SPECIAL COMMITTEE ON ARTIFICIAL INTELLIGENCE IN A DIGITAL AGE

COMMITTEE ON TRANSPORT AND TOURISM

Joint Public Hearing on

AI and Transport

Panel I: The impact of AI on transport modes and mobility until 2030

Nadina IACOB - *Research Fellow, Centre for European Policy Studies (CEPS)*

Robert FALCK - *CEO and Founder, Einride*

Alvaro URECH - *Innovation Director for Spain & Portugal, Alstom*

Professor Rita CUCCHIARA - *Director of the AImage Lab, University of Modena and Reggio (UNIMORE)*

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Panel II: EU Transport Policies: How to prepare for AI while minimising risk

Professor Pete THOMAS - *Emeritus Professor at Loughborough University, Technical Coordinator for the LEVITATE project*

Livia SPERA - *Acting General Secretary of the European Transport Workers' Federation (ETF)*

Prof. Dr. Patrick VAN DER SMAGT - *Director of AI Research at Volkswagen Group and Head of Machine Learning Research Lab at Volkswagen Group, ACEA TF-AI Pilot*

Daniela BRAGA - *Founder and CEO, DefinedCrowd Corp*

BRUSSELS
MONDAY 11 OCTOBER 2021

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IN THE CHAIR

MIAPETRA KUMPULA-NATRI
Vice-Chair of the Special Committee on Artificial Intelligence in a Digital Age

and

KARIMA DELLI
Chair of the Committee on Transport and Tourism

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(The meeting opened at 13.46)

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IN THE CHAIR: MIAPETRA KUMPULA-NATRI
Vice-Chair of the Special Committee on Artificial Intelligence in a Digital Age

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Opening remarks

Chair. – Good day and good seminar for all online and on-place MEPs and also invited guest speakers. The title for today's meeting is 'AI and Transport' and this hearing is organised together with the colleagues from the Committee on Transport and Tourism (TRAN), and we are very happy to hold it together with AIDA and TRAN colleagues and Members.

We will have two separate panels today, each of which will be followed by questions and answers by Members and panellists.

I want to thank our guest speakers for their presence here and for agreeing to take part in this hearing, which is important for us. I would like to remind all the guest speakers in all sessions that their initial presentations should be 5 minutes. Be mindful of the time when speaking.

Members shall ask questions of maximum 2 minutes and panellists shall answer immediately after each timeframe, also in 2 minutes. There shall be no follow-up questions. I invite Members to address their questions to a specific speaker rather than to the entire panel.

This hearing is web-streamed and interpreted in 14 different languages. So please make sure you choose your preferred language selection by using the audio channel selector on the top of your screen.

And last but not least before we hear from our speakers, I take the occasion to remind you of our next AIDA event. It will be on 8 November, when AIDA will hold an interparliamentary meeting with national parliaments, followed then on 30 October, when there will be an AIDA hearing on AI and bias.

So the first panel: the Impact of AI on Transport Modes and Mobility until 2030. We will hear from four distinguished speakers: Nadina Iacob, Research Fellow, Centre for European Policy Studies, CEPS; Robert Falck, CEO Einride; Alvaro Urech, Innovation Director Spain & Portugal, Alstom; and Professor Rita Cucchiara, Director of the AImage Lab at UNIMORE and Director of the Italian National Lab of Artificial Intelligence and intelligent systems of CINI.

And then the second panel, EU Transport policies: How to Prepare for AI while Minimising Risk. We will hear also four speakers: Professor Pete Thomas, Levitate project; Ms Livia Spera, General Secretary of the European Transport Workers' Federation; Mr Patrick van der Smagt,

Director of AI Research at Volkswagen Group and Head of Machine Learning Research Lab at Volkswagen; and then Daniela Braga, Founder and CEO at DefinedCrowd Corp.

Before we have the panel and the presentation of the invited guests, I give the floor to my colleague, Karima Delli, Chair of the Committee on Transport and Tourism in the European Parliament, and I'm happy to give her the floor for her opening remarks, as the coordinating organiser for this hearing. So Karima, please.

1-006-0000
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IN THE CHAIR: KARIMA DELLI
Chair of the Committee on Transport and Tourism

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1-007-0000
Chair. – Madam Vice-Chair, Members of the AIDA and TRAN Committees, dear colleagues, on behalf of the Committee on Transport and Tourism, I would like to thank the AIDA Committee for having proposed the joint organisation of this hearing on artificial intelligence and transport.

The Committee on Transport and Tourism is pleased to be participating today in an essential reflection on the impact that artificial intelligence will necessarily have on transport in the coming years.

We are all aware that artificial intelligence is already very present in our daily lives and that its influence will continue to grow by 2030 and well beyond then, too.

Precisely in the field of transport, it offers opportunities in terms of safety, flow optimisation and energy savings, but at the same time we cannot ignore the fact that artificial intelligence also carries a certain number of risks that we, as legislators, must make sure we assess, because we have a responsibility to create a relevant and proportionate legislative framework.

This is why today's hearing is very important. It will help us to make informed decisions on legislation related to artificial intelligence. As you indicated, Madam Chair, our discussion today will be structured around two panels.

The first aims to provide as complete an overview as possible of the likely developments in artificial intelligence between now and the end of the decade.

The second panel will address the means of best supporting and, where necessary, monitoring this rise in artificial intelligence.

To fuel our discussions, we are pleased to welcome eight experts, whom I would like to thank wholeheartedly for being with us today. Ladies and gentlemen, you work in research, in industry, in the world of start-ups or in worker representation. This range of expertise will provide us with a truly comprehensive overview of the issues surrounding artificial intelligence in transport and we look forward to this discussion.

Ladies and gentlemen, do not forget that all questions are welcome, because this is a subject that is of interest to many of our fellow citizens. I am therefore looking forward to this discussion with you, Madam Chair, and I give you the floor for the first panel.

Panel I: "The impact of AI on transport modes and mobility until 2030"

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IN THE CHAIR: MIAPETRA KUMPULA-NATRI
Vice-Chair of the Special Committee on Artificial Intelligence in a Digital Age

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Chair. – Thank you, Karima and the TRAN Committee. We have agreed that I will chair the first panel and then Karima will take care of chairing the second panel. So we go immediately to the hearing part, and we will have the first invited guest speaker, Nadina Iacob, from CEPS (Centre for European Policy Study). Please, the floor is yours. Five minutes.

Nadina Iacob, *Research Fellow, Centre for European Policy Studies (CEPS)***.** – Good afternoon, and thank you very much to Miapetra Kumpula-Natri and Karima Delli for organising this very important session. My name is Nadina Iacob. I'm an Associate Research Fellow at the Centre for European Policy Studies, or CEPS for short.

In my intervention, I will focus particularly on the impacts of AI and big data on road transportation and connected and automated vehicles, and I will cover the following points. First I will talk about main market trends. Second, I will discuss key opportunities for mobility thanks to new technologies, big data and AI applications. Third and lastly, I will discuss key policy areas of focus to support innovative, trustworthy applications for mobility.

First, let us make an inventory of the key market trends. Estimates about the size and growth of the market for connected and automated vehicles vary, but the trends are very clear. There are significant economic opportunities expected in this field. Some estimates placed the global market for connected and automated vehicles at over 50 billion dollars in 2019, before the COVID-19 pandemic. Well, the past two years marked by the pandemic have had an impact in the field. The market is expected to recover and continue growing up to an estimated market size of around two trillion dollars by 2030, according to some market research estimates.

Now, turning more to the AI component of the discussion, venture capital investments in AI companies – more broadly speaking, not necessarily focused only on the transport sector – are also increasing, according to a recent OECD report. However, in 2020, what we see is that around 80% of the money invested went into companies in the US and China, with the EU attracting only 4% of investment. Importantly for our discussion today, most of the money is attracted by companies in the field of autonomous cars. With significant growth expected over the next years and also interest from investors, it is thus crucial to ensure that the opportunities presented by AI and new data-based applications for mobility can be effectively tapped in the EU as well.

Now, against this background of market developments, let's go to the opportunities in the field of mobility and AI. There are several key developments at the level of innovative applications that fuel these market growth projections that I have just mentioned. The road to autonomous self-driving cars is one of these key trends. While fully-autonomous vehicles are at least 10 years away, according to a recent MIT report, the current investments in the field show that autonomous cars are a key trend to keep in mind in the policy-making process and prepare accordingly.

