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Future Learning

A survey report on the future of professional drivers learning and training

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www.project-futuredrv.eu

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Summary

The Future Learning report at hand summarises the results of two of the major initial research activities implemented in the FutureDRV project in order to receive an initial overview about perspectives and trends within future professional driver training. Both survey address professional driver education and training at micro, meso and macro level.

The chapters 1-5 of this report provide a comprehensive overview about the results of a quantitative online survey conducted with primarily employers in the field of freight transport on their perception on the future of professional driver training. The survey elements primarily address the relevance of different thematic fields for future training to be provided to professional drivers, looks into training methodologies and approaches perceived by the respondents for the upcoming 5-15 years until 2032, survey the organisational framework of professional driver training in transport companies and looks into general trends towards professional driver training amongst others with regard to legal requirements and the influences of digitisation.

The final chapter of this report gives a summary of interview results conducted with transport and education experts across Europe on among others education and training for professional drivers. Those interviews have been documented and coded in order to draw conclusions. Chapter 5 gives an insight view into the coding results related to education and training.

The overall report provides a documentation of results only. Further analysis and interpretation of the results has taken place in the context of the four major FutureDRV intellectual outputs: the FutureDRV profile, the FutureDRV learning solutions, the FutureDRV recommendations and the FutureDRV timeline.

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Annex:

Interview guideline initial research

(1) Structure and set-up of survey questionnaire

The FutureDRV consortium conducted between January and May 2018 an online survey on stakeholders' perspective on the future of professional drivers learning. This survey has been structured into the following elements:

- A General data about the respondents
- B Organisation of training for professional drivers
- C Training for professional drivers
- D Overall framework of training
- E Employers perspective on professional driver training

The questionnaire has been provided in English and German and has been setup as a google questionnaire. It was (and is) available through the website of the FutureDRV project on <https://project-futuredrv.eu/index.php?id=26> labelled as "FutureDRV: Future of professional driver training" questionnaire.

Part A of the questionnaire collected general data about the respondents by asking the following questions:

- **Please indicate, if you are answering this survey on behalf of an**
_employer
_workers council
_education provider offering vocational training for professional drivers (more than driving license training)
_Other
- **If you answer on behalf of an employer or a workers council please indicate, which of the following characteristics applies to your company:**
_my company offers own vocational training for employed professional drivers
_my company offers vocational training for employed professional drivers through an education provider
_my company does not offer vocational training for employed professional drivers
- **What country are you based in?**
(all project countries and other)
- **What is your role in the organisation/ company?**
_education or HRD manager responsible for driver training
_manager/ owner
_trainer/ tutor for professional drivers
_other
- **How many employees has the organisation you are replying for?**
_up to 9 employees
_10 to 49 employees
_50 to 499 employees
_500 and more employees

Part B of the online questionnaire asked primarily for training topics and their relevance in future. The ProfDRV¹ competence areas have been used as reference in order to survey perceived changes in the current qualification requirements. This included among others competence areas like “Loading and unloading”, “Performing pre-departure tasks”, “Communication with customers” etc.. Furthermore, additional topics have been surveyed that have been derived from literature as potentially relevant for professional driver training in the upcoming years and in the course of further digitisation.

The following questions have been given:

- **What provisions do you take in your organisation in order to react to changes that will come up in future?** (one-choice)
 - _None, we see no need for change.
 - _None, we don't know what will be appropriate measures.
 - _Revision of initial training offers for newcomers/ trainees/ apprentices within professional driving with regard to new training approaches
 - _Revision of continuous training offers for professional drivers with regard to new training approaches
 - _Revision of initial training offers for newcomers/ trainees/ apprentices within professional driving with regard to competences to be trained
 - _Revision of continuous training offers for professional drivers with regard to competences to be trained

- **In what competence areas of professional drivers do you see the need for change due to changes in the jobs requirements within the next 10 years from now:**
(answering options: No change needed, Less training needed, More training needed, No more training needed)
 - _driving and manoeuvring the vehicle
 - _performing pre-departure tasks
 - _loading and unloading (incl. prior and subsequent tasks)
 - _planning driving times and routes
 - _maintenance of vehicle and vehicle combinations
 - _work documentation and paper work
 - _cooperation with customers
 - _cooperation with supervisors, colleagues, enforcement bodies and general public
 - _occupational health and safety and healthy lifestyle
 - _continuous vocational education and training

- **Where do you see the need to develop new training for professional drivers in the next 10 years in order to stay up-to-date for the jobs requirements:** (multiple-choice answers)
 - _Digital competences such as e-communication, use of information technology, etc.
 - _Social competences such as interaction with clients
 - _Foreign languages
 - _IT-security
 - _Dispatching/ Logistics processes/ Administration and documentation
 - _Interfaces to other working areas such as warehouse logistics or other transport modes
 - _Healthy lifestyle and occupational health and safety
 - _Transport safety
 - _Ecological/Green transport
 - _Other

¹ See www.project-profdrv.eu.

- **What would you consider as the most innovative and/or future oriented training for professional drivers with regard to its content/ thematic focus that you are currently aware of (please provide a reference for follow up, if possible, and reason your choice):**
(Open answer format)
- **What will, from your point of view, be the most important contents for professional driver training in:** (open answer format)
 - _5 years (2022)
 - _10 years (2025)
 - _15 years (2032)

Part C of the questionnaire asked stakeholders about different learning/training formats and their future relevance within professional driver training according to the understanding and perception of the respondents. Special attention has been given to avoiding of education specific terminology in order to make sure the respondents have a good understanding of the approach in question. For this purpose training approaches have in some cases paraphrased such as in the case of “flipped classroom”.

- **Please rate the following training approaches according to their importance for professional driver training within the upcoming 10 years:**
(Answering options: Very important, Important, Minor important, Not important)
 - _Blended learning combining different learning approaches such as learning in the classroom, virtual learning, work-based learning, etc.
 - _Virtual classrooms (decentralised but at a fixed point of time).
 - _Learning supported by assistive learning systems that assess the learning progress, guide the learner and make suggestions for further learning.
 - _Learning based on learning resources freely available online such as videos or information material.
 - _Mobile learning supported by apps specifically designed for learning purposes.
 - _Web-based structured training courses/ Online training courses
 - _Simulations (driving and other tasks) as a regular part of other trainings.
 - _Serious games as a regular part of trainings.
 - _Social/peer learning with and from colleagues in virtual peer networks and communities.
 - _Learning with augmented reality such as through smartphones and data glasses.
 - _Learning in virtual realities such as with virtual reality glasses.
 - _Highly praxis oriented face-to-face training while theoretical training takes place virtually and with electronic learning resources
 - _Media-supported training provided in short, modular and media-supported learning bites.
 - _Training offers integrated into the trucks telematics systems.
 - _Training systems integrated with the trucks telematics systems in order to adapt training according to collected data.
 - _Online coaching through virtual facilities.
 - _Work-based learning integrated into the process of work.
 - _Open or in-house face-to-face training courses
- **Please rate the following statements on the future of professional driver training in about 10 years from now according to your agree- or disagreement:**
(Answering options: Agree, Agree partially, Disagree partially, Disagree, I don' know)
 - _Face-to-face classroom-based training will remain an integral part of professional driver training also in future
 - _Learning will need to be oriented on individual learning pace and needs in order to meet the

needs of professional drivers.

_Continuous (informal) learning in small bits and pieces will be integral part of professional drivers' future daily routine.

