eRIC Experiencing CBT Programmes in Road Safety In the European Community

STATE-OF-THE-ART REPORT

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Annexes

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1. Introduction

With the aim of assessing the level of development and use of Computer Based Trainings in road safety education, a revision of learning tools regarding the topics of physics of driving as well as fatigue in traffic has to be done in the context of the ERIC project. In a first step, it was foreseen to look at the availability of CBTs in road safety education in general, and in a second step to see if these tools are focusing on the topic of Physics of Driving and Fatigue. Beside this analysis, information has been be gathered regarding the existence of seminar concepts or curricula including these topics and the weight of these topics in the context of a seminar or training.

CBT is a type of education which was introduced around 15 years ago in which the student or user learns by executing special training programmes on a computer. CBT is also called computer-assisted instruction (CAI). Computer-based training (CBT) programmes teach the material of a specific field and at the same time offer various ways of objectively assessing the knowledge gained. The interactive use of multi-media components such as text, graphics, animation, sound, digital slide shows, and videos as well as quizzes can theoretically facilitate the learning process.

Historically, CBTs' growth has been hampered by the enormous resources required: human resources to create a CBT programme and hardware resources needed to run it. However, the increase in PC computing power, and especially the growing prevalence of computers equipped with CD-ROMs, is making CBTs a more viable option for corporations and individuals alike.

CBTs and *e*-learning concepts have nowadays reached a high level of quality that encompasses technical, methodological and didactical standards. CBT is the basis for the use of multimedia in qualification and further training. It is mainly used by medium-sized and large companies for educational purposes of their employees. In the field of road safety education the use of CBT is not yet widespread.

The German Road Safety Council DVR has developed two CBT programmes called “Todmüde? Ohne mich!” (Fatigue) and “Bewältigung von Fahraufgaben – fahrphysikalische Grundlagen” (Physics for driving). The production of these learning tools was supported by the German Statutory Accident Insurance. The intention was to introduce these tools during qualification and further training seminars for employees from the transport sector as well as other employees taking part in seminars in the field of occupational safety. Nevertheless, their applicability is manifold. The transfer and adaptation to other languages enables a wider dissemination, since it was assumed before starting the project that there are not too many CBTs like these available.

2. Setting the Scene

2.1 How to reach the driver

To improve traffic safety three pillars are important - the driver, the car and the infrastructure. In literature, these pillars are sometimes called the “three E´s” (Engineering, Education and Enforcement; Christ et al., 1999). Within the framework of the ERIC project the main focus is on the driver and how he/she can be trained in order to retain/gain a safe driving behaviour.

Having a deeper look on existing literature, one will find a huge amount of theoretical models and practical training approaches of how to teach drivers. Christie (2001b) summarised the effectiveness of driver training programmes for different driver groups (learners, young and experienced) by studying the existing international literature. Training was evaluated as effective if it had a positive impact on the actual crash risk or the crash involvement, but also on the general driving behaviour of the participants. One can distinguish between pre- and post-driver training, defensive, advanced and driver improvement. Pre- and post-trainings mainly focus on basic car control skills and road law knowledge. Defensive driver trainings try to teach drivers to avoid getting into critical situations, whereas advanced driver trainings assist drivers in coping with such situations. Driver improvement measures rather focus on specific groups of drivers who already violated the law (Christie, 1996 and 2001a; as cited in

Christie, 2001b). According to Christie (2001b), most of these trainings "*concentrate on skills and knowledge relevant to crash avoidance or dealing with driving emergencies*". As these skills are not needed regularly, the relevant knowledge and the inherent behaviour are forgotten rather quickly. Furthermore, trainers can not guarantee that drivers transpose knowledge they gained in the desired way. Thus, the motivations hardly are taken into account in the framework of ordinary driver trainings. These issues have been discussed in several European projects (especially GADGET, TRAINER as well as MERIT).

One of the most famous inputs with respect to a theoretical argument was given by the EU project GADGET which focused on the assessment of changes in driver behaviour due to safety devices, modifications of the road environment, legal measures and campaigns as well as educational and training measures (Christ et al., 1999). Within the framework of the project, the GDE matrix (Goals for Driver Education) was developed on the basis of further research in the field of traffic psychology and psychology of learning and education.

There the goals of driving education were described in a hierarchical approach according to the tasks that have to be fulfilled by the driver. Starting from a very basic level – the vehicle manoeuvring skills – it is assumed that the driver has to learn how to master different traffic situations and to develop knowledge and skills with respect to the driving goals and the context. At the very top of the hierarchy is the knowledge on the capability to control life goals which affect the personal driving behaviour. Next to these four hierarchical levels, the risk tendency of the driver and the ability of self-reflection were added to complete the picture of a training curriculum that generates responsible drivers.

As already mentioned above, most of the driver trainings focus on skill-based education and thus, on the lower-left boxes of the matrix. According to the authors of the GDE matrix, an effective driving education should consider as many boxes of the matrix as possible. The question of how the contents are transferred will partly be answered in the following sub-chapter.

		Essential curriculum		
		Knowledge and skills	Risk-increasing factors	Self-evaluation
Hierarchical levels of behaviour	Goals for life and skills for living (general)	**Knowledge about/control over how life-goals and personal tendencies affect driving behaviour** • lifestyle/life situation • peer group norms • motives • self-control, other characteristics • personal values	**Risky tendencies** • acceptance of risks • self-enhancement through driving • high level of sensation seeking • complying with social pressure • use of alcohol and drugs • values, attitudes towards society	**Self-evaluation/awareness of** • personal skills for impulse control • risky tendencies • safety-negative motives • personal risky habits
	Driving goals and context (journey-related)	**Knowledge and skills concerning** • effects of journey goals on driving • planning and choosing routes • evaluation of requested driving time • evaluation of necessity of the journey	**Risks connected with** • driver's condition (mood, BAC, etc.) • purpose of driving • driving environment (rural/urban) • social context and company • additional motives (competitive, etc.)	**Self-evaluation/awareness of** • personal planning skills • typical driving goals • typical risky driving motives
	Mastery of traffic situations	**Knowledge and skills concerning** • traffic regulations • observation/selection of signals • anticipation of the development of situations • speed adjustment • communication	**Risks caused by** • wrong expectations • risk-increasing driving style (e. g. aggressive) • unsuitable speed adjustment • not obeying regulations/ unpredictable behaviour	**Self-evaluation/ awareness of** • strong and weak points of basic traffic skills • personal driving style • strong and weak points for hazard situations
	Vehicle manoeuvring	**Knowledge and skills concerning** • control of direction and position • tyre grip and friction • vehicle properties • physical phenomena	**Risks connected with** • insufficient automatism or skills • unsuitable speed adjustment • difficult conditions (low friction, etc.)	**Awareness of** • strong and weak points of basic manoeuvring skills • strong and weak points of skills for hazard situations • realistic self-evaluation

Table 2: The GDE-matrix (shortened from Hatakka et al., 1999)

2.2 Using new tools for teaching drivers

The EU projects GADGET and TRAINER described a typical driver education which is carried out in a classroom setting, by reading a book, and sometimes combined with a speech of a teacher (Troglauer, 2006). A more interactive approach was recommended in order to facilitate the learning process as well as the knowledge transfer from the classroom to real traffic situations. Thus, the learners need to be more involved in the learning process and they have to obtain feedback about their learning progress, both of which can easily be implemented with the help of multimedia tools. Such tools could not only be used to give the driver a deeper understanding of the traffic regulations, but also to augment the understanding of traffic risks and to raise the awareness for critical situations, but also influence behaviours and attitudes of the driver himself/herself. Another advantage of such kind of tools is the possibility for the learner to use the tool whenever and wherever he/she wants to.

According to Najjar (1995, as cited in Troglauer, 2006) multimedia or e-learning tools offer several benefits compared to an ordinary text book:

- The learning material needs to be **structured** in an understandable way
- The learner needs to **interact** with the learning material
- The learner can **control** the learning **pace** individually
- Information is presented not only in written form, but also via audio-visual elements for instance; thus, the learning process allows the learner some kind of **new** experience.

Although there is a lack of research about the effectiveness of using e-learning tools in comparison to common driver training methods, it seems to be worth to try such tools as they are a valuable cost-effective supplement to trainings that already exist. Besides, there is a lack of evaluation of ordinary driving schemes, as well.

2.3 Multimedia tools implemented in ERIC

As already mentioned above, multimedia tools were identified as cost-effective innovative alternatives to the common driver training and further education. Within the current project, two different tools will be implemented to improve the behaviour of experienced drivers:

- Computer based training “Basics of Physics for driving”
- Computer based training “Fatigue”

“Basics of Physics for driving”

This CD focuses on several aspects of physics which are relevant for the driving task such as speed, braking, driving in curves, how to load a vehicle, etc. The design of the CD is interactive in order to motivate the user to elaborate all of the topics. Furthermore, a game at the end of the process allows the user to test what he/she has learned immediately after the teaching session.

“Fatigue”
The “Fatigue” CD provides a lot of information about how to avoid tiredness. It is packed with practical advices and self-evaluations.

3. Review of already existing tools

The aforementioned CBTs represent a valuable contribution to trainings focusing on various topics of road traffic safety. The CBTs can be used for group trainings as well as by individuals. Their application is rather flexible; every single user can decide wherever, whenever he/she wants to work with the material. The CBTs are appropriate for various target groups like professional drivers, risk prevention technicians, driving school teachers or ordinary drivers.
The main issue of the current report is to illustrate the situation in the project partner countries about already existing CBTs and trainings concerning the topics “Basics of Physics for driving” and “Fatigue”. In the following chapters, the research process as well as the results will be described.

3.1 Austria

3.1.1 Online and telephone search

In order to provide information about already existing e-learning materials concerning the topics “Basics of Physics for driving” and “Fatigue” in Austria, first an internet search was carried out. Therefore as many relevant stakeholders have been taken into account as possible. The focus was on driving schools, bus companies, automobile clubs, schools as well as companies for cab drivers, emergency institutions like the Red Cross or the fire brigade or publishers of teaching material. As the internet search was not that efficient, several companies have been contacted by phone in order to obtain the needed information.

This search procedure showed us that there doesn’t exist much material concerning the topics “Basics of Physics for driving” and “Fatigue” in Austria. In particular we can report the following results:

- Schools for cab drivers: They don't use any kind of material concerning the two topics.
- Publishing companies: They don't have any learning materials concerning "Physics for driving" and "Fatigue".
- Police: They couldn't give us any information.
- Bus companies: They told us that fatigue is not an important topic in their profession because their timetables are laid down by law. And their drivers have to attend courses at driving safety centres to learn about Physics of driving. In their opinion, it is not necessary to treat these topics in more detail.
- Driving Schools: They told us that they use general learning materials including the basics of physics for driving but without a specific focus on fatigue. Some of them purchase these materials from a company distributing learning tools, called BOS.
- BOS: This company distributes teaching materials for driving schools and professional drivers. These learning tools consist mainly of books and of one CD. The CD, however, is intended only as learning material for the theoretical driving test.
- Automobile clubs: The main business of the two big automobile clubs in Austria (ÖAMTC and ARBÖ) is the accomplishment of road safety trainings. So their focus is on physics of driving. They don't have any teaching materials but realize physics through practical tasks.

3.1.1.1 Educational books for driving schools for all classes

Publisher: BOS EDV GmbH & CoKG

Year: 2009; 4th edition

Type of tool: textbook

Target group: people who want to acquire the driving licence for class A

Economic costs: 30 EUR

Topics: *Traffic Rules for Motorcyclists*

Personal requirements, equipment, traffic signs, permitted speed limit, passenger transport, protective clothing for motorcyclists

Driving Techniques and Driving Dynamics

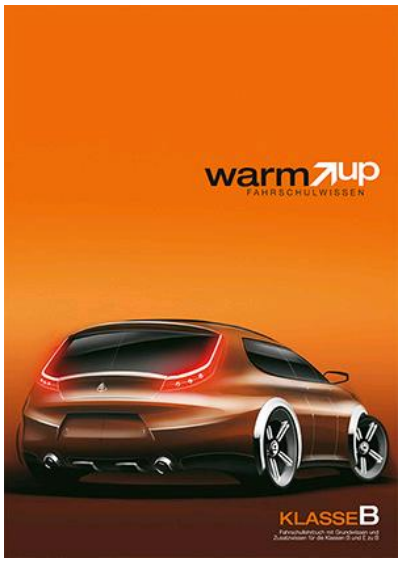
Physics for driving, driving speed and visibility, sitting position, Braking,

Critical Situations

Overtaking, side wind effects on driving, dazzled by the sun, driving under bad weather conditions, driving at high speed, driving in the dark, driving with passengers or in groups,…

Vehicle Engineering

Carriage, wheels, suspension, brake, motor, clutch, gear box



Publisher: BOS EDV GmbH & CoKG

Year: 2009; 7th edition

Type of tool: textbook

Target group: people who want to acquire the driving licence for class B

Economic costs: 20 EUR

Topics:

Traffic Area

Road markings, behaviour at crosswalks or cycle crossings

Traffic signs

Traffic regulation

Manoeuvring, changing the lane, and turning off, reversing,

Right of way rules

Arranged intersections and railway intersections

Topics about sense organs, principle of reliance, 3A Technique

Choice of driving speed

Speed limit, braking distance,

Lighting and distance

Overtaking

Process, restrictions on overtaking,

Rapid transit and road tunnel

Motorway, tunnel, safety vest, behaviour in breakdown situations

Vehicle parking

Detraction of the fitness to drive; Accidents

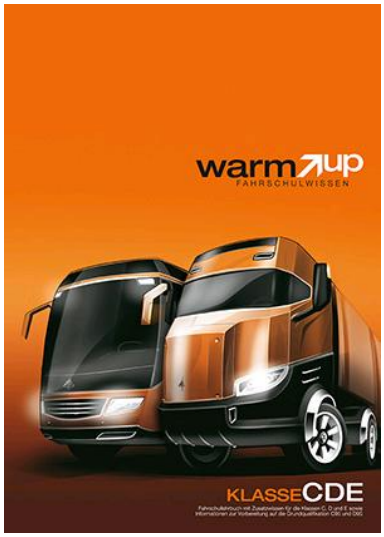
Alcohol, drugs, fatigue, distraction, accident types

Driver licence

Technical components of motor vehicles

Car body, electrics, brakes

Additional knowledge for the classes B+E



Publisher: BOS EDV GmbH & CoKG

Year: 2009; 5th edition

Type of tool: textbook

Target group: people who want to acquire the driving licence for classes C D E

Economic costs: 30-45 EUR

Topics:

Government Regulations for Lorries

Important terms, traffic signs, responsibilities of the driver

Driving lorries

Physics for driving, choice of driving speed, overtaking, navigating in curves and intersections, passenger transport

Loading a lorry

Knowledge about the vehicle

Lorry body, motor, brakes

Government Regulations concerning trailers

Important terms, traffic signs, driving bans, passenger transport

Driving with trailers

Driving speed, overtaking, navigating in curves and intersections,

Knowledge about trailers

Car body, brakes

Loading a trailer

Rules of loading and loading safety

Government Regulations for Buses

Important terms, traffic signs, responsibilities of drivers and passengers

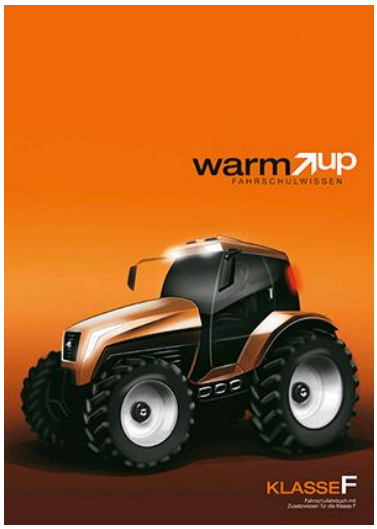
Driving Buses

Choice of driving speed, navigating in curves and intersections, driving public service buses, loading safety in Buses

Knowledge about Buses

Car body, construction, motor, brakes

Qualifications of Professional drivers



Publisher: BOS EDV GmbH & Co. KG

Year: 2009; 3rd edition

Type of tool: textbook

Target group: people who want to acquire the driving licence for class F

Economic costs:

Topics: *Specific Government Regulations*
Important terms, equipment, loading of tractors, passenger transport, railway intersections, towing a trailer
Knowledge about tractors
Wheels, steering, motor, brakes, hydraulics, trailer coupling
Knowledge about trailers
Allowed (licensed) trailers, brakes
Accident prevention and fuel economy
Children, loading, working equipment, driving technique, fuel economy

3.1.1.2 Road Safety Trainings

ARBÖ (Auto-, Motor- und Radfahrerbund Österreichs)

The ARBÖ offers road safety trainings and since 2002 also trainings for the new "Mehrphasenführerschein" (multi-phase driving licence) in its driver safety centres. Driving courses have been offered for about 10 years and are held about 5 times per week. The instructors are specially trained and must pass an examination. The author of the training is the ARBÖ itself. The target groups, especially in Vienna, are car drivers and motorcyclists. The training consists of theory and practical exercises and takes one day. There is no final examination, and it costs about 120 Euros per person. For teaching physics a CBT is used, which is projected onto the wall. This CBT is from the ARBÖ itself and is just a help for the instructors. Fatigue is only briefly discussed (for example signs of fatigue). The ARBÖ has no learning materials on this topic.