The opportunities in the field, however, go beyond only autonomous cars, and they include a wide range of potential services based on data and new technologies. Big data and AI applications can improve traffic management and intelligent transport systems, leading to efficiency gains and journey optimisation. Another AI application relates to enhanced services for predictive maintenance and repair. Vehicle-generated data can be analysed for remote car checks, thus reducing maintenance costs and improving vehicle performance and overall traffic safety. Similarly, AI and data-driven applications can also increase the efficiency of maintenance and repair for the transport infrastructure itself.

Now, putting things into perspective, AI and big data can have wider impacts and contribute to trends and goals such as smart mobility and smart cities. AI can help integrate multiple transport

modes to reduce inefficiencies in transportation. In addition, several developments such as better traffic management, smart parking and improved transport mode integration can also help us build the smarter cities of the future. Against this background, it's clear that the opportunities abound.

Taking into account the key market trends, the developments and opportunities in the field, let us now turn to the policy perspective of the matter – and more importantly, what can be done to support and enable the opportunities of data in AI for transport? As technologies advance at a rapid pace, a secure and trustworthy framework for sharing data and supporting the development of AI applications is essential. Several aspects are important in this framework, and these include the need for liability rules, interoperability, as well as the need to limit strategic barriers in the market.

First, looking at the liability rules. As new technologies are developed in the field of mobility, current liability rules become limited in their ability to clearly determine who is liable for damages that may arise. The proposed AI regulation is seeking to fill a gap in this sense. Now, going forward, it is important to ensure a coherent and clear approach in the EU, harmonising legislation to avoid unnecessary barriers to the sharing of data and the development of AI-based applications.

Turning to the second area of focus: when it comes to policy development, data interoperability is still a challenge in the mobility field, but proposed initiatives such as the common European data space and mobility can play and important role.

Looking ahead, interoperability initiatives in the field of transport and mobility need to be promoted, and more synergies should be fostered between the public and the private sectors to support the exchange and re-use of public and private transport data for integrated mobility services.

Finally, in my list of policy areas to focus on in order to foster competition, strategic barriers that may deter the entry into the market of new market players should be minimised. In this sense, it is important to develop clear and transparent rules for accessing data that in the end can lead to innovative database services and future AI applications.

In light of the key trends for AI in transport, what is essential is to ensure that the regulatory framework in the EU supports developments in this field.

I hope that the key issues I have highlighted are interesting and a good starting point for the debate, and I look forward to your questions. Thank you very much.

1-012-0000

Robert Falck, *CEO and Founder, Einride***.** – Hi, my name is Robert Falck, I'm CEO and inventor of *Einride*. It's a pleasure to be here, and I just want to take this opportunity as well to thank you all for the hard work you're doing for us all.

This invention that we did a few years ago is something that we consider to be the future of transport. It's a vehicle which combines electric and autonomous and has the potential to change the world.

In 2019 we were the first in the world to deploy autonomous electric vehicles on public roads. It was a small bit of a stretch of road here in Sweden, and with that we had marked a first for autonomous electric. This vehicle has the potential to change how we see heavy road freight transport. Since the start, we have been one of the few contenders based in Europe. Most of our competitors are coming out of the US for software, and for electric it is coming out of China. Most of the major players in the automotive industry in Europe are utilising American

companies for software, and we are one of the few competitors that want to be and stay innovative here in Europe.

When we started flying, more than 100 years ago now, the first flight of the Wright brothers was 300 metres. Our stretch on public road was 300 metres. Less than 10 years after this flight, we had one million people on commercial flights. Once the technology is ready and the potential of the technology is unleashed, there are very few things we can do to stop it. Then it becomes up to us as a society to decide what we can do from it.

As the flying industry boomed and more and more people were flying, in the '50s and '60s there was rapid growth and flying occurred. So did the fatalities and the deaths from flying. So in the early '70s, the industry and the policy makers came together with one common ambition: to make it safe to fly. And even if there are more people flying than ever (at least before the Corona virus), there are actually less deaths than have ever been per person flying. And all this has been done through great collaboration with legislators, the industry and technology.

Unfortunately, we don't see the same change happening when it comes to transport or normal road transport. That has literally stayed the same over the last 25 years, and literally nothing has really changed in that today. But there is a way we can get through that.

The situation today is that we have more than 1.3 million people dying each year from road traffic accidents. Just the heavy road freight industry accounts for between 7 to 8% of global CO_2 emissions. On top of that, there is an additional 15 to 20% from driving cars. So this is a huge challenge and it is our generation's responsibility to do something about it.

And what we do at *Einride* is that our vision is to make the Earth a better place for intelligent movement, utilising technology to rewrite and present a different narrative of how the future can look like.

This is not a distant future. This is something we do on a daily basis. We transport goods, autonomous and electric, and it's not 10 years off. It's here today – but not everywhere, not in every application. It's not suitable for all applications, like in cities or in complex environments, but for hauling goods, being a backbone of transport. There it is already making a huge impact.

And the difference between the systems as is and what the potential for the future is, is that we can learn from our mistakes. Through smart systems, AI and smart regulations we can create and learn from each crash – to avoid it. Because self-driving technology is not about learning how to crash, it's all about learning how to avoid it. You can learn from every mistake to do better.

Each application we install reduces CO_2 emissions by up to 90% and helps to create a smarter, safer way of doing transport.
We have to emphasise this is the challenge as it is, and this is the system we're upholding – through legislation and through business interests, and sometimes even just being lazy.

And the challenges for us that work in this industry today – its complex regulations and legal uncertainties, like, for instance, even if you don't have a vehicle or a driver in the vehicle, it would need a rear view mirror in the car. We need to have a steering wheel. We have to adapt all the things that the legislative structure adapts.

There are a lot of business interests upholding this as well. We keep subsidising the carbon-based ecosystem and supporting old technology. I think if there is a challenge for Europe, it's that we need to adapt to change and also allow people to think differently, because innovation is not always done in big companies.

What can we accomplish for adopting this technology with AI as an important part of it? We could reach a "Global Vision Zero". We can learn from mistakes, because that's the essence of what AI is: to utilise the data, to learn from it. And with it, we have a business case for utilising electric and autonomous, and with it, we can reduce the CO_2 emissions with a business case that pays for itself with up to 95%.

You have the potential to shape the future. Me as an entrepreneur is just to showcase what it can be.

1-013-0000

Alvaro Urech, *Innovation Director for Spain & Portugal, Alstom*. – Hello, good afternoon, hope you can hear me and see me well.

First of all, thank you very much. Thank you for allowing me to participate in this hearing. It's very important and a key issue for all of us, and thank you for allowing Alstom also to be part of this hearing.

My name is Alvaro Urech, I am Innovation Director for Spain and Portugal for Alstom, and speaking to you today from Madrid. My intention in these five minutes is basically to tell you a little bit about what we're doing in the use of these technologies, because AI is not just one thing – it is many things. And to be the first step towards this 2030 that this panel is related.

So for Alstom as, of course, you probably know, the company, we are a mobility solution provider, basically focused on public transport and, more specifically, on railway. But for the whole sector, if we want to reach our goal of having more sustainable and smart mobility for all passengers, digitalisation is certainly a very important part of this process. And within this digitalisation effort is where we place all the things we're doing related to artificial intelligence.

But what I would like to do quickly is to go through different areas in artificial intelligence, because we can call data science, or we can call computer vision, or machine learning, different techniques, different technologies within the big umbrella of artificial intelligence.

So what are we doing? Just to give you a few examples. For instance, we are already using this type of techniques within our manufacturing efforts, using, for instance, collaborative robots that help the operator, help the worker do the heavy work at the same time and learn how the worker behaves to allow that nothing happens and there's no accidents, because we have a very strong zero-accident policy.

We also are using very much – as much as we can lately – data science, trying to understand. Because actually what machine learning and data science do is that they look back to what happened before and learn, as the previous speaker was saying. So we try to learn and improve, find patterns in things that happened in the past to help do it better in the future.

For instance, when we do maintenance, we're using a lot of this type of techniques, because instead of saying, OK, you need to change this every year or every five years, now we are learning, using the data, how this equipment behave in different type of situations, operations, weather and all these things. And so we can be more targeted when we do the maintenance, and be, of course, much more sustainable using the equipment better during the time that it should be used.

We're also working on autonomous trains. Railways are a very strict area regarding safety, so anything that we do related to autonomous trains needs to fit within the safety regulations in the railway sector. So this is really going slowly. We're doing things, of course – I mean, automatic metro has been here for many years. But one thing is automatic and another thing is

autonomous, so the environment is completely different from within a metro line to a tram or a mainline train. So we're working on these things, but it takes time.

I didn't want to finish without saying that all this is very important and that we're really all working on it, but it needs to be backed up by two very important issues: data (data quality, data availability) and cybersecurity. Because, as I said before, we need to go back and look at the data to learn for the future. And if the data is not good, if the data is not available or someone has tampered with the data with malicious objectives, we have a problem. So we believe that regulation can really help in these matters, and we are here to help, to assist, to give the context. I am really looking forward to today's discussion and open for questions later. Thank you.