_Continuous (informal) learning of professional drivers alongside work will need additional facilitation through learning technology and/or tutors in future.

_Serious games will be a central instrument in future training for professional drivers in order to learn more motivated and to dive deeper into learning contents.

_Training of practical and manual competences required by professional drivers will take place in virtual realities in future.

_Digital technology will bring learning closer to the workplace and will interrelate work and learning of professional drivers in future.

- **What would you consider as the most innovative and/or future oriented training for professional drivers with regard to the training methods applied that you are currently aware of (please provide a reference for follow up, if possible, and reason your choice):** (Open answer format)
- **What will, from your point of view, be the most important training approaches for professional driver training in:** (open answer format)
 - _5 years (2022)
 - _10 years (2025)
 - _15 years (2032)

Part D of the questionnaire specifically addressed the organisational framework in which professional driver training is perceived to take place in future. It referred here towards the legal framework but also towards embedding into the employers overall HRD strategy and the training organisation at VET providers.

- **Please rate the following statements according to your perception of professional driver training IN 10 YEARS from now:** (Answering options: Agree, Agree partially, Disagree partially, Disagree, I don't know)
 - _Assessment of professional drivers learning needs is regular part of our human resource development portfolio/ strategy.
 - _Training for professional drivers is selected according to his/her individual needs.
 - _The development/ selection of training for professional drivers is oriented on new developments in the profession and related fields.
 - _The development/ selection of training for professional drivers takes into consideration innovative training approaches.
 - _Compulsory training for professional drivers is only part of a wider set of training offers for professional drivers.
 - _The introduction of newcomers (young people or job changers) into the job is an integral part of our human resource development portfolio/strategy.
 - _Measures to improve retention of professional drivers are an integral part of our human resource development portfolio/ strategy.
 - _The provision/ development of a work environment and organisation of work that allows learning at the workplace is indispensable part of our human resource development portfolio/ strategy for professional drivers.
 - _Training for professional drivers is implemented in accordance with the employer's overall company strategy.
 - _Training plays a crucial role within career advancement of professional drivers.
 - _Training for professional drivers is part of an overall human resource development strategy.

- **Please rate the following statements according to their likeliness within the next 10 years (availability assumed). How likely is it ...**

(Answering options: Very likely, Likely, Rather likely, Not likely)

... that your company gets involved in the realisation of innovative training approaches for professional drivers.

... that your company offers training on very innovative training contents/ thematic fields for professional drivers.

... that your company engages into a cooperation with other enterprises to develop innovative training material/ approaches for professional drivers.

... that your company engages into a cooperation with other enterprises to investigate changing job/ training requirements on professional drivers.

... that your company offers additional training for professional drivers beyond legally required training

... that your company offers special training paths for newcomers in the job.

... that your company offers special training paths for career advancement of professional drivers.

... that your company offers special measures for retention of professional drivers.

... that your company involves experienced drivers as tutors and trainers for other professional drivers.

... that your company provides a whole human resource development strategy for professional drivers including recruitment, initial training, continuous training, retention measures, etc.

... that you have professional drivers taking part in distance learning offers such as through learning apps or other kinds of media-supported learning systems.

... that you have professional drivers taking part in distance learning offers such as through learning apps or other kinds of media-supported learning systems.

... that you have professional drivers taking part in training courses involving augmented or virtual reality elements.

... that you have professional drivers taking part in blended learning activities involving different learning approaches such as virtual, face-to-face or work-based learning.

Part E of the questionnaire went on a macro level and surveyed general trends within professional driver qualification looking into digitalisation of learning, legal interventions and trends within legal frameworks, etc..

- **Please rate the following statements according to you agree- or disagreement:**

(Answering options: Agree, Agree partially, Disagree partially, Disagree, I don't know)

_Professional drivers will need more training in future in order to cope with upcoming changes in their profession.

_Professional drivers not willing to extend their competences in future will not be employable any longer.

_Digital technology within training will increase the attractiveness of the job "professional driver".

_Digital technology will make access to training easier for professional drivers.

_Digital technology within training will make training more responsive to professional drivers working schedules (for instance through distance learning).

_Digital technology within training is rather a chance than a risk for professional driver training.

_The application of digital technology within training for professional drivers is necessary in order to cope with future challenges.

_Political and legal interventions will play an increasing role within professional driver training

in future.

_There will be no more compulsory attendance of face-to-face trainings in future.

_Learning of professional drivers will take place to a large extent outside of regular classroom training.

_Learning of professional drivers taking place outside of classrooms will need to receive better formal recognition in future.

_The future task of trainers for professional drivers will be the facilitation of learning processes rather than the provision of knowledge.

_Manufacturers of trucks and their suppliers will play a crucial role in the training of professional drivers in order to cope with changing job requirements in future.

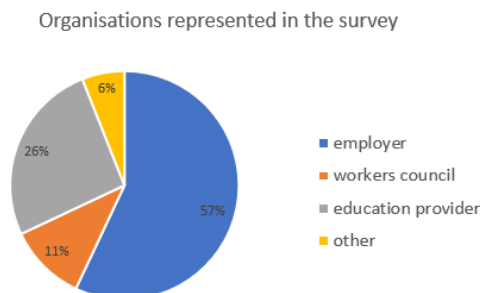
_Providers of other logistical equipment and services will play a crucial role in the training of professional drivers in order to cope with changing job requirements in future.

(2) General information on respondents

The overall questionnaire has been answered by 65 individuals. 52 answers have been provided in the English questionnaire version, 13 in the German version.

The majority of answers have been provided by representatives of employers. 4 out of the 65 respondents answered to belong to another group of stakeholders such as “developers of learning material” and “interest group representative”.

41 out of the answering company representatives answered that their company offers directly or through a VET provider training to professional drivers. 7 did not offer training and 17 did not reply to this question.



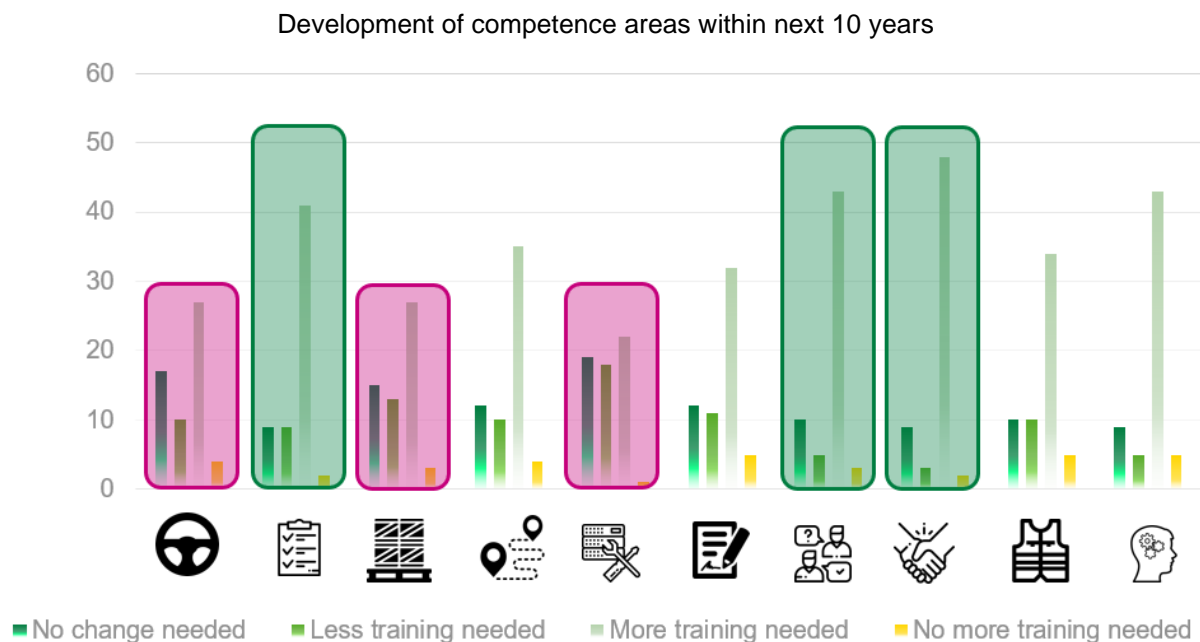
The majority of respondents is based in Germany and Austria (Austria 39, Germany 14). The remaining respondents represent other countries among others France and the UK.