ÖAMTC (österreichischer Automobil- Motorrad- und Touring Club)

The core product of the ÖAMTC is physics. It is covered by the driver safety training centres all over Austria. A driving course consists of a theoretical lesson and lots of practice and takes one day. It is conducted by trained instructors of ÖAMTC. The instructors are subject to detailed statutory requirements. The author of the training is the ÖAMTC. At the end of the training, there is no testing and no combination with CBT. The costs amount to 150 euros per person. The ÖAMTC teaches each year about 125,000 students whereof about 100,000 participate in the driving courses. The target group are all persons aged from 15 years that travel on wheels. For drivers who have the "Mehrphasenführerschein" attending road safety trainings is obligatory. The ÖAMTC has some modules in its programme concerning fatigue. But they are in combination with the topic of nutrition and are held in seminar form.

Oil industry

Fatigue is called a major issue in the petroleum industry (drivers of tankers carrying dangerous goods). Other companies have a special interest in economic efficiency (fuel saving training). According to the ÖAMTC in this area, the module concerning fatigue could not exist alone, because it would not be sold. It is combined with other modules.

The title of the seminar for participants from the petroleum industry is "Road Safety Training". If other companies book the seminar, the titles are often individually selected, for example "driver fatigue". Specially trained instructors, who for example are trained by a traffic psychologist from Germany, conduct the seminar. The author of the seminar is the ÖAMTC itself. The seminar has been offered for 15 years and is held every 2-3 years. The last time it was held in 2008. The target groups are bus and truck drivers. Car drivers are not interested in such trainings. The aim of the ÖAMTC is to carry out practical exercises over half the time of the module. So, for example, it is demonstrated that it is very difficult to recognize obstacles in the dark even under normal conditions, and

also how dangerous driving is when the driver is tired. The module also includes an explaination of the vehicle electronics, such as to keep the track. There is no combination with CBT. The seminar lasts one day and there is no examination, since there is no legal obligation. A maximum of 12 people should attend the seminar, in order to have enough time for everyone. The training costs around 100-150 euros per person. In the oil sector, a significant reduction in accidents was registered since the seminars were launched.

3.1.2 Outcome of the research and general conclusions

FACTUM OHG made an internet and telephone research to get in contact with different companies to receive all the information that is important for the report. The main results of the research are as follows:

- In Austria mainly textbooks and no learning CDs are used.
- The materials are usually addressed to learner drivers and professional drivers.
- The most important topics in these books are “traffic signs and traffic regulation”
- The topic “Basis of Physics” is dealt with in textbooks more thoroughly than the topic “Fatigue. “Fatigue” is more or less treated "like an orphan". Austrian Automobile Clubs work especially with the topic “Basics of Physic” and offer “Road Safety Trainings”. They concentrate more on practical driving-safety trainings than on learning materials like CBTs.

However, for the petroleum industry, “Fatigue” seems to be an important issue.
In Austria you have to pay for learning tools. You can purchase them from the driving schools or directly from the company which distributes these learning materials.

There doesn’t exist much e-learning material concerning the themes “Basics of Physics for driving” and “Fatigue” in Austria. The internet search indicated that there is a special need for e-learning materials in particular for the topic of

"Fatigue". Especially professional drivers would profit if this topic was discussed in more detail in driving schools and further training programmes.

3.2 Poland

3.2.1 Online search

After conducting an online search for information concerning availability of CBT and WBT tools, it has to be mentioned that these tools are not commonly accessible. These can be obtained after paying a fee. Information which can be obtained regarding the content of these tools is general, in the majority of cases it cannot be assumed what is the detailed content, and therefore it is impossible to conclude whether they contain topics of "fatigue" and "physics of driving". The authors of such tools are:

- two big publishing houses: Winfor and Grupa Image – they generally publish educational materials concerning drivers' training and road safety education,
- other publications are made by SPH Credo, Liwona, PIGOSK – these are usually tests, materials including road regulations, road signs, regulations concerning driver's working time period, etc.,
- driving schools and other training centres carrying out drivers' training publish their own materials,
- Akademia Transportu i Przedsiębiorczości (Academy of Transport and Entrepreneurship) publishes its own materials and also offers e-learning courses,
- educational platform for drivers e-kierowca.pl offers online courses as an e-learning tool.

3.2.1.1 WBT

The possibility of analyzing the content of WBT materials in form of online courses is very limited, since they are available only after paying a fee. We can assume they contain some aspects of physics of driving since they are

dedicated to drivers who perform the transport of goods and passengers professionally, and these courses are very specialized.

The courses available on e-kierowca.pl platform are designed for professional drivers who transport passengers and goods on a national and international scale, and include also courses in the field of first aid. These courses are available online after logging to the system and paying a fee.

A list of available courses includes the following ones:

- Supplementary training course for drivers carrying out road transport of passengers.

The course encompasses theory and a set of exercises. The aim of the course is to provide participants with knowledge required for completing the training which entitles the driver to perform professional transport of passengers with the use of vehicle of total permissible weight exceeding 3,5 tons. The course encompasses materials for drivers who want to obtain an authorization for passengers transport, as well as for drivers who already hold a qualification certificate or have done the basic training in the field of passenger transport. The cost of such course: 300 PLN (around 70 EURO), duration: 30 hrs.

- Supplementary training course for drivers carrying out road transport of goods.

Cost: 300 PLN (around 70 EURO), duration: 30 hrs.

- Periodical training – national road transport – cat. D.

The course was elaborated for drivers who want to prolong their authorization to carry out transport. The knowledge in the field of traffic safety and working comfort of a driver is consolidated. The stress is put on safe driving on national roads with regard to legal regulations and restrictions for road transport. Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – international road transport – cat. D.

The course was elaborated for drivers who want to prolong their authorization to carry out transport. The knowledge in the field of traffic safety and working

comfort of a driver is consolidated. The stress is be put on safe driving on international roads with regard to legal regulations and restrictions for road transport outside Poland. Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – national road transport – cat. C.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – international road transport – cat. C.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – road transport carried out by removal companies.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – road transport of wood.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – road transport by vehicles equipped with truck crane.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – road transport of animals.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – road transport of perishable goods.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – road transport of liquid substances in cistern vehicles.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – road transport of building materials

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – road transport of community waste and liquid sewage.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – restrictions in road transport of goods.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – off-specification goods transport.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – fixing of a load.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – safe driving of a bus or a lorry.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – ergonomics for drivers.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

- Periodical training – human factor in road transport.

Cost: 600 PLN (around 135 EURO), duration: 35 hrs.

The online courses available on the web site of Akademia Transportu i Przedsiębiorczości (Academy of Transport and Entrepreneurship) include:

- Load securing.

Training is designed for production plants' employees who deal with sales of goods, road carriers and professional drivers. The content encompasses the legally binding regulations concerning vehicle loading, load fixing, and proper loading of a vehicle. Cost: 250 PLN (around 55 EURO).

- Road transport of hazardous materials ADR.

Training is designed for drivers and road carriers, forwarders and logistic agents. The content encompasses the knowledge on hazardous materials ADR. The length of the training is 24 hours as a minimum. The learning material includes 24 modules, a movie, 9 tests, and 3 relaxing exercises. The participants also receive a handbook and regulations in electronic version. Cost: 450 PLN (around 100 EURO).

Slides from "Road transport of hazardous materials ADR" online training

- *Off-specification goods transport*

Training is designed for drivers, road carriers and organizers of off-specifications goods transport. Training includes knowledge on off-specifications goods transport in road transport. The length of the training is 7 hours. The learning material includes 9 modules, 3 movies, a test, and a relaxing exercise. The participants also receive learning materials in electronic version. Cost: 250 PLN (around 55 EURO).

Slides from "Off-specification goods transport" online training


Przewozy nienormatywne
Organizacja przewozów – Czynności poprzedzające proces
Dobór środka transportu
Platforma standardo-
wa nierozciągana
(przykład)
STOKOTA
iSpring
6 / 27
01:44 / 09:25


Przewozy nienormatywne
Realizacja przewozów
Cechą transportu kombinowanego jest jeden organizator przewozu na całej trasie przemieszczania ładunku oraz jeden dokument przewozowy (list przewozowy w transporcie kombinowanym), a także to, że towar przeładowywany jest z jednego rodzaju transportu na inny w całości (bez jego dekompletacji).
Jedna przesyłka
Minimum 2 rodzaje transportu
Jeden organizator przewozu
Jeden dokument przewozowy
iSpring
3 / 9
00:49 / 02:33

3.2.1.2 CBT

The CBT materials are published mainly by two publishing houses: Winfor and Grupa Image.

Publications by WINFOR publishing house include:

- *Basic principles and practice in fixing loads in road transport – part I*

It is a DVD movie which shows the principles of fixing loads in road transport, presents how to stow a load in an open load-carrying body, how to secure it preventing the cargo from shifting, or preventing it from causing excessive noise. The manner in which loose loads should be secured is also described. The movie presents the binding EU norms concerning rules of calculating the forces affecting the load, the structure and resistance requirements of belts fixing the load and stay rope of fixing lines. The movie also examines the regulations referring to rules of goods transport, preventive meaning of police controls and punishments. Cost: 45 PLN (around 10 EURO), duration: 23 minutes.

- *Basic principles and practice in fixing loads in road transport – part II*

The second part of the movie presents the practical use of devices designed for fixing loads in road transport. It includes information concerning fixing of non-standard loads, filling the open load-carrying body, system of storied fixing. It also describes methods of loading such as placing, increasing friction, immobilization. Cost: 45 PLN (around 10 EURO).

- DVD movie by Grupa Image – Road situations

This movie includes such topics as braking,

cornering, slide on turn, driving in various road and weather conditions, driving with a trailer.
Cost: 180 PLN (around 40 EURO), duration: 1,5 h.

These are the only CBTs strictly devoted to physics of driving which include only selected aspects of the topic.

- *DVD movie by Winfor – Road accidents prevention*

The movie presents problems of road safety on roads in Poland. It includes statistics which make people aware of the threats on roads when people's behavior lack common sense and consideration. Accident causes are presented – speed, alcohol and drugs, unfastened seat belts, use of telephone and fatigue. Cost: 45 PLN (around 10 EURO), duration: 20 minutes.

3.2.2 Questionnaire survey

The questionnaire used in the ERIC project in order to collect information concerning the quantity, quality and availability of CBT and WBT tools was designed within the project. consortium. The first task was to translate this questionnaire into the Polish language as well as to adapt it, taking into consideration Polish background, and if necessary to modify it so that it corresponds with the reality of drivers' training in Poland. There were some differences in understanding some words, for example the form of conducting classes (seminar, training).

Target Group

We have selected 35 institutions to participate in the project and fill in the questionnaires. After preliminary verifications 25 of them were chosen for further proceedings. We have established contact with these institutions, after having their consent to cooperate. These institutions were the following:

- Main driving school associations,
- Training centres for professional drivers,
- Driving schools,
- Drivers' examination centres,
- Regional Road Traffic Centres,
- Road Traffic Inspection,
- Police academies,
- Driving Schools Economic Chamber,
- International Road Transport Union in Poland.

The selection of these institutions was dictated by the guarantee of receiving the filled in questionnaires, the quality of trainings carried out by these institutions and the level of creativity and innovation of the classes conducted so far.

Procedure of Collecting Information

A telephone contact was established with the above mentioned institutions and an acceptance of participating in the project was received. Also a contact person was determined. The next step included sending e-mails to contact persons with a detailed description of the project and expectations towards these institutions. Also a questionnaire was attached with a deadline, including instructions about the way to return the filled-in questionnaire (e-mail, fax, regular mail). After one week, we contacted the institutions by phone and checked whether they had received the questionnaires, and if there were any difficulties in understanding the questions. After the deadline for submitting the filled-in questionnaires had passed, we made another contact (phone, e-mail) with a few institutions whose questionnaires were missing.

Time Frame of Conducted Study

The questionnaire study in Poland was conducted between July 14th, 2008 and August 31st 2008.

Questionnaire Structure

The questionnaire included the introductory part with information about the aim of the project and general information concerning the contact with our Institute. The questionnaire was divided into 4 parts:

- Introductory part – contact details of the institution which filled in the questionnaire and general questions regarding conducting of trainings, using of CBT and WBT tools, including topics of "fatigue" and "physics of driving". If the answers to these questions were positive, the surveyed party could proceed to the next part. If they were negative, the surveyed party submitted the questionnaire to our Institute.
- Forms of trainings carried out including topics of "fatigue" and "physics of driving" – time period, frequency, aim, target group, length of training, etc. If during performed trainings either CBT or WBT programmes were used, the questioned party could proceed to the next part of the questionnaire.
- The use of CBT and WBT tools – detailed information concerning these programmes: title, authors, date of publishing, target group, aim, purpose of use (individual work, work in groups, self-education, progress evaluation), form and way of presenting material, method of material use, necessary equipment, feedback collection, cost of materials, etc.
- Combination of traditional teaching methods and CBT and WBT tools – method of combining, information regarding programmes and its cost.

Results of the survey

We sent out 25 questionnaires to be filled in by the selected institutions. Until September 1st, 2008, 16 of them were returned to us, which constitutes a 64% reply rate. Out of these 16 questionnaires, we conclude that 14 institutions are conducting drivers' trainings and 2 of them do not offer any kind of trainings. In 12 institutions, trainings include the "fatigue" topic, and in 10 institutions, they include "physics of driving" in general. Usually these topics are included in the following trainings:

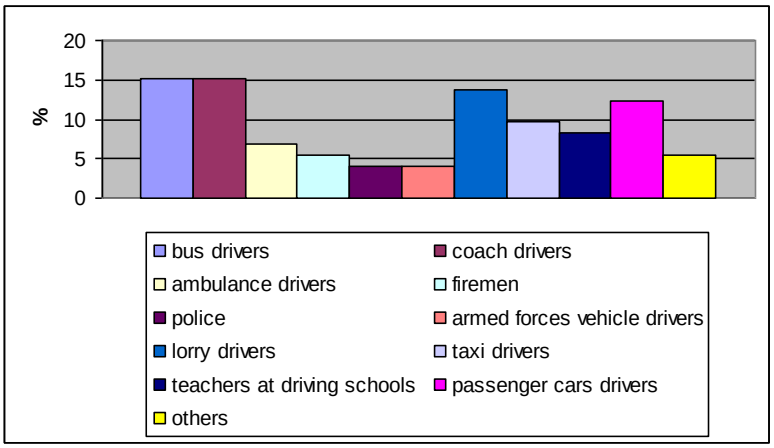
- courses for passengers, goods and hazardous materials ADR transport,
- regular driving courses,

- courses for driving instructors and examiners,
- courses for transport fleets,
- reeducation courses.

The duration of the courses offered varied, they last between 30 and 35 hours. The topics of “fatigue” and “physics of driving” take around 5%-10% of the total course time. The “fatigue” topic is raised mainly during the seminar, “physics of driving” mostly during the seminars and sometimes also during practical training units.

During the courses, the majority of the institutions questioned are using CD-Roms by different authors, also including own materials elaborated by the lecturers, and a few institutions are using web based training.

Target groups for training schemes which include topics of “fatigue” and “physics of driving”

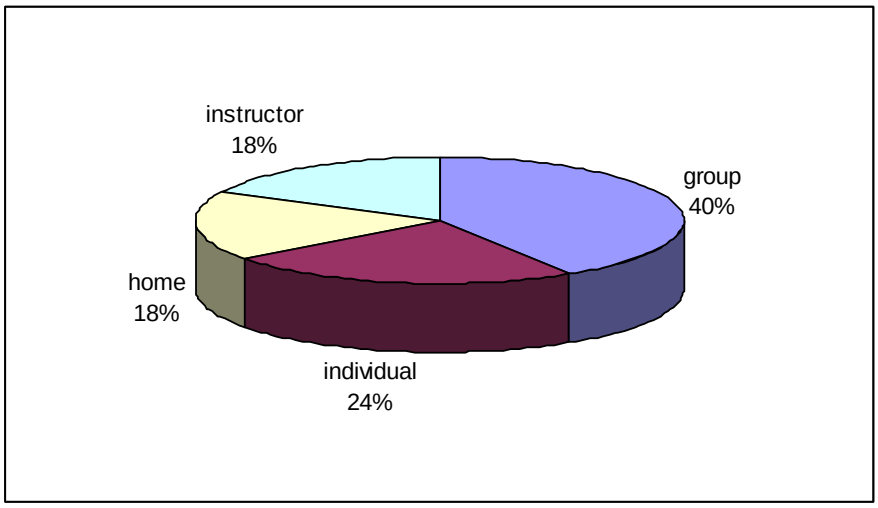


The majority of trainings which include the “fatigue” and “physic of driving” topics are addressed to bus and coach drivers (each 15,1%), the second position take lorry drivers (13,7%), followed by passenger car drivers (12,3%).

The use of CBT and WBT in drivers’ training

The use of CBT tools is more popular than the use of WBT, 69% of the surveyed use the first tool. Most of the CBT tools were published after 2002 and most of the WBT tools after 2004.

Use of CBT



Use of WBT

The CBT and WBT materials are mainly used in group work (40% and 37% respectivly). These tools are also used by course participants individually (not known whether during class or at home).