Rita Cucchiara, *Director of the AImage Lab, University of Modena and Reggio (UNIMORE).* – Thank you for the invitation. I would like in my talk to continue the talk that started with Dr Iacob about the capability of AI-based vehicular mobility monitoring and the need we have to do that at European level.

And by the way, just a second, I present myself. I'm professor at University of Modena and Reggio Emilia, where I'm teaching artificial intelligence for automotive at the motor vehicle University of Emilia-Romagna.

I think that artificial intelligence now, from the technology point of view, is able to do a lot of things. As a previous speaker said before, there are many technologies now available: computer vision, machine-learning-based processing of IT, natural language processing, many deep learning models that have been developed in European research labs, and now they are available with a support system.

Many countries in the world are working on autonomous driving and in many other applications inside the car, like driver advisory system, driver health monitoring, car predictive maintenance, personalised services. I put the US flag because Amazon is working a lot on this, and also some services like car insurance, where in Europe it's very good. There are new results of Italy and Germany together that are working very well.

There is the other side that is not road transport but is about mobility. That means that we could do a lot of things for digitalising 2D and 3D road mapping, for navigation services, road maintenance, traffic assessment and prediction.

The problem is that everything now is done by US. We use Google Maps. We use of ways, we use data that come and have been processed by these kinds of data. And we don't have at European level the same capability to answer in real time to the mobility and traffic analysis prediction of dangerous and anomalous situations. And I think that we really have to do that at European level now.

The next panel will discuss about the risk. I believe that the biggest risk we could have is not to have a policy of that, but allow others to do it for us, because we need to know how transparent decisions are, how much privacy there is in the mobility data, the robustness of the evaluation of the human oversight at European level, and now this is not what we can do.

Instead, in Europe we absolutely have the technology. We developed this technology in many European projects and in all the European labs we could do together, together with European companies, to recognise what's happening in the street, to recognise traffic conditions, to provide and predict the traffic situation.

The real problem is that now we need to have a big investment for that, because organising that, acquiring 3D data about all the roads in Europe, really needs a big investment. And we need to

do some projects that could be scalable at the level of Europe and not just a single project in a single part of Europe.

Now we can collect all the data streams. We have the availability of satellite, surveillance cameras, tripwire that are around, and also we could put together this kind of data with road visual data and GPS. We could do some proof of concept in some pilot area.

For instance, just to give a publicity, we started with a project about this, about digital sustainable twins in Emilia Romagna for understanding the traffic in industrial areas, because industrial areas are something very important, for instance to limit the emissions of trucks, because they need to understand the schedule of these kinds of things.

I believe that, if we put together the important concepts that have been written by the European Parliament in the White Paper on AI, and the new AI Act about the regulation of AI – and if we know the priority of Mobility 5.0, that is the priority in many countries, also in Italy it is one of the priorities – if we put together these kinds of things with the big, high-performance computing facilities we have in Europe for collecting and processing data, now is the time for us to do this at European level.

1-015-0000
Chair. – Thank you so much, and I want to make sure that the technical team will provide this presentation for us in the form that we can see the whole slides.

So now it's time for the colleagues who have questions. It's two minutes, and if you can direct it to a certain speaker on the first panel, it's much more smooth here to guide us through this debate.

So the first question will be from the EPP, Jörgen Warborn.

1-016-0000
Jörgen Warborn (PPE). – Thank you Chair; thank you, Miapetra, and a warm welcome to Robert Falck from *Einride*. I am really proud to have you here as one of the best examples of the Swedish success stories in AI Technology, and thank you for a very good presentation. I think the message was very clear. As you rightly put it, legal uncertainties and complex regulations are among the biggest hurdles to overcome for digital start-ups before they are able to scale up and eventually and hopefully become big and successful. Burdensome bureaucracy and inflexible public agencies are way too often forcing start-ups to either cease their business or move across the Atlantic. So I completely agree with you that this needs to change and it has to change rapidly.

There is an enormous potential to bring in AI innovation that improves lives, and already today, you and other developers have proved this in real life with intelligent vehicles that scan their surroundings, react instantly, preventing accidents and making transport safer and more environmentally friendly. So artificial intelligence can save lives, and this is why we need to make sure that AI for good is developed and deployed here in Europe. I am confident that I speak for a majority of both the Committee on Transport and Tourism and the AIDA committee members in saying that we have to pave the way for promising technologies such as yours.

My questions are: if you would give us a concrete 'to do' list on how to best make this happen, what would you recommend us to do, and what conditions should we set in order to make autonomous vehicle sectors bloom in Europe?

1-017-0000
Robert Falck, *CEO and Founder, Einride*. – I think that we have huge potential in Europe. We have great potential with a lot of smart people and the potential of what we want to build. I think that the challenge that we have faced is that we also have a lot of legislation that is

upholding an existing system. If we want to build a future, we must level the playing field and stop subsidising existing systems.

I think there is a lot of potential what can be done and it is always discussed how you can support the future, but it's not enough discussed how we should stop subsidising existing systems. A lot of potential for how we can utilise digital companies and how we can build, but I think what we need to really expand is to start supporting companies by levelling the playing field and also helping the financing market for risk to actually adapt so we can have a better capital structure for supporting the systems that are growing in Europe.

If it comes, for instance, with a self-driving, most competitors are from the US, financed by the financial market. And in Europe, that market is predominant – connected with big companies – and we are lacking that kind of funding structure to be a front-runner for this kind of innovative new technology.

1-018-0000
Ibán García Del Blanco (S&D). – Good afternoon, I would like to thank all the speakers. Their contributions have been very interesting.

I would like to reflect on the issue of regulation specifically, and on a phenomenon seen all the time here, namely that certain very specific applications are at times somehow considered by public opinion as if we were facing Frankenstein's monster.

This happens if we consider, for example, privacy issues such as remote facial recognition or some other issues. I cannot think of a better example of something that may be met with this prejudice than the use of such artificial intelligence systems in autonomous cars or HGVs weighing tonnes on our roads.

In connection with this, I would like to ask whether you believe that regulation providing for the greatest possible transparency as to the impact of artificial intelligence and as to how certain mechanisms work, providing as much clear information as possible, could help bring about much more investment in some areas and, above all, lead to far greater public acceptance of the use of such systems.

I am absolutely in favour of autonomous transport, for example. I am sure that in a very short time we will dramatically reduce mortality rates on our roads and transport networks. But I admit that I don't believe this to be the intuitive position of most people in Europe.

A final issue, which drew my attention and on which I would like a bit more specific information, is that I wasn't sure whether Mr Robert Falck meant that we had to end all support to our existing car industry when he said that we would have to put an end to subsidies or aid to other means of transport, Or did he mean something else? I would like to know exactly what Mr Falck meant.

1-019-0000
Chair. – To whom was the first question? Did you want to have a specific person or is it enough to have Mr Falck?

1-020-0000
Ibán García Del Blanco (S&D). — In fact, I was not addressing anyone in particular. If someone would like to provide an answer, I should be delighted to listen.

1-021-0000
Chair. – OK, you can keep that question in mind if you want to comment on that one, but Mr Falck, you have the dedicated question: please.

Robert Falck, *CEO and Founder, Einride***.** – Regarding the little bit of subsidising, for instance, when it comes to a lot of the inputs for how to write legislation and how to get input, we have to consider, in fact, that a lot of people and big companies that are holding the existing system also have the money to spend to also have a huge impact on how we see these questions.

I think that it's very important work that you are doing to keep the best opinion of the entire population in mind. And I think that we are all dependent on the fossil-fuel-based economy, but if you want to have a change, we need to be looking a bit outside of that, and to be able to assess how to deploy new technology on equal playing fields.

For instance, a very concrete example is that we have to have a big push for heavier and road freight transport to allow bigger and bigger trucks on our roads, and one of the downsides of that is that you will lock yourself in to dependency on diesel engines. If we say that we cap the size of the trucks, we can have electric in the very near future. And that's a very good example of how we should level the playing field and not listen too much to corporate interests, prejudicing what technology can do for the greater good of mankind.

And this goes for a lot of the questions and applying these kind of technologies: to uphold existing interests that are based on carbon emissions, or allow systems to change – and in a competitive way, because autonomous electric is cheaper to transport, and that will be the benefit of mankind, or uphold the existing system to the benefit of the ones selling the trucks of today?

Álvaro Urech, *Innovation Director for Spain & Portugal, Alstom***.** – I should like to take this opportunity to reply in Spanish to the Member's first question.

