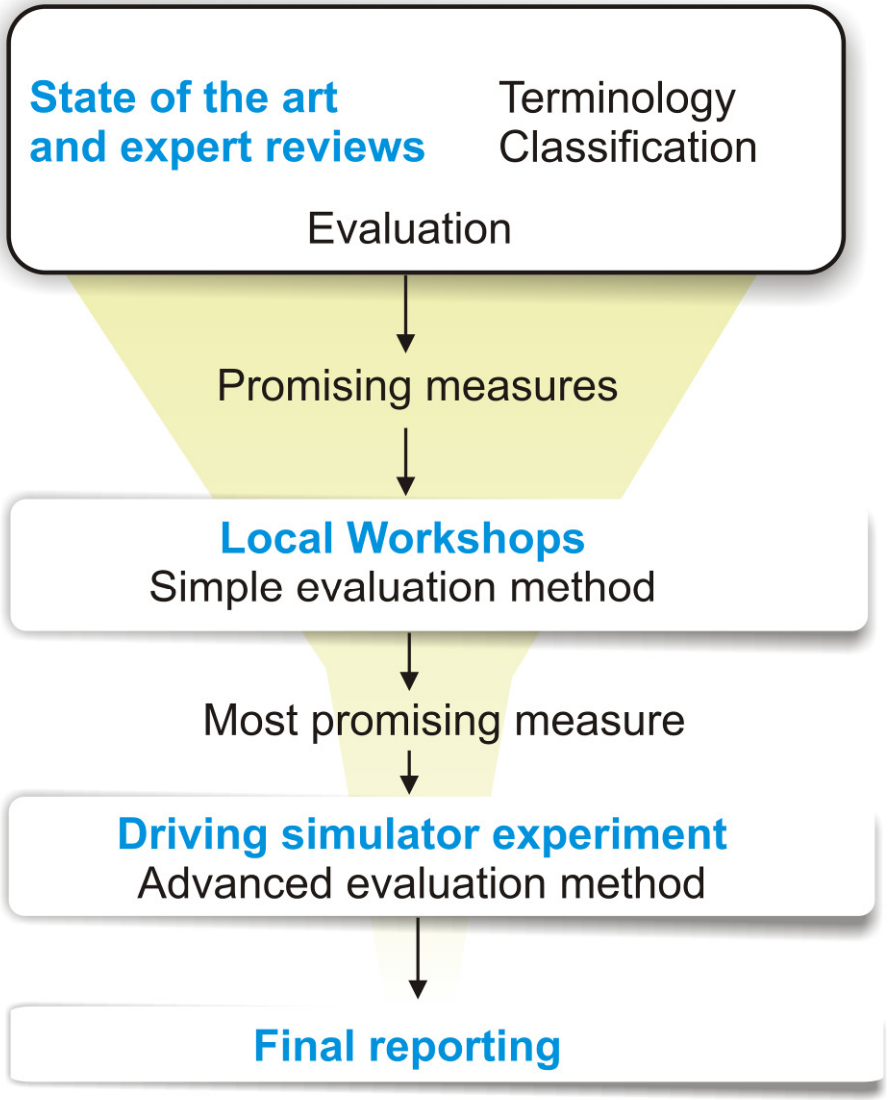
Space Consortium

Organisation	Man month	Country
VTI	9.5	Sweden
TRL	3.3	UK
BRRC	2	Belgium
CDV	3	Czech
UCD	1	Ireland
KfV	4	Austria
FEHRL	2	Belgium

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
Terminology
Classification
Evaluation
Promising measures
Local Workshops
Simple evaluation method
Most promising measure
Driving simulator experiment
Advanced evaluation method
Final reporting

Time plan and deliverables

	2010												2011											
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
WP1					M2+3	D1																		
WP2												D2												
WP3								M4+5		M6			D3											
WP4														M7			M8		D4		D5			
WP5	M1																							D6

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: Selceted SER from WP 1-2 (5-10 SER)

5-6 workshops, questionnaires

- Realistic movies, pictures
- Scenarios on different locations (diffrent 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

