

ICT-DRV quality indicators on technology-support training

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The definition of indicators for a high-quality integration of technology-support into professional driver training has been the major aim of the ICT-DRV project. The set of indicators presented in this paper is therefore a result of the different steps implemented by the ICT-DRV consortium incl. research of the status quo of technology-support within professional driver training, investigation of the scientific landscape in this field, analysis of competence requirements on trainers and the implementation of pilot trainings applying and testing instructional design principles on the target group professional drivers.

The quality indicators outline an aspired target situation with regard to high-quality integration of technology-support into training measures for professional drivers. They provide suggestions for adequate shaping measures for different dimensions having influence on the quality of e-learning and simulator training. While some of the indicators can be found in very similar ways also in the context of other quality considerations on technology-supported training, others – such as the indicator on “Research, sharing and networking” - have been defined as a separate indicator because they represent a deficit having strong influence on quality aspects identified within the initial research.

The ICT-DRV quality indicators are directed to all groups of stakeholders involved into professional driver training. This includes vocational education and training (VET) providers, drivers themselves and their representatives, employers, social partners, e-learning and simulator/ software developers, researchers in this area, authorities and policy makers. They are meant as a tool in the development and in the (self-) evaluation of (existing) structures and approaches to realise technology-support within professional driver training.

Quality development requires the consideration of different perspectives

The question “What is high-quality within technology-supported training?” leads to very different answers dependent on the perspective of the one answering the question. This indicates already that the definition of quality indicators for technology-supported training within vocational education and training for professional drivers is a task requiring the consideration of different stakeholders’ perspectives. Technology-support within training always asks for the consideration of economical, technical and educational aspects. (Ehlers, 2007a/b) In the specific case this triangle has to be even extended by a fourth dimension being legal/ policy related requirements playing a role as soon as the technology support is embedded into regulated training as often the case within professional driver training.

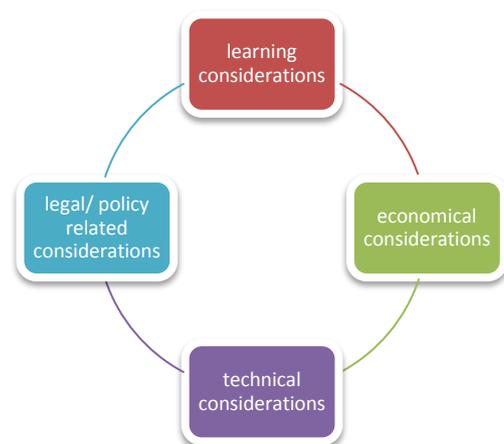


Image 1: Perspectives to be considered in the context of quality considerations and technology-supported training

The realisation of the ICT-DRV quality indicators, therefore, requires efforts from all stakeholders involved into the implementation of technology-supported professional driver training. This includes the drivers themselves, employers, education providers, social partners, e-learning and simulator/software developers, researchers in this area, authorities and policy makers. It needs to be a joined effort in order to realise high-quality within technology-supported training finally leading to improved training environments, better learning of drivers and therefore also safer roads across Europe.

Learning into the centre of attention

Despite of those considerations of looking into different perspectives, the ICT-DRV quality indicators clearly follow an education-oriented approach and put the learner and his/her learning into the centre of attention. In this way they follow one of the basic principles of nowadays education philosophies building the backbone of European education debate and policy.

Technology is considered as a mean only in order to facilitate learning in the concept of the ICT-DRV quality indicators. The application of technology within professional driver training cannot be considered as criteria for quality in itself but rather asks for separate quality considerations in order to ensure an education-oriented integration of technology into training. This is what the ICT-DRV quality indicators intend to facilitate.

Development and structure of the ICT-DRV quality indicators

Educational and technological concepts as well as economical and legal/policy-based considerations underlying the application of technology in order to facilitate learning within professional driver qualification have been the focal point of investigation throughout the ICT-DRV project. Based on its investigations (Bacher, 2014, Semichi, 2014, Ball, 2015) the ICT-DRV consortium drafted a first set of quality indicators. This first set of quality indicators has been presented to a number of stakeholders from the participating countries representing the different perspectives outlined above. Their input provided the basis for the now available final version of the ICT-DRV quality indicators.

The ICT-DRV indicators for high quality technology-support within professional driver qualification contain the following major dimensions:

- **Quality Indicator 1: A supporting and regulating legal and organisational framework**
Legal regulations as well as the organisation of work provide the necessary framework for the implementation and, if applicable, recognition of CBT and SBT. This applies especially to the legal framework provided in the context of EC directive 2003/59 and, if necessary, further legal regulations having influence on the implementation of such training alongside regular work as a professional driver. Besides legal aspects also the work organisation provides the learner with the necessary time and framework to participate in CBT/SBT and with the necessary support to transfer newly gained abilities into practical work.
- **Quality Indicator 2: Comprehensive information and counselling**
There are information and counselling measures put in place in order to:
 - inform end-users and decision-makers objectively about CBT and SBT,
 - enable learners, employers and competent-bodies to decide if a CBT/SBT offers meet their requirements,

- enable learners and employers to decide if a the training format CBT/SBT is suitable for an individual learner and/or for a certain learning need,
 - select and adapt courses to individual training needs of a learner and/or a company and
 - provide learners and contact persons in their company with the necessary guidance and facilitation before, during and after the course attendance/ implementation.
- **Quality Indicator 3: Specifically trained trainers and tutors**
Trainers/ tutors facilitating technology-based training are – besides regular training for trainers and in professional topics – trained in a number of additional abilities that are based on the characteristics of the technology they are working with in its learning context. This includes among others specialised training:
 - for simulator trainers in the characteristics of learning with the simulator/ simulation, individual and group coaching and debriefing, the design and selection of scenarios and the operation and application of the simulator, its various features and additional tools and
 - for e-learning tutors in the characteristics of distance learning, e-tutoring, learner motivation and instruction, e-communication and coaching as well as interviewing and feedback techniques.
 - for both e-learning tutors and simulator trainers – training in the ability to identify the special needs of some participants.
 - **Quality Indicator 4: Application of the learning outcomes approach**
The learning outcomes approach with its implications on the quality of training is applied on SBT and CBT. SBT and CBT courses are described in terms of learning outcomes (knowledge, skills and competences) associated with a course, learning environments are adequate to achieve those learning outcomes and, if applicable, assessment takes all kinds of learning outcomes into account and applies appropriate assessment measures.
The application of the learning outcomes approach allows the recognition of prior/ non- and informal learning. This includes the recognition of learning outcomes acquired within such CBT/SBT courses in the framework of other (formal) learning outcomes based vocational education and training courses/ certificates.
 - **Quality Indicator 5: Provision of an added value to the learning process**
The application of computer- and simulator-based training has a clear added value for the learning process and/or the achievement of the aspired learning outcomes. Technology-based courses are therefore exclusively offered for the achievement of learning outcomes that can clearly benefit from the application of such learning approaches and/or that can be equally be achieved through classical as well as through technology-based training approaches.
 - **Quality Indicator 6: Sound and thorough instructional and technological interface design**
The design of CBT and SBT is based on instructional design considerations taking into account the aspired learning outcomes and the needs and characteristics of the learner. This leads to the development of learning environments providing best conditions to stimulate and facilitate learning. Pedagogy drives the choice of instructional technology, not the other way around.