Content of CBT and WBT

As can be seen from the analyzed questionnaires, the content of the CBT and WBT tools includes mainly simulators, films, questions and answers, presentations, dangerous situations, lecturers' comments, and in a few cases exercises. These tools are not very diverse.

Feedback

There is no possibility to have an immediate feedback in any of these tools.

3.2.3 Conclusions

The aim of the survey was to:

- Obtain information concerning the CBT and WBT materials available and used in the process of drivers' training.

- Evaluate these materials from the point of view of their usability in drivers' training process.

The survey method used in the project was a questionnaire elaborated within the consortium and adapted to Polish standards.

We approached 25 different institutions connected with road transport which carry out drivers' trainings with a request to fill in the prepared questionnaires. 16 questionnaires were sent back (64% reply rate). In 2 of the surveyed institutions no trainings were conducted. 12 institutions have included topics of "fatigue" and 10 of "physics of driving" in the trainings carried out. These topics are mainly raised within the courses for goods, passengers and hazardous materials ADR transport, regular driving courses, courses for instructors and examiners, fleet courses and reeducation courses.

After analyzing the questionnaires, we can conclude that the CBT and WBT materials in general are not commonly used in the process of drivers' training. This situation may result from the fact that these tools are not widely available (limitation due to the cost of these tools) and probably due to a lack of awareness of the existence of such tools.

After conducting an online search and analyzing questionnaires, we can assume that there are two major publishing houses in Poland which publish educational materials in form of CBTs for drivers and driver candidates – Winfor and Grupa Image. These materials can be purchased only and concern mainly examination tests, different situations in traffic, traffic regulations, etc., and only three of them are devoted to some aspects of physics of driving. These are mainly DVD movies.

There is also an educational platform *e.kierowca.pl* which offers WBT tools – online courses for regular and professional drivers. The participation in these courses is possible only after a person logs in to the system and pays a fee of around 50-600 PLN (around 10-140 EURO). Another source of e-learning is a

web site of Akademia Transportu i Przedsiębiorczości (Academy of Transport and Entrepreneurship) which offers 3 kinds of online trainings. The costs of these courses are 250 PLN and 450 PLN (around 55 EURO and 100 EURO).

Some of the training centres use materials elaborated by their own lecturers (these materials have different forms, also as CBT) during their courses. Some of the surveyed did not give much detailed answers to questions regarding the content of these materials as they stated it was an official secret. Most of these materials however include mainly presentations, comments, examples, sometimes exercises.

We can conclude that there is a gap on the market concerning materials, including the topics of “fatigue” and “physics of driving” in the form of CBT or WBT. The content of the available tools is mostly general, only in very few cases, they include some aspects of fatigue and physics of driving. CBT or WBT tools strictly devoted to the topics of “fatigue” or “physics of driving” are unavailable in Poland.

Some of the respondents remarked they would be very interested to use such materials in the process of drivers’ training if they were available in Poland.

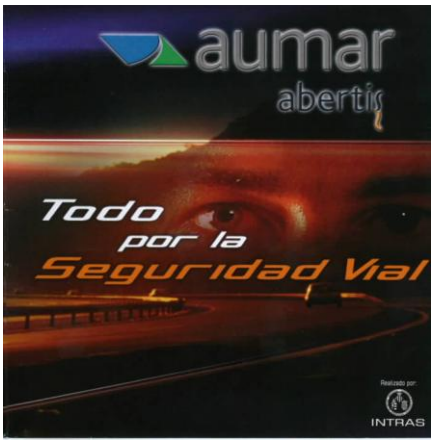
3.3 Spain

In order to write this state-of-the-art review, an internet search of other materials developed in Spain has been carried out, taking into account the objective of the project which is the evaluation of the two CBT’s. This search procedure was chosen starting from the fact that these tools are frequently disseminated through internet. Consequently, an exhaustive online search allowed finding the most relevant materials in Spain. Obviously, it was not possible to find all of them, most probably because they do not have the same importance. This revision allowed and was helpful for the design of a questionnaire to be sent to driving schools, road safety experts or professional drivers and for the collection of information about learning tools already existing in our country.

Once the search was over, we were able to ascertain that most of the materials found belong to INTRAS. Hereafter, each material found is described. We will separate the ones by INTRAS from that of other organizations.

3.3.1 Online search

"Todo por la seguridad vial" (Everything for Road Safety)



Author/Director	Francisco Alonso
Year	2005
Publisher	INTRAS - AUMAR
Type of tool	CBT
Topic	Attitude changes in the motorway
Target group	Parents, youth, children
Economic cost	Free

This CBT, designed by INTRAS in collaboration with AUMAR, focuses on the change of behaviours when driving on the motorway. Starting from the fact that human factor has a huge influence on driving and on the accidents, its objective is to emphasize on road safety and on the environmental protection.

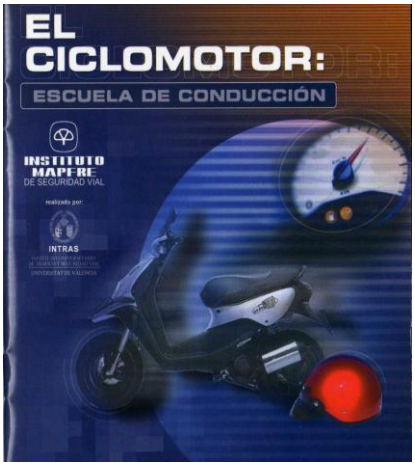
The programme is directed to a wide public; consequently, the contents were designed for people from different age groups. Moreover, there is a game for all ages that foster group interaction.

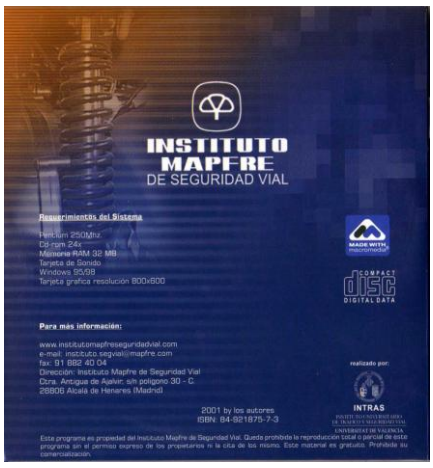
The CBT has the following structure:

- Presentation: explanation of the objectives and description of the participating organizations.
- Let's learn about road safety: how to prepare a trip; possible scenes on motorways; dangerous manoeuvres; what to do in case of having an accident; human factor; vehicles; passengers.
- Games: classified by ages to reach all the public.
- Research: some data coming from the research carried out by Aumar.

It is possible to start by any section. However, the system does not save the routes performed by the person. The programme can be watched in approximately one hour. The "Fatigue" topic is present in 10% of the CD content and the "Bascs of Physics" one in 60%. We can say that the system is theoretical as well as practical, with games designed for several age groups

"El ciclomotor" (The moped)





Author/Director	Francisco Alonso – Jaime Sanmartín
Year	2001
Publisher	INTRAS - MAPFRE
Type of tool	CBT
Topic	Obtaining the moped driving licence
Target group	Young drivers
Economic cost	Free

The CBT that is presented hereafter deals with the knowledge, aptitudes and attitudes needed to obtain the moped driving licence. Consequently, it is aimed at the persons who want to obtain the licence for this type of vehicle (young people especially).

The Road Safety Institute of Mapfre and the DATS research group of INTRAS (Development and Advising in Traffic Accidents and Road Safety) have developed this training programme from a multidisciplinary perspective. In addition to the necessary knowledge about the current legislation, the programme presents a fundamental training component: the human factor. We have to bear in mind that the latter explains 85% of the traffic accidents.

This CBT consists of four large thematic blocks:

- The moped
- The road and the road signs
- Driving
- We, the drivers

The system also has a section with questions and another one for evaluation, which allow evaluating the knowledge, the aptitudes or the users' performance. The tests included here have to be passed by all the participants of the course. Each test is composed of 30 questions, sorted according to the thematic blocks. Each question has four alternatives with only one possible correct answer. The

evaluation section gives feedback, given that the person is told about his correct and bad answers. The programme is individual and theoretical, but with questions and evaluations. It can be watched in approximately one hour.
The "Fatigue" topic is present in 10% of the CD content and the "Basics of Physics" one in 40%.

"Action. Conducirse: un film para la formación de las conciencias en el tráfico" (Action. Driving on one´s own: a movie for training consciousness in traffic)

Instituto MAPFRE | SEGURIDAD VIAL

Author/Director	Francisco Alonso – Cesáreo Fernández
Year	2004
Publisher	INTRAS
Type of tool	CBT
Topic	Training of consciousness in traffic
Target group	Young drivers
Economic cost	Free

INTRAS developed this CBT in 2004, with the aim of making young drivers aware of the road dangers.

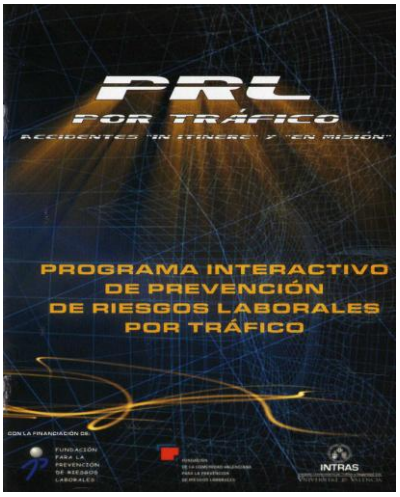
The programme is structured in forms, in which several topics related to road safety explain a high percentage of traffic accidents where young drivers are involved. There is also a video that gathers opinions and impressions of some road users.

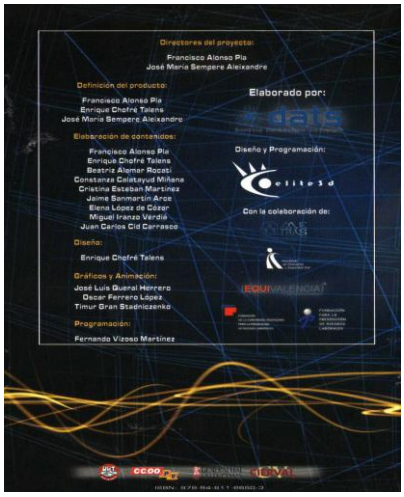
The system has a “full” version and a “light” one, this way the user may choose what best fits him. The programme starts with an introduction, and the following topics are presented subsequently:

- Speed
- Aggressive driving
- Drugs and alcohol
- Passive safety
- Risk perception

The content is basically theoretical and instructing, and it neither has any exercise nor evaluates the person.
Both “Fatigue” and “Basis of Physics” only appear in 10% of the material.
The programme may be watched in approximately one hour and is free.

“PRL por tráfico. Accidentes in itínere y en misión” (Traffic Labour Risk Prevention. Commuting and work-related road accidents)





Author/Director	Francisco Alonso – José María Sempere
Year	2007
Publisher	INTRAS – FUNDACIÓN DE LA COMUNIDAD VALENCIANA PARA LA PREVENCIÓN DE RIESGOS LABORALES
Type of tool	CBT
Topic	Prevention of traffic accidents while working
Target group	Employees travelling for work-related purposes
Economic cost	Free

Given that one out of two employees who die is killed on the road, the main reason why this CBT was designed was to promote the improvement of the safety and health working conditions. It is expected to influence all the factors that take part in the work fatality rate.

The CD starts from a real study that considers all the accident data linked with the work field, data that come from the DGT and the Labour Department. Furthermore, the tool was designed to cover the needs of the employee as well as the trainer's.

The programme is practical above all. Through activities and tasks, user comprehension and training are made easier. The structure of this interactive programme is the following:

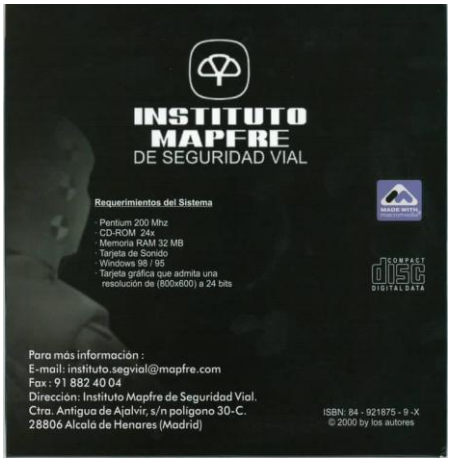
- Driving techniques
- Human factor
- Vehicle factor

In addition, the system is divided into three sections that allow several types of access according to the needs of the user:

- Full access
- Access by selection
- Customized access

In about one hour this CBT can be watched and the activities can be carried out. The “Fatigue” topic is only dealt with in 2% of the content. However, the “Basics of Physics” topic appears in almost half of the programme.

“I programa de seguridad vial para empresas” (First road safety programme for companies)



Author/Director	Francisco Alonso – Jaime Sanmartín
Year	2000
Publisher	INTRAS – MAPFRE
Type of tool	CBT
Topic	Prevention of commuting and work-related accidents
Target group	Employees travelling for work-related purposes
Economic cost	Free

Here is another CBT that deals with the traffic accidents that happen while working. Therefore it is not surprising to see that the target group are employees.

Once more, INTRAS together with the Mapfre Institute have developed a new tool with the objective of improving road safety in the work environment. This programme offers an interactive route through several sections linked with road safety, dealing with all the factors involved in it.

The programme is structured as follows:

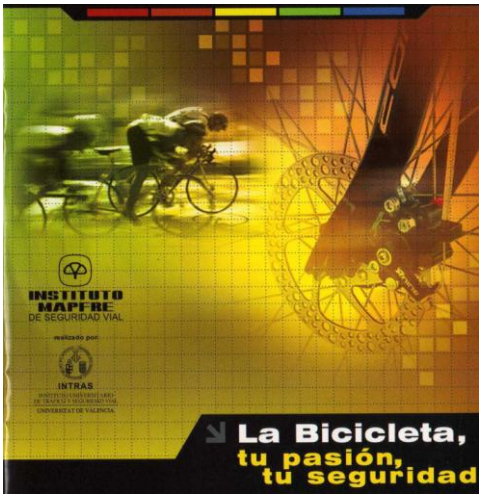
- Presentation: presentation of the problem and of the objectives of the CBT.
- Mapfre: presentation of the company and of its actions.
- INTRAS: presentation of the Institute and the tasks it carries out.
- Contents: in this section there is the possibility to select one of the five topics. The user may access them without following a particular order. The aspects that are dealt with are the driver, the vehicle, the road and surroundings, the regulation and the work accidents.
- Questionnaire: a set of more than one thousand questions, together with a series of illustrations, evaluate the knowledge and attitudes toward road safety. It gives an immediate feedback since the user may check the points he is getting. Moreover, an advantage that offers this programme is that after every answer, it is possible to go to a specific section where the explanation is given.

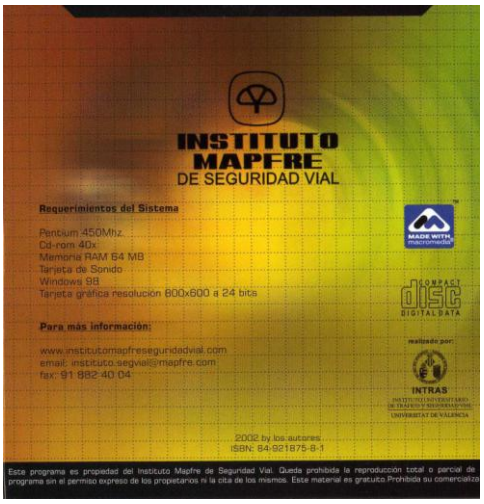
The theoretical part of the CBT can be carried out in a little bit more than one hour. Nevertheless, if the questionnaire is answered, it can exceed two hours.

The “Basics of Physics” topic is present in 40% of the theoretical content, while the “Fatigue” one is only in 5% of it.

We could say that this CBT is both theoretical and practical and it enables the user to learn and be trained on a self-learning scheme.

“La bicicleta, tu pasión, tu seguridad” (The bicycle, your passion, your safety)





Author/Director	Francisco Alonso - Luis Montoro
Year	2002
Publisher	INTRAS - MAPFRE
Type of tool	CBT
Topic	Road safety for the cyclists; safe driving
Target group	Cyclists
Economic cost	Free

With the objective of promoting safe driving in one of the groups that is more at risk than other road users, INTRAS developed this CBT in 2002.

The objective of this CBT is that the bicycle users, of any age and any cultural-social level, learn how to correctly move on this transport mode and then promote a correct and safe use of this vehicle. Likewise, it is also expected to promote solidarity and respect from the other road users, aiming at boosting coexistence.

The CBT structure is the following one:

- Menu: presentation of the programme where the logos of the companies appear that have carried it out (INTRAS and MAPFRE), the five big thematic sections into which the programme is divided, and the access doors to specific information.

There are five big thematic sections:

- The bicycle: Here are the sections on history, element description, types, accessories, maintenance and transport.
- The cyclist: In this section, the accidents and the bicycles, the appropriate age, who can ride a bicycle, clothing and the risk factors are taken into account.
- The roads: Types of road, safety systems, dangers of the road and road signs are dealt with in this section.
- Driving: Sections of preparation, defensive driving and driving in special conditions.
- The rules: The rules related with bicycle are exposed.