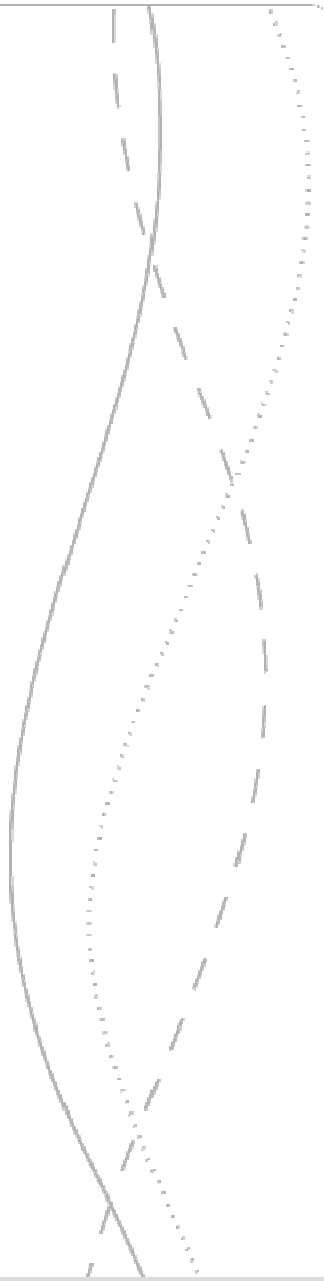
WP4 Objective

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”

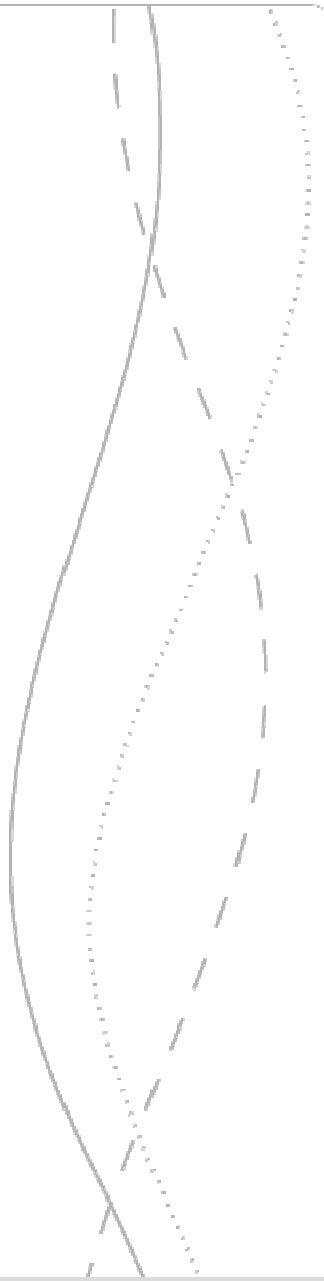
Aim

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

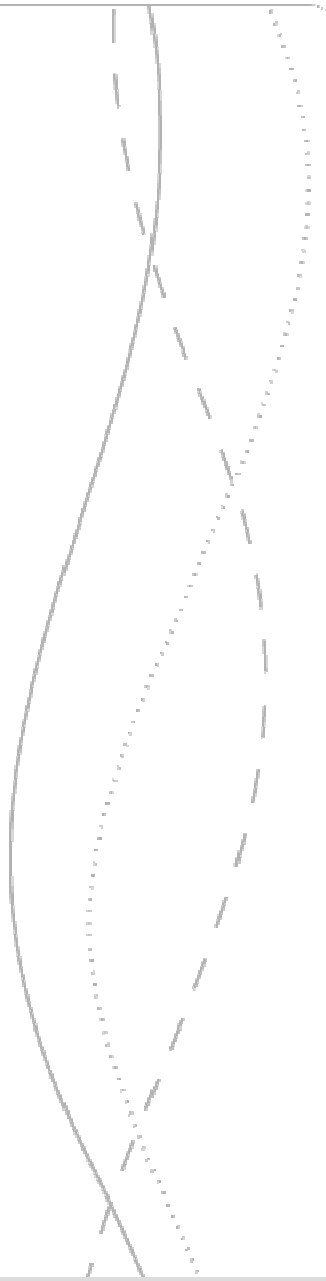


Measures

Sampling frequency: up to 200 Hz

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

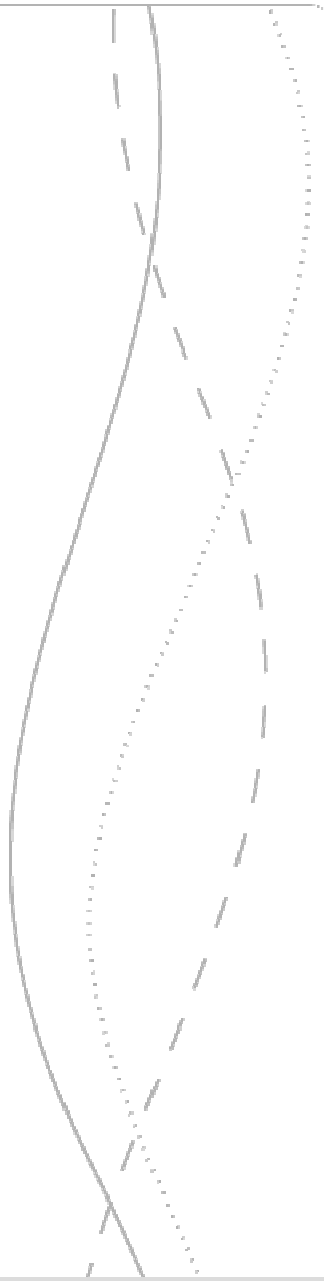
Eye related measures from eye tracking system (Smart EYE)