I believe that, as the famous saying goes, any sufficiently advanced technology seems like magic at the outset. I believe that we are currently at that stage, and that explaining to people why these things work, to increase the level of general knowledge with regard to all of this, could also be a very useful way to show the public that the problems are not that many. There are some problems and there are risks that must be managed, but, to give an example, usually when analytical techniques are used to count people entering or leaving a means of transport, their faces are not looked at. Faces are neither looked at, recorded, nor counted; it is shapes or bodies that are counted.

This would appear to give rise to more fear, but in reality it does not pose a problem. And this is so because it is set down in law. It is so and it is verifiably so. The principle of transparency must be overarching: to know how and why such algorithms make the decisions they make.

I do think that promoting knowledge of these technologies will certainly help improve implementation in the future.

Rita Cucchiara, *Director of the AImage Lab, University of Modena and Reggio (UNIMORE)***.** – Absolutely, I agree with Dr Urech before. I believe that we can explain to the people that the algorithm that can be used for face recognition is exactly the same one that is used for vehicle detection in an autonomous car, but it is also the same that is used in Google in order to understand the traffic or to do similar things.

So I believe that we need to say to the people that privacy data are already collected by many services that are outside Europe, and instead we would like to use these data in a completely privacy-compliant method and comply with all the regulations of AI, but just only to understand and to provide a provision of the best optimisation of traffic and to do something that is useful for everyone. I believe that information is the most important thing.

Elsi Katainen (Renew). – Thank you to the panellists for this very interesting and informative discussion. It is evident that artificial intelligence will have an increased role to play in the different fields of transport today and in the future. Smoother, cleaner and safer transport will make EU citizens lives' and mobility easier and freight transport more effective.

It has been interesting to hear about the new innovations and applications of AI in the transport sector. However, digitalisation and AI-led automatisation also pose challenges. We need to have a deeper look at what is happening in the field. For example, in the logistics sector, exact deliveries are made with agreed and sometimes very tight schedules. The quality of the data for the artificial intelligence system is of utmost importance for the effective functioning of these logistic chains. However, the quality of the data available is not always optimal, which will decrease the usefulness of AI. Here we need more improvement.

My question is mainly to Nadina Iacob. Has this problem been identified, and what are the proposed solutions to ensure high enough quality of data for AI to function properly? Furthermore, there are often many different companies in the logistics chain handling confidential information and data. How can it be ensured that this data is protected and doesn't fall into the wrong hands, for example to hackers?

Nadina Iacob, *Research Fellow, Centre for European Policy Studies (CEPS).* – Thank you very much for this question. Indeed, quality of data is one of the crucial things when we talk about data-enabled applications.

Perhaps what is an important distinction to make from the beginning is the fact that data exists, and also in quite tremendous quantities. But the problem sometimes is the way in which the existing data can be used and combined from different sources, and that's where the problem usually happens. This is why I was mentioning interoperability earlier in my intervention.

A key area of focus in this sense, going forward, is to promote and seek to establish, as much as possible, standards for data and enable data sharing between different organisations and systems in order to be able to really tap into the potential that data offers and improve the quality of the existing information that can then feed into algorithms and database applications. So this would be on the first point you mentioned.

Then on the second point, about handling confidential data: this is where a party, for instance the GDPR (General Data Protection Regulation), kicks in. And the GDPR focuses more specifically on the personal data, of course, but I will expand on this in a moment.

The GDPR does provide this uniform basis at EU level to handle more sensitive types of information and also perhaps to respond to issues of consumer trust that were mentioned earlier, in the sense that data subjects know that their data is protected under this Regulation.

What is perhaps necessary going forward is to ensure that for specific types of applications and sectors, enough guidance exists: that GDPR, in the end, is a horizontal piece of legislation and does not account for specificities of sectors, including the mobility sector. And this is something to keep in mind.

And going forward, in addition to just personal data per se, indeed, cybersecurity is also a key issue that needs to be considered further on, to ensure that the data existing can be utilised to its best potential in applications, but that it is also at the same time protected against hacking risks. For this, I fully agree with you: cybersecurity is of utmost importance.

Karima Delli, *Chair of the Committee on Transport and Tourism***.** – Thank you very much for your presentation.

I would like to ask you quite simply: how do we do this in practice? Today we content ourselves on saying that we have data, but the real question, which was mentioned a little by our expert, Ms Iacob Nadina, is the opening of data and Open Data: you have not gone far enough in your reflexions.

I also have a question from a colleague who is not able to be here today. I will read out the question from Ms Alametsä Alviina:

colleagues, great hopes have been placed in the rapid development of artificial intelligence in the transport sector. Various research studies estimate that the deployment of artificial intelligence in transport will increase employment and create significant economic benefits throughout the European Union by 2030.

But 2030 is also the year in which the EU aims to achieve a 55% reduction in greenhouse gas emissions compared to 1990 levels. Artificial intelligence in transport can reduce congestion, the number of individual cars on the roads and therefore greenhouse gas emissions.

However, it also carries a very high risk of increasing emissions, as autonomous vehicles could make car travel more attractive, which could lead to an increase in car travel rather than an increase in use of public transport.

What recommendations do you have for us politicians so that we can ensure that artificial intelligence in transport is used to further our climate goals and not hinder them? How can we also ensure that we avoid the rebound effects and continue to prioritise public transport, walking and cycling over the development of new technologies and over private cars?

Chair. – Is it for Rita Cucchiara or did you mention someone?

Karima Delli, *Chair of the Committee on Transport and Tourism***.** – This is a question from our colleague, Ms Alviina Alametsä, which I think is addressed to all the panellists.

Chair. – Then let's make a very quick round to one topic, please. We start with Nadina Iacob.

Nadina Iacob, *Research Fellow, Centre for European Policy Studies (CEPS)***.** – I will break down this question into two main components. First, you mentioned the dangers of people relying perhaps too much on cars if autonomous cars become too popular, let's say. And then, what do we do about connected goals such as the energy and emissions goals that we have up until 2030?

First, we're looking at modes of transport. I think what is very important to keep in mind is that the development of autonomous vehicles comes together with a plethora of other developments in the field. So autonomous vehicles per se will not necessarily be the only option available for citizens, thanks to AI developments, but they will be part of a conglomerate of options including, for instance, integrated modes of transport that may be more appealing for citizens than simply owning an autonomous car. What is key in these developments is to ensure that wider goals set for the EU are clear to the average citizen, and to ensure that various means exist for citizens to choose themselves and to understand what each choice implies.

This is why I mentioned, for instance, that smart cities play a very important role, and the development of AI and transport can be a key component of making our cities smarter, giving

more choices to our citizens, and ensuring that the overall developments in the field contribute to wider policy goals.

(The Chair cut off the speaker)

1-032-0000
Chair. – There were four answers in two minutes, so I have to limit. Robert Falck, one point: you mentioned very much the emissions, so please, if you have something to add.

We don't have him online? Maybe later?

Alvaro Urech? On emissions?

1-033-0000
Alvaro Urech, *Innovation Director for Spain & Portugal, Alstom.* – Yes, just a quick answer. Yes, that's a risk, it may happen. Actually we're working from the public transfer from the railway to become the backbone of sustainable transport, but we need to keep in mind that we are in the era of passenger choice. So we need to offer solutions, we need to offer things to the passengers, which is probably the multimodal approaches, which makes more sense, that are convenient for them.

If we offer them things that are not convenient for them, they may tend to move away from the things that we believe are best. So let's keep on pushing on desirability, appeal, convenience of public transport, to avoid this possibility – although remember that a traffic jam in an autonomous car is still a traffic jam. OK, so that's just my quick answer.

1-034-0000
Rita Cucchiara, *Director of the AImage Lab, University of Modena and Reggio (UNIMORE).* – Also for me a quick answer. From the autonomous car, I'm sure that they will allow better use of car sharing, and this could be used for limiting the gas emissions, but especially what we have started to do in the Emilia-Romagna area is to understand the traffic in order to improve the use of bicycles and other transport possibilities to go to the industrial area where the roads in general can become dangerous for people on bicycles and so on.

If you have the idea of the traffic and the mobility, you can also optimise the use to schedule better the use of the tracker and therefore, for instance, to use them during the night and not the when the workers on bicycles go to the industries.

So I believe that the use of AI and intelligence, understanding what and predicting what can happen absolutely, could go in the direction of limited emissions and improve our environment. This is our scope.

1-035-0000
Ernő Schaller-Baross (NI). – Thank you so much for the opportunity. Road transport is the driving force behind the European economy. Known as the mobility package, the package of EU legislation for the road transport sector entered into force last summer. Unfortunately, the approved legislation will reduce the competitiveness of transport companies in Central and Eastern Europe and place an additional burden on small and medium-sized enterprises.