There are three access doors to specific information:

- Safety and health: access to subjects linked with cycling, road safety and health, as for example nutrition.
- Expert advices: a series of videos done by cycling professionals are shown.
- Routes: access to a menu of “guided tour” through the contents of the programme.

The system has more than one route. The user has the freedom to move through the multimedia programme according to his/her needs or wishes. Moreover, the learning material is divided into independent modules, so that the user may start by anyone of them. The programme can be watched in approximately 90 minutes.

The “Fatigue” topic is present in 2% of the content and basically appears in the “The cyclist", in the risk factors section. The “Basics of Physics” one is present in all the subsections of the “Driving” section (near to 35%).

The structure is both theoretical and practical (there are exercises) and individual, instructive and fit for self-study purposes at a time.

“INCOVÍA: Programa de intervención, sensibilización y educación vial. Manual del formador” (INCOVÍA: Intervention, awareness and road safety education programme. Trainer manual)

Author/Director	Luis Montoro - Francisco Toledo
Year	2006
Publisher	DGT - INTRAS
Type of tool	CBT
Topic	Penalty point system
Target group	Every single person that wishes or has to recover points
Economic cost	4 EUR

The INCOVÍA programme started to be created in 2005 as a result of the modification of the Organic Law 17/1995 of the Penal Code where the text on traffic, motor vehicles circulation and road safety was modified.

Through the design of this programme, the intention was to achieve that the reoffender drivers reach a greater awareness and change attitudes towards the problem of traffic accidents. For that, such tool offers an educational action on the offenders.

One of the keys of the programme is the uniformity in the action with which it is pretended to act on the offenders.

The action is based on two CBTs that will guide the course of recovering points. The CBT that is described here is the one designed for the trainer. Here, all the contents of the road safety culture are extensively developed. The objective is to give the trainer a basis tool so that he is well prepared to raise the awareness and give re-education courses.

Given that this tool is not directly seen by the student who is going to recover his points, there are neither exercises nor evaluation.

The programme deals with the following topics:

- Traffic accidents
- Dynamics of an impact and consequences for the victims
- Driving: taking decisions
- Aptitudes and basic capacities for a safe driving
- Risk groups
- Risk factors
- Active and passive safety
- Preventive driving
- What to do in case of an accident
- The importance of respecting traffic rules

Moreover, there are also some videos showing what is being explained.
The programme duration is one hour. The user has the freedom to choose the route he wants to. In the same way in the starting menu, there is the possibility to make a choice between the reduced - that is "short" or "light" - version, the version adapted to the needs of the driver or the full version. 13% of the CBT is devoted to the “Fatigue” topic and 20% to the “Basis of Physics” one.

“INCOVÍA: Programa de intervención, sensibilización y educación vial. Manual del alumno” (INCOVÍA: Intervention, awareness and road safety education program. Student manual)

Author/Director	Luis Montoro - Francisco Toledo
Year	2006
Publisher	DGT - INTRAS
Type of tool	CBT
Topic	Penalty point system
Target group	Every single person that wishes or has to recover points
Economic cost	4 EUR

The intervention, awareness and road safety education programme for the student is a material very similar to the one that has been previously described, since they start from the same project (INCOVÍA). This CBT was also designed for the point recovery courses, which the offender drivers will have to undergo.

However, given that this programme is the one that will be specifically used by the students, the phrasing, the style or the structure or the length of the chapters vary. This CBT is more focused on alerting the offenders and making them thinking about the consequences of the road fatality rate.

The topics raised are practically the same as the trainer CBT, even though some factors that are usually the cause of traffic accidents are more emphasized:

- Traffic accidents
- Dynamics of an impact and consequences for the victims
- Driving: taking decisions
- Aptitudes and basic capacities for a safe driving
- Risk groups
- Speed
- Alcohol
- Drugs
- Diseases and medicine
- Sleep
- Fatigue
- Stress
- Active and passive safety
- Preventive driving
- What to do in case of an accident
- The importance of respecting traffic rules

Unlike the CBT for the trainer, in the student one there is a part to evaluate the knowledge or the aptitudes that the driver is acquiring through the course. The system saves each user in order to remind the contents he had been learning and, consequently, saves the route he had been taking through the programme. When he opens the system, the driver must answer a questionnaire on road safety attitudes and knowledge. According to the result, the programme creates a specific route for the driver to review the topics connected with the offences he

made. Moreover, the subject must save the history of the offences he committed.

As a general rule, the CBT is very interactive: the graphs, the videos, the pictures and the exercises make the understanding and the handling of the programme easier. This CBT is longer than the previous one, and three hours are needed to watch the entire programme. As well as in the trainer programme, in this one “Fatigue” is present in 13% of the CBT and “Basics of Physics” in 20%.

“Conducción segura” (Safe driving)

Author/Director	Francisco Toledo
Year	2004
Publisher	INTRAS – COMPAÑÍA LOGÍSTICA DE HIDROCARBUROS CLH
Type of tool	CBT
Topic	Prevention of accidents linked with professional drivers
Target group	Professional drivers
Economic cost	Free

The research group INFORSE of INTRAS, run by Francisco Toledo, developed a programme of safe driving in collaboration with the “Compañía logística de Hidrocarburos”. This CBT deals with several aspects related to road safety in general, but is particularly focussed on the professional driver group.

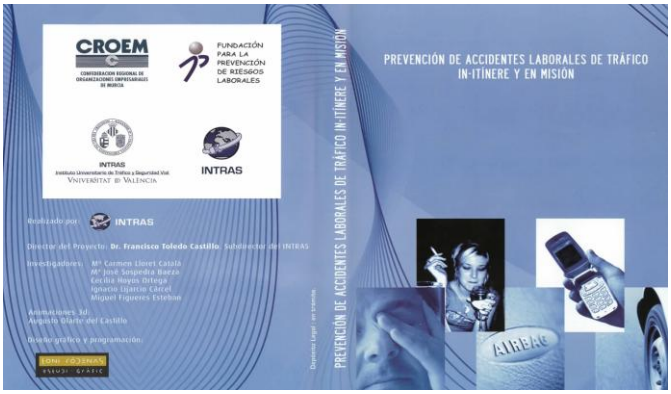
It is a video of 45 minutes length where the following topics are presented:

- Alcohol: the blood alcohol contents and its effects, the laws, false beliefs
- Distractions: basically focussed on the use of the mobile phone.
- Fatigue: how sleepiness affect driving.
- Passive safety: safety belts, airbags, headrests.
- Taking decisions: expert advice facing several risk situations.

As it can be observed, the content is quite general and could be addressed to everybody. However, it is focused on the point of view of the professional driver who spends many hours driving. The video has a menu but is not divided into chapters. Therefore, the user cannot take a route other than the one offered by the CBT (although it can be forwarded with the cursor).

The theoretical information exposed in it is narrated and accompanied with background music. This facilitates the learning and the memory task. There are also several interventions of different persons who describe their own experiences in relation with traffic accidents. There are neither any practical exercises nor is there any evaluation of the subject. Just as the “Fatigue” topic is present in 20% of the video, the “Basics of Physics” one does not appear at all.

“Prevención de accidentes laborales de tráfico in-itínere y en misión” (Prevention of traffic accidents “to” and “at” work)



Author/Director	Francisco Toledo
Year	2007
Publisher	INTRAS
Type of tool	CBT
Topic	Prevention of occupational accidents
Target group	Employees travelling for work-related purposes
Economic cost	Free

This last CBT belonging to INTRAS was also carried out by the research group led by Francisco Toledo. Given that the topic dealt with is the same as the one of the CBT “Conducción segura” and is also aimed at the work environment, the contents found here a similar:

- The sleep: In this first section, sleep is defined in order to expound later on the diseases most linked with it in the driving context.
- Consumption of substances: The psychodisleptic and psychotomimetic substances, the SNC stimulants and the depressive ones.
- Passive and active safety: ESP, safety belt, airbag and headrest.
- The disctractions: Danger of the mobile phone while driving.

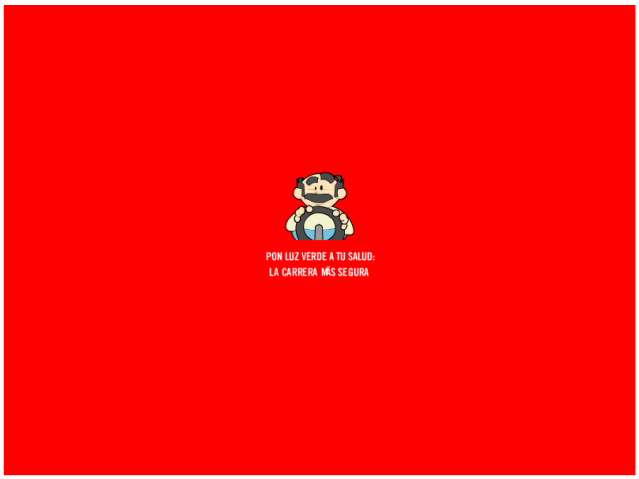
- Speed: It is described how this factor is related with traffic accidents, added to a section devoted to “time management”. Some 3-D animations show the sequence of a journey performed at 50, 70 and 90 km/h respectively.
- The penalty point driving licence: After having defined the system, the ways to lose and recover the points are explained. Moreover, given that this CBT also deals with situations arising in the work context, there is also a section devoted to the Law 17/2005 in order to explain the competences of a professional driver.

The programme is theoretical and not interactive at all. Nevertheless, it allows knowing the most frequent risk factors for the occupational fatality rate for the target group to acquire the knowledge and the responsibilities in work risk prevention.

Since there is a section devoted to sleep, the “Fatigue” topic is present in 17% of the CBT. This is not the case for the “Basic of Physics” topic which appears in only 5% of it. The programme can be watched in one hour.

Revision of the rest of the materials found in Spain

“Pon luz verde a tu salud” (Give your health a green light)



Author/Director	José A. Fernández
Year	2008
Publisher	UNIATRAMC
Type of tool	WBT and CBT http://www.uniatramc.org/cdtaxi/comienzo.html
Topic	Prevention of occupational risks in a taxi environment
Target group	Taxi drivers
Economic cost	Free

After having carried out the internet search to find other educational tools created in Spain, the webpage of the UNIATRAMC (Unión de pequeños autónomos del Transporte, las Comunicaciones y el Mar) was found, where the WBT that is presented hereafter can be accessed,.

The UNIATRAMC is a non-profit associative company with a professional basis founded in 2000, which employs transport, communication and sea freelances, with the main aim to defend its professional interests in front of the public administrations and to promote its representation, management, defence and coordination in front of all the public and private institutions of any sector.

The “Pon luz verde a tu salud” programme was developed with the objective of knowing the reality of the taxi sector with regard to the occupational risk prevention. It is expected to contribute to achieving a safe and healthy environment at work. The Foundation of Occupational Risk Prevention also took part in the development of this project with the aim of providing a computer tool to the taxi driver so that he is able to evaluate his work position and, consequently, set appropriate corrective measures. As was pointed out in the summary table, this tool is available on the web and as a CD-ROM.

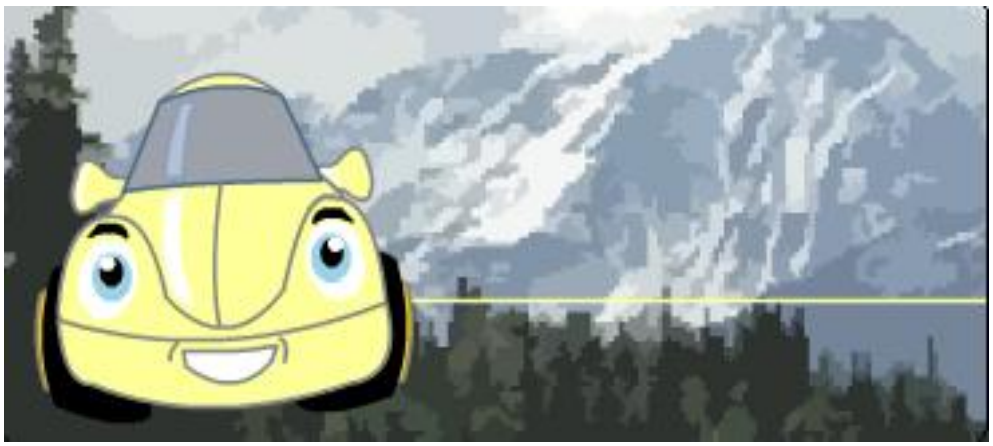
This system is divided into the following sections:

- Presentation and use of the CBT: In this section, the company and the objectives set to create this programme are described. In addition to that, it is explained how to use it.
- Occupational risks: the risks and the preventive measures related to the taxi driver's work position.
- Legislation: The Law 31/1995 of the regulatory framework of the occupational risk prevention is shown.
- Self-evaluation programme: Multiple choice questions in relation with psychosocial, ergonomic and safety aspects are proposed.

There is no established order to go through the programme. Furthermore, the user may go back to the menu whenever he wishes to.

Even though there is a section with questions, the tool is very theoretical. The programme can be watched in about 45 minutes. As for the "Fatigue" and "Basics of Physics" topics, they are present in the WBT content in 10 and 60%, respectively.

"Curso de conducción defensiva" (Defensive driving course)



Author/Director	SAGERIS
Year	2004
Publisher	SAGERIS-IBÉRICA
Type of tool	WBT http://www.sageris-iberica.com/demo_cursoOnline/index2.htm
Topic	Defensive driving
Target group	All the drivers
Economic cost	Free

The “Conducción defensiva” course developed by the SAGERIS company (Sociedad de Asistencia para la Prevención de Riesgos), is another programme found on the internet. Nevertheless, unlike the previous one, this one has not been published as a CD.

Since 1984, SAGERIS has been developing consultancy and training projects in the field of Vehicle and Machinery Risk Prevention. This company is also a well-known member of the National Safety Council and the only member authorized to give Defensive Driving training sessions in Spain. The WBT that is described here is a very complete tool that tries to make the user reflect on the problems that are led by an inappropriate behaviour while driving.

It is composed of several units that are structured according to its content:

- Avoiding accidents.
- Differentiation within the concept of responsibility.
- The principles of defensive driving.
- Influencing products.
- Control of the vehicle: maintenance, documentation and insurance.
- Tyres
- Driving with adverse weather conditions.

- Control of the load.
- Anticipation and the safety cushion.
- Distractions: mobile phones.
- Ending the trip: parking and manoeuvring safely.
- In case of an accident: attitude, steps, first aid.
- New regulations.

Moreover, there is an introduction that describes the WBT as a training element in the road safety context. This is a sequential online learning course, and therefore the established path cannot be modified.

The design of a “pre-test” and of a “test” allows evaluating the road safety knowledge. Once the “pre-test” has been passed, the participant may start the course. As for the “test”, it assesses the course usefulness as well as the acquired knowledge. Once the questions have been passed, there is the possibility to print a certified diploma. This gives feedback to the user.

The course of the programme is very dynamic, since the content that is being explained is narrated as well. Moreover, it is interactive and the user may answer several questions that are appearing on the screen while the theory is being explained. This WBT may be watched in a little bit less than one hour. The “Basics of Physics” topic appears in half of the content of the units. Unlike the “Fatigue” one, given that this topic is not dealt with at any unit.

“Conducción segura” (Safe driving)

Author/Director	Elena Madrigal – Beatriz Ejarque – Miguel Ángel Riaza
Year	2008
Publisher	Conductor Novel (Autoescuela de Madrid)-CIFESAL
Type of tool	CBT
Topic	Effective prevention of traffic accidents
Target group	All kinds of drivers
Economic cost	Free

This last tool presented here is a project carried out by the "Novel" driving school of Madrid, in collaboration with the "Asociación Provincial de Autoescuelas de Madrid" and the "Centro de Investigación y Formación de Empresas".

Unlike the two previous WBTs found on the web, this CBT came from the "Novel" driving school of Madrid. This centre was one of the contacts to which the survey that is presented in the next section was sent.

The "Safe driving" CBT was designed with the aim of preventing traffic accidents in general, starting from the idea that this kind of fatality rate can be avoided, among other things, because human factor is present in 90% of the causes. Therefore, it is not odd that most of the content deals with this topic.
The programme is a narrated video with background music. It is divided into 14 chapters:

- Safe driving
- Speed
- Alcohol
- Drugs
- Medicine
- Sleepiness and fatigue
- Aggressive and reckless behaviour
- Child safety systems

- Airbag
- ABS
- Aquaplaning
- Braking
- Straight braking

As can be seen in this index, only 7% of the CBT is focused on “Fatigue”. However, the “Basis of Physics” is dealt with in 28%. The video lasts 30 minutes and is totally theoretical. It does not have any kind of exercise and the user is not evaluated. Nevertheless, this tool could be used individually or in group. Moreover, it is very instructive as it contains general road safety aspects, being the explanation accompanied with the corresponding picture that illustrates the theory.