- **Quality Indicator 7: Continuous evaluation and further development of CBT/SBT courses**
CBT/SBT courses are continuous subject for review, change, improvement and further development in order to adapt to changing needs and requirements and to the state-of-the-art of educational technology. Learning is the leading factor within all evaluation and development efforts.
- **Quality Indicator 8: Research, sharing and networking on the realisation of SBT and CBT**
The implementation of SBT and CBT requires a continuous dialogue and close cooperation between education providers, developers of CBT and simulators as well as researchers, therefore, continuous sharing, networking and joined research activities are taking place in order to further work on the improvement of SBT and CBT.

Each of those indicators has been further defined in terms of key questions relating to the indicator, the aspired target situation within each topic and suggestions for adequate shaping measures in order to develop a high-quality integration of technology into training.

Although the consulted stakeholders considered all indicators as nearly equally relevant, indicator 1 on “A supporting and regulating legal and organisational framework” has been highlighted as being fundamental for the integration of technology-supported training into professional driver training. The provision of a sound legal basis in terms of Directive 2003/59/EC, other related European legislation and their national counterparts has been put into the focus in order to enable technology-support within professional drivers training in general and on high quality in particular.

Utilisation of the ICT-DRV quality indicators

Key questions, aspired target situations and proposed shaping measures identified for each of the quality indicators are meant to support the involved stakeholders in their individual quality development efforts and to be used as facilitators for critical reflection on quality issues in different contexts. They do not aspire to describe requirements for the integration of technology-support into professional driver training but provide a handy tool to work on the development/ improvement of quality on different levels and to evaluate the own situation with regard to quality.

The ICT-DRV quality indicators therefore intend to contribute to quality awareness of individuals and to the development of quality strategies of organisations and quality development in this educational field in general (Stracke & Hildebrandt, 2007). They are no checklist for requirements on technology-supported training but rather an additional step towards “quality literacy” (Ehlers, 2007) of all actors involved into professional driver qualification.

In this context they can serve among others:

- education providers in order to reflect on and (further) develop technology-supported trainings for professional drivers,
- public authorities in establishing quality standards for accreditation of e-learning and simulator training within professional driver training based on educational considerations,
- competent bodies in the evaluation of technology-supported courses for accreditation purposes,
- end-users of technology-supported courses to evaluate a technology-supported course and providers of such courses.

Application of quality indicators in the context of Directive 2003/59/EC

It is quite obvious that it is neither useful nor realistic to integrate such a comprehensive set of quality indicators into a European Directive such as Directive 2003/59/EC. This has also been a clear message received from the stakeholder consultations underlined by the availability of already existing national quality assurance/ development measures in the different national contexts. But this is also not the intention of the ICT-DRV quality indicators.

However, as outlined above, the basis for a high-quality integration of e-learning and simulator training needs to be provided by a sound legal basis for the application of such technology-supported training because as the status-quo of debate on this topic across Europe shows, a missing specification on the eligibility of (in this case) e-learning leads to very different interpretations and uncertainty across Europe which needs to be considered as a deficit regarding the development of quality in this field.

Besides a general specification of eligibility of such training methods, especially the application of the European Qualifications Frameworks (EQF) learning outcomes approach (indicator 4) appears to be a very effective measure in order to facilitate not only the pure integration but a quality integration of technology into training for professional drivers. This is the case because it shifts the regulated part of professional driver training away from input factors such as hours spend in training to the outcomes of learning in terms of knowledge, skills and competences. The way how those learning outcomes are archived is not specified and therefore leaves space for achieving those learning outcomes also but not exclusively through technology-supported training.

The learning outcomes approach nevertheless also contains a strong quality component as it has become evident within the ICT-DRV pilot courses (Ball, 2015). Focusing on a predefined set of learning outcomes including competences, skills and knowledge to be achieved with training requires a clear orientation of any kind of training on those learning outcomes. This inevitably requires the consideration of quality aspects such as outlined within the ICT-DRV quality indicators especially when it comes to the realisation of e-learning and simulator training. This is therefore also the place for applying the ICT-DRV quality indicators by different groups of stakeholders, on different levels and in different (national) contexts in order to support the development of quality in the application of e-learning and simulator training within professional drivers' initial and continuous/ periodic training.

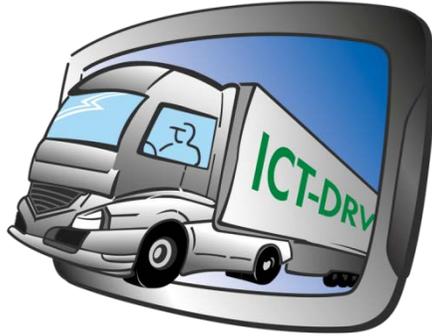
Such an application of the ICT-DRV quality indicators additionally fosters the use of and drawing back to existing national structures, instruments and tools as already recommended in the context of professional driver training under Directive 2003/59/EC by the ProfDRV project (Ball, 2013). Further investigation work within ICT-DRV already points out such existing structures and measures that can be connected to or embedded into national structures within the investigated Member States (ICT-DRV, 2015).