50% percent of the respondents state to be manager/owner of the responding company, nearly 20% are either responsible for education or HRD in the company or trainer/tutor for professional drivers. The remaining 10% stated “other” and referred to among others trade union representatives and training development.

The different sizes of companies are nearly equally represented: 30% represented a company with up to 9 employees, 25% a company with 10 to 49 employees, 25% 50 to 499 employees and 20% stated to represent a company with 500 and more companies.

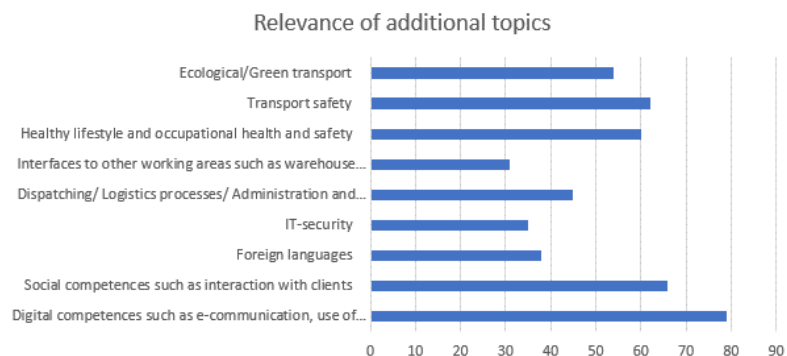
(3) Training topics (Organisation of training for professional drivers)

Asked for changes needed in the training of professional drivers within the competence areas defined in the ProfDRV project the following answers have been provided in the survey:



Especially the three areas "Driving and manoeuvring the vehicle", "Loading and unloading the vehicle" and "Maintenance and care" show a tendency that the need for training tends to decrease. However, the areas of "Performing pre-departure tasks (incl. departure control)" and the two "communication and cooperation areas" are clearly in need of more training. This shows a general tendency already and confirms results collected in the initial FutureDRV interview survey with experts and stakeholders.

Amongst the additional topics nearly 80% of the respondents agree to a need for new/ additional training on the topic of digital competence. Also, social competences, safety and health related topics are considered as necessary by more than 50% of the respondents. Training in related fields such as warehousing but also in IT-security and foreign languages is perceived as less relevant.



Further topics stated under "other" are: green transport, e-mobility, prevention of terrorism, automation in the transport sector and legal requirements.

Asked for most innovative and/or future oriented training for drivers the respondents answered the following:

- Training by different virtual- and augmented reality for work methods using new technology and automation. Technology changes are mostly such small parts (software features ect.), but time between changes and updates is going smaller all the time.
- The area of post test training that employers look for is training to minimise the environmental and health impact of LGV operations. This can cover minimising fuel use, noise and damage as well as awareness of vulnerable road users. This often has an economic payback in

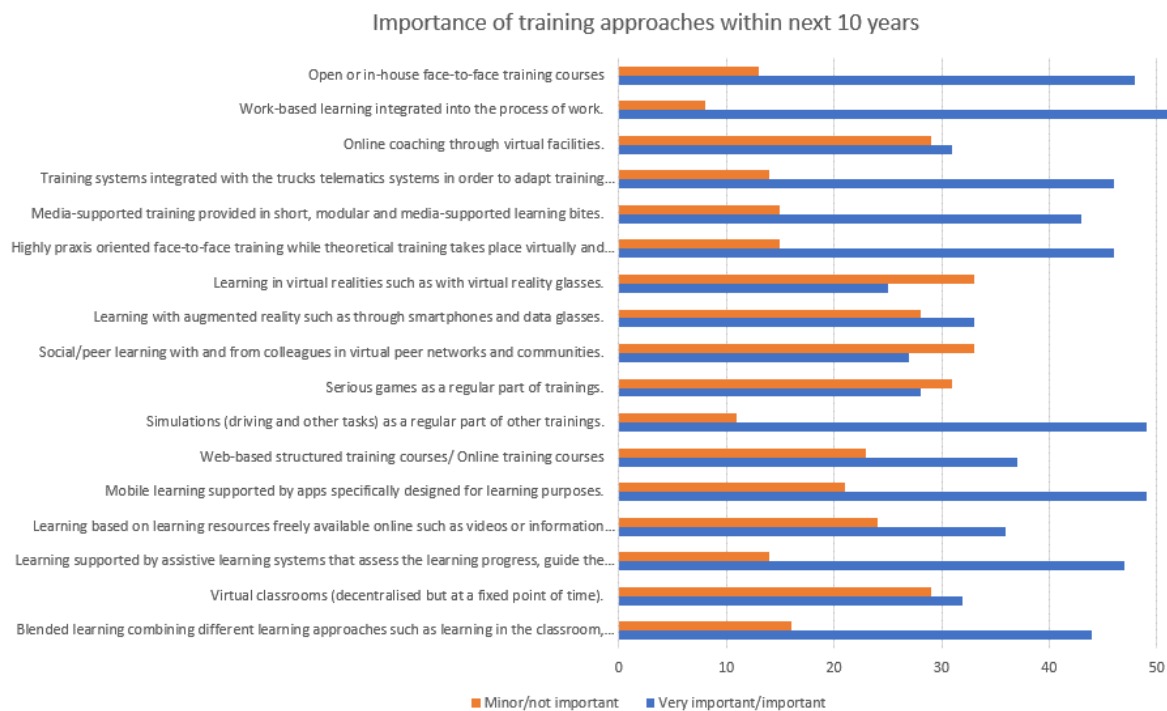
reduced costs (e.g of fuel or damage repair) For example RTITB has run programmes e.g for Bidvest <http://www.transportengineer.org.uk/transport-engineer-news/rtitb-course-saves-bidvest-thousands-in-fuel-costs-and-cemex-fleet-source-training/163408/>.