As a result, the beneficiaries of the package may be third-country carriers. Meanwhile, truck-driver shortages are becoming increasingly worrying throughout the European Union, and it's also set back in Hungary.

My question is that, based on your expertise, which are the most essential technological innovations in the field of artificial intelligence that the European Union should support in order to close the gap between transport companies in Western and Central and Eastern Europe and create opportunities for European small and medium-sized businesses instead of endangering their competitiveness?

Chair. – And who do you want to answer, please?

Ernő Schaller-Baross (NI). – A general answer would be very good, thank you.

Robert Falck, *CEO and Founder, Einride***.** – Sorry, we seem to have a little bit of a technical issue here. Would you mind just repeating the question?

Ernő Schaller-Baross (NI). – My question is that, based on your expertise, which are the most essential technological innovations in the field of artificial intelligence that the European Union should support in order to close the gap between transport companies in Western and Central Europe and create opportunities for European small and medium-sized businesses instead of endangering their competitiveness?

Robert Falck, *CEO and Founder, Einride***.** – That's a great question. My view is that they are two-fold. One is to secure that people get the right education, especially when it comes to programming and AI, but also when it comes to the future jobs of the economy. We see that we will have much more advanced systems when it comes to transport. The future transport worker will be well paid and will have a different type of work than today than just driving.

And I think that this new type of system will also have a revival of the countryside, because the more democratic or lower cost of transport also will allow us to a more decentralised transport system, making the city and rural areas more equal when it comes to transport costs. And I think that's going to really help a lot of small and medium-sized businesses to compete with giants, because without the logistical benefits, it's actually quite beneficial to have small and medium-sized companies, especially in the poorest and across a lot of areas. For me, electrification and automation is all about creating something better.

I just want to highlight a previous question – we'll start here. It's very simple if we want to get a better future: you should put a much higher demand that you can't go autonomous without being sustainable. No autonomous deployment on the roads without a sustainable propulsion system. It's very simple and very beneficial, and with it you have the business case for altering the transport system today.

Chair. – Thank you so much, and any other speaker wants to conclude, because then we are over time and we will move to the next panel. Doesn't seem so. Thank you so much for all the visiting speakers, and I turn now to the plenary in the hall, and Karima, you will have the floor to chair the next panel. Thank you on my behalf.

Panel II: "EU Transport Policies: How to prepare for AI while minimising risk"

IN THE CHAIR: KARIMA DELLI
Chair of the Committee on Transport and Tourism

Chair. – Thank you, Madam Chair.

We shall therefore move on to the second part of our discussions and address the following question: how to prepare for artificial intelligence while minimising the risks? I am now going to give the floor to our experts and I will be very strict with regard to respecting speaking times. Each of you has five minutes and I will start with you, Mr Pete Thomas, Professor Emeritus at

Loughborough University and technical coordinator of the LEVITATE project. The floor is yours for five minutes.

Pete Thomas, *Emeritus Professor at Loughborough University, Technical Coordinator for the LEVITATE project***.** – Good afternoon, and thank you for inviting me to this hearing. I'm honoured and looking forward to helping the committees in their deliberations. My comments are based on my position as Emeritus Professor in Road and Vehicle Safety at Loughborough University and also as the Technical Coordinator of the LEVITATE Research Project, which is funded under the Horizon 2020 programme. And I'd like to draw your attention to the acknowledgement that is on the screen.

The Project LEVITATE is taking a different approach to many other studies in this area of cooperative, connected and automated mobility (CCAM). We use simulation models and statistical methods to forecast the impact of increasing automation and also the introduction of mobility services that are enabled by automation and connectivity.

Our focus is on cities, and it ranges from the direct traffic impacts such as travel time and congestion through to societal-level impacts such as safety and emissions. Our results are still preliminary, but there are already some general conclusions that we can see.

First of all, our research does generally support the widespread expectations that automated vehicles – AVs – and CCAM services will improve traffic and safety. However, to achieve this, we need perfect vehicles operating on perfect roads with perfect road users. And this may be several decades away, and during a long transition phase, impacts are expected to be much more mixed.

There are no fully automated vehicles on the road yet, but we expect early AVs to be more cautious in traffic than human-driven vehicles, accelerating more slowly, stopping more frequently and leaving greater separation distances. In cities this will reduce speeds and increase congestion, and city authorities will have to introduce policies to mitigate these effects.

One of the impacts we have examined concerns parking and access to city centres. For example, an AV taking a passenger to a city centre may have one of several behaviours. Once passengers are dropped off, an AV might park itself locally; it might return to a distant base; or it may drive around waiting for the passengers to return.

These behaviours add to the local traffic, and we can show that they have the potential to increase congestion by up to 20%. Connectivity and automation also open up the possibility of services such as automated ridesharing that's already been mentioned, where passengers can call for a vehicle and then share a journey with others on the way.

Our analysis shows that if passengers don't choose to share the vehicle, then travel times can increase by up to 16%. So for the impact on traffic to be minimal, regulators must ensure that there are suitable procedures and mechanisms in place to promote ridesharing and in particular to mitigate disincentive factors, such as those relating to personal safety.

Many of the interventions that we've examined can have an impact on the transport modes that people choose. Active travel is highly valued for its health and for environmental reasons and is promoted by cities. But we found that by improving the services such as, for example, using an automated last-mile transport, then this is a disincentive for people walking or cycling, which can reduce by up to 75%.

The public expectation is that automation will result in considerable safety benefits. Automated vehicles might not exhibit *(inaudible)* speeding and distraction. However, during the transition

phase, earlier generations of vehicles will not be perfect. They will make mistakes. They will introduce new traffic risks even when some existing risks are already reduced.

It's well known that there are challenges associated with the handover of control between human and vehicle, for example. Similarly, there are real challenges when managing the interaction between vehicles and crossing pedestrians. We've not yet been able to estimate the size of these new risks, but we do believe they may be very significant during the transition phase.

What is clear is that the impacts of CCAM services and technologies depend strongly on the driving style that's programmed into vehicles. We expect that many of the adverse impacts could be mitigated by new city policies. But to achieve this, we've identified the need for much better independent monitoring of AVs during the transition phase. This phase has already started with driver assistance systems on cars, and the need for data will only increase. And with that, I'd like to stop there. Thank you.

1-046-0000

Livia Spera, *Acting General Secretary of the European Transport Workers' Federation (ETF).* – Good afternoon everybody. Thanks for this opportunity. Indeed, the ETF (European Transport Workers' Federation) represents five million transport workers across Europe in all transport modes, and this is the reason for the feeling that transport is, of course, one of the most impacted sectors by the effect of artificial intelligence, and indeed, transport work will change and is changing significantly. We already see the effect of artificial intelligence on our workers. At the same time, the effects of artificial intelligence on transport workers – on workers in general but on transport workers – are highly understudied and not very well known, and a general request is to promote more knowledge on this.

Of course, we have been looking very closely at the other proposal presented by the Commission and the debate surrounding it, and we have some major doubts and major concerns.

First of all, regarding the approach. The Commission is basing its approach on ethical guidelines. We think this is not the right way to go, because there are a lot of ethical guidelines but there is a general lack of consistency and predictability. So this is not, for us, the way to go. Also, the general approach is based on trust – creating trust – in order to enable Europe to become a champion in developing artificial intelligence in order to create a trustworthy climate. This is not bad in itself, but it is done without really looking at what the effect on workers can be.

This is exactly what I was saying before. There is also another problem in that the general definitions that are used in the Commission proposals are based, of course, on a consultation. But the consultation was mainly with companies, with technology providers, so then we can argue if that was a truly democratic process. It was certainly open to everybody, but some views were taken into account more than others. There is, as I said, a major lack of consideration for everything that is worker-related. There is a system that introduces the risk level, of course, but still there is a lack of appropriate measures that are taken because, again, the risk shouldn't be evaluated by a third party; it's the producer itself that has to evaluate it.

So what we are advocating for is rather to have an approach based on the precautionary principle. This is a principle that is used in several European policies and has a basis in the Treaty on the Functioning of the European Union, and it is a principle that would allow the putting forward of the basic principles that we would require for having a suitable environment for developing artificial intelligence in a way that is also not damaging workers and the working environment.

Of course, there is a major issue for us, which is about workers' involvement – trade union involvement. So I will just give you an example. Very recently, our members in Italy concluded a ground-breaking agreement with Amazon, which was exactly about this: about governing through a more traditional industrial-relations system between employers and employees. The management backed an algorithm, because when work is managed by an algorithm, there are a lot of dimensions including, for instance, safety and working time, which can be, of course, disregarded.