Annex:

- ICT-DRV quality indicators on the integration of technology-supported training into professional driver qualification

List of references:

- Bacher, T. (2014). *Report on the scientific framework of e-learning and driving simulator application in professional driver training (preliminary version)*. available at: <http://project-ictdrv.eu/index.php?id=85> (30/01/15)
- Ball, C. (2015). *Findings from the ICT-DRV pilot e-learning and simulator course evaluations*. unpublished
- Ball, C. (2013). *Professional driver training in Europe – status quo and future prospects*. In: Conference and Project Proceedings: Transport meets Education (ProfDRV), Stuttgart: etmservices (9-16)
- Ehlers, U.-D. (2007a). *Towards greater quality literacy in a eLearning Europe*. Available at: <http://openeducationeuropa.eu/de/article/Zu-einer-besseren-Qualit%C3%A4tskompetenz-in-einem-e-Learning-Europa?paper=57214> (31/01/2015)
- Ehlers, U.-D. (2007b). *The “E” – Empowering Learners: Myths and Reality in Learner-Oriented eLearning Quality*. Available at <http://openeducationeuropa.eu/de/article/Das-%E2%80%9Ee-%E2%80%9C-%E2%80%93-Lerner-Empowerment%3A-Mythen-und-Realit%C3%A4ten-der-lernerorientierten-e-Learning-Qualit%C3%A4t?paper=57214> (31/01/15)
- ICT-DRV (2015). *National scenarios for the application of the ICT-DRV quality indicators*. unpublished
- Semichi, M. (2014). *Report on e-learning and simulator-based learning in professional driver training in selected countries incl. a collection of emerging practices in the field*. available at: <http://project-ictdrv.eu/index.php?id=85> (30/01/15)
- Stracke, C.M. & Hildebrandt, B. (2007). *Quality Development and Quality Standards in e-learning: Adaption, Implementation, and Adaptation*. In: Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunication 2007, Chesapeake, VA: AACE, 4158-4165



Indicator 1:

A supporting and regulating legal and organisational framework

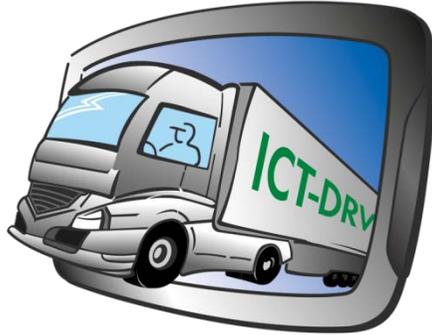
Summary of indicator:

Legal regulations as well as the organisation of work provide the necessary framework for the implementation and, if applicable, recognition of CBT and SBT. This applies especially to the legal framework provided in the context of EC directive 2003/59 and, if necessary, further legal regulations having influence on the implementation of such training alongside regular work as a professional driver. Besides legal aspects also the work organisation provides the learner with the necessary time and framework to participate in CBT/SBT and with the necessary support to transfer newly gained abilities into practical work.

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(1.1) Do legal frameworks on training for professional drivers support e-learning (CBT) and simulator training (SBT) ¹ solutions for training and testing?	Relevant legal frameworks (such as those provided in the context of Directive 2003/59/EC) state that, in part, training for professional drivers can be completed using approved e-learning and simulator training. Flexibility for interpretation of the legal framework is maintained, and National organisations responsible for implementing professional driver training adopt the concept of simulator training and e-learning as part of the core curricula in academic and vocational learning environments.	<ul style="list-style-type: none"> Amendment to current legal frameworks to incorporate the possibility to use distance/ e-learning/ -testing and, if applicable, simulator-based training/testing. National organisations open up the opportunity to integrate e-learning/-testing and simulator-based training/ testing into professional driver training. 	<ul style="list-style-type: none"> European and National bodies responsible for the legal framework of professional driver training. Stakeholders involved in professional driver training and development in the implementing countries. Social partners.
(1.2) Do legal frameworks on training for professional drivers contain education-based quality requirements on the realisation of e-learning (CBT) and simulator training (SBT) and corresponding testing options?	Relevant legal frameworks (such as those provided in the context of Directive 2003/59/EC) on the implementation of and testing within professional driver training include learning/education-based quality requirements on e-learning/-testing and simulator-based training/ testing.	<ul style="list-style-type: none"> Definition of education-based quality requirements on the implementation of e-learning/-testing and simulator-based training / testing within professional driver training. Integration of those quality indicators within the relevant legal frameworks. 	<ul style="list-style-type: none"> European and National policy makers. Industry observers / stakeholders. Testing authorities/ Awarding bodies. Social partners.
(1.3) Are e-learning and simulator training recognized in the framework of the national	EU member states recognise the value and benefits of CBT/SBT within professional driver training and	<ul style="list-style-type: none"> Revision of Directive 2003/59/EC in terms of a learning outcomes based approach independent 	<ul style="list-style-type: none"> National policy makers.

¹ The terms „e-learning “and „CBT“as well as „simulator (-based) training“and „SBT“are used analogically in this paper. The definitions of the terms “computer-based training” (CBT) and “simulator-based training” (SBT) have been applied as specified in the ICT-DRV project.