3.3.2 Questionnaire survey

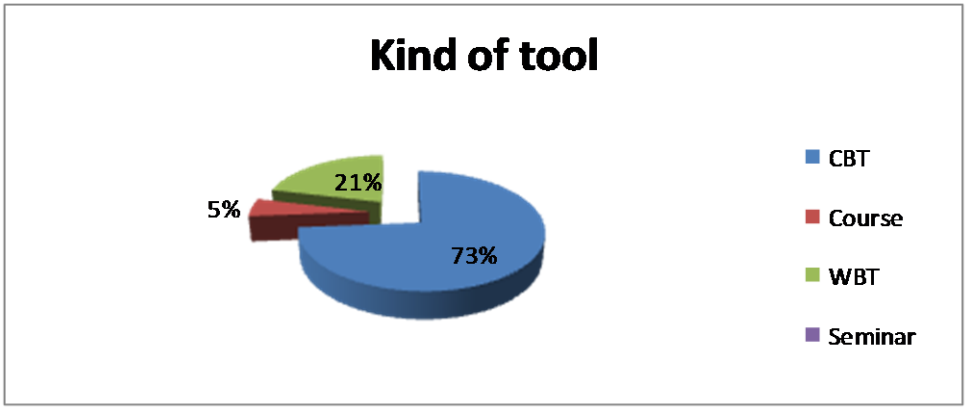
With the objective of evaluating the state-of-the-art review, a questionnaire in which the most interesting variables for our study were collected was designed. It was created by a web based (2.0) tool. It was created by a web-based (2.0) tool specifically devoted to the creation of surveys: Form Assembly (http://www3.formassembly.com/).

This questionnaire was mainly aimed at driving school teachers, road safety experts and occupational risk prevention technicians linked with driving. An e-mail was also prepared, in which the project was explained and the survey was introduced, the survey could be accessed by clicking on the enclosed link. Altogether 176 e-mails were sent (one per company). Nevertheless, in order to ensure that all the contacts had received the e-mail, phone calls were made to the ones that had not sent their answers by the beginning of February yet. In addition to that, we took the opportunity to confirm the attendance at the seminars that will begin in March.

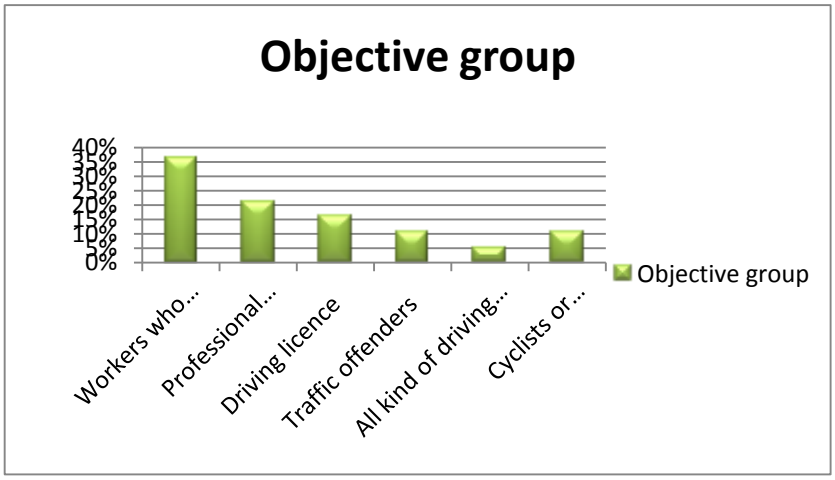
Results

By February 13th 2009, we received 14 surveys which represents 7,9% of the reply rate.

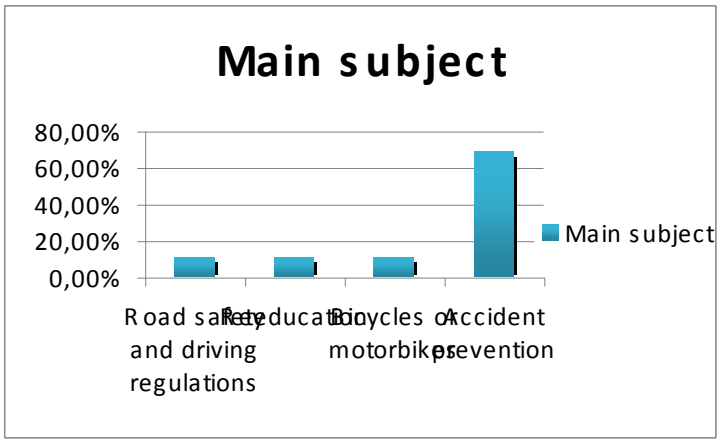
Most of the analyzed materials were published after 2000.



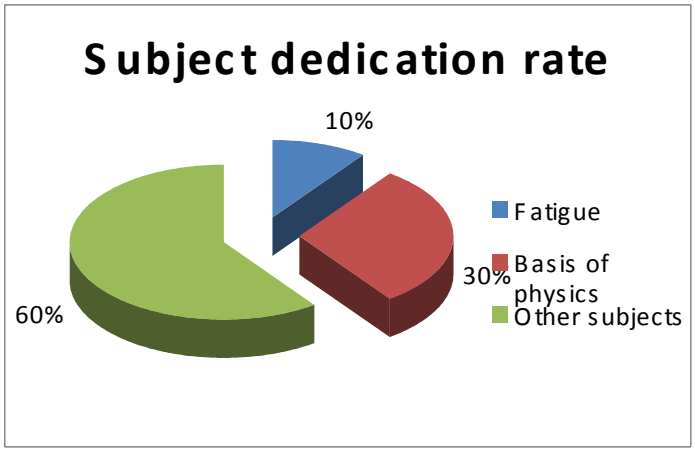
The great majority of these tools are addressed to employees who usually go to work by car or drive their own or business vehicles for work purposes



The more frequent subject is “the traffic accident prevention”. It is accounted for 70% of all the analyzed materials.



10% of the revised tools aimed at the "fatigue" subject and 30% of them deal with "basics of physics".



Most of the CBT's, WBT's and courses (73%) have an assessment section to test users, 80% of the analysed materials are freeware.

3.3.3 Conclusions

As for the online search of the materials developed in Spain, the expectation was very different from the result obtained from sending of the surveys. It was already well known that, at INTRAS, many learning tools had been carried out by several research groups. From the thirteen that were described in this report, ten were developed by and belong to INTRAS. Therefore, it is understandable

that the accessibility to those programmes was easy. For the remaining ones, two have been viewed on the corresponding webpage and the last one was sent by the driving school that published the CBT.

The conclusions that could be drawn are very similar to the ones shown in the outcome of the surveys section, since most of the authors of the programme that were found also replied to the survey.

- Most of the materials found are CBT's published in and after 2000.
- Francisco Alonso, director of the DATS research group of INTRAS, is the author who most often appears in the creation of CBTs.
- The main topic mostly dealt with is "traffic accident prevention", especially in the working environment.
- The target group that is most often present in the programmes are employees travelling for work-related purposes.
- Only the "INCOVÍA" CBTs, which are aimed at the offenders who have to recover their points, have to be paid for.
- Most of the tools reviewed give feedback to the user and evaluate the knowledge acquired and the attitudes modified.
- Only in one case, the "Basics of Physics" topic appears more often than "Fatigue" in the contents of the reviewed programmes.

As can be seen, as to the conclusions drawn from the survey and from the online search, there is practically no difference. Consequently, it can be said that the creation of learning tools in Spain follows the same pattern, which is based on similar contents and aimed at a target group travelling on the road as part of their work, the reason for which these persons are more exposed to risk and to the road fatality rate.

3.4 Germany

3.4.1 Questionnaire survey

In order to provide information about already existing e-learning materials and trainings concerning the topics “Basics of Physics for driving” and “Fatigue” in Germany, first an e-mail survey based on a questionnaire designed within the consortium was carried out. This questionnaire was adapted for the e-mail survey. A list of 136 addresses covering the following institutions, organisations and companies was prepared. The survey was carried out in the months of July, August and September 2008:

- Driving school associations
- Driving school academies for professional drivers
- Driving Training Centres
- The institutions for statutory accident insurance and prevention
- Automobile Clubs
- Automobile Manufacturers
- Police
- Rescue Service associations
- Selected Universities/Research Centres
- Publishers in the field of transport
- Road Safety Associations
- Road Transport Associations

It was expected that the institutions, organisations and companies which were selected had an interest to include the above mentioned topics of the CBTs, namely physics of driving and fatigue, in the qualification or further training of their drivers, employees or costumers using modern learning tools.

Responses and results

The adapted questionnaire was aimed at gathering information concerning the weight of the topics of fatigue and physics in available CBTs, WBTs, seminars

and trainings. The response of 15 questionnaires (11% response rate) was not very high, nevertheless the analysis of the responses showed that the topics of fatigue and physics of driving are treated in an unbalanced way: While physics of driving is included in the context of seminars and road safety trainings of almost all the responders, fatigue was only mentioned by two organisations (Work Accident Insurance for Post and Communication and the Work Accident Insurer for Railways). The use of CBT or WBT as a modern learning tool was only affirmed by the Work Accident Insurer for Railways: For their accident prevention activities in form of seminars they use DVR´s CBT “Fatigue”. All the other responders, namely Road Safety Training Centres run by the automobile club ADAC, the Training Centre for the Qualification of Professional Drivers BBZ Nordhausen, the TÜV Rheinland Academy and its branches, or Work Accident Insurers like the Braunschweigischer Gemeindeunfallverband and Unfallkasse Hessen offer seminars and trainings which include the topic of physics without however using CBTs or WBTs.

No responses were received from Police, Driving School Associations, Publishers, Research Institutes and Automobile Manufacturers. Due to this unsatisfying result, an extensive internet search was done afterwards.

3.4.2 Online search

Publishers

- Degener Verlag GmbH: http://www.degener.de

This publisher is specialised in all kinds of learning and teaching materials corresponding to driver licensing: books, CD-ROMs, multi-media products, presentations and videos directed to driving school teachers and their students. It encompasses materials for professional as well as private car drivers and their teachers, starting from qualification and reaching until further training.

A selection of Degener's modern learning and teaching tools are presented here

CD “Click and Learn” Premium

This CD contains a software that includes all questions/answers of the theoretical driving test for all classes and can be used at home or at the driving

school. It can only be obtained through driving schools. Additionally, the software “Click and Learn Vortest” (Pre-test) provide in a short version (7 examination sheets for each class) and a full version (all questions, all classes in 11 languages) the official PC theoretical driving examination sheets.

No information was available on the price.

The following learning books for driving school students who prepare for the licence in the classes A, B, S and D as well as light motorized two-wheelers include topics in the field of physics of driving such as braking, distance keeping, overtaking, loading, etc. which belong to the curricula of each of the driving classes. These books can only be purchased at the driving schools.

The book “Gesunheit und Fitnes” (Health and fitness) dedicated to professional drivers includes the topic of fatigue.

(No price indication available)

The book “Ladungssicherung” (Load securing) contains all relevant aspects of safe and secure loading: legal requirements and regulations, physics of driving with loads, different types of securing load, calculation methods, tools for securing loads, risks, practical examples.

(No price available)

The book “safety of passengers” deals with all relevant aspects for a professional bus driver: responsibilities of the driver, physics of driving with passengers, loading and securing load in busses.

(No price available)

- Universum Verlag GmbH www.universum.de

This publisher focuses on books and materials related to work, health, transport and environment, education and qualification, work in the future, discapcities and work. Together with the Statutory Accident Insurances it has produced several books, brochures and CDs for work health and accident prevention. The following brochure is directed to car and van drivers and focuses on the topic of safe loading and securing:

BGI 597-21 Edited in 2006

Price per unit: 1,95 €. 50 Units: 1,60 € each, 100 units: 1,45 € each

- Verlag Heinrich-Vogel: www.verlag-heinrich-vogel-shop.de

This publisher belongs to the Springer Group and is specialised in producing learning and teaching materials in the field of road transport, especially for professional driver qualification and further training. A selection of the learning and teaching materials is presented here:

The book and the CD Rom “Securing loads easily” treat all aspects of loading, including the behaviour of the vehicle, centre of gravity, practical examples as well as calculation formulas for the distribution of the load.

Author: R. Sander
8th Edition 2009
Price: 23,43 €

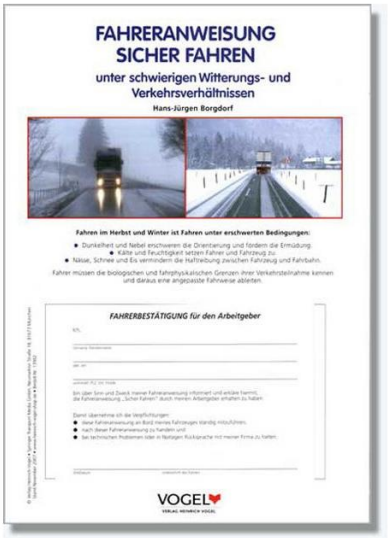
100 presentation slides based on the manual for self-learning and teaching
Price: 82,11 €

The Poster “Safe and Secure Loading” shows in a very structured way how to deal with this task. The most relevant aspects are presented with the aim to reduce the reservation of drivers against loading.

Price: 17,73 €

Furthermore, an 8 page brochure “Fahreranweisung Ladungssicherung” (Instructions for loading) dedicated to professional drivers explains in an easy way how to handle the loading and includes also aspects of physics of driving. Author: R. Sander, Price: 3,51 €. Updated edition in 2009

The 8 page brochure “Fahreranweisung sicher fahren” (Instruction for safe driving) deals with the topic “driving under specific circumstances” such as fog, winter, darkness, icy roads, and includes recommendations.



Updated edition in 2009 Price: 3,51 €

Concerning the further qualification of professional drivers, this publisher has produced several handbooks and materials for trainers and participants. Here is a selection of them:

The handbooks “Safety technology and safe driving” for participants and trainers deal with the 3rd module on further qualification of professional drivers and includes aspects of physics of driving. In addition, a CD Rom that contains around 80 presentation sheets and a PC based interactive multiscreen programme, supports the trainers in their teaching procedure.

Price: 10,59 €

2nd Edition 2009

for drivers

Price:26,64

3rd Edition 2009

for trainers

Price:105,91€

Price::296,31€ €

Furthermore, this publisher has produced a 5th module for further qualification of professional drivers which deals with load securing. The materials are structured in the same way as the 3rd module presented above. The handbook is composed of a handbook for learners and one for trainers, a CD-Rom with presentation sheets, and a software programme with intercative multimedia screens. The prices are the same as for the 3rd module.

- Driver Trainings in Germany

Beside these above mentioned learning and teaching materials offered by publishers, numerous driver safety trainings are available in Germany. The safety trainings are divided into theoretical and practical units, which allow the participants to make their own experiences. They are offered in specific training areas and are directed to all kinds of drivers: for car, motorcycle, van, HGV, tank

lorry, bus, and rescue service vehicle drivers. The knowledge about physics of driving is an essential part of all the training. More details about all types of training can be found on:
http://www.verkehrssicherheitsprogramme.de

- Road Safety Trainings based on DVR Guidelines

“Guidelines of DVR” is a quality definition introduced by the German Road Safety Council in the 1990s for the development and implementation of driver trainings. The organisations which offer these types of trainings have signed an agreement and pay a licence fee. The agreement obliges the organisation to implement a high quality standard which is laid down in the QM System ISO 9001 2000. It guarantees the customers and the organisations which offer trainings a high standard. The following organisations offer these trainings:

- ACE Auto Club Europa e.V.
- ACV Automobil-Club Verkehr Bundesrepublik Deutschland
- Aus- und Weiterbildung Starick GbR
- auto motor und sport Fahrsicherheitszentrum am Nürburgring GmbH & Co.KG
- Autostadt GmbH
- AvD Automobildclub von Deutschland
- AVP Institut für angewandte Verkehrspädagogik e. V.
- BBZ Berufsbildungszentrum für den Straßenverkehr Nordhausen GmbH
- BVDM Bundesverband der Motorradfahrer e. V.
- BVF Bundesvereinigung der Fahrlehrerverbände e.V.
- Dekra Akademie GmbH
- Dekra Automobil GmbH
- drive&ride gmbh / Instruktoren-Börse - Steffen Oppel
- DVW Deutsche Verkehrswacht e. V.
- EvoBus GmbH
- Forum Fahrsicherheit - LGVF
- green duck Sicherheitsberatungsgesellschaft für Gefahrgut und Umweltschutz mbH
- GTÜ Gesellschaft für Technische Überwachung mbH
- HDI-Gerling Sicherheitstechnik GmbH
- Heiko Rödel GbR
- Landesverkehrswacht Niedersachsen e.V.
- Michelin Driving Centre Groß Dölln
- OVS - Omnibus Verkehrs Service
- Prodrive Fahrertraining GmbH
- Sicherheitstraining Bodensee

- SVG Bundes-Zentralgenossenschaft Straßenverkehr eG
- TFR Motor, Erlebnis & Fun-Park-GmbH
- TÜV Rheinland Akademie GmbH TÜV Rheinland Group
- TÜV Süd Akademie GmbH
- Verkehrsakademie Bayern e. V.
- VPA GmbH Verkehrspädagogische Akademie
- VSZ am Sachsenring GmbH & Co KG
- Witt Weiterbildung + Wissenstransfer

In addition to the trainings offered on the basis of the “DVR Guidelines”, a “DVR Quality Seal” was developed during this last decade. The “Quality Seal” not only focuses on the training itself but also on the development of new trainings, on the qualification of the trainers and on the training facilites (training premises, rooms, etc).