- Telematics and autonomous vehicle training.
- Within ten years we will almost certainly have driverless vehicles which will make the driver more of an engineer than a driver. The job will change so drastically that it is almost impossible to envisage without knowing what is coming and when.
- *How to work on a professional way with passengers*
- *Operation and driving of semi-autonomous vehicles to ensure efficiency and assure public safety*
- *Simulators, as a way to improve skills at a lower cost. training focused on safety and efficient driving*
- *Certificate of professionalism of the coach driver. Cod: TMVI0108 (Spain)*

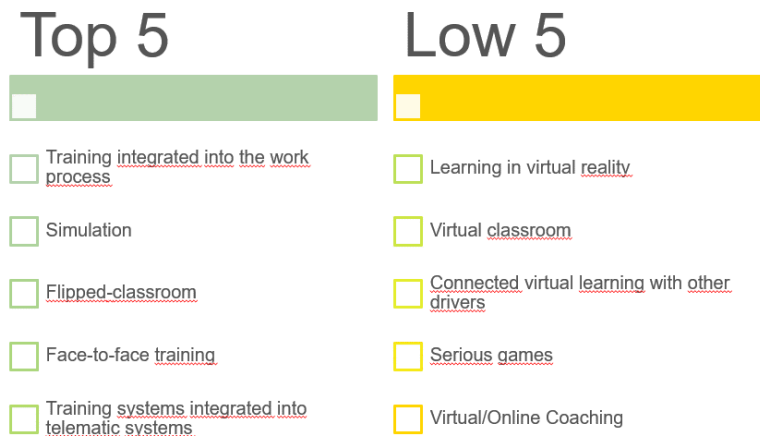
(4) Future relevance of training approaches

Within this area of the online survey different kinds of training approaches have been surveyed. Here classical training approaches such as regular face-to-face training and driving simulation have clearly been rated as very important and important in the future too. However, especially the high rating for “work-based learning integrated in the process of work” can be considered as an interesting result as well as a number of digital learning approaches such as “training systems integrated in trucks telematic systems” as well as “mobile learning solutions” that have also been rated as important or very important by a majority of the respondents. This also applies for blended learning which, however, is surprisingly rated lower than pure digital learning approaches.

Especially training approaches referring to very innovative technology such as virtual or augmented reality but also serious gaming received more ratings for minor or no importance within future training. This, however, should be looked at very critically because it is a general tendency to rate not well-known training methods lower than others independent from their actual potential from an expert perspective.

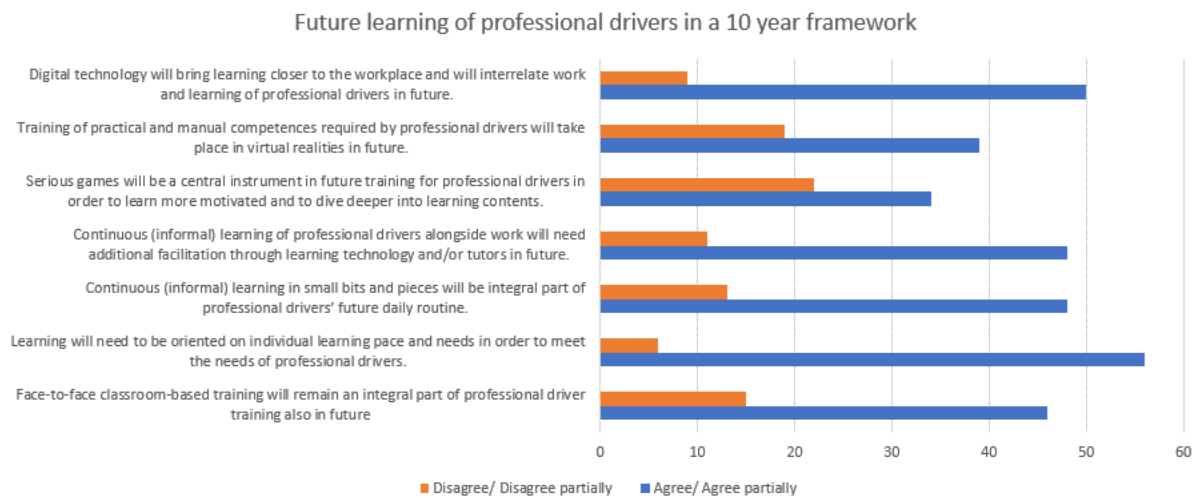


The following Top and Low 5 training approaches for future professional driver training from the point of view from primarily employers result from this survey result:



This result should, however, be treated under consideration of the profiles having answered the questionnaire. Especially general education and training trends and findings cannot be reflected in this result. However, this result provides interesting information about perception of the sector and potential reluctance towards promising innovative training approaches that need to be addressed in order to make use of those training approaches and their opportunities.

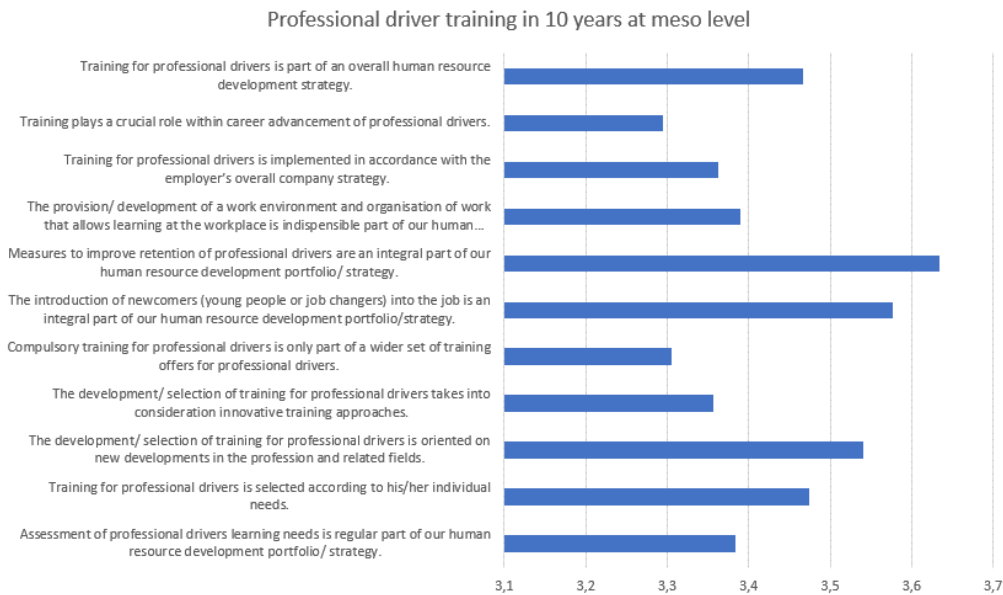
Another question in this part of the questionnaire has referred to a number of statements on training methodology:



Those results partially relativize the previous. This becomes for instance evident in the very strong agreement on the statement “learning will need to be oriented on individual learning pace and needs in order to meet professional drivers needs” which can only be realised using innovative learning analytics supported digital learning solutions but is rarely realisable in the previously preferred classroom setting. However, generally it seems the respondents agree with the described trends within learning also applying for professional driver training.