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
implementation approaches of Directive 2003/59/EC?	incorporate this type of training into their National implementation approaches of Directive 2003/59/EC, particularly in respect of periodic training. This is documented by the relevant body responsible for managing professional driver training on a National level.	<p>from time spend in training.</p> <ul style="list-style-type: none"> Amendment to Directive 2003/59/EC to incorporate (under section 4) the possibility to use distance/e-learning. National organisations incorporate SBT / CBT into their eligible set of training methodologies for initial and periodic training and also apply a shift from input- to outcome-orientation on their legal frameworks. 	<ul style="list-style-type: none"> National stakeholders. Transport unions. Social partners.
(1.4) Is it possible for drivers to attend distance learning during working hours, alongside their regular work and possibly close to the workplace?	<p>Legal regulations for work and rest periods incorporate provisions for the attendance of e-learning that allow for the participation of e-learning close to the workplace.</p> <p>Companies recognise the value of distance learning and make provision for drivers to attend e-learning during their normal working hours.</p>	<ul style="list-style-type: none"> The idea of distance/ work-based learning is incorporated into legal considerations on rest and work periods. Employers take a pro-active approach in providing their drivers with the necessary time or work environment to participate in e-learning off the job and on the job dependent on the requirements of the e-learning course. 	<ul style="list-style-type: none"> Policy makers and regulatory/controlling bodies. Social partners. Drivers.
(1.5) Do employers provide the necessary organisational framework for the implementation and follow up of such courses?	<p>Employers develop a working plan for their drivers, which makes it possible to incorporate distance learning into the working day and make the most of the time available when not carrying out deliveries or driving duties away from base. The employers provide the necessary technical and organisational framework for following distance learning courses with a work-based learning approach.</p> <p>CBT/SBT is written into company training plans and is developed throughout a drivers' working life as part of a lifelong learning strategy.</p> <p>Training contents are integrated into employers overall HRD and company strategy and the practical application of the training contents are pro-actively supported by the employers with appropriate means.</p>	<ul style="list-style-type: none"> Employers take a pro-active approach to CBT/SBT training and invest time in developing their drivers through different training environments made possible by the theory of CBT/SBT. Employers reviewing the possibilities / limitations of CBT/SBT and procure the most appropriate platform (software / hardware and / or simulators) to be used on a regular basis as part of a driver's in-company tuition, and to compliment mandatory training. Employers review that requirements of certain trainings/ courses on the organisation of work in order to allow participation in such training courses and transfer of learning gained in the framework of such courses and provide the necessary frame conditions. 	<ul style="list-style-type: none"> Employers. Social partners. Drivers.



Indicator 2:

Comprehensive information and counselling

Summary of indicator:

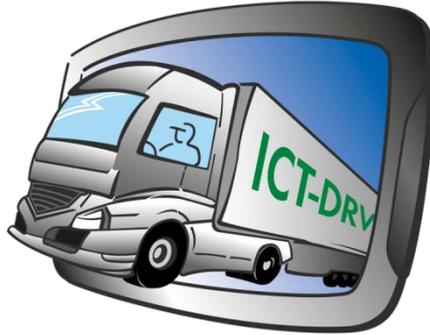
There are information and counselling measures put in place in order to:

- *inform end-users and decision-makers objectively about CBT and SBT,*
- *enable learners, employers and competent-bodies to decide if a CBT/SBT offers meet their requirements,*
- *enable learners and employers to decide if a the training format CBT/SBT is suitable for an individual learner and/or for a certain learning need,*
- *select and adapt courses to individual training needs of a learner and/or a company and*
- *Provide learners and contact persons in their company with the necessary guidance and facilitation before, during and after the course attendance/ implementation.*

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(2.1) Are there independent information sources about learning with CBT/SBT available?	There are independent information sources about the advantages and disadvantages as well as about the benefits possibly resulting from e-learning and simulator-based training provided by independent institutions such as public bodies. Those sources provide an objective view supported by research and practical results into the capacity of such training approach, their opportunities and limitations as well as their requirements on additional work-related factors for participation and transfer.	<ul style="list-style-type: none"> • There is an independent body in charge of delivering and promoting provider independent information on CBT and SBT. • Research results and practical experiences on the advantages and disadvantages, application contexts, quality criteria as well as on the possible benefits of SBT and CBT are reviewed by an independent body according to information needs of employers, authorities and other relevant stakeholders. • The independent information is continuously reviewed according to the relevant state-of-art in the field. • Such independent information is made available via a public website free of charge in order to ensure transparency, wide use and easy access by all stakeholders concerned. • Further measures can put in place such as: <ul style="list-style-type: none"> _a quality award/ seal of quality for e-learning and simulator training courses fulfilling a certain set of education based learning-driven quality 	<ul style="list-style-type: none"> • Policy makers • Authorities • Trade associations. • Stakeholder networks

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
		<p>criteria provided by the independent body.</p> <ul style="list-style-type: none"> _online information facilities and libraries fit for the needs of employers, authorities, VET providers and other possible information seekers. _online databases on e-learning and simulator training courses fulfilling a set of learning-based quality criteria and providing a pre-defined set of comparable information that facilitate decision-making processes. 	
(2.2) Are there criteria and procedures defined and applied that allow competent bodies to assess/evaluate SBT/CBT courses based on common education-based standards?	There are criteria and procedures for the assessment/evaluation of e-learning and simulator training courses available from an independent source and for application within course accreditation processes. Those criteria are based on learning considerations.	<ul style="list-style-type: none"> • Common criteria and procedures for the evaluation of simulator training and e-learning courses that focus on the facilitation of learning and are based on the characteristics and learning needs of professional drivers are defined in dialogue between authorities, social partners, VET providers and employers. • Criteria and procedures are periodically revised under consideration of new research result, practical experiences and innovations in the field. • Those criteria are continuously and consistently applied within accreditation processes for e-learning and simulator training by the relevant institutions. 	<ul style="list-style-type: none"> • Certifying/Accrediting authorities • Policy makers • Social partners representing interests of workers and employers. • Stakeholder networks
(2.3) Do providers of CBT/SBT have information and counselling structures in place in order to provide competent information and guidance on their e-learning and simulator training offers within decision-making processes as well as during and after course attendance?	<p>Training providers provide in addition to the actual course delivery/ facilitation support structures for their clients that provide overall guidance and support in the selection, preparation, implementation and follow-up of courses as well as consultation regarding the integration of individual courses into an overall HRD strategy.</p> <p>Furthermore VET providers provide competent / accrediting bodies/ authorities with the information relevant for evaluation and decision-making processes.</p>	<ul style="list-style-type: none"> • VET providers provide information and related counselling for employers and learners on the selection and adaption of e-learning and simulator training courses to the specific needs of learners and employers. • VET providers offer support and counselling measures for employers and learners on the provision of the necessary organisational framework for the implementation and follow-up of such courses. • VET providers hold measures in place in order to support employers and learners in the follow up of the courses. • The provision of such information and support structures by VET providers is part of the criteria to be applied in the accreditation of such courses. 	<ul style="list-style-type: none"> • VET providers • Certifying/Accrediting authorities • Employers

