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FERSI training seminar on simulator-based training and research & TRAIN-ALL Workshop

Thessaloniki, Greece, 14-16 September 2009

There is pan-European consensus on the fact that driver training needs to expand away from its current focus on controlling the vehicle in traffic, so as to cover "higher level" strategical factors.

Computer-based tools (CBT) have great potential in radically improving driver training, as they offer (among others) possibility for repetition of structured scenarios, leading to enhanced training efficiency, possibility to manipulate traffic environments, ability to train risk awareness in a safe (artificial) environment, possibility to train strategical decisions (e.g. trip planning or route choice), possibility to familiarise with various vehicle types and in-car equipment (such as ABS, ESP, ADAS, IVICS, etc.), control assessment in different settings, etc. moreover, such systems offer a low-cost solution, as it is possible that one trainer can train multiple drivers in one session. Finally, it is important to mention that the training can be adapted to the personal problems and weaknesses of each driver, by monitoring the trainee's progress.

And yet, for all driver types, there exists as yet no large and Europewide computer-based training tools market, despite the maturity of the relevant technology and unlike the recent market development in the USA and Japan. One of the major obstacles is the high fractionalisation of the Market, with most CBT manufacturers operating in few countries and a total lack of standardisation and modularity, that would allow users to expand their systems gradually to different scenarios/user groups or to interconnect different CBT tools.

TRAIN-ALL, a FERSI endorsment project, developed a computer-based training system for different land-based drivers cohorts, that integrates multimedia s/w, driving simulator, virtual driving simulator and on-board vehicle sensors, into a single modular platform. The TRAIN-ALL project which started in November 2006 with three years duration, is co-funded by the European Commission and is composed of 17 partners Europewide (encompassing of simulator developers, an automotive industry, a police department and research Institutes). The new system is cost-effective (create viable business), adequate both for training and assessment. The core development focused on driving simulators, with the realisation of several prototypes. New simulation tools have been developed for motorcycle riding, passenger car (both for novices and emergency drivers) and truck driving. The new tools include also VR-based immersive simulation tools, as well as a common architecture and a modular simulator design process for multi-user, group training.

In the FERSI training seminar, FERSI experts and TRAIN-ALL Partner representatives present driving simulator technologies, tools and scenarios, adequate for training all types of drivers (professional, private, elderly, etc.) and riders; as well as their subsequent needs and wants. It is thus a truly multidisciplinary seminar, of high value for technological tool developers, drivers/riders trainers and other stakeholders (i.e. traffic safety experts, representatives of relevant Ministers, researchers, etc.).

The seminar will be followed by a technical visit of TRAIN-ALL simulators technology in the afternoon of 15 September (16:00-18:00) and the final TRAIN-ALL Workshop on 16 September.

The seminar has a fee of 300€ for both days (150€ for FERSI and TRAIN-ALL members and 50€ for students), but the TRAIN-ALL Workshop is free of cost for all. Please go to http://www.certh.gr/FERSI-REGISTRATION_FORM.en.aspx in order to register at the Seminar and www.trainall-eu.org for the Workshop (or fill in the attached registration form).

For help in accommodation and organizational issues, please contact Ms. A. Kostouli at: akostou@certh.gr, tel: 00302310 498453, fax: 00302310 498269.

We hope to have the pleasure to welcome you in Thessaloniki.

Dr. E. Bekiaris
FERSI Chairman

Dr. M. Panou
TRAIN-ALL project Coordinator

FERSI Training Seminar Programme

Location: CERTH/HIT premises, 6th Km Charilaou-Thermi Rd, 57001 Thermi, Thessaloniki, Greece

Day 1: 14 September 2009

PLENARY SESSION

Time	Theme	Presenter
O9:00-09:30	*Registration and coffee*	
09:30-10:20	Simulators in driver training & research – a short historical overview	B. Peters, VTI
10:20-11:10	Simulator technologies overview and benchmarking	S. Espie, INRETS
11:10-11:30	*Coffee break*	
11:30-12:20	Driving simulator typology and characteristics	B. Lang, TRL
12:20-12:50	Advanced functions in driving simulators	M. Panou, CERTH/HIT
12:50-13:30	Functionality and scenarios per user type and guidelines for simulator selection	E. Bekiaris, CERTH/ HIT
13:30-14:30	*Lunch break*	

PARALLEL SESSIONS

A. Simulators for drivers/riders

Time	Session	Presenter
14:30-15:30	Car simulators overview	K. Foerst, FOERST
15:30-16:00	Motorcycle simulators overview	S. Espie, INRETS
16:00-16:20	*Coffee break*	
16:20-16:50	Motorcycle simulators overview (cont.)	S. Espie, INRETS
16:50-18:00	VR/AR driving simulators overview	M. Bues, USTUTT