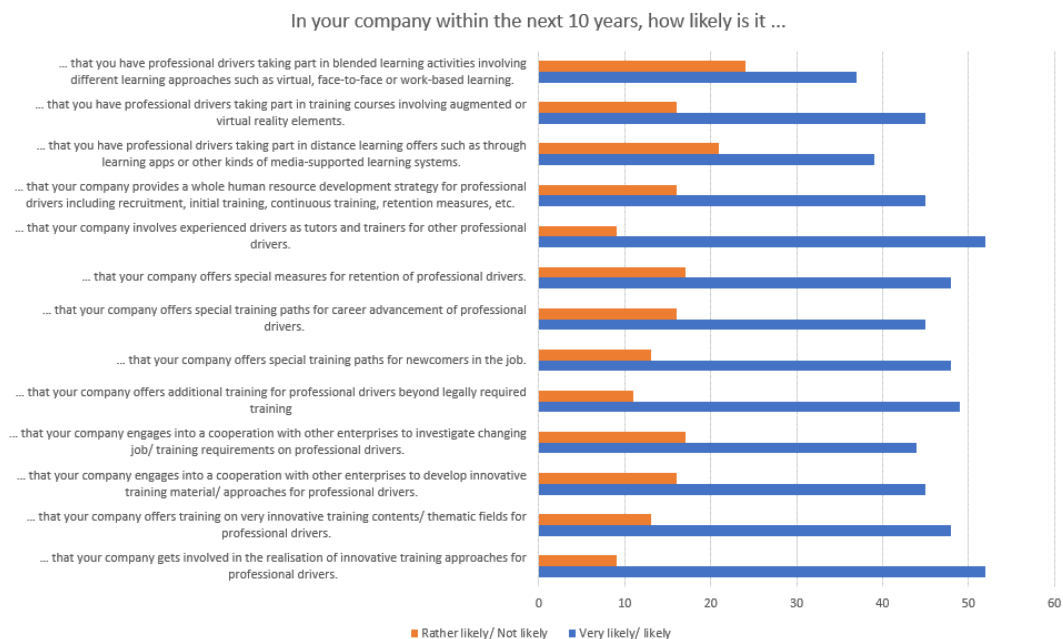
(5) Organisational framework of professional driver training

Within this survey section the organisational framework of future professional driver training has been surveyed. Also here generally the agreement with the given statements reflecting general trends within training is very high:



However it needs to be noted that especially the two statements on improvement of retention of drivers as well as the introduction of newcomers as part of a human resource strategy clearly received the highest ratings which underlines the importance given to those aspects clearly referring to the current shortage of professional drivers. The lowest agreement reach the statements on career advancement of drivers as well as on the provision of additional training besides compulsory training, which reflects the general difficult perception on vocational education and training as an important tool within the sector.

Furthermore, potential future activities/ positions of companies employing professional drivers have been surveyed:



Here the ones having received the highest likeliness are a potential involvement of companies into the realisation of innovative training approaches for professional drivers and the involvement of experienced drivers as trainers and tutors for other professional drivers.

(6) General trends within professional driver training

Furthermore, general trends in the context of professional driver training have been surveyed in the FutureDRV online survey. Here some of the statements point out:

There is a strong tendency towards disagreement when it comes to compulsory attendance of face-to-face training, which clearly shows that the clear majority of survey participants clearly a continuous legal requirement for drivers to attend classical classroom training. At the same time, however, there is strong agreement to the statement that digital technology will make access to training easier for professional drivers in future.

There is surprisingly a rather high level of disagreement when it comes to OEMs playing a role within future professional driver training while the role of political and legal interventions is considered by a clear majority of survey participants as increasing compared to the current situation.



(7) Results of the initial FutureDRV expert interviews

Besides the in the previous chapters summarised quantitative online survey, the FutureDRV consortium also conducted interviews with about 50 experts all across Europe among others education and training related aspects in the context of the future of professional driving. The interviews took place between January and July 2017.

Those interviews have been coded according to the information provided by the experts in order to structure and analyse the result and draw conclusions. The summarised results of this coding relevant for education and training are documented here:

Macro level of education and training

Legal regulations:	<i>Code 95 (C95) has to be adapted, since 2009 the EU directive has not been changed</i> _no control mechanism in order to find out if a driver did the periodic training or not _no regulations which training modules of the Code 95 directive are suitable for e-learning
Policy framework:	<i>Training and testing systems have to be redesigned on behalf of the Authorities</i> _Innovations regarding professional driver qualifications: changes are happening on many front and is particularly dynamic in some non EU countries. In the EU the revised Directive 2003/59 needs to take account of more passive and active safety measures and the importance that plays in the driver's role. _“EU-type retraining practices” are not likely to bring outcomes expected, these practices are rather formal ones, serving the goal only to spend time in training institutes and not offering most up-to-date knowledge and skills _Hungary: Fitting the professional driver training into the OKJ Training System (= National Registry of VET programmes) does mean one step forwards, the training system would be in need of further and quicker changes though _Hungary: Financial funds at the disposal of training institutes are not present at the moment
Roles and position of social partners:	<i>Social partner organizations have requested improvements on the education and training plan of drivers</i>
Development in related fields of work	<i>Training is more advanced/diverse in other fields, training systems of other relevant fields, enhancement of the interactive training methods can be observed which seem to be more effective as merely traditional methods → road transport should be more diverse and more creative</i> _The air industry (pilots) is leading the way → some good examples which could be transferred across to professional drivers, particularly in relation to simulator use and regular testing Interactive methods may help candidates to better develop they view on traffic which seems to lack in the today's obsolete methods. Drivers can develop their special view only later, after a while when working as a professional driver. Accidents may happen in the early phases due to the lack of proper „traffic view”.
Trends and innovations	<i>Training trends</i> <i>Use of hazard perception training will increase as awareness of modern driving grows</i> <i>Safety standards will improve through a combination of better technology and improved driver awareness</i> <i>A recent innovation is the ‘Driver Passport’, which will record details of all driver training (vocational) logged on a database and stored on a card that can be scanned by RFID</i>

Meso level of education and training

Organisation of driver training:	<p><i>Needs for development in legal regulation with regard to the development and organization of driver training:</i></p> <ul style="list-style-type: none">_In general: more training is needed_Training facilities grow uncontrolled, no quality inspections on teaching materials_Continuous training: certain amount of hours and a minimum standard of curriculum_Step to improvement: accreditation or a training register that includes all VET providers and trainers, because a minimum of check ups/inspections of VET providers, trainers and quality of curricula is needed_Driver CPC: Driver CPC will need to develop to be more meaningful for the driver / employee; it is too focused on a few subjects and will need to change as the industry develops (include more focus on customer service and personal interaction); Category B drivers (commercially) must now be included within Driver CPC <p><i>Organization of driver training and testing system should undergo a crucial change in order to prepare drivers for their future jobs, today's training system will no longer be capable of delivering knowledge and skills needed in the future</i></p> <ul style="list-style-type: none">_Driving Schools and private VET providers will not be able to buy the most updated vehicle technology for training purposes because they simply cannot afford → National authorities should be involved in purchasing at least a limited set of vehicles equipped with the newest technologies_Much more practical elements should be included in today's driver training and testing_Driver training can be done in a boarding school system (this type of training lasts longer and also costs are higher, but we have to move to higher standards_New training methods like e-learning, simulators and blended teaching/learning concepts are already being used but need further spreading_“Dual Training” where young people, also University and College students receive a practical part of their training at the production companies within the industry. Completely the same model should be applied for the professional drivers of the future. <p><i>Development and organization at VET providers</i></p> <ul style="list-style-type: none">_Training providers have to be trained as well, this has to be regulated_RTITB Driver Training Standard is a new standard for driving that didn't previously exist. The current system is not effective as there is no common standard for Europe in terms of testing and training and a cohesive system is desperately needed._Training and testing of Approved Driving Instructors only supports the situation as of today, or, there are already out-of-date elements in the training system which do not even match today's requirements <p>Training methods and training materials have gone out of date in Hungary, (delay may be up to 10 years comparison to western Europe) □ driver training institutes</p>
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are not likely to be able to follow those rapid developments upon their own financial possibilities, it only could be done with some support from higher levels (of government)

Future training needs

Drivers will need additional competences, so new trainings are needed

Future training needs due to new technologies:

- _Driver will have to study new technologies → IT skills will need to be improved as the technology becomes more widespread, drivers need to have the confidence and ability to use modern technology which will become a standard part of the working life
- _Vehicle technology will have most impact on the way drivers are trained and utilized
- _Higher technical understanding and technical knowledge
- _Training modules at aspects like digitalization and high-tech vehicles, especially for electronic trucks
- _Training in eco-driving (fuel efficient driving)
- _ICT competences for route planning etc.
- _Automation: Training for understanding of every aspect of autonomous vehicles (Understanding of technical and electronic equipment) to manage computers/ electronic malfunctions and track the vehicle's activities → understanding, monitoring, securing its operations; Additional technical training in order to monitor the automated vehicle, he will need more than knowledge of traffic; Rebuild all training paths starting with the driver license, training courses will change completely but nobody know how, yet; Training for driving in a platoon; Drivers should learn how to co-operate with (DAS-supported, autonomous) vehicle systems; Training for sustaining of the awareness of the perception of hazards
- _Gigaliner (LGV): Drivers will need significant training about how to deal with such a long vehicle, it needs special driving technique knowledge and skills of professional drivers (E.g. hanging loads in frigo trucks, liquid transport etc.)
- _Technology should be suited to drivers' knowledge and experience

Future training needs due to additional work tasks and competences within the supply chain → higher qualification is needed, drivers will need to be upskilled without delay and as technology comes on stream:

- _Different ways of reloading, automatic loading/unloading
- _Dealing with specific problems
- _Administrative tasks: Management and supervisory roles
- _Social skills
- _Communication skills inside and outside the company
- _Sense of business and customer service = ambassador of the company: Image and general appearance; Driver will have to be more attentive to clients; Sales responsibilities; Language skills; Customer service skills; Trainings like forwarding merchant for all activities and services

Training needs in general:

- _Current skills of planning, scheduling, loading, legislation
- _Cargo security: Use of new cargo securing equipment not only should be learned at classroom courses, it is also needed to be learned in a training field
- _Safety, security and quality control
- _Training standards for drivers responsible for home delivery → use of quiet technology
- _Lifelong learning is needed
- _Drivers have to do a training before they will be allowed to drive a new truck model □ learning by doing will be over

Cooperation between stakeholders	<p>Training methodology developers should be in closer connection with those experts in practice</p> <p>Special cargo securing methods, special driving technique knowledge and skills should be taught within the frames of transportation companies or goods producers, because those special knowledge and skill might point well beyond the possibilities of merely a Driving School</p> <p>Any training solution must be applicable to the company so that they can see the benefits</p>
Personnel and organisational development	<p>Transport industry have to train the drivers in order to enhance the use of new technologies</p> <p>New ways of thinking, learning and training within the companies and the whole industry is needed</p>
Training within the organisational strategy	<p>Transport industry have to train the drivers in order to enhance the use of new technologies</p> <p>Companies should have in-house trainers to keep drivers informed</p> <p>Trainers within the companies with concrete knowledge of the trucks are needed</p> <p>More focus on companies who deliver training in house because the standards are often not known or recognized</p> <p>Companies may have different approaches to training and what training will be required of their drivers and the roles that the drivers will play</p> <p>In-house behavior analysis modules (circulation of photos, videos etc.) to raise awareness and rectify improper conduct</p>

Micro level of education and training

Methodical approaches of future training solutions	<p>New training methods will be needed (many of them are already present) → Training delivery methods, techniques and equipment will need to change to address the changing requirements</p> <p>Less classroom-style training and a better balance of training techniques and approaches → different ways to provide drivers with knowledge are necessary</p> <p>Professional driver training will need traditional classroom training also in the future, supported by an advanced e-learning material which can be processed individually at home, including theory test practicing</p> <p>_ Simulator training → Truck simulator training will become more important: Use of simulators, will increase in low to mid-end simulator training in the coming years, E-learning opens up new opportunities; Simulator training faced with the prospect of VR and serious gaming simulators; Virtual training methods to demonstrate danger situations and also to develop counteracting skills; Driving simulators (learners enjoy this practice, which also makes it possible to address how to respond to safety alerts); Addition to classroom-based group trainings programs, use of reality-based simulation exercises including handling of work tools (tools used in the company as tec; Simulators are unattractive because you don't feel the kinetic energy of the vehicle</p> <p>_ Blended teaching/learning concepts, e-learning → e-learning has appeared and gains ever more and more popularity: E-learning for practice to certify learning outcome: e-learning course with a certificate of competence in combination with a review session with a trainer and afterwards an exam; Online learning / blended learning will need to be</p>
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used more because drivers are spending more time away from their company's headquarters → e-learning must develop quickly and be task-specific, otherwise the drivers' interest will disappear; Blended training, which uses both on and off the job training will start to increase; Distance-controlled and screen-based e-learning, both in classrooms and using simulators; New interactive training methods like e-learning method, which is not yet a complete "autonomous" interactive training but the elements of it are already contained. E-learning materials could be step-by-step further developed to a fully autonomous interactive learning/Training; Computer aided testing with animated questions and/or video clips which are rather popular among driver candidates, and are combined with consulting possibilities within the driving schools such establishing a blended teaching/learning concept; E-learning training method itself also undergoes a rapid evolution by enhancing levels of interaction, by embedding interactive animations and video clips which lead to the growth and acceptance of this new training/learning method; E-learning is not a long-term solution for initial training, it may lack interaction and undermine learner motivation

_ **VR technology** will be used more in transport and logistics (for both driving and other tasks): Virtual reality might have a role to play in driver training though it needs to be really effective and well thought through

_ **Serious games**

_ **Mobil learning** by using mobile phones and mobile apps → Training should be more mobile to reflect the driver's environment

_ **Group discussions and role plays** to enhance communication skills: more interaction in trainings

_ Higher percentage of **practical components**: cargo safety, saving gasoline needs practice and life demonstrations

_ **Fundamentals of training** (classroom and field training based on real-life situations) will remain: Face-to-face trainings is better for mediating a real situation

Requirements of future training

More training in general, because it reduces costs regarding to eco-driving

Learning shall be accessible anytime/anywhere

New generation has special requirements on future training programs, new training programs have to address young people and motivate them to come to the industry

_ Younger drivers are willing to work hard, but they need to be motivated in different ways, they have different styles of learning and communicating

_ Young people want to understand the why and be part of something bigger and they wish to work in an industry that embraces the new digital era: having an online application that is optimized for mobile devices, this generation has grown up using the internet

_ **Raise the standards of training across the board** → there is a mismatch between what we expect in terms of training and what we actually get, a change is needed

Requirements of training design on trainers/tutor and their competences

Trainers must have experience in order to provide an authentic picture and design realistic exercises: theory must be linked to practice on driving simulators

Trainers will have to change what they offer:

_ Moving to more mobil learning, learning by using mobile phones and mobile apps

_ Instructors themselves should be familiar with the new methods and their advantages

→ Preparation of driving instructors and driving examiners with regard to future competences

More trainer checks for skills and competences to deliver the training, but no enforcement or penalties because that would be counter-productive

Requirements of raining design:

_ Drivers need a skills needs assessment in the first instance and then training should be based on the findings from that assessment

_ Well-designed training syllabus needed with exact description of the expected training outcomes

_ Currently no requirement on the standards or qualifications for training instructors, and

this should be a priority for the future

_During practical training, much more cargo securing training should be integrated and driver candidates should be tested in practice, how accurately they know and can apply cargo securing methods