Although all the trainings deal with driving physics, especially braking, driving in curves, effects of speed, skid resistance, no CBTs are used during the theoretical units.

Trainings are also offered by the automobile manufacturers, such as Audi, BMW, Mercedes Benz and Volkswagen, these are dedicated to make a customer familiar with a vehicle from the respective manufacturer rather than raising awareness about risks in traffic.

- Combus Competence Mensch und Bus GmbH
  http://www.wbo.de/combus/top_combus.asp

This company offers several trainings and seminars for bus drivers.Ttheir seminar programmes include the use of a CBT “Physics of driving” which is partly based on DVR's Computer Based Learning Programme. The seminar participants can become familiar with the behaviour of the vehicle by CBT-based learning on acceleration, speed, manouevring, braking, and safety systems. The CBTs can be obtained by bus companies upon paying a user licence fee.

- Seminars run by the Institute for Work and Health, German Social Accident Insurance

This Institute offers four types of seminars:
http://www.dguv.de/iag/de/qualifizierung/_pdfangebote/transport.pdf

- “Fit unterwegs” (Fit on the road)

This seminar deals with the vehicle as a working place, typical accident causes of commercial drivers, strategies to prevent stress, fatigue and ways how to cope with it, social rules in transport and safe load securing.
It is directed to safety officers, fleet managers, and decision makers of transport companies. A practical unit involves the use of a driving simulator. The one full day seminar split into two days costs 275 € and is supported by DGUV.

- “Fit unterwegs – Intensivtraining” (Fit on the road intensive training)

This seminar is directed to drivers of vans and sales representatives who drive a lot. The contents are the same as in the seminar described above, only the duration differs: It is a two full day seminar split over three consecutive days. Costs: 475 €

- “Verkehrssicherheit fördern im Betrieb und auf der Straße” (Enhance road safety at the workplace and on the road)

This seminar is directed to safety officers of companies and includes general knowledge about road safety, how to enhance road safety prevention in companies, how to apply different tools such as the use of mobile simulators for road accident prevention activities in companies and the use of the CBTs on Fatigue and on Physics from DVR. The two full day seminar split over three days costs 475 €.

- "Als Moderator betriebliche Verkehrssicherheitsarbeit mit Hilfe von Simulationstechniken und CBT gestalten" (Design road safety activities at workplace with the support of simulators and CBTs)

This seminar is directed to safety officers at companies who already have experience with road accident prevention measures at the workplace. Here, the focus is especially on the use of the mobile simulator, the design of teaching modules, the use of the CBT "Fatigue" and "Physics" in the context of the prevention activities. The full three day seminar is split into four days and costs 690 €.

The following seminar

- "Alles im Griff? – Clever abfahren" (Everything under control? – Start smart): http://www.bgdp.de/pages/seminare/index.htm

is offered by the Statutory Accident Insurance for the companies belonging to the printing and media sector and is directed exclusively to young employees and apprentices.

The first part of the seminar deals with general aspects of road safety and aims at raising the awareness of the young employees. The second part is on critical driving situations, the causes and strategies to prevent them. CBTs, training sequences on a simulator and group discussions are used as methods in a blended learning approach. The third part is a practical safety driving training that allows the young employees to develop a feeling for risk situation based on the knowledge gained in the previous learning units.

Seminars dedicated to the topic of fatigue are rare, nevertheless they mostly address professional drivers and commuters in the context of occupational health and safety.

- Deutsche Bahn Training for fleet drivers

http://www.db-training.de/site/dbtraining/de/seminarfinder/fahrzeugfuehrer/lkw-fahrer/kf2206.html

This seminar is oriented to DB fleet drivers who learn how to use the tachograph and to cope with the problem of fatigue while driving. It inludes the following topics:

- Analysis of personal work overload situations and reactions to cope with them
- Getting in touch with new methods to face them
- Relaxation excercises to prevent fatigue or drowsiness
- Development of a personal check list to prevent risk of fatigue behind the wheel

The duration of the seminar is of one day, the costs are 149 €.

“Wach am Steuer Training” (Awake behind the wheel”)

www.bg-verkehr.de

This seminar is supported by the Statutory Accident Insurance for Transport and was developed for truck drivers. It was evaluated with the inclusion of truck drivers from Ford GmbH Germany. It has two units of 90 minutes each, where the drivers learn strategies to cope with the fatigue phenomenon. In addition, two personal conversation units of 60 minutes each (before and after the seminar,

the second one is optional) allow to analyse changes in attitudes and behaviour. No CBT is used in the context of this seminar. The costs are partially borne by the BG Verkehr.

3.4.3 Conclusions

We made an e-mail survey based on a questionnaire and an internet search in Germany to obtain information about the availability of e-learning materials, seminars and trainings in the field of fatigue and fundamental knowledge of physics of driving. The following conclusions can be drawn after this research:

- The publishers specialised in the field of transport offer a lot of learning and teaching materials related to licensing and qualification of professional drivers. Besides traditional text books and manuals, CBT programmes are only found in the context of learning for the theoretical driving examination.
- Modern teaching tools such as presentation sheets and multimedia interactive screens are offered by the publishers for trainers/teachers.
- In the context of seminars, the use of CBTs is not widespread.
- The topic of physics of driving is included in the road safety trainings. As they are more oriented toward practical driving exercises, there is no space for the use of CBTs during the theoretical units.
- The topic of fatigue is treated in seminars related to occupational health and safety, especially for professional drivers.
- The topic of fatigue is included in some learning/teaching materials concerning the further qualification of professional drivers.
- Commuters or private car drivers have limited access to refresh their knowledge about fatigue.
- Commuters or private car drivers have access to refresh their knowledge about physics of driving by attending driver trainings. Trainings with the “Quality Seal of DVR” and based on the “DVR Guidelines” are purely safety oriented, whereas training offered by manufacturers or others focus only on improving manoeuvring skills.

ANNEXES

ANNEX I: Background information

eRIC Experiencing CBT Programmes in Road Safety In the European Community

Austria

In Austria, a total of 414,795 newly registered vehicles (without trailer) were documented in 2009 (Statistik Austria, 2010); this reflects an increase of 2.6% compared to 2008. Only in December 2009 the motor vehicles fleet attained 23.065 vehicles growth. Thereof 19.422 corresponded to passenger cars, 2.090 to lorries, 94 to omnibuses, 583 to motorbikes, etc. The number of drivers rose in a similar speed as the vehicle fleet. In 2007 87.400 mostly young people – 73% were aged between 16 to 18 years, 93% were younger than 25 years - acquired a driving licence for one or more vehicle classes (Statistik Austria, 2010). Table 1 gives an overview of the driving permissions, obtained by novice drivers in the year 2007 separated by the different vehicle categories.

A	B	C1	C	B+E	C1+E	C+E	F
9.630	84.786	1.292	2.456	1.994	1.080	1.881	5.662

Table 1: Acquired driving licences of Austrian novice drivers in the year 2007 (Statistik Austria, 2010)

In 2008 Austrian drivers caused 39.173 road accidents with the consequence of 50.521 injuries and 679 fatalities. 1.741 accidents involved heavy trucks and caused the death of 111 people. Thus, 4% of all accidents required 16% of all traffic fatalities. The risk of being killed in an accident involving a heavy lorry is four times as high as for a “regular” accident (Statistik Austria, 2010).

The main reason for traffic accidents in 2007 was speed (~ 36%), followed by violations of right of way (~14%), errors while overtaking (~11%), inattention (~11%) but also fatigue (~4%, KfV, 2008). These figures underline the fact that something has to be done to improve traffic safety on our roads. The ERIC project aims at refreshing the knowledge of drivers about what they learned in driving schools with regard to physics as well as consequences of fatigue for the driving behaviour.

Poland

Within the last two decades in Poland a major development of motorization has occurred, which resulted in a growth in number of road accidents and its victims. As it results from the road accident cause analysis, the most common accident cause is improper driver behaviour. For many years now the situation in Poland has remained unchanged – the vehicle drivers are responsible for over 76% of road accidents in Poland, mainly due to lack of professional knowledge and skills, which should be acquired during professional drivers' training. To facilitate the educational process and obtain optimal achievements it is essential to engage educational tools**,** particularly multimedia, which improve the effectiveness of the learning process by 56%, facilitate the subject comprehension by 50-60%, reduce the level of misunderstanding when transferring the knowledge by 20-40% and save time by 38-70%. The multimedia also facilitate the distant training (e-learning). Therefore the EU project ERIC educational programmes "Fatigue" and "Physics of driving" can become an essential tool in training of professional as well as regular drivers.

Situation in Poland

In 2008 in Poland the total length of public roads was over 383.300 km. The number of all vehicles (passenger cars, lorries and tractors) amounted to over 21,3 million, including over 2,5 million lorries (also vans), over 1798.000 road tractors and over 92.500 buses. In road transport, over 1 340 million tons of goods were transported and over 666 million passengers.

The volume of goods transport places Poland among the EU27 on the sixth position, following Germany, Spain, Italy, France and Great Britain. In international transport with regard to volume of transported goods, Poland occupies the first position and is followed by Germany and Spain. The largest volume of passengers transported internationally was noted between Poland and Germany, Great Britain, Italy, France, the Czech Republic and Ukraine.

In comparison with 2007, the number of passenger cars, lorries, road tractors and buses has risen in 2008 by 8,5 %. There was also a growth in international and

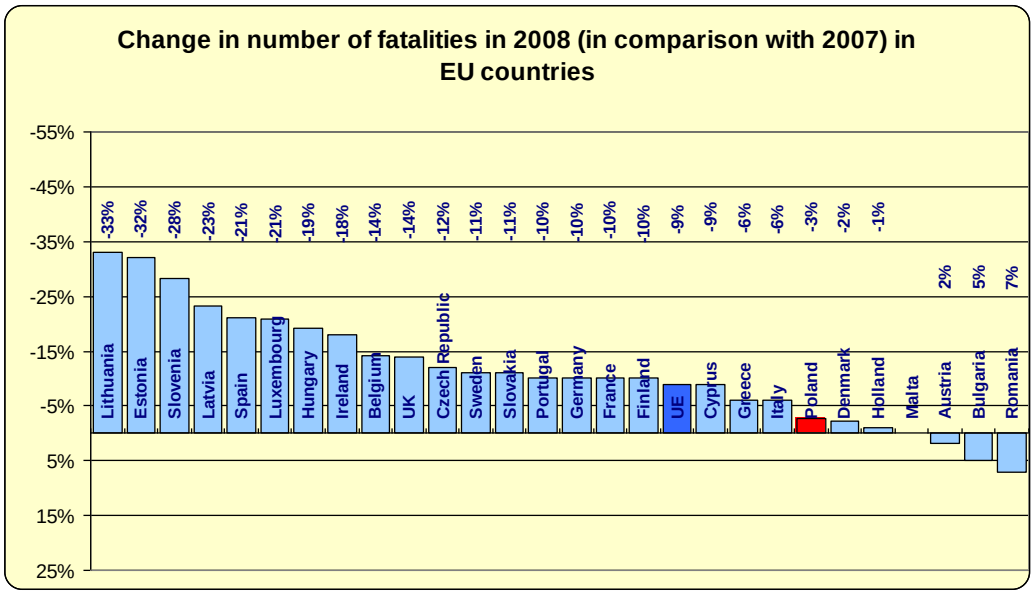
national transport of goods (by 10,4%) and a decrease in international transport of passengers (by 7,3%).

In 2008, 49.054 accidents occurred on Polish roads (in 2009 – 44.196), in which 5.437 people were killed (in 2009 – 4,575) and over 62.000 were injured (in 2009 – 56.046). In 80% of these accidents, the guilty party were vehicle drivers who committed a violation or consciously infringed the traffic rules. Fatigue or falling asleep was the cause of 1% of all road accidents. Fatigue was the cause of 6% of all accidents caused by lorry drivers. Improperly loaded vehicles were responsible for 0,02% of all road accidents. In all road accidents the involvement of lorry drivers was equal to 10%, and of bus drivers to 2%.

Among all traffic offenders (vehicle drivers), lorry drivers caused almost 3 000 accidents (7,5% of total road accidents caused by the vehicle drivers) and bus drivers contributed to 436 accidents (1,1% of total road accidents caused by vehicle drivers). The total number of accidents caused by vehicle drivers in Poland in 2008 amounted to 38 318 (78,1% of all accidents), in which 3 659 persons were killed and 51 346 injured. The drivers and passengers of lorries constituted 3,2% (175 killed) of all road fatalities. The total number of road fatalities in 2008 amounted to 5 437.

In Poland road safety conditions have improved in 2008 as compared to 2007. Excluding Poland, in 22 EU countries, the number of road fatalities has decreased in the range between 1% (Holland) and 33% (Lithuania). The best result was achieved by Lithuania followed by Estonia (decrease by 32%), and Slovenia (decrease by 28%). In Poland, the number of fatalities in road accidents has dropped by 3%. These changes are presented in Fig. 1.

Fig. 1. Change in number of road fatalities in 2008 (compared with 2007) in EU countries



In Poland, each day an average of 15 people are killed in road accidents, and 160 are injured. The heavy financial losses which are suffered by the whole society due to road accidents (measured by the national income which has not been generated) exceed the amount of national budget expenditures for medical and social care. Annually, the losses related to road accidents in Poland amount to 2% of the Gross National Income, in 2008 it was 30 billion PLN. The social cost of one person killed in a road accident in Poland amounts to around 1 million PLN.

Professional drivers in Poland

In 2008, in Poland a total of 21,5 million driving licenses was issued including:

- 3 221 162 (15,3%) of cat. C, C1, C+E,
- 851 980 (4%) of cat. D, D1, D+E.

Characteristics of driver's profession

The profession of a driver consists in goods and passengers transport. The unconditional requirement for a professional driver is to have the knowledge of traffic regulations and construction and technical condition of the vehicle driven, which is the basic working tool. A professional driver is working on a national as well as an international level. He is supervising the loading and fixing of goods, while his company is responsible for all damages which occur during transport. While behind

the steering wheel, he is responsible for safety, and when crossing a border, his duty is to perform customs clearance. Especially in cases of international transport, the work of a professional driver is related to covering long distances which oblige drivers to comply with working time periods which require them to be away from home for longer periods. The profession of a driver is connected with time pressure and fatigue.

Requirements

Psychological and medical requirements for professional drivers are more detailed than for regular drivers and embrace personality characteristics and efficiency, which decide upon the safety of the work performed. Basic requirements concern sharpness of vision, colour perception, stereoscopic vision, vision after dusk, proper differentiation of intensity and level of sound, proper sense of balance, sense of smell, visual-motor coordination, manual dexterity, sense of touch. The most important features of a driver are: quick reflexes, perceptiveness, ability to concentrate, divisibility of attention, monotony immunity, long lasting effort resistance. Among additional features which can be helpful are: sense of direction, good memory, spatial imagination and technical skills.

The only formal requirement for professional drivers is to hold an adequate category driving license and have a positive opinion from medical and psychological tests. In the latter case, a level of intelligence, reflex, perceptiveness, motor coordination and divisibility of attention are checked.

Working time periods for professional driver

A professional driver can drive for up to 9 hours per each twenty four hours (a day), and twice a week for up to 10 hours. A driver cannot drive longer than 4,5 hours at one time, after this time a 45 minutes break must be taken unless the rest period starts. This break can be replaced by shorter ones of a minimum of 15 minutes each used during 4,5 hours journey. These shorter breaks are not included in daily rest time periods, they cannot be used for any other kind of work. Weekly working time periods, including overtime, cannot exceed 48 hours on an average. This period can be extended to 60 hours, if an average weekly working time period does not exceed 48 hours in a given settling period which does not exceed 4 months. Within two

weeks, a driver cannot exceed 90 hours of driving a vehicle. A driver is entitled to at least 11 hours of undisturbed rest. It can be shortened, but it has to amount to not less than 9 hours and not more often than 3 times a week. At this shortened rest time period, the equivalent rest time must be used before the end of the following week. The rest time can also be divided into 2 or 3 parts, but one of them should embrace at least 8 consecutive hours, and the daily rest should be equal to 12 hours.

For a driving team of 2 professional drivers, one driving day lasts 30 hours. The standard working time periods for such team is as following: 1st driver – 4,5 hours, 2nd driver – 4,5 hours, 1st driver – 4,5 hours, 2nd driver – 4,5 hours, rest – 12 hours. If there are 2 drivers, the mentioned break periods are not obligatory, since the waiting time and time not devoted to driving are not considered as working time. The minimum time period of undisturbed rest in this case is 8 hours in each 30-hours period. It is not possible that one driver gets back his rest time while the other one is driving. Rest time periods can be used only if a vehicle is parked. It cannot be realized if a vehicle is moving, and even if it is parked at the parking lot, it has to be equipped with sleeping beds.

After a maximum of 6 periods of day driving or 6 days, a driver is obliged to take a week off. The legal regulations define it as a prolongation of a day rest period. It should amount to 45 hours but can be shortened to either 36 hours, if it is used at the place of vehicle base or at the driver's home place, or to 24 hours if it is used at another place. A period, a rest time was shortened by, can be used by a driver before the end of the third week, after a week in which the reduction occurred.

If work is performed during the night for at least 4 hours, the working time period of a driver cannot exceed 10 hours a day.