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(2.4) Are CBT and SBT courses adapted/adaptable to the individual needs of learners/companies?	CBT and SBT courses are highly adaptable and modifiable to individual needs of companies and learners. VET providers provide the necessary counselling structures in order to identify and adapt e-learning and simulator training to those individual needs as a regular part of the training provision.	<ul style="list-style-type: none"> • Adaptability of CBT and SBT to the individual needs of learners and employers and related counselling structures in order to identify and adapt e-learning and simulator training courses is a criteria for the accreditation of such courses. • VET providers have the necessary consultation and support structures in place in order to identify individual learner needs and prior abilities as well as the needs of companies. • Simulator- and computer-based learning settings are adaptable to the individual training needs and prior abilities of learners as well company needs. 	<ul style="list-style-type: none"> • VET providers • SBT/CBT developers • Certifying/Accrediting authorities • Employers



Indicator 3:

Specifically trained trainers, tutors and auditors

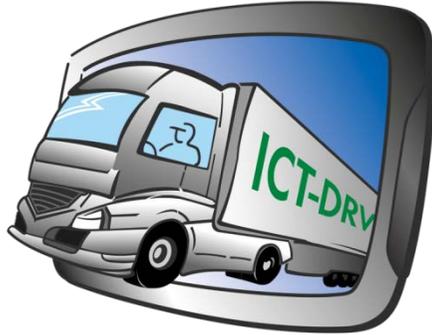
Summary of indicator:

Trainers/ tutors facilitating technology-based training are – besides regular training for trainers and in professional topics – trained in a number of additional abilities that are based on the characteristics of the technology they are working with in its learning context. This includes among others specialised training:

- *for simulator trainers in the characteristics of learning with the simulator/ simulation, individual and group coaching and debriefing, the design and selection of scenarios and the operation and application of the simulator, its various features and additional tools and*
- *for e-learning tutors in the characteristics of distance learning, e-tutoring, learner motivation and instruction, e-communication and coaching as well as interviewing and feedback techniques.*
- *for both e-learning tutors and simulator trainers – training in the ability to identify the special needs of some participants.*

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(3.1) Do trainers and tutors involved into CBT and SBT have specialised abilities related to training and teaching within technology-based training they are involved in?	All trainers implementing/ facilitating CBT and SBT have solid pedagogical and didactic/ teaching and training abilities adapted to the technology-based teaching environment and are able to support the learner and to develop exercises that reflect pedagogy.	<ul style="list-style-type: none"> • Sets of Learning Outcomes (knowledge, skills and competences) are defined so as to describe the basic requirements on trainers in terms of pedagogy and didactics for the implementation/ facilitation of e-learning and simulator training. • Training offers are provided by VET providers in order to allow SBT/CBT trainers/tutors to acquire the necessary Learning Outcomes in order to train within technology-supported learning environments. • CBT/SBT tutors/trainers are required – as a prerequisite- to proof the relevant abilities (based on the predefined learning outcomes) when entering into this field of training. • Specialised initial training and related proof of abilities of tutors and trainers is part of the criteria for the accreditation of e-learning and simulator training. 	<ul style="list-style-type: none"> • Certifying/Accrediting authorities • Trainers • VET providers • Employers (HRD)
(3.2) Do trainers and tutors receive specialised continuous training related to	All trainers/tutors participate regularly in compulsory continuous training programmes. The attended training includes specialised training on the facilitation	<ul style="list-style-type: none"> • There are continuous training offers provided for SBT/CBT trainers/tutors with regard to their professional skills related to the facilitation of e- 	<ul style="list-style-type: none"> • Trainers • VET providers

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
teaching and training within the technology-based courses they are involved in regularly?	of e-learning and simulator training.	<p>learning and simulator training.</p> <ul style="list-style-type: none"> • SBT/CBT trainers/tutors are required to regularly update and improve their abilities in this field through continuous training. • SBT/CBT training providers are required to ensure continuous training for their trainers/tutors. • Specialised continuous training of tutors and trainers is part of the criteria for the accreditation of e-learning and simulator training. 	<ul style="list-style-type: none"> • Certifying/Accrediting authorities
(3.3) Do training providers offering CBT/SBT offer access to specialised training for trainers on the topic of technology-based training?	Training providers offering CBT/SBT offer access to initial and continuous specialised training on facilitating CBT and SBT for their trainers.	<ul style="list-style-type: none"> • VET providers provide and ensure access to initial and continuous training offers for SBT/CBT trainers/tutors with regard to their didactical and pedagogical skills when resorting to technological training environments. • SBT/CBT training providers are required to ensure continuous didactical and pedagogical training for their trainers/tutors. • The provision of continuous specialised training for tutors and trainers is part of the criteria for the accreditation of e-learning and simulator training. 	<ul style="list-style-type: none"> • Trainers • VET providers • Certifying/Accrediting authorities
(3.4) Are trainers involved in the realisation of CBT and SBT trained in the special requirements of the learning outcomes approach?	Trainers and tutors involved in CBT and SBT have received specialised training enabling them to work using a learning outcomes based approach.	<ul style="list-style-type: none"> • There are courses offered for trainers and tutors on the implementation of learning outcomes based courses. • Trainers and tutors participate at least once and possibly regularly on courses improving their skills in the context of learning outcomes orientation. 	<ul style="list-style-type: none"> • Trainers • VET providers



Indicator 4:

Application of the learning outcomes approach

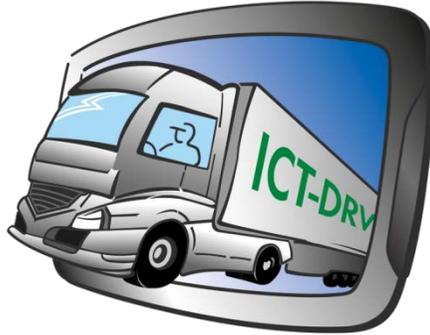
Summary of indicator:

The learning outcomes approach with its implications on the quality of training is applied on SBT and CBT. SBT and CBT courses are described in terms of learning outcomes (knowledge, skills and competences) associated with a course, learning environments are adequate to achieve those learning outcomes and, if applicable, assessment takes all kinds of learning outcomes into account and applies appropriate assessment measures.

The application of the learning outcomes approach allows the recognition of prior/ non- and informal learning. This includes the recognition of learning outcomes acquired within such CBT/SBT courses in the framework of other (formal) learning outcomes based vocational education and training courses/ certificates.