What we are asking for, in fact, is a specific artificial intelligence directive for workers, and this is because the issue is so specific that Europe should not only be aiming at being the champion for promoting and developing artificial intelligence technology but also at having the most protective environment for workers. And what are our main demands here? First of all, to strengthen employers' responsibility in preventing artificial intelligence risk. Today, employers are obliged to carry out risk assessments at the workplace, and certainly, risks coming from artificial intelligence should be included in the series of risks that need to be assessed.

So, ensuring privacy and data-protection rules because the GDPR (General Data Protection Regulation) is there, but for the workers it is extremely difficult to have it implemented. Ensure explainability – it should be explained to workers how AI is being used; always ensuring 'human in command'; prohibiting worker surveillance; and, of course, enabling workers to become AI literate in order to understand why and how processes are put in place.

1-047-0000

Patrick Van Der Smagt, *Director of AI Research at Volkswagen Group and Head of Machine Learning Research Lab at Volkswagen Group, ACEA TF-AI Pilot***.** – Thank you very much, and indeed, I am leading the research on AI and machine learning in the Volkswagen Group, but today I am speaking to you in my role as the pilot of the Task Force on AI in ACEA (the European Automobile Manufacturers Association).

The first point is with respect to assisted and autonomous driving. The current ex-ante conformity assessment is taking care of all the issues related to in-vehicle AI – and we're talking about 'narrow AI' here, so not general AI, which is something that does not exist in the real world yet. But we're talking about AI and machine learning as we know it nowadays.

The Type Approval Regulation is a very important legislative framework here, of course – the general safety regulation, conformity of production, in-service compliance and so on. These cover many, if not all, of the issues that we are discussing with respect to AI in the vehicle.

Indeed, the existing framework – the UNECE framework – addresses all of these issues and are currently in place or are currently being set up with respect to automated lane-keeping, software updates, security, autonomous vehicles, automated vehicles.

It is important to have an interaction between the AI Act and the existing Type Approval Regulation, and that's, of course, also within the plan – that the new requirements for AI deployed in the vehicle should be defined within those sectoral frameworks in order to have an agreement between all these systems in all the markets. So that is good, but it's a point that needs to be stressed and needs to be followed up in the future.

At the same time – and I would like to also fortify the message of the previous speaker that ethical guidelines are not enough – OEMs (Original Equipment Manufacturers) are addressing ethical and trust considerations in the process along the value chain, because not just in-car and security features in car are an important issue, but also the whole value chain with respect to CCAM (Cooperative, connected and automated mobility), with respect to manufacturing, with respect to finance and so forth, needs to be safeguarded, and the AI Act goes a good way there. But we are also, as OEMs, looking into codes of conduct and standards and, of course, going

also beyond codes of conduct, which is important to make the ethical guidelines actually actionable.

One initiative we have started is *etami* (ethical and trustworthy artificial and machine intelligence) in order to say how can we make these ethical guidelines, for instance, as those produced by the High-Level Expert Group on AI, actionable within the company?
I will follow up with the policy recommendations on AI from the FCA. We have a number of recommendations first of all, and I think that's a bit of an open door to carefully balance regulation with innovation and we are, of course, aware that the AI Act tries to do that, but that remains a very important point. And the other point that I mentioned just before is to ensure consistency with the existing sectoral regulatory frameworks and certification requirements, first of all. And secondly, it's very important to harmonise the AI requirements at the UNECE (United Nations Economic Commission for Europe) level.

A few smaller points (or maybe not smaller points, but detailed points). The clarifications of legal meanings and the regulatory texts are maybe a bit lopsided. There is a definition of AI, but there is, for instance, no definition of data or subliminal techniques – bias, adequacy, irrelevance – those are mentioned and may lead to confusion in one case or the other.

Maybe a more important point is the definition of AI itself. The current definition of AI is basically regulating all software, and that may lead to some issues, especially once the definition is moved on to subsequent legal systems. Also, a very important point is to use a proportionate risk-based approach for AI applications.

And the last point: defer the further development of industry-led initiatives – I mentioned *etami* before – but make a code of conducts actionable. And finally, to refer to state-of-the-art standards to synchronise those with the AI Act and upcoming regulations.

1-048-0000
Daniela Braga, *Founder and CEO, DefinedCrowd Corp***.** – OK, good afternoon. I'm Daniela Braga, Founder and CEO of DefinedCrowd, a data-for-AI company. We collect and structure high-quality data in an ethical way for applications in the field of human computer interaction.

For example, virtual assistants like Siri or Cortana; smart speakers like Alexa or Google; Google Translator and similar machine translation applications; biometrics recognition, like facial recognition; computer vision applications like OCR; object recognition.

The types of data we deliver to our clients are in the form of speech, voice, text, image and video, and we cover 50 languages. We use crowdsourcing, because people are still required to train and improve AI machine learning models for a good while.

Now, the new paradigm in industry is that data is the new code, as AI is the new software. There will not be any business or organisation in the next decade that is not going to have to have an AI department or will have to build on top or use AI.

When we think about AI applied to transportation, we think about autonomous driving and autonomous vehicles mostly. As we know from MarketWatch and a lot of other market research articles, the global autonomous vehicle market was valued at 54 billion in 2019, and it's estimated to go beyond two trillion in 2030.

And this has been a very fast-moving area. The first autonomous cars appeared in the 80s with the Carnegie Mellon University, NavLab and AVL projects. Since then, both the EU and the United States have made big breakthroughs. In 2014, Google's autonomous vehicles and Tesla semi-autonomous cars started driving in the United States, and as of 2019, 29 of the US states have passed laws permitting autonomous cars.

So obviously the benefits are undeniable. Autonomous vehicles enable independent mobility for non-drivers, as well as people suffering from certain disabilities, and they allow travellers to travel with more comfort and flexibility, to read and rest and even work. They also reduce the driver costs in commercial vehicles. They also improve safety, reduce car crash risks, increase road capacity and will help lowering, of course, carbon emissions and reducing financial expenses, which is very aligned with the EU carbon neutrality of 2050 goal.

AI will also be used in applications to ease traffic congestion and help routing traffic and estimating public transportation times of arrival more accurately. In fact, Google Maps started that same thing. However, implementing the new Artificial Intelligence in Transport report, with the benefits of AI, brings real challenges. AI Applications raise numerous ethical, social, economical and legal questions, such as: who is liable for an accident? How to protect AI from cyber attacks?, and How to ensure data protection and transparency?

AI can also lead to biased decisions, restrict users' options, influence their opinions and manipulate their choices. So in 21 years of experience in this field of data for AI, which data is at the centre of everything in machine learning, my recommendations are the creation of a task force for ethics and AI, with a subcommittee dedicated to transportation, and also – around the data – really paying attention to the data problem.

This type of data is hard to find, so the EU should promote regulations and guidelines for Member States' public and private sectors, to share data, obviously with all the privacy and PII taken care of. But this is for me one of the most important aspects to do within the European Union to accelerate the state of the art of AI in transportation.

1-049-0000

Josianne Cutajar (S&D). – Thanks to the panellists who have joined us in this and the previous session. AI will do to transportation what the internet did to the globe. A sector traditionally conservative, the benefits of AI for transport are so evident today that the entire sector has mobilised to integrate AI systems.

We are all aware of the various question marks surrounding its applications, amongst which are civil liability and ethical issues. These are just two of many.

On the panel today I, luckily, see represented academia, trade unions and the private sector. Therefore, I would like to ask Professor Thomas, who has advised the Commission on road policy: the private sectors and innovators have often called for less legislation, accusing the legislator of hindering technological advancement. But this could also lead to more certainty, investment and, possibly, more trust by users.

We are indeed competing in a global world, especially with markets such as China and the US, with less administrative constraints for businesses. I would therefore like to further discuss with you how the EU should approach AI legislation to avoid impeding technological development and to strike the balance between regulation and development.

To Secretary Spera: the application of AI will boost automation whilst also ending many jobs. Yet at the same time, it will create new ones, which we cannot think of today. Therefore, how do we start, as of today, ensuring that policies are in place to push for the creation of new jobs through AI in full respect of labour laws?

And finally, to Professor van der Smagt and CEO Braga: the more we implement AI in transport, the more exposed we are to cyber threats. What can the private sector do to reassure the consumer and the regulator of the security of such systems, consequently creating a favourable public opinion?

I stipulated, for each question, to whom it is addressed: Professor Thomas when it comes to the question between balancing deregulation vis à vis technological development; General Secretary Spera when it comes to ensuring that the new jobs which will be created through AI are in full respect of labour laws; and Professor van der Smagt and CEO Braga when it comes to the implementation of AI in transport and addressing cyber threats, and what more we could do to reassure consumer and regulator security and trust.