Training of professional drivers in Poland

Drivers' training to obtain driving license cat. C1, C, C+E, D1, D or D+E can be carried out by an entrepreneur, military unit, internal affairs unit or school, which is in possession of the following:

- educational equipment consistent with currently binding law regulations and the level of technology, including at least:
    - a board,
    - a mock-up or a simulator of different situations which can occur in road traffic,
    - training boards, computer programmes or videos explaining: traffic safety rules, vehicle maneuvering rules, basic control and maintenance activities, and first aid rules for the victims of road accidents,
    - currently binding legal regulations texts in the field of road traffic and the vehicle exploitation principles,
    - other devices supporting the use of the above mentioned ones.

Trainings for the candidates of all driving license categories encompass the following issues:

- impact of fatigue on the perception abilities, decision making, reaction time or change in the behavior of drivers,
- maintaining safe distances between vehicles in different weather conditions, road surfaces and time of the day,
- the use of a vehicle, transport of passengers and goods taking into consideration the environmental protection.

The specific subject matter of trainings for driving licenses cat. C and D include the following:

1. Knowledge (cat. C, C+E, C1, C1+E, D, D+E, D1, D1+E) concerning:

- regulations of the working time periods and the rest period (the ability to use the tachograph),
- regulations concerning the type of transport: passengers or goods and documentation required in national and international passengers and goods transport,
- precautions taken in case of emergency,
- route planning, road map reading,
- safety measures regarding vehicle loading, placing and fixing the load – it concerns driving licenses cat. C, C+E, C1, C1+E,

- responsibilities and duties of a driver towards transported passengers – it concerns driving licenses cat. D, D+E, D1, D1+E,
- general principles of vehicle operation, its construction and maintaining, the basic running gears of a vehicle.

2. Skills and behaviors in the scope of:

- interconnecting the vehicle with the trailer or semitrailer (cat. C+E, C1+E, D+E, D1+E).

New regulations for professional drivers

In accordance with the new regulations for professional drivers, drivers are obliged to participate in mandatory trainings and take exams. These are preliminary qualifications and periodical trainings. A driver who starts his professional driving career is obliged to finish the preliminary qualification. The act introduced protects the acquired law of drivers. If a driver obtained a driving license of cat. D1, D1+E, D or D+E earlier than Sept. 10th 2008, he would be exempted from this obligation. Drivers with driving licenses cat. C1, C1+E, C or C+E can prolong it for another year.

The theoretical and practical classes and qualification tests are part of the preliminary qualification, which can be conducted at school or at driving schools. At the end it is necessary to pass the tests. Every 5 years, a driver is obliged to participate in periodical training in form of a course or a cycle of classes staggered during a 5 year-period and receive the qualification certificate issued by the manager of a training centre. The entrepreneurs have the obligation to employ drivers holding preliminary qualifications and send them to periodical training and medical check-up.

Spain

In Spain, about 250.000 persons died in the last century and more than 15 million casualties were recorded. Each year, road accidents cause between 1.200.000 and 1.500.000 fatalities worldwide and provoke some kind of traumatism to approximately 35 millions of persons. In the European Union, it has been calculated that the annual road fatalities are about 45.000, and it has been estimated that the

number of casualties exceeds 2 millions. In Spain, in 2007, 100.508 accidents with casualties were recorded in which 2.957 persons died and 97.551 were injured. Moreover, the road accident rate entails a high economical cost, given that it represents 2% of the Gross Domestic Product in Spain (GDP). These huge expenses would mainly come from hospitalization, rehabilitation, management, staff and material expenses, victim transfers, indemnities, among others.

However, the European Union set the target of reducing the number of road victims by half by 2010. This implies the participation of all the European road safety experts.

Given that 18,8% of the driving licences issued in 2007 were for professional drivers, the ERIC project in Spain has focused its study on professional drivers, risk prevention technicians and on the driving teaching group.

Each year, an excessively high number of professional drivers lose their lives or suffer from serious injuries as a result of accidents where fatigue is involved. After 18 hours without sleeping, a driver's performance is equivalent to having the maximum allowed level of alcohol in the blood.

Professional drivers carry out weeks of up to 80 hours working, many of them during the night, without resting enough, with bad eating habits conditioned by their activity and stressy situations because of having to fulfil the loading and unloading schedules.

Approximately half of the fatalities that happen in the work environment take place on the road. Moreover, the traffic accident rate for work-related trips is more representative for adults than for any other group. Almost 3 out of 10 adults involved in accidents have to travel for work reasons (source: INTRAS-UVEG). However, the drivers involved in this kind of accidents usually have not committed any offence. Distraction or inattentive driving are commonly the main cause.

Although such problem is not the aim of our study in this report, it is mentioned in this section in order to show the importance that it can have on the professional drivers or on the ones that cover a long distance to get to work.

According to the data provided by the General Traffic Directorate (DGT) in its 2007 statistical yearbook (http://www.dgt.es/portal/es/seguridad_vial/estadistica/), the Spanish motor vehicles fleet on 31st December 2008 counted 30.969.224 vehicles. 71,51% corresponded to passenger cars (22.145,364) and the rest (8.823.860) is classified as follows:

- Lorries and vans: 5.192.219 (16,77%)
- Buses: 62.196 (0,20%)
- Motorbikes: 2.500.819 (8,08%)
- Industrial tractors: 213.366 (0,69%)
- Other vehicles: 855.260 (2,76%)

It is also relevant to mention that the motor vehicles fleet has increased by 2,15% from 2007 to 2008.

As for the driver census, on 31st December 2008, there were 25.495.368 drivers (3,86 % more than in the previous year). Moped, agricultural vehicle and reduced mobility vehicle drivers are included.

According to the General Regulations of Motorists, 1.257.901 driving licences were issued in 2008. 18,8% of these (236.722) correspond to professional licences (type BTP, C-1, C, D-1, D+E, C1+E, C+E).

It is important to take into account all these data when focussing the study to the afore-mentioned target group: professional drivers, risk prevention technicians, driving school teachers

Germany

On 1st January.2008, 49.330 million vehicles were registered in Germany. 83,5 % of them were cars, 7,5% HGV, 7,2% motorcycles, 0,15% buses and 1,6 % other types of vehicles. The amount of new registrations of 3.650.200 vehicles decreased slightly (-1,4%) compared to the year before, which reflects the economic crisis of that year.

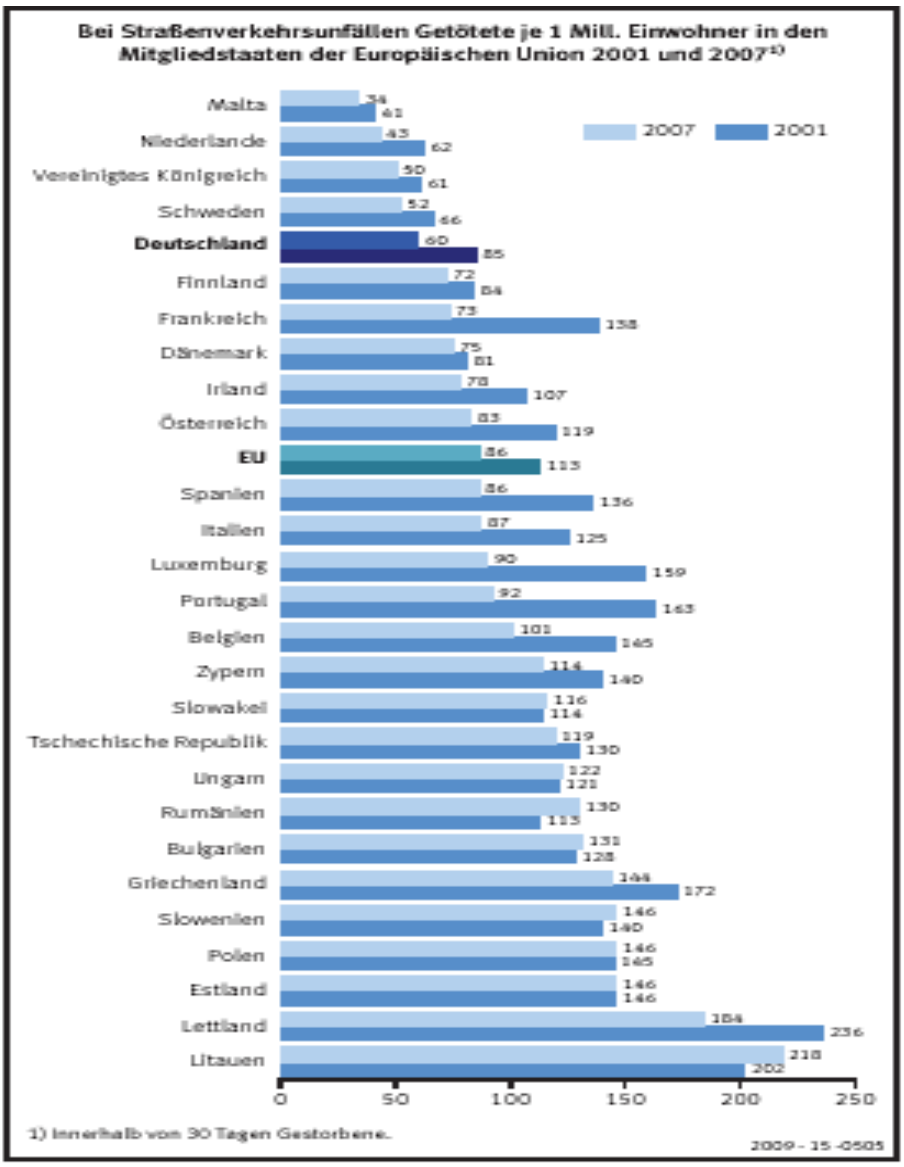
On the road network of 2.312.000 km (126.000 km motorways, 404.000 km national roads, 866. 000 km federal roads, and 911.000 km district roads), 3,45 million tons of goods were transported, 1,66% more than the year before. From the year 2005 until 2008, 17,4% more tkm goods were transported on German roads. Looking at the modal split, 54.613 million persons chose the individual motorized transport as a means, 9.132 buses, 2.345 rail and 166 the air transport. Roads remain therefore the most important means of transport.

In the year 2008, 1.597.142 new licences were issued, 2% more than the year before.

Class A, A1	Class B, BE, BF17, BEF17	Class C, C1, C1E, CE	Class D, D1; D1E, DE
200.203	1.133.329	159.115	14.294

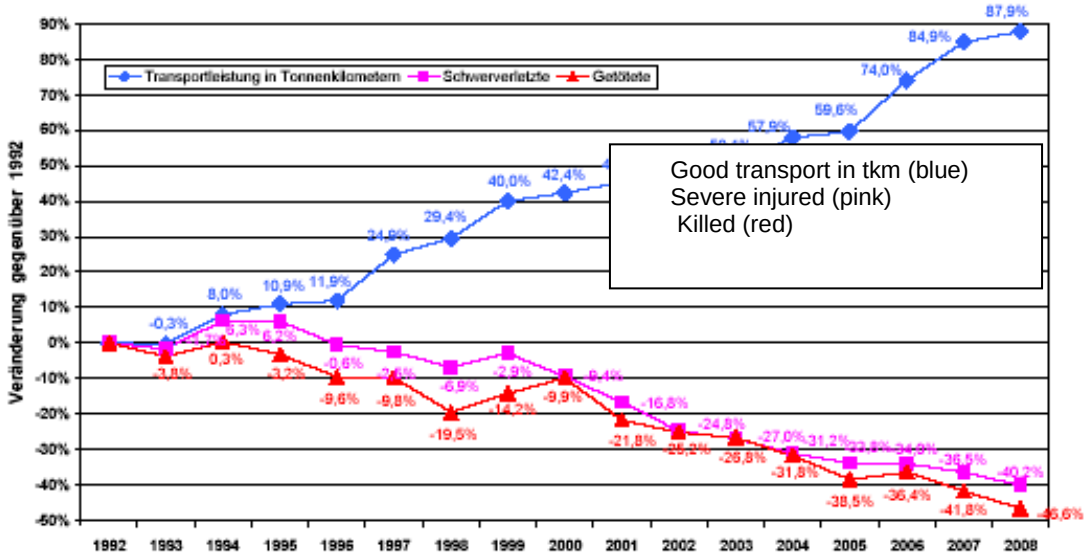
Road safety has improved steadily over the past decades in Germany. According to provisional results, 1.415 persons died in the year 2009 in Germany due to road traffic accidents, 7,3% less than the year before. Nevertheless, this improvement gives no place for complacency, since one person dies every two hours, and every minute one person is injured in a road accident. 2,29 million accidents were registered by police in 2008 (-1,8% as compared to 2007), while in 320.614 of those accidents persons were killed or injured (-4,5%). 4.447 persons died (-9,5%) and 413.524 persons were injured (-5,2%), among them 75.443 severely (-6,4%).

In the context of the European Union, Germany was the fifth “safest” country with 60 killed persons per one million inhabitants. Since 2001, the amount of killed persons decreased by 36%.



Killed per 1 Mio Inh. 2008, Destatis

Concerning the accident data of commercial drivers, the lowest amount of killed persons was registered since the German reunification. Since 1992, the amount of killed persons involved in an accident with commercial vehicles (1005 persons in 2008) decreased by 46,6% and the severely injured (7.977 persons) decreased by 40,2%. 183 HGV drivers died as a consequence of an accident and 11.315 were injured. The graph shows the evolution since 1992.



Looking at the accident causes, 91% of all accidents occurred due to human errors, whereas 8,9% occurred under the influence of bad weather and road conditions and also due to animals on the road. Speeding, violations of right of way and errors while overtaking were the main accident causes.

eRIC Experiencing CBT Programmes in Road Safety In the European Community

ANNEX II: Questionnaire guideline

eRIC Experiencing CBT Programmes in Road Safety In the European Community

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QUESTIONNAIRE DESIGN FOR THE REVISION OF EXISTING TOOLS IN THE FIELD OF FATIGUE AND PHYSICS OF DRIVING

Introduction:

We are proposing a design with the objective to set up an outline of the procedure of collecting information in relation with the current state of the learning tools used to train drivers on “fatigue” and “physics of driving”. This is a guidance outline, consequently it has to be understood in a flexible way.

We suggest three possible phases in order to obtain the information:

At the initial stage, that we will call **Stage 0**, a first contact will be established. This could be by writing a “letter of introduction” in which we explain the objective of our research and our wish of contact, by phone if possible, in order to gather information for our study. This stage would be the appropriate one to initiate contact with organizations that, for any kind of reason, are less approachable or that are not keen to be contacted by phone as a first resort.

Stage 1 would consist in a phone call with the following objectives: ask whether or not there is a person that could give us information on learning tools (trainings, seminars, CBTs and WBTs), set up what are the tools and how to proceed in Stage 2.

Stage 2 could consist in a questionnaire sent by regular mail or e-mail or in a phone interview. In this stage, we will discuss the specific characteristics of the learning tool in depth.

Before starting with Stage 0, here is a list of the organizations that should be contacted (the list is not exhaustive nor do all the organizations listed necessarily have to be contacted. The decision will be taken by each partner in his own country in order to collect as much detailed information as possible):

- Associations from the haulage industry/ road transport sector
- Insurances / work accident prevention organisations / institutions
- Driving school associations
- Road safety organisations
- Training centres for professional drivers
- Vehicle Inspection organisations
- Universities
- Police and Police Academies
- Emergency and rescue services
- Publishers of teaching/learning materials

Hereafter, you will find three charts summarizing the suggested procedure of the data collection in the three stages:

STAGE 0
(Contact established with a letter)

Suitable to make contact with organizations that are not keen on being contacted by phone as a first resort.
Objectives:

1- To introduce ourselves.
2- Express our wish to set up a second contact.

STAGE 1
(Phone call)

a) Information to be collected:

1. Contact organization/company.
2. Contact person data: name, position in the company or organization, phone number, e-mail, address.
3. Establish the type of learning tool: training, seminar, CBT or WBT.
4. Establish the way Stage 2 will be carried out.

b) Steps:

1. Short presentation: who we are, goals of the interview.
2. Establish contact with the instructor, the producer...
3. Introduction to the subjects: to detect whether or not they use learning tools in the field of fatigue and physics of driving.
4. Establish the way Stage 2 will be carried out:
   - Appointment for a second phone interview or
   - Send the questionnaire

STAGE 2
(Analysis of the learning tool)

A) Variables for the training/seminar

1. Type.
2. Title.
3. Company that **conducts** the training/seminar.
4. Authors.
5. Frequency.
6. Target group.
7. Main subject.
8. "Fatigue" intensity.
9. "Physics of driving" intensity.
10. Structure (theory, practice, application)
11. Length (hours and sessions).
12. Test.
13. Requirements.
14. Cost.

B) Variables for the CBT/ WBT

1. Type.
2. Title.
3. Authors.
4. Year of edition.
5. Frequency.
6. Company that **conducts** the CBT/WBT.
7. Target group.
8. Main subject.
9. Structure.
10. Test.
11. "Fatigue" intensity.
12. "Physics of driving" intensity.
13. Interactivity.
14. Autonomy
15. Requirement.
16. Customisation.
17. Intranet.
18. Shareware/ Freeware.
19. Cost.