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(4.1) Are learning outcomes (in terms of knowledge/skills/competences) defined for CBT/SBT courses?	<p>Learning outcomes for a specific course are defined before developing and implementing CBT/SBT courses.</p> <p>The learning environment is designed based on instructional design considerations that are adequate to achieve the defined learning outcomes.</p> <p>The learning outcomes are closely related to practical work tasks of professional drivers and are defined in the EQF descriptors knowledge, skills and competences and/or equivalent national learning outcome descriptors.</p>	<ul style="list-style-type: none"> • Learning outcomes for a specific course are previously defined in terms of the EQF descriptors (knowledge, skills and competences). • Instructional design considerations are made in order to develop a learning environment in order to reach the pre-defined learning outcomes. • The learning outcomes are related to practical work tasks of professional drivers and these facilitate the transfer of knowledge, skills and competences into work practice. • The definition of special sets of learning outcomes for a specific course is part of the criteria for the accreditation of e-learning and simulator training. 	<ul style="list-style-type: none"> • VET providers • CBT/SBT developers • Trainers/Tutors • Certifying/ Accrediting authorities
(4.2) Do training and assessment methods take the pre-defined learning outcomes adequately into consideration?	<p>Instructional design and assessment methods are based on pre-defined learning outcomes and focus on the reaching and the demonstration of all abilities incl. knowledge, skills and competences.</p> <p>Instructional design and assessment methods are appropriate for reaching and assessing different kinds of learning outcomes of the CBT/SBT course (e.g. for</p>	<ul style="list-style-type: none"> • Instructional design is clearly related to the pre-defined learning outcomes • The instructional design allows/ is appropriate for the achievement of the pre-defined knowledge, skills and competences. • Assessment methods are clearly related to the pre-defined learning outcomes. • There are different and adequate assessment 	<ul style="list-style-type: none"> • VET providers • SBT/CBT developers • Trainers • Competent bodies in charge of assessment • Certifying/ Accrediting authorities

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
	<p>assessing professional competence real-world tasks or case studies are used whereas for assessing knowledge examinations or self-assessment is used).</p>	<p>methods used for assessing either knowledge, skills or competence.</p> <ul style="list-style-type: none"> • Practical abilities are trained and tested with praxis-related approaches. • The adequateness of training and assessment methods for the pre-defined learning outcomes is part of the criteria for the accreditation of e-learning and simulator training. 	
<p>(4.4) Does the course take non- and informally aspired learning outcomes into account?</p>	<p>Non- and informally acquired knowledge, skills and competences of professional drivers are taken into consideration in CBT/SBT courses in appropriate ways in order to minimise the time spend in training on learning outcomes already achieved elsewhere.</p> <p>Therefore, courses are designed in such a way that they can be adapted to the prior abilities of professional drivers. The way how prior learning has been achieved is not of relevance in this context.</p>	<ul style="list-style-type: none"> • SBT/CBT courses have adequate measures in place in order to adapt course participation to prior learning of the participants. Among others self-assessments, different kinds of testing and adaptive training environments can be adequate measures in order to identify prior learning. • Adaptability of courses can be realised by measures such as the possibility to skip elements of the course or to choose between different levels or topics. This can be realised automatically by the overall IT-system and/or manually by course tutors. • The adaptability of training environments to learners' prior abilities is part of the criteria for the accreditation of 'e-learning' and simulator training. 	<ul style="list-style-type: none"> • VET providers • CBT/SBT developers • Trainers • Bodies in charge of assessing learning outcomes • Certifying/ Accrediting authorities
<p>(4.5) Are other related (formal) learning outcomes based VET qualifications/ certificates taken into consideration when defining the learning outcomes for the particular course?</p>	<p>Learning outcomes are related to the learning outcomes of other VET qualifications/ certificates for professional drivers. When CBT/SBT courses are developed, already existing qualifications/certificates are reviewed to build on them (e.g. apprenticeship training for professional drivers, driver CPC or dangerous goods training).</p> <p>This facilitates the recognition of learning outcomes aspired within SBT/CBT in the framework of other (broader) qualifications/ courses and guarantees that the learning outcomes of CBT/SBT do not exist in isolation from other (formal) VET courses/certificates.</p>	<ul style="list-style-type: none"> • Before developing CBT/SBT courses for professional drivers learning outcomes of existing VET offers/certificates are reviewed. • Learning outcomes of a particular CBT/SBT course are aligned to these learning outcomes. 	<ul style="list-style-type: none"> • VET providers • CBT/SBT developers • Bodies in charge of assessing learning outcomes • Bodies in charge of the recognition of non-/informal / prior learning



Indicator 5:

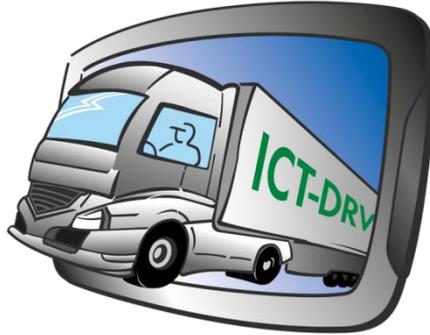
Provision of an added value to the learning process

Summary of indicator:

The application of computer- and simulator-based training has a clear added value for the learning process and/or the achievement of the aspired learning outcomes. Technology-based courses are therefore exclusively offered for the achievement of learning outcomes that can clearly benefit from the application of such learning approaches and/or that can be equally be achieved through classical as well as through technology-based training approaches.

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(5.1) Are educational considerations the major criterion within decision-making about application and design of CBT and SBT?	<p>Education-based considerations and the facilitation of learning are the leading factors within the design and implementation of e-learning and simulator training courses. Such considerations decide about questions on the technical as well as on the organisational aspects of the course.</p> <p>If learning related requirements cannot be fulfilled in an economical manner due for instance high technical development costs etc., aspired learning outcomes are adjusted accordingly and/or alternative learning/ training solutions are chosen in order to reach the aspired learning outcomes with a better cost-benefit ratio.</p>	<ul style="list-style-type: none"> • Not the aim to use technology within training but the need to reach certain learning outcomes and/or the opportunity to add value to the learning process by means of technology guides decision-making processes about the application of technological means within training. • Instructional designers or other professionals with a similar expertise in learning theory and the design of (technology-based) learning environment are integral part of teams developing and evaluating simulator training and e-learning for professional drivers. • Research results and learning theory are taken into consideration and applied in the context of CBT and SBT development. • The learning outcomes approach is consequently applied on e-learning and simulator training courses and the ability of the learning environment to reach the aspired learning outcomes is subject of continuous evaluation. • E-learning and simulator training are subject to continuous evaluation within development, implementation and follow up. • Relevant legal regulations support the integration of technology-supported training for the sake of learning. 	<ul style="list-style-type: none"> • VET providers • SBT and CBT developers • Certifying/ Accrediting authorities