B. Simulators for professionals

Time	Session	Presenter
14:30-15:30	Truck/bus simulators overview	P. Vanhule, THALES
15:30-16:00	Training of drivers of emergency vehicles	H. Grattenthaler, IZVW & C. Mark, WIVW
16:00-16:20	*Coffee break*	
16:20-16:50	Training of drivers of emergency vehicles (cont.)	H. Grattenthaler, IZVW & C. Mark, WIVW
16:50-18:00	Emergency vehicle simulators – a user's perspective	J. Pfaffenzeller, BPP

18:30 Cocktail

Day 2: 15 September 2009
FINAL SESSION

Time	Session	Presenter
09:30-10:30	Towards and integrated architecture for driving simulators	H. Janssen, TNO
10:30-11:30	The relevant market and how to penetrate it	J. Kuipers, GREENDINO
11:30-11:50	*Coffee break*	
11:50-12:50	Experiences and best practices from national schemes on simulator-based training – a country case	M. Matejka, CDV
12:50-13:30	Experiences and best practices from national schemes on simulator-based training- a European approach	L. Gunnarson, STR
13:30-14:30	*Lunch break*	
14:30-15:15	Simulator sickness avoidance	M. Delahaye, COAT
15:15-16:00	Research questions and towards a roadmap for the future	E. Bekiaris, CERTH/HIT

16:00-18:00 Technical visit (TRAIN-ALL demos)
20:30 Dinner

Sessions outlines

Plenary session

1. Simulators in driver training & research – a short historical overview

A short history of simulator technology from the early 30's to today. Emphasis is on simulators used for driver training, their key characteristics and how to select a simulator that is appropriate to each training task/ scenario. The GADGET matrix and Michon model are used as tools to structure the simulators characteristics selection. Did you know that sound may be more important than even vision for giving to the user the proper simulation feeling? Do you know which motion/ torque (longitudinal, lateral, vertical, pitch, yaw, and roll) is more important for supporting each simulator scenario type/ training task? Time to learn …

2. Simulator technologies overview and benchmarking

A technical/ technological overview and benchmarking of driving simulators of all kinds. Small tricks of the trade will be presented, to further assist on simulator choice and functional specifications. Typical errors and deficiencies in simulator based driving will be revealed. Cause simply bigger (and more expensive) is not always better…

3. Driving simulators typology and characteristics

Different typologies of simulators are proposed (based on their user group, type of motion, visual properties etc) examples for these clusters are provided. The presentation will explore what technical characteristics are crucial for different training purposes. You'll learn what a full motion simulator is and that even a static simulator should have at least one degree of motion…

4. Advanced functions in driving simulators

A wide range of advanced simulator functions is presented with examples, based upon TRAIN-ALL recently developed know-how. Ambient Intelligence, Virtual Instructor, Enhanced Reality, Advanced Driver Support Aids and many other modules (10 in total) are explained and discussed. How can they be implemented in training curricula? How cost efficient they may be? Learn about them and ask for personalized implementation to your own driving simulation needs…

5. Functionality and scenarios per user type and guidelines for simulator selection

One size does not fit all! There is no single technology nor common scenario for all users. This session presents you with the needs of different user groups (namely novice drivers, truck drivers with emphasis on ADR ones, elderly drivers, disabled drivers) and how they can be satisfied by different training curricula and simulator types/ characteristics. So, as not to use a canon to train a mousse…

Parallel sessions

A. Simulators for drivers/riders

6. Car simulators overview

Car simulators exist as early as from the 30's. But, just like cars too, they are very different today. Learn about high functionality – low cost car simulators available for training purposes today. Among the various types, there is certainly the one you need...

7. Truck/bus simulators overview

Truck/ bus simulators are not only extremely developed today, they can be mobile too! You can have one inside a truck and travelling around! Adequate for training as well as assessment. Do you know which country in Europe uses many of them for ADR drivers training and assessment? Where is the next one about to be installed? That and much more will be revealed…

8. VR/AR driving simulators overview

Virtual and augmented driving simulators are not anymore virtual, they are real! From Head Mounted Display based to full immersion platforms, not only they are available; they even might be more cost efficient than real ones, as they are multipurpose…

B. Simulators for professionals

9. Motorcycle simulators overview

Riding simulation is still at its infancy and you're about to experience the latest developments, the success stories and the remaining issues of the major simulation challenge of the next years. At which speed ranges is riding simulation more difficult? Why is riding simulation much more challenging than driving one? Ready for a knowledge ride?