Competence/skill requirements of future Professional Drivers

IT skills

Business, administrative and organizational skills

- _Role as company ambassador
- _Customer service skills
- _Sales-based behaviours
- _Marketing
- _Enhancing relationship with clients in order to provide solutions for their clients and generate new business for their company
- _Understanding of processes due to transport of goods and logistics

Communication skills

- _Strong increase of digitalized communication with the client
- _Service skills
- _Linguistic skills

IC skills

Media and digital competence

Technical skills

- _Drivers have to be able to handle vehicle assistance systems and electronic systems
 - _Technical expertise of new technologies, how to use them in vehicle and understanding the limits
 - _Operating on electronic and information technological devices
 - _Ability to analyse their vehicles' telemetric systems and to read and understand the transmitted information
- Skills set required in terms of maintenance of machines
- _less mechanical / technical skills will be needed

Driving skills; Control and supervision the autonomous vehicle (partially or fully):

Deeper understanding of vehicle operation, knowledge and skills of driver

assistance systems, system-technological knowledge of autonomous driving; Drivers must able to corrective measures if necessary and that automation features are in working order: safety checks before, while and after driving; Skills in terms of control and supervision of autonomous vehicles; Skills in terms of understand the vehicles, use on-board-technology; Skills in terms of verify their equipment and their vehicle; Ability to detect breakdowns and repair minor malfunctions; **Eco-driving:** fuel efficient driving; Safe driving

Fundamental skill: Driver will have to have all of the **traditional skills coupled with an understanding of technology** to be able to override the technology where necessary or to take over should technology fail; Basic skills will not need to change: it will be easier to train and develop drivers and they will naturally improve their relevant skills through everyday use of technology and Systems; Current skills of planning, scheduling, loading, legislation

Personal skills

Key qualities: mental strength, responsiveness, resilience

- _Physical and mental resilience → Stress management
 - _Reliability and countability
 - _Drivers must develop a sense of professionalism (punctuality, friendliness, reliability etc.)
 - _Drivers will need to **be flexible and adaptable in their working life** → Wider scope of vision, ability to acquire a higher level of theoretical, shared attention, quick perception and ability to quickly adopt to varying situations and work loads
 - _Alertness and perception: Conditioning of the constant awareness of dangers and to
-

sustain concentration of attention (Danger awareness of PD may diminish on permanently using DAS systems and alertness goes down due to the monotonous environment)

Legal knowledge:

_ Knowing the relevant EU regulations

_ Safety-related regulations

_ Competencies in terms of regulations, particularly regarding security

Knowledge about load security: Loading and unloading

Knowledge about all labor safety

For further information on this publication please get in touch with:

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Interview guideline

Initial research/ Task 1

v.1 (as of 24 January 2017)

Target groups of the initial research interviews

Please consider the following groups of stakeholders within your initial research. Every partner is expected to contribute at least 10 interviews (covering as many different target groups as possible) to the initial research.

- Experts in the field of transport looking at transport from different angles (such as telematics, transport infrastructure, etc.) and/or education
- VET providers (incl. schools and colleges)
- Manufacturers/ Service providers (not only trucks but also other transport related products and services)
- Publishers/ Learning material/ technology developers
- Employers
- Sector organisations/ associations
- Drivers and their representatives (unions)
- Driver agencies / Temporary employment agencies
- Chambers of labour/commerce
- Cities clusters
- Policy makers

(Not all questions are relevant for all potential interview partners! The interview guideline to be used for a specific interview should be built out of the guiding questions below on a case-by-case basis.)

Interview invitation letter proposal

Dear ...,

we [your organisation] are partner in the European project ***“FutureDRV: Preparing professional drivers for their role within the fourth industrial revolution and its innovations within road transport”*** funded by the ERASMUS+ programme of the European Commission. It is the major aim of the FutureDRV project to explore the future of professional driving and the competence requirements related to it in a timeframe of about 15 – 20 years from now on. The project results intend to give stakeholders in the field such as employers, education providers, social partners or policy makers a reliable perspective of the changes that are ahead and their influence on the current and future workforce of professional drivers.

Our initial project step is the exploration of the future of transport in order to get a comprehensive overview of professional driving and the context it will take place in. We will look at the future of professional driving from several perspectives in order to ensure a broad picture of information we can build on. This initial research will be implemented by interviewing stakeholders and experts representing very different fields of/relevant for transport and logistics between January and May 2017.

As you are a stakeholder/expert in the field, we of course, would like to invite you for an interview within this initial FutureDRV research and would be very grateful if you can contribute between 30 and 60 minutes of your time to answer our questions on your perspective on future developments within transport and logistics to answer our questions. You will of course receive access to our guiding questions prior to the interview in order to prepare and to get back to us with questions, if necessary.

Please don't hesitate to get in touch with [your organisations' contact person] at [your organisation] for further information on the project or the interview and its topics.

We are very much looking forward to learn more about your perspective on future developments within transport and logistics.

Best regards,

...

Interview implementation

Initial remarks and interview introduction:

As initial remarks, it is strongly recommended that partners take the time to explain to interviewees the purpose of the FutureDRV project (i.e. to identify future trends and innovations that will lead to new work requirements that our project will incorporate in the FutureDRV profile, learning solutions, recommendations and timeline) and the conclusions that are to be drawn from this particular initial research (i.e. development of future scenarios of professional driving, a comprehensive overview about the future ahead of professional driving, basic considerations for development of the FutureDRV profile and learning solutions). Therefore it is important- beyond all the formal questions contained in the template – to get the stakeholders interviewed to provide as many details as possible regarding their prospective view on these changes.

It is especially important to clarify that we are primarily interested in the working context (i.e. tools, processes, work organisation, technique, interactions with others ...) professional drivers will work in in future because an understanding of this working context will enable us to draw conclusions on the drivers future skill requirements.

Please also raise the following aspects in your introduction:

- The projects co-funding through the European Commission,
- The timeframe of the project between Sep 2016 and Aug 2019,
- The timeframe looked at between now and 2030/2035,

- The interviews are conducted with experts and stakeholders from all across Europe, there will be in total about 40-50 stakeholders representing different areas interviewed, further will be involved at later project phases,
- The possibility to treat all information provided anonymously, but it will be asked again at the end of the interview if and to what extent the interview partners name/organisation may be mentioned in the research report,
- Not all questions can be answered by all experts equally it is therefore no problem to skip questions that appear not to be applicable or to further investigate on questions that are especially relevant in the interview partners context.

Interview questions

(Please note: Block A and C should be presented to all kinds of stakeholder, block B is for VET providers and related specialists only. Feel free to elaborate on every question as far as possible/needed with the individual interview partner and/or to skip questions if not relevant for an interview partner. If sending interview questions before the interview to the interviewee please only send the actual questions and leave the hints in italic out, those are just meant as hints for the interviewer during the interview!)