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(5.2) Is there research about the effectiveness of CBT and SBT on different training topics/ sets of learning outcomes within professional driving undertaken and taken into consideration?	<p>There are continuously research activities implemented on instructional design, effectiveness and the conditions for effectiveness of CBT and SBT application within professional driver training.</p> <p>The research among others includes pilot studies on instructional design considerations, effects, effectiveness of and requirements on e-learning, simulator training and combined/ blended training approaches on certain sets of learning outcomes within professional driving in comparison to regular non-technology-based training.</p> <p>The results of this research serve and are systematically taken into consideration in the course of CBT and SBT development.</p>	<ul style="list-style-type: none"> • Research activities on effects, effectiveness of and requirements on e-learning, simulator training and combined/ blended training approaches on certain sets of learning outcomes within professional driving are continuously implemented. • Research results are widely available in order to be used by a wide group of stakeholders. • There are funds available in order to financially support such research activities from public and private sources. • Stakeholders demonstrate in the field cooperation in this matter in order to make best use of resources and use the results jointly. • Research results are taken into consideration and applied in the context of CBT and SBT development. • Relevant legal regulations support the integration of technology-supported training for the sake of learning. 	<ul style="list-style-type: none"> • VET providers • SBT and CBT developers • Employers • Social partners representing interests of workers and employers. • Trade unions • Policy makers • Authorities • Researchers • Stakeholder networks on VET for professional drivers
(5.3) Is there research on the instructional design of CBT and SBT in the context of professional driving undertaken and applied within course design?	<p>Blended/ combined learning approaches are given special attention in the development of e-learning and simulator training for professional drivers in order to make best use of different training approaches and combine different training approaches (e-learning, simulation, class-room learning, work-based learning, etc.) in order to best meet the characteristics and needs of professional drivers as a group of learners.</p>	<ul style="list-style-type: none"> • E-learning and simulator training are considered as means to achieve certain learning outcomes only and not as ends in themselves. • Instructional designers or other professionals with a similar expertise in learning theory and the design of (technology-based) learning environment are integral part of teams developing and evaluating new training scenarios. • Different kinds of training approaches and possible combinations are considered when developing a new training scenario in order to find the best combination of approaches for the aspired learning outcomes and the target group. • Relevant legal regulations support the integration of technology-supported training for the sake of learning. 	<ul style="list-style-type: none"> • VET providers • Trainers/ Tutors • CBT/ SBT developers
(5.4) Are blended learning approaches taken into account in order to make best use of different training approaches' benefits?			



Indicator 6:

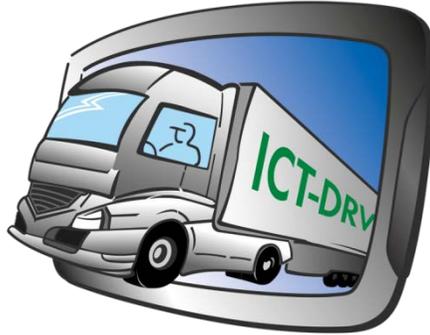
Sound and thorough instructional and technological interface design

Summary of indicator:

The design of CBT and SBT is based on instructional design considerations taking into account the aspired learning outcomes and the needs and characteristics of the learner. This leads to the development of learning environments providing best conditions to stimulate and facilitate learning. Pedagogy drives the choice of instructional technology, not the other way around.

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(6.1) Are CBT and SBT courses built on state-of-the-art learning and instructional theory and/or tested and proven instructional design models?	Although CBT and SBT systems are built on experience rather than on instructional design theory and models, they can be very effective in facilitating the learning processes. It is regular practice to consult and apply instructional design theory and models as a starting point for the development of e-learning and simulator training.	<ul style="list-style-type: none"> Further education relating to educational technology and instructional design is offered for VET professionals dealing with the development of CBT and SBT. Instructional designers or other professionals with a similar expertise in learning theory and the design of (technology-based) learning environment are integral parts of teams developing and evaluating new training scenarios. Information on instructional design and instructional theory is easily accessible for VET professionals e.g. through a common online platform on such topics. 	<ul style="list-style-type: none"> VET providers and Higher Education concerned with training for VET and other education professionals. VET providers CBT/ SBT developers Policy makers
(6.2) Are the chosen instructional design models and training techniques adequate for the course' learning outcomes and for application within the chosen kind of technology-based training?	<p>Instructional Design models and training techniques are selected based on the previously defined aspired learning outcomes and take the characteristics of the different kinds of learning outcomes (knowledge, skills and competence) into consideration.</p> <p>However, adequacy of training techniques cannot be judged in general and training not applying empirically sound principles are not a priori bad, but the quality will vary and the quality of the outcome is difficult to estimate.</p>	<ul style="list-style-type: none"> Further education relating to educational technology and instructional design is offered for VET professionals dealing with the development of CBT and SBT. Instructional designers or other professionals with a similar expertise in learning theory and the design of (technology-based) learning environment are integral part of teams developing and evaluating new training scenarios. Courses are based on a predefined set of learning outcomes. 	<ul style="list-style-type: none"> VET providers and Higher Education concerned with training for VET and other education professionals VET providers CBT/ SBT developers Policy makers Researchers Stakeholder networks on VET for professional drivers Certifying/ Accrediting