10. Training of drivers of emergency vehicles

Emergency driving is a challenge for the driver, urging for a profound training. The driver has to integrate the requirements of safe driving under risky conditions and the demands coming from the mission itself. Therefore, a comprehensive training system must be developed which allocates the appropriate training media (e.g., real driving, simulator, CBT, group discussion) to the respective training contents. Lessons learned from the design of a training system for the Bavarian Police will be reported as well as

new training facilities developed in TRAIN-ALL will be demonstrated

11. *Emergency vehicle simulators – a user's perspective*

What do emerging vehicles drivers and instructors say about these all? The Bavarian Police Training Center expert gives us a highlight of actual emergency training in a dynamic simulator, presents us with the most interesting scenarios and the actual user experiences. An insider's view of how good all of it can be; if appropriately applied…

Final session

12. *Towards and integrated architecture for driving simulators*

How can we transfer scenarios and modules from one simulator to another? How to write s/w that can run to other simulators too? Who will invest in a market where interoperability is an unknown word and once the vendor he/she procured the simulator is out of business, he/ she is left helpless? A new, holistic and open simulator architecture is presented, including proposals for data and functionalities interchange, terrain databases transfer and future standardization priorities.

13. *The relevant market and how to penetrate it*

Simulators are expensive and a luxury; thus, they don't sell… True or false? Before answering follow this session about simulators cost benefit and cost efficiency analysis, their potential business schemes and market breakthroughs. Cause when PC's came out in the first place they were big, complex and expressive… and simulators just aren't anymore!

14. *Experiences and best practices form national schemes on simulator-based training – a country case*

Czech Republic was one of the first (and very few) countries worldwide to use driving simulators widely in driver training (even in the former socialistic times!). The session presents technical solutions of the past and the present, experiences gained and lessons learned, in following a nation-wide simulator training curriculum.

15. *Experiences and best practices form national schemes on simulator-based training – a European approach*

Feedback from simulator based training is collected from several countries. What was particularly successful in one country; what did not work properly in another? Which training scenarios leaded to even more accidents and were abandoned? What are the good and what the not so good practices in using driving simulators for training and assessment? Lessons revealed…

16. *Simulator sickness avoidance*

Simulator sickness is a major obstacle to a generalized training scheme with them. Remarkably it affects all the more the most experienced drivers and enhances with age. How to foresee and how to avoid it, based on pre-test questionnaires? How to correlate it with early physiological signals monitoring (i.e. sweat, EEG, EMG, ECG)? Come to learn about it…

17. *Research questions and towards a roadmap for the future*

And now what? What are the major gaps in terms of research and development, in terms of curricula and scenarios? This session proposes priorities for further research and innovation uptake, setting the scene for a Pan-European roadmap in simulator-based training. Be part of it!

TRAIN-ALL Workshop

In conjunction to the FERSI seminar, the TRAIN-ALL project final pan-European workshop takes place, starting in the afternoon of the 15th of September with the demonstration of the project developments and continuing with presentations and discussions on the 16th of September. The programme of the 2nd day of the Workshop follows below:

Location: CERTH/HIT premises, 6th Km Charilaou-Thermi Rd, 57001 Thermi, Thessaloniki, *Greece*

16 September 2009 **- Agenda**

Time	**Subject**	**Presenter**
09:15-09:30	Opening	*Mary Panou* – CERTH/HIT, Greece
09:30-10:00	EC policies on Traffic Safety Research - *to be confirmed*	*Ludger Rogge* – European Commission
10:00-10:30	TRAIN-ALL: from concept to reality	*Evangelos Bekiaris* – CERTH/HIT, Greece
10:30-10:45	Invited speaker The driving schools view from Sweden	*Lars Gunnarson – STR, Sweden*
10:45-11:00	Invited speaker The driving schools view from Finland	*Kaija Savolainen* - EcoDriving Center Oy, Finland
11:00-11:30	Coffee break	
11:30-12:00	Simulator validity	*Bjorn Peters* – VTI, Sweden
12:00-12:20	Simulator sickness avoidance	*Marcel Delahaye* – COAT, Switzerland
12:20-13:00	TRAIN-ALL prototypes evaluation and best practices	*Britta Lang* - TRL, UK
13:00-13:30	Discussion	Moderated by *Stephane Espie* - INRETS
13:30-14:30	Lunch break	
14:30-14:50	Standards for Driving Simulators – Rationale and Solutions	*Henk Janssen* - TNO, Netherlands
14:50-15:10	Towards exploitation	*Jorrit Kuipers* – GREENDINO, Netherlands
15:10-16:00	Discussion (focused on CEA issues)	Moderated by *Evangelos Bekiaris* – CERTH/HIT, Greece
16:00-16:30	Conclusion	*Evangelos Bekiaris* – CERTH/HIT, Greece