A Identification of trends, innovations, future work requirements and their impact

- (1) Which trends, developments and innovations in the following areas are relevant from your point of view for the future of professional driving in the upcoming years?
 - *Technological (e.g. truck, trailers, automation, connectivity, loading and unloading facilities/ transport/logistics infrastructure in general, traffic management systems, alternative transport with/without driver, ...)*
 - *Environmental trends (e.g. city regulations, reduction of noise, new types of fuel)*
 - *Economic trends (e.g. intermodality, home delivery, urbanization, consolidation)*
 - *Social and behavioral (e.g. ageing workforce, new generation of workers and their requirements on work, working hours, languages skills, IT/communication skills)*
 - *Policy (e.g. legal requirements, ethical considerations, city regulations)*
 - *Safety (e.g. urban driving, country driving, hazard perception)*
- (2) Which effect will these trends, developments and innovations have – from your point of view - on the future work/ working context of professional drivers?
(Which forms of new work might emerge? How will this new work be performed?)
- (3) What characteristics should future professional drivers have in order to be ready for the future?
(Examples: attitudes, technological competence, language skills)
- (4) Which effects will these trends and developments have – from your point of view - on skills requirements? How does this work differ from current requirements?
- (5) In your opinion, will the expected changes lead to the need of new training solutions? If so, what features should these new solutions bear?
- (6) Looking into the future of the professional driver profession, where do you see the most important future fields of competence development for professional drivers in the upcoming 10 to

15 years from your particular perspective?

Please refer (one after another) to

_technological changes – in vehicles as well as infrastructure (e.g. truck, trailers, automation, connectivity, loading and unloading facilities/ transport/logistics infrastructure in general, traffic management systems, alternative transport with/without driver, ...),

_ecological changes, climate change, ... (e.g. city regulations, reduction of noise, new types of fuel)

_changes in logistics economy, ... (e.g. intermodality, home delivery, urbanization, consolidation)

_changes in society, ... (e.g. ageing workforce, work-life-balance, new generation of workers and their requirements on work, working hours, languages skills, IT/communication skills)

_changes in policy (e.g. legal requirements, ethical considerations, city regulations)

_safety aspects (e.g. urban driving, country driving, hazard perception)

- (7) Are you aware of any innovations (or emerging/upcoming practices or pilot initiatives) within training/ education for professional drivers or related professional fields that you would consider as addressing those requirements (all different dimensions) already? If yes, please describe!
(Please ask after every area of change indicated in question 6)
- (8) What changes are necessary within organisations in order to get ready for future requirements?
- (9) Do you know of any national, European or international study, project or article on how the professional drivers' (or relevant related) activities and/or the context they take place in will evolve in the future? If so, please specify.

B Identification of innovative learning solutions

- (1) Looking into professional driver qualification that you are aware of, which measures related to qualification (this can be measures such as training offers, training organisation approaches, validation standards, requirements on trainers, legal requirements with regard to training, etc.) would you consider as innovative? Why?
(Make sure to address micro – meso – and macro level innovations – maybe split this questions into three – one per level?)
- (2) Do you think existing training solutions (see q1) sufficiently address professional drivers' skill needs in order to stay competent in the specific field they address also in future.
- (3) Are there such training innovations in related professional fields that you would consider as relevant for professional driving as well? Why would you consider them as relevant?
- (4) Looking into the way training takes place (provided through VET providers, in companies, etc.), what would you consider as innovative and future oriented in the field of professional driving? What examples of such innovative training approaches (within professional driving or related fields) are you aware of? Please describe!
- (5) Are you aware of national or sectoral innovations with regard to professional driver qualification (such as revised sector standards, legal regulations, guidelines, laws, etc.)? Please describe?
- (6) What kind of training will – from your point of view - be necessary in future in order to ensure professional drivers employability on the one hand and on the other ensure a competent handling of the changes ahead of us by drivers?

- (7) Do you know of any national, European or international study, project or article on how the professional drivers' activities will evolve in the future and lead to new VET engineering and didactical approaches ? If so, please specify.

C General questions to the interview partner:

- (1) Whom else would you recommend with regards to this topic for an expert interview?
- (2) May we mention your name/organisation in the list of stakeholders and experts interviewed that we will publish in the related research report and the final project publication (available in print and electronically online)? Yes/no
- (3) May we approach you with single statements/ answers from this interview in order to get your permission to quote your answer in our research report or later on within our project work? Yes/no
- (4) May we contact you again in case there are additional questions on a certain element of this interview? Yes/no
- (5) May we contact you again for further stakeholder/expert interviews throughout the implementation of the project and/or do you want to get engaged into the project in other ways (associated partner, ...)? Yes/no
- (6) Do you want to receive further updates about the projects progress? Yes/no

Conclusion of the interview

Please give the interview partner a short summary how we will proceed with the collected data:

- Individual interviews will be summarized and evaluated from different perspectives by the project consortium,
- Results will be the basis for development of future scenarios on professional driving, starting point of our FutureDRV profile and for deciding about the FutureDRV learning solutions focus,
- Furthermore the results will be the basis for further research throughout the course of the project leading to the project recommendations and timeline,
- All interviews collected will be summarized in a research report that will be integral part of a final project publication (potentially earlier available as individual publication on the project website).

Interview documentation

Please document every interview individually by summarizing the answer of the interviewed expert/stakeholder as detailed as possible by interview question in English. A full transcription is not necessary. Please send the summary as soon as you have it available to Claudia for upload and sharing on the virtual project space.



Interview questions

(stakeholders/experts)

Initial research/ Task 1

v.1 (as of 24 January 2017)

A Identification of trends, innovations, future work requirements and their impact

- (1) Which trends, developments and innovations in the following areas are relevant from your point of view for the future of professional driving in the upcoming years?
- (2) Which effect will these trends, developments and innovations have – from your point of view - on the future work/ working context of professional drivers?
- (3) What characteristics should future professional drivers have in order to be ready for the future?
- (4) Which effects will these trends and developments have – from your point of view - on skills requirements? How does this work differ from current requirements?
- (5) In your opinion, will the expected changes lead to the need of new training solutions? If so, what features should these new solutions bear?
- (6) Looking into the future of the professional driver profession, where do you see the most important future fields of competence development for professional drivers in the upcoming 10 to 15 years from your particular perspective?
- (7) Are you aware of any innovations (or emerging/upcoming practices or pilot initiatives) within training/ education for professional drivers or related professional fields that you would consider as addressing those requirements (all different dimensions) already? If yes, please describe!
- (8) What changes are necessary within organisations in order to get ready for future requirements?
- (9) Do you know of any national, European or international study, project or article on how the professional drivers' (or relevant related) activities and/or the context they take place in will evolve in the future? If so, please specify.



Interview questions

(vocational education experts)

Initial research/ Task 1

v.1 (as of 24 January 2017)

B Identification of innovative learning solutions

- (1) Looking into professional driver qualification that you are aware of, which measures related to qualification (this can be measures such as training offers, training organisation approaches, validation standards, requirements on trainers, legal requirements with regard to training, etc.) would you consider as innovative? Why?
- (2) Do you think existing training solutions (see q1) sufficiently address professional drivers' skill needs in order to stay competent in the specific field they address also in future.
- (3) Are there such training innovations in related professional fields that you would consider as relevant for professional driving as well? Why would you consider them as relevant?
- (4) Looking into the way training takes place (provided through VET providers, in companies, etc.), what would you consider as innovative and future oriented in the field of professional driving? What examples of such innovative training approaches (within professional driving or related fields) are you aware of? Please describe!
- (5) Are you aware of national or sectoral innovations with regard to professional driver qualification (such as revised sector standards, legal regulations, guidelines, laws, etc.)? Please describe?
- (6) What kind of training will – from your point of view - be necessary in future in order to ensure professional drivers employability on the one hand and on the other ensure a competent handling of the changes ahead of us by drivers?
- (7) Do you know of any national, European or international study, project or article on how the professional drivers' activities will evolve in the future and lead to new VET engineering and didactical approaches ? If so, please specify.