		<ul style="list-style-type: none"> • Continuous formative evaluation is conducted already at development stage of e-learning and simulator training. • Studies/assessment on the quality of technology-based training are continuously implemented in order to provide a sound empirical basis for the instructional design of technology-based training courses. 	authorities
(6.3) Does the instructional design of CBT and SBT courses take the specific needs and characteristics of professional drivers into account?	<p>The needs and characteristics of professional drivers are strongly taken into consideration in the development and realisation of e-learning and simulator training.</p> <p>This includes aspects such as a strong work/ practical orientation of learning, the adaptability of learning environments to differing work realities and levels of prior learning / experience, the necessity of guidance and tutoring within the learning process especially in distance learning approaches, a social component of learning and a clear interrelation between theory and practical elements.</p>	<ul style="list-style-type: none"> • Research into the learning needs and characteristics of professional drivers in the context of e-learning and simulator training is continuously conducted in order to provide VET providers and CBT/SBT developers with further information on this matter. • Further research on this matter is accessible for and taken into consideration within the design of e-learning and simulator training. • The identified learning needs and characteristics of professional drivers are clearly reflected in technology-supported learning environments in general, in terms of its adaptability and interactivity. 	<ul style="list-style-type: none"> • VET providers • CBT/ SBT developers • Researchers • Stakeholder networks on VET for professional drivers • Certifying/ Accrediting authorities
(6.4) Are CBT/SBT courses adaptable to the needs of different learners before and during course attendance?	E-learning and simulator-training are adaptable and adapted according to the needs of different learning groups. This includes adaptability with regard to learning preferences/ characteristics as well as learning content.		
(6.5) Do CBT/SBT courses adequately take into account needs for interactivity and interaction between learners, trainer/tutor and technology?	<p>E-learning and simulator training designs strongly take into considerations the target groups needs with regard to interactivity and interaction between learners, trainer/tutor and technology.</p> <p>This is for instance reflected in the integration of tutoring and communication structures and target group appropriate technological interface design.</p>		



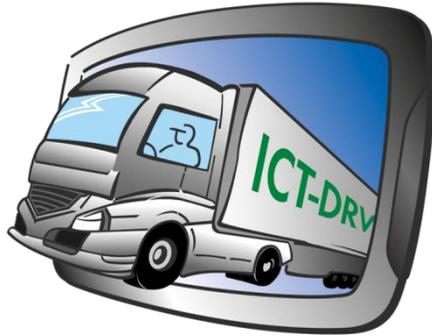
Indicator 7:

Continuous evaluation and further development of CBT/SBT courses

Summary of indicator:

CBT/SBT courses are continuous subject for review, change, improvement and further development in order to adapt to changing needs and requirements and to the state-of-the-art of educational technology. Learning is the leading factor within all evaluation and development efforts.

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(7.1) Are SBT/CBT courses subject to regular evaluation with regard to learning outcome parameters?	<p>CBT/SBT courses are continuous subject of formative and summative evaluation during development, implementation and follow up of courses to ensure they are meeting the pre-defined learning outcome parameters.</p> <p>Appropriate measures defined in an evaluation plan are put in place by VET providers and CBT/SBT developers.</p>	<ul style="list-style-type: none"> • Evaluation relating to learning outcome based parameters is integral part of e-learning and simulator training. Related evaluation plans are developed and implemented for every CBT/SBT offer. • There are mechanisms in place for learners to provide feedback to trainers and tutors. • There is a formal mechanism for trainers/tutors to provide feedback to course designers. 	<ul style="list-style-type: none"> • VET providers • CBT/ SBT developers • Certifying/ Accrediting authorities
(7.2) Are CBT/SBT courses regularly reviewed and further developed?	<p>Based on results from evaluations, CBT/SBT courses are adapted and incorporate feedback regularly to ensure they are meeting the learning outcomes as well as the needs and characteristics of their target group.</p>	<ul style="list-style-type: none"> • The continuous course evaluation with regard to learning outcome parameters is part of the criteria for the accreditation of e-learning and simulator training. 	



Indicator 8:

Research, sharing and networking on the realisation of SBT and CBT

Summary of indicator:

The implementation of SBT and CBT requires a continuous dialogue and close cooperation between education providers, developers of CBT and simulators as well as researchers, therefore, continuous sharing, networking and joined research activities are taking place in order to further work on the improvement of SBT and CBT.

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(8.1) Are there structures in place in order to facilitate dialogue between VET providers, developers and researchers at national and European level and on an on-going basis?	There are structures for dialogue, research and continuous communication between different stakeholders concerned with e-learning and simulator training for professional drivers in place at European and where appropriate national level. Those structures are open to all stakeholders concerned and provide the necessary facilities and resources in order to enable continuous and effective cooperation and communication.	<ul style="list-style-type: none"> • There are facilities such as an internet platform and/or conference available for stakeholders to meet and exchange with each other on an ongoing basis. • A network/ networks of stakeholders is set up in order to support dialogue and exchange. • Funds are available for the realisation of such networking activities. 	<ul style="list-style-type: none"> • VET providers • CBT/ SBT developers • Policy makers • Researchers • Stakeholder networks on VET for professional drivers • Certifying/ Accrediting authorities • Employers • Social partners.
(8.2) Are there regular research and development projects implemented on the application of CBT and SBT within professional driver qualification covering all required areas?	Multi-disciplinary research and development projects relating to CBT and SBT for professional drivers are implemented with a special focus on the facilitation of learning within such technology-supported learning environments. Those projects are implemented in multi-disciplinary partnerships and with a strong practical relevance.	<ul style="list-style-type: none"> • VET providers, CBT/SBT developers and researchers closely cooperate within research and development projects. • Research in this field has a strong practical approach in order to support the practical development of e-learning and simulator training. • Funds are available in order to realise such intra- and trans-disciplinary research and development activities especially those with very strong innovative elements in order to allow the players involved to make steps into uncharted terrain. 	<ul style="list-style-type: none"> • VET providers • CBT/ SBT developers • Policy makers/ authorities • Researchers • Stakeholder networks on VET for professional drivers

Key question	Aspired target situation	Adequate shaping measures	Stakeholders concerned
(8.3) Are existing and new research results relevant for CBT and SBT for professional drivers easily accessible for those concerned with the development, implementation, certification and accreditation of CBT and SBT?	Existing and new research results are easily accessible outside of the scientific community relating to this matter and presented in a way that serves the needs of those professionals practically designing and implementing CBT and SBT as well as certifying and accrediting such courses.	<ul style="list-style-type: none"> • There is a virtual library established with existing and new research results that applies an approach and a language oriented on the needs of VET professionals and CBT/SBT developers. • There is continuous dialogue facilitated between researches and VET professionals/ CBT/SBT developers in this field in order to stimulate access and exchange of research results and their application in practice. 	<ul style="list-style-type: none"> • VET providers • CBT/ SBT developers • Policy makers/ authorities • Researchers • Stakeholder networks on VET for professional drivers