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



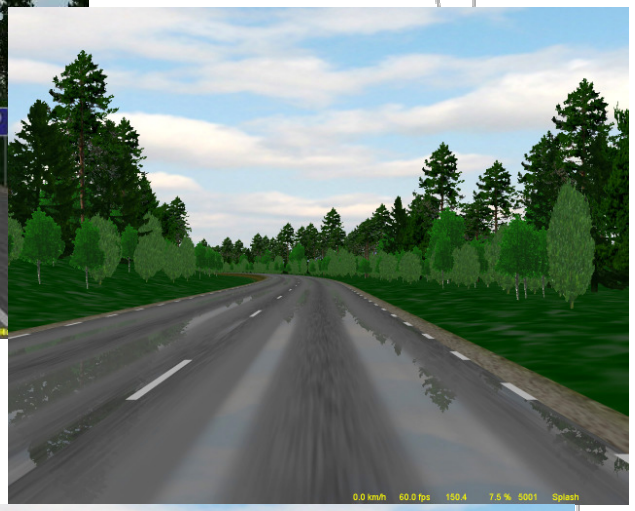
Scenario

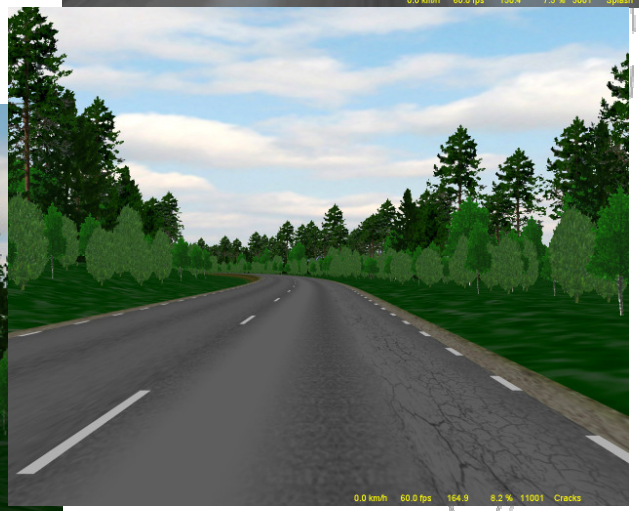
Based on the selection in WP3
Maximum 8 scenarios

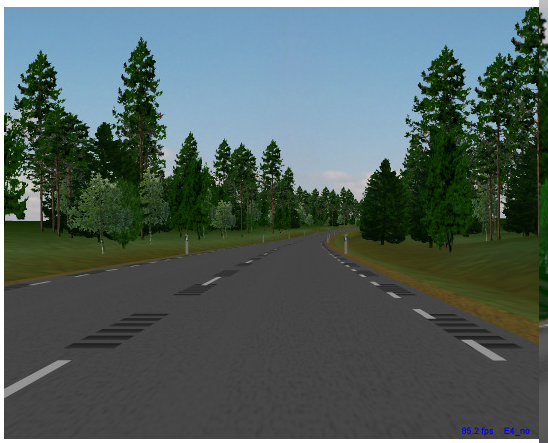
No speed limit signs
No speedometer

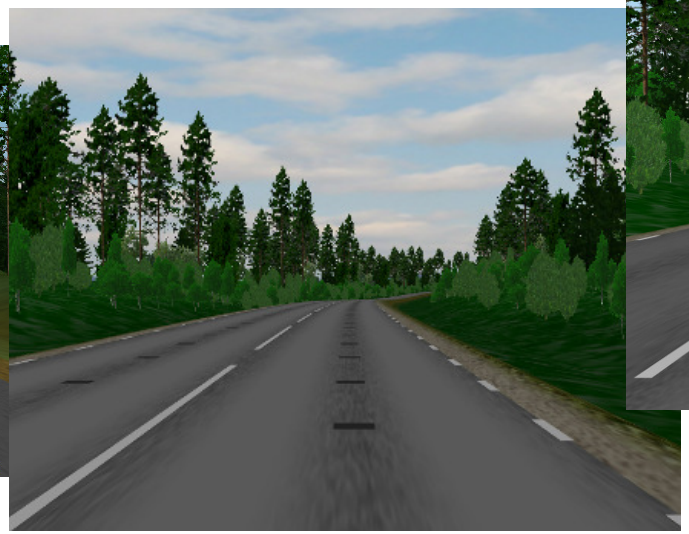
10 minutes training + 45 minutes

Examples









Thank you

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