1-050-0000

Pete Thomas, *Emeritus Professor at Loughborough University, Technical Coordinator for the LEVITATE project*. – The question is about balancing the issues about the deployment of new automated technologies. I think with our research that we've conducted, what we've observed is that the expectations that many, many people have and that have even been expressed today, about the long-term benefits of AI mobility technologies, are exactly that: long term, and that the real challenge is going to be in the transition period as we're building up new capabilities of vehicles, and particularly as we're seeing those vehicles entering the vehicle fleets.

This means that we have to be aware that when we say automated vehicles become available on the road, that means that they start to become available for consumers to buy. But the typical age of a vehicle when it's taken off the road may be 15 years, so there's a minimum period that we've automatically got before we can see large-scale penetration of the fleet by automated vehicles, and that will be one of the biggest factors that drives the impacts that we see at city level, at societal level.

1-051-0000

Livia Spera, *Acting General Secretary of the European Transport Workers' Federation (ETF)*. – Clearly, what I said in my presentation about the preparation of a directive that really tackles the questions related to workers – that could certainly help. But for us, transport workers have evolved over the centuries, so the consequences of AI are already visible. What we need is, certainly, trade union involvement, workers' involvement in the process, and we believe that collective bargaining is the right place. We already have a lot of examples of collective bargaining tackling technological change, and this is the right place to govern innovation: through dialogue and through the involvement of workers and their representatives.

1-052-0000

Patrick Van Der Smagt, *Director of AI Research at Volkswagen Group and Head of Machine Learning Research Lab at Volkswagen Group, ACEA TF-AI Pilot*. – Thank you so much, and thank you for the question. It touches me because I've been working in machine learning and AI since my master's thesis in the in the mid-1980s, and I have suffered from an AI winter, which was caused because of mistrust and over-hyping of the technical possibilities of these methodologies. And now that the applications are happening and becoming ever nearer, especially also in transport, I think trust is one of the most important things that we need to work on in these methodologies. And for me, that means that we – even though the research and R&D and sandboxing are important – in the applications, we must make sure that in the process of creating those, we need to work on industry standards and certification of these standards within all the suppliers and users of the methodologies.

1-053-0000

Chair. – Thank you very much, you are right to talk about trust, because without trust, we cannot move forward with the technological aspect.

I shall now give the floor to Ms Susana Solís Pérez. Can you hear me? No, I am told that she is not connected.

Let's move on to Ms Tilly Metz, in that case. Hello, can you hear me?

1-054-0000

Tilly Metz (Verts/ALE). – Thank you very much to the speakers for the interesting presentation. Indeed, artificial intelligence brings both opportunities and risks to the transport

sector, and those have to be studied and addressed before automated vehicles are put into the market.

So I think my questions, at least the first two questions, are for Professor Pete Thomas, and maybe the last one. Sorry, I have to work in parallel, and maybe the last question is for the lady that spoke last.

So first: automated cars have a real potential to improve road safety, which is great, as well as we want to avoid deaths and serious injuries on our roads. But in our enthusiasm for automatisation, we should not forget about the bigger picture. The new types of automated and connected vehicles also pose new risks, especially when they are used in mixed traffic, interacting with conventional vehicles and vulnerable road users like motorcyclists, cyclists and pedestrians. There's also the concern that the manufacturing of the software that is intended to improve road safety can cause accidents. To ensure that the vehicles are completely safe for both the drivers and other road users, we need more research and development to improve product safety. We also need tests under real driving conditions and independent crash analyses of accidents with vehicles equipped with assisted and automated vehicles before more advanced systems are put on the market.

What would you say are the biggest risk in terms of road safety for automated vehicles, and what should the EU do to address these risks? And then secondly, automated cars have the potential to lower greenhouse gas emissions by, for instance, keeping a lower and more regular speed. But the study from the Michigan University from 2018 found that introducing automated vehicles actually could increase energy demand for the vehicles due to all the extra hardware needed, which also affects the emissions. Have you studied...

(*interruption by the Chair*)

It's just the effect of the emissions from the automated cars, also from a life-cycle perspective of the cars, and what are the conclusions?

The other one was about cybersecurity, but I'll skip it then.

1-055-0000
Pete Thomas, *Emeritus Professor at Loughborough University, Technical Coordinator for the LEVITATE project***.** – The question is: what are the most important things that we can do to ensure safety with automated vehicles? And I think in the short term, because we have only driver assistance technologies on the road currently, one of the key factors is that we should get as much feedback from the functioning of those vehicles as possible. So we need to understand what they're doing on the road so that we can learn lessons from that and plan that into the longer-term development of vehicles.

For the longer term, of course the biggest question is: how do we ensure the safety of vehicles? There's no such thing as completely safe, but there are very many technological challenges in ensuring safety, building up a framework that can be incorporated into European regulation to enable these vehicles to be used on the road.

But there are two other factors that I would mention. One particular factor in the shorter term, where we anticipate vehicles will be sharing control between the vehicle and the human, depending on the particular stage in the journey: the human factor is a really critical limitation in this, in the ability to accept control or to give control.

But then the fourth factor that I would suggest is different: it's one of complacency. There is a widespread view that automated vehicles will give us huge safety benefits. But we're a long way off that, and in the period of time until we do have these highly-performing automated

vehicles, there are many other things that we can be doing to improve safety, to do with road design, road user behaviour and other functions of vehicles.

1-056-0000
Daniela Braga, *Founder and CEO, DefinedCrowd Corp*. – Just to address the former question too and the question on road safety.

On trust of AI – and any AI – we need AI literacy and education across the board, for citizens, for governments, for companies. It's very important that people de-mystify the fear of AI.

The second part has to do with road safety. I'm not going to comment on the carbon emissions because I'm not an expert in that field. But in the area of road safety, in our cities this is not going to happen overnight. The mixed levels of autonomy of vehicles have to be defined. It's not very busy traffic and cramped cities will have to completely redesign their layouts to allow, probably in the first instance, level three, level four, or level five autonomy – if everybody understands what I'm talking about in terms of hands-on and eyes-on and how much the driver is engaged. But it will come, together with a redesign of cities and roads, just as we have bike lanes.

1-057-0000
Kosma Złotowski (ECR). – I have a question for Mr Van Der Smagt. A sense of security is very important when using new technologies. Autonomy will bring about a transport revolution, but the changes will create new risks. In addition to the lack of adequate infrastructure, consumers' concerns may hinder the market uptake of these technologies. Is the motor insurance system ready for these changes, and will insurance costs not represent a problem for individual users? Is it possible in practice for fully autonomous vehicles and vehicles with drivers to operate simultaneously on the same roads? In such a situation, will the driver of a traditional vehicle be held to be more responsible for an accident or a collision? Should technological issues, including those related to autonomous mobility, not be incorporated into driver training systems immediately?

1-058-0000
Livia Spera, *Acting General Secretary of the European Transport Workers' Federation (ETF)*. – No, sorry, I had an issue with the interpretation, so I couldn't get the whole answer – if I can please have it repeated very shortly?

1-059-0000
Kosma Złotowski (ECR). – Is the motor insurance system ready for these changes? Will insurance costs not represent a problem for individual drivers? Is it possible in practice for fully autonomous vehicles and vehicles with drivers to operate simultaneously on the same roads? Will there be no greater degree of responsibility for the driver of a traditional vehicle in such a situation? And finally, should technological issues, including those related to autonomous mobility, not be incorporated into driver training systems immediately?

1-060-0000
Livia Spera, *Acting General Secretary of the European Transport Workers' Federation (ETF)*. – The question of reliability is still understudied in many sectors, not just in road transport – what will happen when there will be more autonomous driving, for instance?
Regarding the training, we believe that, especially in a sector such as road transport, which is now governed by very low salaries and very poor working conditions, technological innovation can be a way to professionalise workers, so to have probably less employment but better employment. But this, again, has to be addressed in the right way, notably through training, and that's where companies also should be pushed by legislation and by policies also to invest in training, so there should indeed be better training standards, and this is something that we are absolutely not against.

1-061-0000
Chair. – Thank you very much. Mr Patrick Van Der Smagt, could you please tell us how you address the issue of liability at the manufacturers-level?

Patrick Van Der Smagt, *Director of AI Research at Volkswagen Group and Head of Machine Learning Research Lab at Volkswagen Group, ACEA TF-AI Pilot***.** – I didn't hear the last part of what you said, but I think I can answer the question all the same.