C) Combined variables

1. Variables of the tool for the training/seminar.
2. Variables of the tool for the CBT/WBT.
3. Structure of the learning activity.
4. Cost.

Note: The information on these variables will be collected through a phone interview or mail..

Development of the information collection

The data collection will be carried out by following a guidance outline that will allow us to fill in each learning tool "forms" uniformly. These forms will contain the relevant information of each learning tool that we analyse. (See forms in the annex).

As we have previously mentioned, we suggest three stages ~~that will~~ to be carried out according to the situation.

STAGE 0 (Contact established by a letter)

This is the starting stage, and it will help us to make a first contact. It will consist in an "introduction letter" in which we inform about the subject of the research and our wish to have a contact, by phone if possible, to gather information for our study.

This stage has been thought to make contact with organizations or companies that, for any kind of reason, are less approachable or not keen to be contacted by phone as a first resort.

STAGE 1: (Phone call)

In this stage, the following steps will be carried out:

1. **Introduction**: (who we are, goal of the interview).

For example:
"Good morning. My name is _____ and I call you from the _____ (organisation, institution). I would like to have some information on the trainings, presence or distant seminars for a study we are carrying out in the framework of a European project."

2. **Making contact with the person in charge of the training or the seminar**:
Making contact with the appropriate person is the key to obtain quality information. Consequently, it is important to bear in mind that the contact person does not have to be a user of the learning tool, given that he might not have all the information we need. It will be more useful to contact an instructor, a learning material producer, or even the person in charge of giving information on the training, etc. --> Das ist eine Binsenweisheit!

For example:
"With whom should I talk to have information?"

3. **Collect information for Form 1** (see Form 1 in the annex)**:**
   1) **Short presentation:** Presenting ourselves and the organisation/institution we represent to the contact person.

2) **Interview number:** This part is on the right upper side of all the forms. We will proceed by appointing an ID number in the first form.

3) **Data of the surveyed person:**
   - Company or organization to which he belongs.
   - First name and last name.
   - Position
   - Phone number
   - E-mail
   - Address (in case the next contact will be ~~done~~ by regular mail).

4) **Learning tools:**
   - **Set up the relationship with the "Fatigue" and/or "physics of driving" topics:** It is important to clarify to the surveyed person that the information we need only refers to trainings, seminars, CBTs and WBTs that are linked to fatigue and physics of driving. Therefore, it is important to give a short definition of these two topics.

     For example:
     "Does the training or seminar have among its objectives to teach the student on questions regarding fatigue while driving?"
     "Is the student taught on questions regarding the vehicle behaviour like braking, acceleration, speed perception...?

   - **Type of learning tools:** training, seminar, CBT, WBT. We ensure that the surveyed person knows the terminology we are using. They might not be familiar with expressions like E-learning or WBT.

     For example:
     "Do you offer trainings, seminars or any other training activities to drivers?"
     "Are you using CD-Rom or WebPages to teach?"
     "Are you performing online/internet teaching?

     We also have to bear in mind that the different learning materials and tools might be <u>combined</u>. For example, CBTs or WBTs may also be used with trainings or seminars. This kind of data will be noted down.

     In the <u>quantity</u> section, we refer to the number of learning tools on which the surveyed person will be interviewed.

5) Set up the way to proceed in Stage 2:
At this stage, we will ask if we can fix a phone interview writing down the date and time or, if not, if we can send a questionnaire per e-mail or by regular mail.

For example:
"Could I call you later to be informed in detail about the training or seminar?"
"Would you mind filling in a questionnaire?"
"Would you prefer to receive it by email or by normal mail?"

6) Remarks:
This section has been thought to be filled in by all the questions that the form does not consider.

The objective is to gather enough information to complete Form 1 of Stage 1. Therefore, the order of the questions we will ask does not necessarily have to be the same as the one that appears here.

STAGE 2: (Analysis of the learning tool).

In the previous stage, we fixed the way to proceed in Stage 2. either by a questionnaire sent by mail (regular or e-mail), or in a phone interview. The objective of this stage is to gather information to analyse the learning tools.

At this stage, we will use the Stage 2 forms (see Stage 2 forms). As you will notice, we have three kinds of forms that fit to the learning tool about which we want to collect information.

The forms are the following ones:

A. **Form for the training / seminar**: the one used to analyse the trainings or the seminars.
B. **Form for CBTs / WBTs**: for the analysis of the CBTs and WBTs
C. **Form for the combination**: it will be used together with the previous ones for such cases when the traditional tools (trainings and seminars) are combined with technological ones (CBTs and WBTs).

Hereafter, we will explain the content of the forms and the variables they gather.

A) Form A for Training or Seminar:

- **Interview number**: This number will be the same we used in Stage 1 with the contact person. This will enable us to link the form used in Stage 1 to the form used in Stage 2.

- **Combined**: In this section we will write down whether or not the learning offer consists in trainings or seminars combined with CBTs and WBTs. It is important to point out this characteristic given that it can –provide us much information on the way these learning activities are carried out .

- **Data on the training or seminar.**

1. **Type**: Identify, if it is a training or a seminar.
   For example:
   "Is it a training or a seminar?"

2. **Title**: in case it has one
   For example:
   "What is the name of the training?"

3. **Company that conducts the training:**
   For example:
   "Which company offers the training or seminar?"

4. **Authors:**

5. **Frequency:**
   For example:
   "Since when is the training / seminar conducted ?"
   "How often?"

6. **Target group:**
   For example:
   "For which persons has the training been designed?"

   We suggest the following categories (more than one option can be chosen):

   - ☐ Bus driver (urban)
   - ☐ Coach driver (interurban)
   - ☐ Ambulance driver
   - ☐ Firemen
   - ☐ Police
   - ☐ Armed forces vehicles drivers
   - ☐ Lorry drivers (specify): goods, special transport, and dangerous goods _____
   - ☐ Taxi drivers
   - ☐ Driving school teachers
   - ☐ Passenger cars
   - ☐ Others (specify): _____

7. **Main subject of the training / seminar:** It does not have to be fatigue or physics of driving.
   For example:
   "What is the main subject of the training or seminar?"

8. **"Fatigue" intensity:** This variable may be measured by indicating the percentage of the hours devoted to fatigue in the whole training.
   For example:
   "What is the length of the training (in hours)?"
   "According to you, how many hours are devoted to fatigue?"

9. **"Physics of driving" intensity:** This variable may be measured the same way as the previous one.

10. **Structure:** It refers to the way in which the training or seminar is conducted :
    For example:
    "What are the parts that make up the training or seminar?
    "Is there a theoretical one and a practical one?"

11. **Length of the training or seminar:** Here, we will ask for the total hours and for the sessions in which the training is given.
    "How many sessions make up the training or seminar?

12. **Test on the knowledge acquired during the training / seminar:** If there is one, we will ask for the test system used and will write it down.
    "Are the knowledge acquired by the student evaluated?"
    "How?"

13. **Requirements:** This refers to classroom, circuit, own vehicle, etc.
    "Where does the training or seminar take place?"
    "Is the own vehicle needed?"

14. **Remarks:** This section has been thought to be filled in by all the questions that the form does not consider.

With these questions, we will collect sufficient information to complete Form A (see Form A in the annex)

B. Form for CBTs/ WBTs:

- **Interview number**: This number will be the same we used in Stage 1 with the contact person. This will enable us to link the form used in Stage 1 to the form used in Stage 2.

- **Combined**: In this section we will write down whether or not the learning offer consists in trainings or seminars combined with CBTs and WBTs. It is important to point out this characteristic given that it can provide us much information on the way these learning activities are carried out .

- **Data on the CBT/WBT**:

1. **Type:** Identify, if it is a CBT or a WBT.
   For example:
   "Do you use CD-Rom to teach?
   "Is the material posted online?"

2. **Title / URL address of the WBT:**
   For example:
   "What is the title of the CD-Rom?"
   "What is the address of the Internet page?"

3. **Authors:**
   For example:
   "Who are the authors of the CD-Rom/webpage/online material?

4. **Year of edition of the CBT.**

- **Variable obtained from the surveyed person:** Some variables will be obtained directly from the surveyed person, and some others will be extracted from our own analysis of the CBT or WBT. The following ones belong to the first category:

5. **Frequency:** We will ask for the times that the multimedia tool has been used, to obtain more data on the frequency or on the continuity.
   For example:
   "When has the CD-Rom of Internet page been used?"

6. **Company:**
   For example:
   "Which company is in charge of supplying the CD-ROM?"
   "Which company is in charge of designing the content of the Webpage?"

7. **Target group:**
   For example*:*
   "For which persons has the learning tool been designed?"

   We suggest the following categories (more than one option can be chosen):

   - ☐ Bus driver (urban)
   - ☐ Coach driver (interurban)
   - ☐ Ambulance driver
   - ☐ Firemen
   - ☐ Police
   - ☐ Armed forces vehicles drivers
   - ☐ Lorry drivers (specify): goods, special transport, and dangerous goods _____
   - ☐ Taxi drivers
   - ☐ Driving school teachers
   - ☐ Passenger cars

- ☐ Others (specify): _____

8. **Main subject of the CD-Rom/online material:** it does not have to be fatigue or physics of driving.
   "What is the main subject of the DC-Rom/online material?"

9. **Structure:** In this section we will take into consideration if the multimedia material is given to a group as opposed to an individual person, if it is self-taught learning or it is allowed, if -this has a theoretical and a practical part.

   For example:
   "Is it given individually or in a group?"
   "Is it given by an instructor or is it self-taught learning at home?"
   "Is there a theoretical part? And practical?"
   "In the CD-Rom or Webpage, are there practical activities/exercises for the student?"

10. **Test: surveyed person and viewing of the material**
    "Do you evaluate the progress of the student yourself?"
    "Does the CD-Rom/webpage have any kind of test or other system to evaluate the student's progress?"
    "Could you explain that system?

11. **"Fatigue" Intensity:** This variable may be measured by checking, on the one hand, the total volume that this topic represents in respect to the whole content, and on the other hand, the estimated time devoted to this topic. The information will be obtained by the surveyed person and from viewing the multimedia material ourselves.

    For example:
    "How much time do you think that an average student needs to view the whole CD-Rom?"
    "According to you, how much time does the CD-Rom devote to the Fatigue topic?
    "As far as the content is concerned, which percentage is devoted to the Fatigue topic?"

    This way, we will collect four types of data we are interested in:

    - Total time of viewing the whole material.
    - Time devoted to Fatigue.
    - Percentage of time devoted to Fatigue with regard to the total seminar duration??
    - Percentage of content taken up by Fatigue with regard to the whole content.

12. **"Physics of driving" intensity:** This variable may be measured the same way as the previous one.

13. **Interactivity:** This variable, as the previous one, will be obtained from the questions asked to the surveyed person and from viewing the multimedia material. We will value the level of interactivity of the learning material according to the following questions:

    For example:
    "Does the multimedia material have exercises, activities and active elements like games or simulators?"
    "What is the percentage of the total content that is devoted to these active exercises?"

14. **Autonomy:** The level of autonomy will be studied from the data obtained from the surveyed person and the viewing of the learning multimedia material.

    Here, the following questions will have to be answered:
    " Is there more than one itinerary?"
    "Once the itinerary has been chosen, does the computer select the route or does it let the user be free?
    "Is it a sequential learning, where the student is not free to choose the route on his own / by himself?"

15. **Requirements:**–The question refers to the technical requirements, but other ones can be included as well, if necessary .

    For example:
    "Which devices are needed to work with the CD-Rom?"

16. **Customisation:** This variable tries to measure the level of adequacy of the multimedia material to the user's needs and learning progress.

    Therefore, the following questions will have to be answered:
    "Does the CD-Rom have any system that recalls the user's history?"
    "Does it have any system that recalls the user's last session and allows him to resume where he left?"
    "Do the exercises have an immediate feedback?"

17. **Intranet:**
    For example:
    "Is the learning material available on the intranet?"

18. **Shareware o Freeware***:*

19. **Cost:**
    For example:

"What is the cost of the CD-Rom?"

20. **Remarks:** This section has been thought to be filled in by all the questions that the form does not consider.

With these questions, we will gather sufficient information to complete ~~.~~Form B on CBT/WBT (see form in the annex)

C) Combined form:

It will be used <u>together with the previous ones</u> when the traditional tools (trainings and seminars) are combined with other kinds of tools like multimedia (CBTs and WBTs)

- **Interview number**: This number will be the same ~~we~~ as used in Stage 1 with the contact person.

1. **Combination:** we will mark with an "X" the type of combination we are dealing with.
2. **Name of the Training or Seminar.**
3. **Title of the CBT or URL address of the WBT.**
4. **Cost of the learning activity.**
5. **Structure of the learning activity:** In this section, we will demonstrate the way the two learning tools are combined.
6. **Remarks**: This section has been thought to be filled in by all the questions that the form does not consider.

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ANNEX.

STAGE 1 (Contact)	**Interview number:**

DATA OF THE SURVEYED PERSON:

1. Name of the company or organisation:
2. First name and last name:
3. Position:
4. Phone number:
5. email:
6. Address:

LEARNING TOOLS:

7. Learning tools linked to:

   a. Fatigue: Yes ☐ No ☐
   b. Physics of driving: Yes ☐ No ☐

8. Type of learning tools:

☐ Training. Quantity: _____
☐ Seminar. Quantity: _____
☐ CBT Quantity: _____
☐ WBT Quantity: _____
☐ Combination (specify):
_____ Quantity: _____
_____ Quantity: _____
_____ Quantity: _____
_____ Quantity: _____

Total: _____

NEXT STAGE:

☐ Phone interview - Date - Time:	☐ Mail : ☐ E-mail ☐ Regular

REMARKS:

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STAGE 2 (Analysis of the learning tools)	A. Training / Seminar	Interview number: Combined: Yes ☐ No ☐

DATA ON THE TRAINING / SEMINAR:

1. Type: Training ☐ Seminar ☐
2. Title:
3. Company:
4. Authors:

VARIABLES:

5. Frequency:
   Starting Year: _____
   Quantity per year: _____
   Last training or seminar: _____
6. Target group:
7. Main subject:
8. "Fatigue" intensity:
   Training / seminar hours: _____
   Fatigue hours: _____
   Percentage of fatigue hours: _____ %
9. "Physics of driving" intensity:
   Training / seminar hours: _____
   Physics of driving hours: _____
   Percentage of physics of driving hours: _____ %
10. Structure:
    Theory: Yes ☐ No ☐
    Practice: yes ☐ No ☐
11. Length:
    Hours: _____
    Sessions: _____
12. Test: Yes ☐ No ☐
    ☐ Practical exam
    ☐ Theoretical exam
    ☐ Other (specify): _____
13. Requirements:
    ☐ Classroom.
    ☐ Circuit.
    ☐ Vehicle.
    ☐ Other (specify): _____
14. Cost: _____€
15. Remarks:

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STAGE 2 (Analysis of the learning tools)	B. CBT / WBT	Interview number: Combined: Yes □ No □

DATA ON THE CBT/ WBT:

1. Type: CBT □ WBT □
2. Title/ URL address:
3. Authors:
4. Year of edition:

VARIABLES (I):

5. Frequency:

6. Company:

7. Target group:

8. Main subject:

9. Structure : □ Individual □ Group
□ Instructor □ Self-teaching
□ Theory □ Practical exercises

10. Test:
□ The user is not evaluated.
□ Test by the multimedia system.
□ Test by the staff.
Test instrument:
□ Exam
□ Test from the system.
□ Other (specify): _____

11. "Fatigue" intensity:
Total time of viewing the whole material: _____
Time devoted to Fatigue: _____
Percentage of time devoted to Fatigue with regard to the total seminar / training duration : ___%
Percentage of content taken up by Fatigue with regard to the whole content: ___%

12. "Physics of driving" intensity:
Total time of viewing the whole material: _____
Time devoted to physics of driving: _____
Percentage of time devoted to physics of driving with regard to the total seminar / training duration : ___%
Percentage of content taken up by physics of driving with regard to the whole content: ___%

13. Interactivity:

Interactive material offered by the multimedia system:

- □ Games.
- □ Simulators.
- □ Exercises
- □ Others (specify):_____

Percentage of the content devoted to the interactive material: ___ % of the total.

14. Autonomy:

- □ More than one itinerary.
- □ Once the itinerary has been chosen, the system selects the route.
- □ The user is absolutely free to move in the multimedia system according to his needs or wishes.
- □ The learning is sequential which at any rate requires an established route.
- □ The learning material is divided into independent modules, the order is of no importance.

15. Requirements:

- □ Standard PC
- □ Additional device (specify): _____

16. Customisation:

- □ Keeps the user's history.
- □ Allows the user to resume where he left.
- □ Immediate and appropriate feedback.

17. Intranet version: Yes □ No □

18. Shareware: □
Freeware □

19. Cost of the multimedia material: _____ €.

20. Remarks:

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STAGE 2 (Analysis of the learning tools)	C. Combined	Interview number:

1. Combination:
   - ☐ Training + CBT
   - ☐ Training + WBT
   - ☐ Seminar + CBT
   - ☐ Seminar + WBT

DATA:

2. Name of the Training or Seminar:

3. Title of the CBT or URL address of the WBT:

VARIABLES:

4. Cost: ____ €.

5. Structure of the learning activity:

6. Remarks:

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