First of all, with respect to insurance: of course, the autonomous driving situation has an impact in that there will be a difference in the producer and the operator of the vehicle, as the operator will very likely be a third party, a company, or the OEMs can also provide that service additionally. And in that case, indeed, insurance needs to be taken care of there.

The current legislative framework is such that, of course, the Product Liability Directive itself takes care of the producer parts, but with respect to the operator, insurance and liability, their legal frameworks have not been completed yet and are currently being looked into, and it is a very important point to have that finished before we are in any situation to put level five autonomous driving on the roads.

As to your last question – do we need special training for human drivers when level five is going to be on the road? – well, I can only give a personal opinion and not an official one. But my personal feeling is that, if that were so, then that's not level five, because level five is supposed to be interacting with other agents on the roads autonomously and safely. So I hope we will not come to a situation where people have to take extra care with respect to autonomous vehicles.

Έλενα Κουντουρά (The Left). - Madam President, I should like to thank the experts for their very interesting presentations and, as a member of both the Committee on Transport and Tourism and the Special Committee on Artificial Intelligence, I think that today's workshop is proving extremely very useful for our work in both committees. I have two questions, the first to Mr Thomas and the second to Ms Spera:
Just last week, the report on the EU Road Safety Policy Framework 2021-2030, which I had the honour of presenting, was adopted in Parliament.

We are also calling for new harmonised provisions to ensure the complete safety of automated vehicles for their drivers and for other road users. My first question to Mr Thomas therefore concerns the interaction of fully or partially automated cars with conventional cars. Will it be possible to secure, in a safe and socially just manner, the promised benefits of AI as described by you (traffic decongestion, better safety standards, environmental protection) while conventional cars, cyclists and pedestrians are on the roads? Particular attention is needed in urban centres where interactions are more complex and AI decisions therefore become more difficult and more prone to errors or ethical dilemmas. What specific risks have you identified and how are they being effectively addressed?

My second question, to Ms Spera, concerns another very important issue relating to the challenges of AI at the workplace, particularly with regard to the safety and rights of workers in the transport sector. In the absence of an appropriate legislative framework, technology could well become yet another means of pressuring drivers to make even faster deliveries, rather than upholding their rights and ensuring compliance with labour law. What are the specific risks for transport workers arising from this and how can they be effectively prevented?

Pete Thomas, *Emeritus Professor at Loughborough University, Technical Coordinator for the LEVITATE project***.** – That's a very good question about the introduction of automated vehicles in respect of the 2030 road safety objectives.

There are a number of questions. There are risks, I think, that are already known about the introduction of automated vehicles or – more likely in this time frame – driver assistance

systems. And I think the risks come from the limits of the systems that we'll be seeing. And so when a vehicle reaches the limit of its capabilities and needs to hand control back over to the driver, the challenge will be to ensure that the driver is in a sufficient state of awareness and understanding of the traffic situation to be able to take over control seamlessly. So when a vehicle comes to the end of a highway, for example, and the vehicle can no longer drive itself, that becomes a risk point.

Other risk points that we see are potentially about the interactions between automated vehicles and vulnerable road users. How will pedestrians be able to cross the road? Currently, it's common that we use eye contact between the driver and the pedestrian when we're close to the vehicles, to be sure that the human driver has recognised the pedestrian. We look at the movements of vehicles when they're at a greater distance. But how will we reproduce this with automated systems? That is a challenge, because if we can't reproduce this, then it potentially has significant impacts on the nature of how we cross the road and where we can cross the road.

But the final point to make in respect of the 2030 Road Safety Strategy is that performance indicators are at the heart of this, and we need to be sure that we're monitoring the introduction of these new technologies in a way to enable us to build a strong evidence base to make future decisions. And I think that in itself will also be a challenge.

1-065-0000
Livia Spera, *Acting General Secretary of the European Transport Workers' Federation (ETF)*. – Indeed, the risks are already there; they are not risks – they are reality, when we look what's going on at the workplace.

There are two kinds of risks I think. One is the fact that the development of artificial intelligence technology is also allowing the development of new companies and new forms of companies that do not see themselves anymore as an employer. And so as such, industrial relations with these companies are difficult. So if you don't see yourself as an employer, if you don't see your workers as employees, then there is a breakdown in traditional industrial relations, and this is, of course, one of our main battles for trade unions in general.

The other thing is what I said in my presentation about the need of always having the human in command. Because if we, for instance, look at what's happening in parcel delivery, in e-commerce, in last-mile delivery, where it's there is an algorithm management that establishes the number of parcels that workers have to deliver per day, this is really unreachable. So what's happening is that in many cases there is a chain of subcontracting in order to be able for the driver to keep the standard. And there is also, of course, a lot of fatigue and problems related to safety.

So there are different dimensions, and I'm sure that many more will come. And that's why there must always be – even though the setting changes and the style of company changes – industrial relations and the dialogue with the union and collective bargaining power will always stay as the fundamental tool to ensure good working conditions.

1-066-0000
Dorien Rookmaker (NI). – I would like to thank the panel, because I've learned a lot today. I have two, maybe three short questions.

The first one is for Mr Van Der Smagt. He talked about the need for a better definition for artificial intelligence, and I would like to know why it's so important to have a good definition. And also, do you have any suggestions?

Then for Ms Braga, you talked about an ethical task force to help us with making good policies for artificial intelligence and the use of data. I would like to ask you: how would you think such a task force would operate, what would be its objective, and who should be in this task force?

And then thirdly, Mr Pete Thomas: I would like to know if he also has some views about the separation of vehicles to enhance the use of autonomous vehicles? That's it.

1-067-0000

Pete Thomas, *Emeritus Professor at Loughborough University, Technical Coordinator for the LEVITATE project***.** – The question is about how to ensure the separation of vehicles to ensure safety: is that correct? OK. In many ways we see already the value in separating vehicles of very different collision risks. So we like to separate pedestrians and cyclists from conflicts with cars, and there are many areas where that's shown real benefits – in the Netherlands, for example, and in Denmark and Germany, where there are high levels of segregation.

What we found when we've explored the issue of segregating automated vehicles on highways from others is that, when the vehicle numbers are relatively small, then this can add to congestion and potential conflicts. It's only when the vehicles themselves get larger and therefore take a fair share of the roadway that the risks become smaller.

1-068-0000

Patrick Van Der Smagt, *Director of AI Research at Volkswagen Group and Head of Machine Learning Research Lab at Volkswagen Group, ACEA TF-AI Pilot***.** – Thank you so much, and thank you for not asking me to be the first answerer, because I had to look up the reference for the definition of the AI Act.

The reason for that is, first of all, in the AI Act, the definition of AI is only used in combination with high risk. So the liability of that definition itself may not be so high.

But first of all, the definition basically includes any type of software which has some parameter that is adapted, and that basically means any type of software that we use nowadays is covered by the AI Act per se.

Since it combines only with high risk, that may not be the problem, but a more serious problem arises, I think, at the moment where this definition is picked up by subsequent and other legal frameworks. As I mentioned, the transgression of these legal frameworks in security and so on, at the UNECE level and so on and so forth. So that definition will transgress.
Sorry for being over the minute. My last thing is that the ISO/IEC 22989 definition might be a better way to go, more on learning systems than anything else.

1-069-0000

Daniela Braga, *Founder and CEO, DefinedCrowd Corp***.** – So, how to operate the task force? The task force should be appointed by the Commission and it should operate in cycles of two years – two years because I think it's a good time to settle, to deliver something within a group of work.

Who should be there? Representatives of society, governments, academia, SMEs, big corporations.

What is the goal of this task force? It should be to provide deliverables. So not just documents in terms of guidelines, but also guidelines for certifications, for standards and recommendations around data, safety rules, models, sharing data models and more ethical questions, more philosophical questions around decision-making for when we are all in level five of autonomy of all of these autonomous vehicles.

Closing remarks

Chair. – Thank you very much to all the speakers, thank you dear colleagues, thank you interpreters for having given us more time, for accompanying us and for enabling us to continue our work.

We have now reached the end of our hearing. I would like to thank all the speakers, of course, as well as the members of the TRAN and AIDA committees for the quality of the debates. I have no doubt that the discussions have only just begun, because we already know today that future legislative debates on artificial intelligence will be very important. I would like to thank the AIDA Committee for coordinating and co-organising this hearing.

I wish you all a good day. The debate has only just begun because there are many questions that have not been addressed, such as energy consumption and the place of these cars in cities that are going to be transformed, among many others. In any case, the debate has only just begun. Thank you interpreters, thank you very much TRAN secretariat, thank you dear colleagues, and thank you technical services for always being there with us. I hope to see you all very soon. The meeting is closed.

(The meeting closed at 15:58)